CAN EXPANSIVE (SOCIAL) LEARNING PROCESSES STRENGTHEN ORGANISATIONAL LEARNING FOR IMPROVED WETLAND MANAGEMENT IN A PLANTATION FORESTRY COMPANY, AND IF SO HOW?
A CASE STUDY OF MONDI

A thesis submitted in fulfilment of the requirements of the degree of

DOCTOR OF PHILOSOPHY
of
RHODES UNIVERSITY

By
DAVID LINDLEY

August 2014
ABSTRACT

Mondi is an international packaging and paper company that manages over 300 000 ha of land in South Africa. After over a decade of working with Mondi to improve its wetland management, wetland sustainability practices were still not integrated into the broader forestry operations, despite some significant cases of successful wetland rehabilitation. An interventionist research project was therefore conducted to explore the factors inhibiting improved wetland management, and determine if and how expansive social learning processes could strengthen organisational learning and development to overcome these factors. In doing so, the research has investigated how informal adult learning supports organisational change to strengthen wetland and environmental sustainability practices, within a corporate plantation forestry context. How individual and/or group-based learning interactions translate to the collective, at the level of organisational change was a key issue probed in this study. The following three research questions were used to guide the research:

1. What tensions and contradictions exist in wetland management in a plantation forestry company?
2. Can expansive learning begin to address the tensions and contradictions that exist in wetland management in a plantation forestry company, for improved sustainability practices?
3. Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?

Cultural historical activity theory (CHAT) and the theory of expansive learning provided an epistemological framework for the research. The philosophy of critical realism gave ontological depth to the research, and contributed to a deeper understanding of CHAT and expansive learning. Critical realism was therefore used as a philosophy to underlabour the theoretical framework of the research. However CHAT and expansive learning could not provide the depth of detail required to explain how the expansive learning, organisational social change, and boundary crossings that are necessary for assembling the collective were taking place. Realist social theory (developed out of critical realism by Margaret Archer as an ontologically located theory of how and why social change occurs, or does not) supported the research to do this. The morphogenetic framework was used as
a methodology for applying realist social theory. The expansive learning cycle was used as a methodology for applying CHAT and the theory of expansive learning; guiding the development of new knowledge creation required by Mondi staff to identify contradictions and associated tensions inhibiting wetland management, understand their root causes, and develop solutions. Through the expansive learning process, the tensions and contradictions become generative as a tool supporting expansive social learning, rather than as a means to an end where universal consensus was reached on how to circumvent the contradictions.

The research was conducted in five phases:

- **Phase 1**: Contextual profiling to identify and describe three activity systems in Mondi responsible for wetland management: 1) silviculture foresters; 2) environmental specialists; 3) community engagement facilitators. The data was generated and analysed through document analysis, 17 interviews, 2nd generation CHAT analysis, and Critical Realist generative mechanism analysis;
- **Phase 2**: Analysis and identification of tensions and contradictions through a first interventionist workshop. Modelling new solutions to deal with contractions, and examining and testing new models in and after the second interventionist workshop;
- **Phase 3**: Implementing new models as wetland management projects and involved project implementation. This included boundary crossing practices of staff in the three activity systems, reflection and re-view in a further five progress review/interventionist workshops, and a management meeting and seminar;
- **Phase 4**: Reflecting on the expansive learning process, results, and consolidation of changed practices, through nine reflective interviews and field observations;
- **Phase 5**: Morphogenic/stasis analysis of the organisational change and development catalysed via the expansive social learning process (or not).

The research found that expansive social learning processes supported organisational learning and development for improved wetland management by: 1) strengthening the scope, depth, and sophistication of participant understanding; 2) expanding the ways staff interact and collaboratively work together; 3) democratising decision making; 4) improving social relations between staff, reducing power differentials, and creating stronger relationships; 5) enhancing participant
reflexivity through deeper understanding of social structures and cultural systems, and changing them to support improved wetland and environmental practice of staff, and developing the organisational structures and processes to strengthen organisational learning and development; and 6) using the contradictions identified as generative mechanisms to stimulate and catalyse organisational learning and development for changed wetland/environmental management.

Importantly, many of the contradictions identified by the research were between the activity systems and the institutional setting, and this has highlighted the critical relationship between wetland management practices, expansive social learning processes, and organisational development. It was concluded that the development of wetland and environmental management knowledge required by Mondi staff is closely related, not only to the workplace situation, but also to the institutional structures and management capabilities. Wetland sustainability practices therefore cannot exist alone. They are dependent on processes such as expansive social learning to strengthen staff dialogue, learning, and improved relational practices and agency, to identify and find solutions to factors inhibiting wetland practice. They are also dependent on the development of the organisation to put in place the institutional structures enabling the social learning processes required for improved wetland management.

Five types of changes emerged from the research: 1) changes in structure, 2) changes in practice, 3) changes in approach, 4) changes in discourse, and 5) changes in knowledge, values, and thinking. These changes ranged on a visibility scale: the changes in structure and practice were quite explicit on the one hand, while the changes in approach, discourse, knowledge, values and thinking were more tacit. This was an important finding, as most often the explicit changes tend to be noticed and recorded, since they are actual changes that have taken place and are easy to measure and see. Tacit changes are often ignored or go largely unnoticed. Tacit changes are emerging changes that appear to be a prerequisite enabling the explicit changes to take place. Tacit changes also have the potential to catalyse further changed practices and structures in the future. They can therefore be termed catalytic changes, as they have the potential for catalysing future change. This finding is important for environmental education since it is characteristically a catalytic activity, developing the agency of people to act on environmental issues, with most of these actions only taking place in the future. As this newfound agency is acted upon, these tacit changes have the potential to bring
about change in the way people practise in the future. Therefore tacit changes are very important
indicators for determining the potential changes that might happen in the future, which is
important for monitoring the long-term impact of environmental education interventions.

In analysing the changes in organisational learning and development in relation to wetland and
environmental management, the research illuminated a morphogenetic process. The expansive
learning cycle provided a platform to scaffold and support open-ended environmental learning
processes that are deliberative and potentially catalytic, to strengthen reflexivity for changed
wetland practices. This catalysed the socio-cultural-agential interaction required for
morphogenesis, through enabling a safe learning ‘space’ with associated tools to act as the starting
point for the interaction. Interventionist workshops catalysed engagement of the participants with
the properties and powers of the social structures and cultural systems that were conditioning the
context in which the Mondi staff were learning and practising. During these interactions, the
personal emergent properties and powers of participants were activated and came into
relationships with those of the social structures and cultural systems, as they began to interact and
shape one another. This strengthened participant reflexivity, enabled participants to deeper
understand the inhibiting structures, and to develop and implement the solutions that resulted in
the five different types of changes. The research consequently revealed that expansive social
learning can provide a space for seeding or catalysing organisational development, organisational
learning, and organisational change processes through enhancing agent reflexivity.

The research concluded that expansive social learning can provide an environmental education
platform to proactively work with the sociology potential of morphogenesis to bring about future
change, rather than only looking at existing practice and using morphogenesis to retrospectively
understand how change has happened in the past, as Margaret Archer’s work has done (1995;
2000). Environmental educators can therefore work with expansive social learning as a platform to
scaffold and support open-ended environmental learning processes that are designed to catalyse
and strengthen reflexivity for bringing about environmental change. They can proactively landscape
a deliberative democratic approach to growing the reflexivity and change capacity of agents. In this
way environmental educators can proactively work with the social processes of learning as
mobilisers of morphogenesis.
TABLE OF CONTENTS

ABSTRACT ..................................................................................................................................... i
LIST OF FIGURES ........................................................................................................................ xvi
LIST OF TABLES ....................................................................................................................... xviii
LIST OF ACRONYMS ................................................................................................................... xix
ACKNOWLEDGEMENTS .............................................................................................................. xx

CHAPTER ONE: Introduction and context: Mondi and its management of wetlands .............. 1
  1.1 Introduction .................................................................................................................... 1
  1.2 What is a wetland? ........................................................................................................ 2
  1.3 The importance of wetlands and their rapid degradation ........................................... 3
  1.4 A wetland partnership between two conservation NGOs and a plantation forestry company ....................................................................................................................... 4
    1.4.1 Key reasons for working with the plantation forestry sector and specifically Mondi .... 5
    1.4.2 Mondi’s environmental commitment ........................................................................ 7
    1.4.3 The need to support Mondi staff with wetland management expertise .................... 8
  1.5 Description of the wetland related social-ecological issues in Mondi ......................... 9
    1.5.1 Silviculture foresters .................................................................................................. 10
    1.5.2 Environmental specialists ....................................................................................... 14
    1.5.3 Mondi community engagement facilitators ............................................................. 14
    1.5.4 Senior and area managers ....................................................................................... 15
    1.5.5 Contractors and their workers ................................................................................ 15
    1.5.6 Communal wetland users ....................................................................................... 16
  1.6 Water scarcity, wetlands and business risk ................................................................. 17
    1.6.1 Water scarcity and risk ......................................................................................... 17
    1.6.2 The business risk associated with inadequate water and ecosystem management .... 18
    1.6.3 The risk of plantations to South African water security ........................................ 19
    1.6.4 The water and wetlands business risk to Mondi’s plantation forestry operations .... 20
  1.7 Past approaches used by the MWP in working with Mondi to strengthen wetland management ................................................................................................................. 21
  1.8 Past MWP support has not resulted in the changes required ...................................... 25
    1.8.1 A lack of an integrated approach to wetland management ..................................... 26
    1.8.2 Mondi restructuring contributes to the changing landscape in working with Mondi ... 27
    1.8.3 Institutional factors affecting an enabling environment ........................................... 28
  1.9 Aim of the research .................................................................................................... 29
  1.10 Overview of the study design .................................................................................. 31
CHAPTER TWO: Reviewing social learning processes relevant to improving wetland practice.....37

2.1 Introduction ..................................................................................................................37
  2.1.1 Questioning the theory supporting MWP’s work .....................................................38
  2.1.2. Discovering the relevance of social learning to the MWP’s work ................................38
  2.1.3. Confusion when reading social learning literature ..................................................40

2.2 Changing paradigms of environmental learning .............................................................40
  2.2.1 The narrow instrumental origins of environmental education ......................................40
  2.2.2 A broadening of perspectives on environmental education research ............................42
  2.2.3 A socially critical orientation to environmental learning .................................................43
  2.2.4 The emergence of social learning in the environmental context ....................................46

2.3 Understanding what social learning is ............................................................................47
  2.3.1 The risk of ontological collapse ........................................................................................48

2.4 Elements of social learning important to my research ....................................................50
  2.4.1 Importance of valuing social learning processes over products ........................................51
  2.4.2 Needing to bridge the gap between knowing and doing ................................................52
  2.4.3 Changing values, beliefs, ideologies and assumptions ....................................................53
  2.4.4 The necessity of deliberating democratically .................................................................55
  2.4.5 Learning with an epistemology orientated to risk ...........................................................59
  2.4.6 Understanding the meaning of participation in social learning .......................................62
  2.4.7 Different epistemologies of learning give rise to different understandings of participation ........................................................................................................................................65
  2.4.8 Conclusion ........................................................................................................................66

2.5 Organisational learning ..................................................................................................66
  2.5.1 Introducing learning for organisational development and change ....................................67
  2.5.2 The ‘split’ in organisational learning and the learning organisation ..................................68
  2.5.3 The popularity of the learning organisation and criticisms of it ........................................69
  2.5.4 Individual and collective learning in organisations ..........................................................70
  2.5.5 The socio-cultural approach to organisational learning ..................................................71

2.6 Social learning as a community of practice ....................................................................73
  2.6.1 A broad understanding of communities of practice .........................................................73
  2.6.2 The use of communities of practice by corporates ..........................................................77
  2.6.3 Cultivating communities of practice ................................................................................78
  2.6.4 The potential relevance of communities of practice to Mondi .........................................80
  2.6.5 A critical view of communities of practice .......................................................................82

2.7 Expansive learning and CHAT as an approach to organisational learning .........................87

2.8 Conclusion ....................................................................................................................88
CHAPTER THREE: Theoretical and philosophical framework ................................................................. 90
  3.1 Introduction .................................................................................................................................. 90
  3.2 Epistemological theories supporting the research ........................................................................ 90
  3.3 The origins of CHAT and Expansive Learning ............................................................................. 91
    3.3.1 Vygotsky’s life in a nutshell .................................................................................................. 91
    3.3.2 Influence of Marxism on Vygotsky’s thinking .................................................................. 93
    3.3.3 Vygotsky’s theoretical concepts ....................................................................................... 93
    3.3.4 The use of Vygotsky’s ideas .......................................................................................... 95
  3.4 Cultural Historical Activity Theory ............................................................................................ 96
    3.4.1 First generation CHAT .................................................................................................... 96
    3.4.2 Second generation CHAT ............................................................................................... 97
    3.4.3 Third generation CHAT ................................................................................................. 100
    3.4.4 Five principles forming the basis of CHAT ................................................................... 101
  3.5 Theory of Expansive Learning .................................................................................................... 102
    3.5.1 An overview of expansive learning ............................................................................... 102
    3.5.2 The important role of contradictions .......................................................................... 104
    3.5.3 Boundary crossing as a form of horizontal learning across different professional practices ................................................................................................................. 106
    3.5.4 The use of CHAT and expansive learning as an epistemological framework to support organisational learning and development ........................................................ 107
    3.5.5 Criteria for what constitutes learning in the organisational and professional learning context of this study ................................................................. 109
  3.6 Broad philosophical orientation .................................................................................................. 110
  3.7 Philosophy of Critical Realism .................................................................................................... 111
    3.7.1 A stratified ontology ........................................................................................................ 112
    3.7.2 Generative mechanisms .................................................................................................. 113
  3.8 Realist Social Theory .................................................................................................................. 114
    3.8.1 The relationship between structure and agency ........................................................... 115
    3.8.2 Properties and powers of the parts and the people ...................................................... 117
  3.9 Conclusion .................................................................................................................................. 118

CHAPTER FOUR: Methodology and methods ......................................................................................... 120
  4.1 Introduction .................................................................................................................................. 120
  4.2 Expansive learning cycle as a methodology for applying CHAT and the theory of expansive learning .......................................................................................................................... 120
    4.2.1 Summary of the expansive learning cycle .................................................................... 122
    4.2.2 The importance of the expansive learning cycle being both continuous and discontinuous ................................................................................................................. 124
    4.2.3 Similarity between Wals’ six steps of social learning and the expansive learning cycle ................................................................................................................................. 125
4.3 Morphogenetic framework as a methodology for applying realist social theory.............. 126
  4.3.1 Morphogenetic cycle of structure ............................................................................ 129
  4.3.2 Morphogenetic cycle of culture ............................................................................... 130
  4.3.3 Morphogenetic cycle of agency .............................................................................. 131
4.4 Case study approach .................................................................................................. 133
  4.4.1 Selection of case study areas and participants .............................................................. 134
4.5 An interventionist approach of Change Laboratory workshops as a method for data generation .................................................................................................................. 137
4.6 Data generation and analysis .......................................................................................... 140
  4.6.1 Data from interviews (Phase 1) .................................................................................. 146
  4.6.2 Data from interventionist workshops (Phase 2) ............................................................. 149
  4.6.3 Data from area wide progress review workshops and management meetings (Phase 3) .............................................................................................................................. 154
  4.6.4 Data from reflective interviews (Phase 4) ..................................................................... 161
  4.6.5 Analysis of data using morphogenetic framework to identify how the changes emerged (Phase 5) ........................................................................................................... 162
4.7 Validity of the research ................................................................................................. 162
4.8 Ethical considerations .................................................................................................. 164
4.9 Conclusion ................................................................................................................... 165

CHAPTER FIVE: Understanding wetland management activity systems, inhibiting contradictions, and developing solutions to deal with them ....................................................... 166
5.1 Introduction ..................................................................................................................... 166
5.2 Description of the three wetland management activity systems in Mondi ......................... 167
  5.2.1 Forester activity system ............................................................................................ 168
  5.2.2 Environmental specialist activity system ................................................................. 170
  5.2.3 Community Engagement Facilitator (CEF) activity system ....................................... 173
5.3 Identifying and then deepening an understanding of the tensions and contradictions within and between the three activity systems ......................................................... 175
  5.3.1.a Tensions from interviews - contradiction #1: Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning........................................................................................................................................ 180
  5.3.1.b Tensions from workshop #1: Deepening an understanding of contradiction #1 ........ 182
  5.3.1.c Tensions from workshop #2: Further deepening an understanding of contradiction #1 ......................................................................................................................................................... 184
  5.3.2.a Tensions from interviews - contradiction #2: Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their attitudes/culture/individual complexity and resistance to change differs........ 186
5.3.2.b Tensions from workshop #1: Deepening an understanding of contradiction #2 ....... 186

5.3.3.a Tensions from interviews - contradiction #3: Between the loss of experience and skills from staff leaving, and the lack of a structure and a willingness to share wetland knowledge and skills of old timers with newcomers ........................................ 187

5.3.3.b Tensions from workshop #1: Deepening an understanding of contradiction #3 ....... 187

5.3.4.a Tensions from interviews - contradiction #10: Between implementing general wetland management practices and not knowing exactly what desired state the wetland is being managed for ........................................................................................................... 188

5.3.4.b Tensions from workshop #1: Deepening an understanding of contradiction #10 ....... 188

5.3.5.a Tensions from interviews - contradiction #4: Between CEFs, foresters and environmental specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and the Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach ........................................................ 189

5.3.5.b Tensions from workshop #1: Deepening an understanding of contradiction #4 ....... 189

5.3.5.c Tensions from workshop #2: Further deepening an understanding of contradiction #4 ............................................................................................................................................................................. 190

5.3.6.a Tensions from interviews - contradiction #6: Between how Mondi want to manage its wetlands, and how external influences like local communities want to use and manage the wetland resources ................................................................................ 191

5.3.6.b Workshop #1: Deepening an understanding of contradiction #6 .......................................................................................................................................................................................................................... 191

5.3.7.a Tensions from interviews - contradiction #12: Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it .............................................................................................................. 192

5.3.7b Tensions from workshop #1: Deepening an understanding of contradiction #12 ....... 192

5.4 How the group prioritised their chosen contradictions ................................................................................................................................. 193

5.5 Identifying possible solutions .......................................................................................................................................................................................................................... 194

5.5.1.a Solutions from interviews - contradiction #1: Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning .......................................................................................................................................................... 195

5.5.1.b Solutions from workshop #1 .................................................................................................................................................................................................................................................................... 195

5.5.2.a Solutions from interviews - contradiction #2: Between individuals who recognise the importance of strengthening informal learning, and those who do not because their attitudes/culture/individual complexity and resistance to change differs .......................................................................................................................................................................................................................... 196

5.5.2.b Solutions from workshop #1 .................................................................................................................................................................................................................................................................... 196

5.5.3.a Solutions from interviews - contradiction #3: Between the loss of experience and skills from staff leaving, and the lack of a structure and a willingness to share wetland knowledge and skills of old timers with newcomers .......................................................................................................................................................................................................................... 197

5.5.3.b Solutions from workshop #1 .................................................................................................................................................................................................................................................................... 197
5.5.4.a Solutions from interviews - contradiction #10: Between implementing general wetland management practices and not knowing exactly what desired state the wetland is being managed for ............................................................ 201

5.5.4.b Solutions from workshop #1 ......................................................................................... 201

5.5.5a. Solutions from interviews - contradiction #4: Between CEFs, foresters and environmental specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach .................................................. 202

5.5.5.b Solutions from workshop #1 ......................................................................................... 203

5.5.6.a Solutions from interviews - contradiction #6: Between how Mondi want to manage its wetlands, and how external influences like local communities want to use and manage the wetland resources ............................................................ 204

5.5.6.b Solutions from workshop #1 ......................................................................................... 205

5.5.7.a Solutions from interviews - contradiction #12: Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it .............................................................................................................. 205

5.5.7.b Solutions from workshop #1 ......................................................................................... 205

5.6 Developing a thirteen point draft action plan ............................................................... 206

5.6.1 Developing an induction programme ............................................................................ 206

5.6.2 State of Wetlands Report field days............................................................................... 207

5.6.3 Using field days as an informal learning tool ................................................................ 208

5.6.4 Local wetland projects to strengthen staff collaboration ............................................. 208

5.6.5 Area managers to promote field days ............................................................................ 208

5.6.6 Senior managers to motivate area managers to have field days ............................ 209

5.6.7 Education of management on what informal learning is about .................................. 209

5.6.8 Development of a toolbox of ideas to support informal learning ................................. 210

5.6.9 More informal feedback sessions, in your face, and face to face communications ...... 210

5.6.10 All staff need to have a slice of understanding of forestry, environmental and communities issues ............................................................................................................................................. 211

5.6.11 Integration of environmental training into existing contractor training matrix ............ 212

5.6.12 Some interesting observations .................................................................................... 212

5.7 Developing an implementation plan ............................................................................ 213

5.7.1 Strengthening the induction process for new staff ....................................................... 213

5.7.2 Creating formal learning modules for existing staff .................................................... 216

5.7.3 Development of a toolbox of methods and materials .................................................... 216

5.7.4 Integrating environmental toolbox information into the contractor training matrix ... 217

5.7.5 MWP to hold field days on State of Wetlands Report recommendations .................. 217

5.7.6 Making local and cross-area field days happen ............................................................. 218

5.7.7 Selecting projects that staff can collaboratively work on ............................................ 219

5.7.8 Gaining support from area and senior management on the workshop process ....... 221
5.7.9 Senior management to create the space for area management to motivate staff...221
5.7.10 The need for feedback sessions by management to staff ........................................221
5.7.11 The importance of face to face report backs by specialists ........................................222
5.7.12 More ‘in your face’ communications are needed rather than emailing ....................222
5.7.13 The need to educate management on what informal learning is ................................223

5.8 Testing implementation plan against the original tensions and contradictions ..........223
5.9 Conclusion 225

CHAPTER SIX: Expansive social learning processes begin to strengthen the reflexivity and agency of Mondi staff for improved wetland sustainability practices ..........226
6.1 Introduction ...................................................................................................................226
6.2 Analytical statement #1: The sophistication of participant understanding increased as the expansive learning process progressed .........................................................228
6.2.1 Interviews: Emergence of a shallow understanding of tensions and basic solutions ..228
6.2.2 Workshop #1: Tensions and solutions begin to grasp an understanding of the contradictions .................................................................................................................231
6.2.3 Workshop #2: Emergence of a broader and deeper understanding of tensions and contradictions, and more sophisticated solutions .........................................................233
6.2.4 Expansive social learning processes that supported participants to begin developing a deeper understanding of the tensions and contradictions ........................................235

6.3 Analytical statement #2: The expansive learning process began to strengthen democratisation of decision making ..............................................................................236
6.3.1 Tracing the contributions of Black participants to contradiction #4 .........................238
6.3.2 Tracing the contributions of Black participants to contradiction #1 .........................239
6.3.3 An interesting finding for a South African context ....................................................240

6.4 Analytical statement #3: Improving wetland management depends on the critical relationship between wetland management practices, expansive social learning processes, and organisational development ........................................................242
6.4.1 Expansive social learning processes strengthen participant understanding, but only if the institutional space is provided ..............................................................................242
6.4.2 The importance of organisational development in strengthening wetland management. .................................................................................................................................244
6.4.3 The dependence of wetland management on the relationship between social learning and organisational development .................................................................248

6.5 A reflection on the research findings of phase 1 and 2, relative to the research questions .........................................................................................................................249
6.6 Conclusion ....................................................................................................................251
7.17 Has expansive learning been able to deal with the contradictions? ............................... 322

7.17.1 Progress in dealing with the contradictions ................................................................... 322
7.17.2 Why the silos are such a hard nut to crack ................................................................. 324
7.17.3 Has more progress been made than participants are aware of? ................................. 326
7.17.4 A need to continue the expansive learning process? .................................................... 326

7.18 Conclusion ................................................................................................................ 329

CHAPTER EIGHT: The emergence of organisational changes and corporate agency .......... 331

8.1 Introduction ................................................................................................................ 331
8.2 Morphogenesis of structure, culture and agency .......................................................... 331
8.3 Structural and cultural conditioning (T1) ...................................................................... 332

8.3.1 Generative mechanisms giving rise to structural and cultural emergent properties in Mondi ......................................................................................................................... 332
8.3.2 Structural emergent properties and powers conditioning Mondi staff at T1 ............... 334
8.3.3 Cultural emergent properties and powers conditioning Mondi staff at T1 ............... 336
8.3.4 Primary and corporate agents at T1 ............................................................................... 338

8.4 Socio-cultural and group interaction (T2-T3) ................................................................. 339

8.4.1 An overview of what happened during T2-T3............................................................... 339
8.4.2 Participant realisation of the SEPs and CEPs constraining practice ............................. 341
8.4.3 Discovery of new enabling CEPs ..................................................................................... 342
8.4.4 Emergence of the staff PEPs .......................................................................................... 343

8.5 Structural and agential elaboration and reproduction (T4) ........................................... 345
8.6 The morphogenesis of organisational learning and development ............................... 346

8.6.1 Expansive social learning provides the platform to catalyse morphogenesis .......... 349
8.6.2 Proactively working with the sociology potential of morphogenesis to bring about future change ................................................................................................................. 350

8.7 Conclusion ................................................................................................................ 352

CHAPTER NINE: Conclusions, reflections and recommendations for further research ........ 353

9.1 Introduction ................................................................................................................ 353
9.2 A summary of the research ........................................................................................ 353
9.3 Conclusions that emerged from the research ............................................................... 354

9.3.1 Sophistication of participant understanding of the inhibiting structural and cultural context increased as the expansive learning cycle progressed ................................. 354
9.3.2 The expansive learning process began to strengthen democratisation of decision making ................................................................................................................................. 355
9.3.3 Improving wetland management depends on the critical relationship between wetland management practices, expansive social learning processes, and organisational development .......................................................... 355

9.3.4 Management is important for enabling or disabling safe spaces for informal learning ........................................................................................................................... 356

9.3.5 Five types of changes emerged from the research ranging from tacit catalytic changes to explicit actual changes ................................................................................. 356

9.3.6 The shared object of the three activity systems of foresters, CEFs and environmental specialists expanded .............................................................................................................. 357

9.3.7 Additional expansive learning cycle required to consolidate and grow existing changes ........................................................................................................................... 357

9.3.8 Expansive learning has been able to strengthen organisational learning and development .................................................................................................................. 358

9.3.9 Expansive social learning provides a platform to catalyse the morphogenesis of organisational learning and development .............................................................................................................. 358

9.3.10 Future change may be brought about by proactively working with the sociology potential of morphogenesis ........................................................................................... 359

9.4 A reflective review of the research process .......................................................... 359

9.4.1 Managing the risk of basing research on what participants say .................................... 359

9.4.2 Deepening the contextual picture of Mondi .................................................................. 360

9.4.3 Reflexivity as the interventionist researcher ........................................................................ 361

9.4.4 The usefulness of the research to society ........................................................................ 362

9.4.5 A reflection on the usefulness of the theoretical framework used for the research .......................................................................................................................... 363

9.4.6 The dilemma of supporting research participants during implementation of solutions or not .................................................................................................................. 364

9.4.7 Using the theoretical framework to strengthen research rigour but not being a slave to it .................................................................................................................. 365

9.4.8 Including additional management in the expansive learning process ........................... 366

9.5 Recommendations for further research ................................................................. 367

9.5.1 Investigating how expansive social learning may better understand and deal with power imbalances between participants: ............................................................... 367

9.5.2 Testing the research findings in another organisational context: ........................................ 368

9.5.3 Testing the research findings at a larger catchment scale across the boundaries of multiple stakeholders: ................................................................................................. 368

9.5.4 Investigating if including additional managers and greater support during solution implementation strengthens expansive social learning: .................................................. 369

9.6 Conclusion ............................................................................................................... 370

REFERENCES ................................................................................................................. 371
Appendix 1: Questions guiding interviews with foresters on how they were learning and practices wetland management ............................................................ 387
Appendix 2: Example interview with a Social Development Facilitator on how they are learning and practicing wetland management ........................................ 389
Appendix 3: Contextual descriptions of the three main wetland management activity systems of Mondi ............................................................................ 404
Appendix 4: Analytical memo of tensions from interviews and workshop #1 .................... 409
Appendix 5: List of contradictions ................................................................................................................................. 423
Appendix 6: Analytical memo of solutions from interviews and workshop #1 ................ 426
Appendix 7a: Wetland Action Plan .................................................................................................................. 435
Appendix 7b: Analytical memo of main issues discussed during workshop # 2 ............ 437
Appendix 8: Level 1 analytical memo of main issues discussed during workshops # 3 (On CD-ROM) ...................................................................................... 448
Appendix 9: Level 2 analytical memo of main issues discussed during workshops # 3 ...... 448
Appendix 10a: Transcriptions - learning & practicing interviews (On CD-ROM) ........... 459
Appendix 10b: Transcriptions - workshop #1 (On CD-ROM) ........................................... 459
Appendix 10c: Transcriptions - workshop #2 (On CD-ROM) ........................................... 459
Appendix 10d: Transcriptions - progress review workshops #3 (On CD-ROM) ............ 459
Appendix 10e: Transcriptions - management meeting & seminar (On CD-ROM) ............ 459
Appendix 10f: Transcriptions - management reflective interviews (On CD-ROM) ........... 459
Appendix 11: Analytical memo of main issues discussed during reflexive interviews and management seminar (On CD-ROM) .................................................. 459
Appendix 12: Reflexive interview questions ........................................................................................................ 460
Appendix 13: Example email of member checking for interview transcriptions ............. 461
Appendix 14: Example email requesting Mondi staff participation ................................. 463
Appendix 15: Example emails sent to Mondi staff participating in the research, and providing them with the notes from both workshop#1 and #2 ....................... 466
Appendix 16: Environmental training matrix for Mondi staff (On CD-ROM). ...................... 468
Appendix 17: Detailed list of the SEPs CEPs and PEPs of five types of changes identified (On CD-ROM) ........................................................................... 468
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>A typical type of wetland found in a well managed plantation forestry area, called a wet grassland.</td>
<td>6</td>
</tr>
<tr>
<td>1.2</td>
<td>Working with Mondi foresters and environmental specialists in the field mapping wetland sites, as well as taking senior managers into the field to learn how to do wetland delineation.</td>
<td>9</td>
</tr>
<tr>
<td>1.3</td>
<td>Training Mondi foresters to delineate wetlands by, for example, looking at the differences of the red soil colour of terrestrial soils compared to the black colour of wetland soils.</td>
<td>23</td>
</tr>
<tr>
<td>3.1</td>
<td>A first generation model of mediated action (adapted from Engeström, 2001, p.134).</td>
<td>96</td>
</tr>
<tr>
<td>3.2</td>
<td>A second generation mediating triangle of a cultural and historically constituted activity system (adapted from Engeström, 1987, p.178).</td>
<td>98</td>
</tr>
<tr>
<td>3.3</td>
<td>Third generation activity theory: 2 activity systems with a partially shared objective as a minimum unit of analysis. (Engeström, 2008, p.14)</td>
<td>100</td>
</tr>
<tr>
<td>4.1</td>
<td>Sequence of learning actions in an expansive learning cycle (Engeström, 2010, p.8).</td>
<td>122</td>
</tr>
<tr>
<td>4.2</td>
<td>The three phases of Archer’s basic morphogenetic and morphostatic cycle, where ‘T’ is time (Archer, 1995, p.157).</td>
<td>127</td>
</tr>
<tr>
<td>4.3</td>
<td>The morphogenesis of structure (Archer, 1995, p.193).</td>
<td>129</td>
</tr>
<tr>
<td>4.4</td>
<td>The morphogenesis of culture (Archer, 1995, p.193).</td>
<td>130</td>
</tr>
<tr>
<td>4.5</td>
<td>The morphogenesis of corporate agency (Archer 2000, p.268).</td>
<td>131</td>
</tr>
<tr>
<td>4.6</td>
<td>Map with research study region highlighted (Tourist map of South Africa, 2013).</td>
<td>134</td>
</tr>
<tr>
<td>4.7</td>
<td>Map of KwaZulu-Natal with the four Mondi business unit areas selected for the research highlighted (Tourist map of South Africa, 2013).</td>
<td>135</td>
</tr>
<tr>
<td>4.8</td>
<td>Research participants at the first interventionist workshop using some quiet time to think about the mirror data before discussing it.</td>
<td>150</td>
</tr>
<tr>
<td>4.9</td>
<td>Research participants at the second interventionist workshop discussing the root causes of the two prioritised contradictions and their associated tensions.</td>
<td>153</td>
</tr>
</tbody>
</table>
Figure 4.10 Research participants at the five progress review workshops held in each of
the original four business unit areas of Mondi, as well as an additional new
business area called the Paulpietersberg Area..............................................................156

Figure 4.11 Mondi senior and middle level management during the seminar to share what
was emerging from the expansive social learning process...........................................160

Figure 5.1 A summary of the wetland management activity system of silviculture foresters.......170
Figure 5.2 A summary of the wetland management activity system of environmental
specialists. .......................................................................................................................172

Figure 5.3 A summary of the wetland management activity system of community
engagement facilitators ................................................................................................175

Figure 7.1 Five types of changes on a visibility scale, ranging from those being tacit and
catalytic to those being explicit and actual .................................................................321

Figure 8.1 The morphogenesis of organisational learning..............................................347

Figure 8.2 An overlay of the expansive learning process, as implemented in this research,
with the morphogenetic process..............................................................................351
LIST OF TABLES

Table 1.1 The research phases .....................................................................................................................33
Table 4.1 Timeline of the research process phases, data generation and analysis stages ..............145
Table 5.1 A list of the twelve contradictions that emerged from the Mondi staff interviews as hindering wetland and other environmental sustainability practices. ...............................176
Table 5.2 The two key prioritised contradictions as reframed at the end of workshop #1 ..........178
Table 7.1 Summary of the organisational and professional learning changes that have taken place during the expansive social learning process .....................................................................................................................317
**LIST OF ACRONYMS**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEF</td>
<td>Community Engagement Facilitator</td>
</tr>
<tr>
<td>CEP</td>
<td>Cultural Emergent Property/Power</td>
</tr>
<tr>
<td>CHAT</td>
<td>Cultural Historical Activity Theory</td>
</tr>
<tr>
<td>COP</td>
<td>Communities of Practice</td>
</tr>
<tr>
<td>CSI</td>
<td>Corporate Social Investment</td>
</tr>
<tr>
<td>DWAF</td>
<td>Department of Water Affairs and Forestry</td>
</tr>
<tr>
<td>FSC</td>
<td>Forestry Stewardship Council</td>
</tr>
<tr>
<td>HCV</td>
<td>High Conservation Value</td>
</tr>
<tr>
<td>LO</td>
<td>Learning organisation</td>
</tr>
<tr>
<td>MWP</td>
<td>Mondi Wetlands Programme</td>
</tr>
<tr>
<td>NECF</td>
<td>Northern East Cape Forests</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Governmental Organisation</td>
</tr>
<tr>
<td>OL</td>
<td>Organisational learning</td>
</tr>
<tr>
<td>PEP</td>
<td>Personal Emergent Property</td>
</tr>
<tr>
<td>SEP</td>
<td>Structural Emergent Property/Power</td>
</tr>
<tr>
<td>WESSA</td>
<td>Wildlife and Environment Society of South Africa</td>
</tr>
<tr>
<td>WOW</td>
<td>Windows on Our World: Wetlands</td>
</tr>
<tr>
<td>WRC</td>
<td>Water Research Commission</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
</tr>
<tr>
<td>ZPD</td>
<td>Zone of Proximal Development</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

I would like to thank all the staff at Mondi Ltd and the Wildlife and Environment Society of South Africa (WESSA) who were involved in the research for being so willing and supportive during the research process, especially Chris Burchmore and his team from Mondi Ltd. Special thanks to Dr Jim Taylor and Dr Eureta Rosenberg for inspiring me to embark on this PhD journey in the first place. Professor Heila Lotz-Sisitka and Professor Rob O’Donoghue were wonderful in providing such insightful and deep thinking advice, and opening up my mind to new ideas and ways of thinking. Thanks also go to Dr Mutizwa Mukute whose PhD thesis motivated and guided my research, when I struggled to understand what others were saying. Dr Lausanne Olvitt was responsible for instigating some key ideas and providing valuable literature which helped me see clarity through the fog of cultural historical activity theory. Particular thanks also go out to Michelle Hietstermann, Damian Walters, Sharon Wilson and Vaughan Koopman of the Mondi Wetlands Programme, and fellow students in our Masters and PhD classes, who provided constant support and suggestions which played an important part in shaping the research. Thanks and deep appreciation to my parents Tim and Sue Lindley who sacrificed a lot to provide me with a quality education foundation, enabling me to undertake this PhD. Importantly I have to thank Baloo, our beloved Jack Russell who tirelessly kept me company, either sleeping on the desk, wedged in between me and the arm of the chair, or on my lap for almost the entire five years of my PhD research. Thanks, my little man, for your stalwart support during those early and chilly winter mornings by the fire. Finally my biggest thanks must be given to my wife Ros, who has endured the past five years of my crotchetiness during times of permanent academic stress, being a most valued and often used sounding board, and for putting up with a husband who neglected her over the past half a decade of these studies, and narrow-mindedly thought of little else than this research and my full time job.
CHAPTER ONE: 

Introduction and context: Mondi and its management of wetlands

1.1 Introduction

The chapter paints a broad contextual picture of the importance of wetlands to society, and how the wetland based partnership between two not for profit non-governmental conservation agencies and Mondi came into being through the Mondi Wetlands Programme (MWP). It goes on to briefly look at the structures within Mondi responsible for managing wetlands; how Mondi manages its wetlands; the way in which the MWP has worked with Mondi in the past to improve wetland management; and some contextual issues that may have influenced wetland management in the past. It was stated that past MWP support of Mondi staff has not resulted in the changes required for Mondi to maintain and improve the integrity of its wetlands over the long term, and possible reasons provided for this. A shallow understanding of social learning processes and the dynamics of social change by MWP staff was proposed as potentially contributing towards this lack of change. The chapter finishes with the reasons for conducting this research and outlines the research questions attempts to answer. Information for this contextual picture was generated, in part, from examining historical Mondi Wetlands Programme progress reports. These were written over the past 13 years, during which the MWP had worked together with Mondi in an effort to strengthen wetland management practices. The reports consisted of 43 individual MWP progress reports written by myself over a period from January 1997 to November 2009 (Lindley, 2009a). These quarterly written reports recorded the progress the MWP had made in all its work, relative to annual predetermined outcomes and outputs. Additionally, this contextual picture was also informed by interviews held with 18 Mondi staff held in December 2008 (Lindley, 2008) as part of a separate study to determine how the MWP could better support Mondi’s wetland practices. It was this study that originally seeded the idea for the PhD research. Those interviewed included field workers and management staff working in forestry operations, environmental management, and community based social development. The tacit knowledge I had generated over the past 13 years of working with Mondi, as well as supporting literature, also informed the development of this contextual picture.
1.2 What is a wetland?

Globally, there are many different definitions of wetlands. One of the most widely recognised definitions comes from the Convention on Wetlands, also called Ramsar:

‘Wetlands’ are defined by Articles 1.1 and 2.1 as:

**Article 1.1:** For the purpose of this Convention wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.

**Article 2.1** provides that wetlands: may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six meters at low tide lying within the wetlands. (Ramsar, 2012)

For the purpose of this thesis, the South African National Water Act definition will be used, which is not at odds with the Ramsar definition, but rather more explicit in identifying the attributes a section of land must have to be called a wetland: “wetland” means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil” (Department of Water Affairs and Forestry, 1998). Despite the variety of wetland definitions, the term ‘wetland’ can simply be seen as a family name for many different types of wetlands grouped together under a common name. These different types range from the seeps, springs and wet grasslands found in the upper catchment, to marshes, floodplains, pans, and riparian areas in the middle catchment, to the lakes, mangrove swamps, and estuaries in the lower catchment. As alluded to by the Water Act definition, the three key features that all these different types of wetlands have in common are: 1) a high water table that may be at, or within 20cm, of the soil surface for a minimum of a month a year, in an average rainfall year; 2) this creates conditions for soils to develop a unique signature showing hydrophorphic or waterlogged characteristics; 3) as a result of this waterlogging for a minimum of one month a year, the plants and animals that live in wetlands have adapted to live in these saturated conditions, and are therefore distinctly different to those that live in the drier terrestrial areas (Department of Water Affairs and Forestry, 2005). An important feature of South
Africa’s wetlands is that many are only seasonally or temporarily saturated. These three characteristics can therefore enable identification of wetlands and their boundaries, even when no water may be visibly present at the surface (ibid.). As will become apparent later in the thesis, these three characteristics are very important to the plantation forestry industry for delineating wetlands, to ensure that timber plantations are not planted in them or the surrounding buffer areas.

1.3 The importance of wetlands and their rapid degradation

Wetlands provide a host of ecosystem services and goods, and as such they are highly valuable to society and its well-being (Mitsch & Gosselink, 2000; Millennium Ecosystem Assessment, 2005; Russi, ten Brink, Farmer, Badura, Coates, Förster, Kumar, & Davidson, 2013). Those applicable to wetlands in South Africa include the ability of wetlands to purify water, regulate its flow, recharge groundwater aquifers, attenuate floods and control erosion. Wetlands also provide natural resources for use by communities living nearby, including building materials, fish, potable water, material for making tourist and traditional crafts, livestock grazing and subsistence agriculture. From a cultural perspective, wetlands are also important for spiritual, educational, cultural and recreational uses. Due to the sensitivity of the negative impact of plantation trees on water resources, and the high number of indigenous communities living on and adjacent to Mondi land (section 1.5), the above mentioned ecosystem goods and services are also of greatest value to Mondi. The ecological foundation which makes it possible for wetlands to provide this wide variety of ecosystem services is the rich biological diversity found in wetlands. Not all wetlands are able to perform all these functions equally well, as this depends on a wetland’s individual characteristics and the opportunity being available for the wetland to perform these functions (Kotze, Marneweck, Batchelor, Lindley, & Collins 2007). A State of Wetlands Report assessing wetland health and the ecosystem services that key wetlands on Mondi landholdings were providing, highlighted that these wetlands were providing significant ecosystem services to surrounding communal wetland users, as well as beneficiaries who lived downstream (Walters, Kotze, & Job, 2011). When valuing the world’s ecosystem services and natural capital, seminal research has highlighted that wetlands are not only one of the most biologically diverse ecosystems on Earth, but their associated ecosystem services are valued higher than most other ecosystems as well (Costanza, d’Arge, de Groot, Farber, Grasso, Hannon, Limburg, Naeem, O’Neil, Paruelo, Raskin, Sutton, & van den Belt, 1997, Russi, et al., 2013). Southern African research valuing ecosystem services that wetlands provide to communal and
commercial farmers and urban dwellers support these international findings (Sullivan, MacFarlane, Dickens, Mander, Bonjean, Teixeira-Leite, & Pringle, 2008; Turpie, 2010).

However, despite this value wetlands provide to society, global wetland and river degradation over the previous 100 years has been alarmingly high (Schuyt & Brander, 2005; WWF, 2010a; WWF 2012; Russi, et al., 2013). This destruction has been caused by a number of factors: pollution and the physical disturbance caused by activities of the manufacturing and mining industries as well as the agriculture sector; excessive water abstraction; dumping of solid waste in wetlands; the draining of wetlands for urban developments and commercial agricultural crops; the planting up of wetlands and riparian areas to timber plantations; inappropriate road construction; and the building of dams. In the past, wetland researchers have suggested that the enormity of this destruction in South Africa is most likely to be in line with global trends, with about half of the country’s wetlands being lost predominantly due to these developments (Walmsley, 1988; Kotze, Breen, & Quinn, 1995). Research from individual catchments, such as the Mfolozi River where it is estimated that 58% of the wetlands have been lost, tended to support this suggestion (Begg, 1988). However it is only more recently that new data has verified this, with the latest National Biodiversity Assessment finding that wetlands were found to be the most threatened ecosystem in South Africa (Driver, Sink, Nel, Holness, Van Niekerk, Daniels, Jonas, Majiedt, Harris, & Maze 2012). The National Assessment found that 48% of the wetland types in South Africa were critically endangered, 12% endangered, and 5% vulnerable, indicating the alarming situation for South Africa’s wetlands.

1.4 A wetland partnership between two conservation NGOs and a plantation forestry company

The Mondi Wetlands Programme was initiated in 1991 due to this unprecedented loss of wetland habitat and associated ecosystem services in South Africa, and the lack of any co-ordinated approach to dealing with the issues and associated risks. The programme was initiated through a partnership between the Wildlife and Environment Society of South Africa (WESSA) and the World Wide Fund for Nature (WWF), with various corporate businesses funding the initiative. The MWP’s aim in its first ten years was to catalyse and support wetland conservation throughout South Africa. After catalysing a significantly sized wetland community of practice, the programme’s aim changed
to supporting what it had catalysed, and working towards supporting social change for improved wetland practices. Since 2001, funding for the MWP’s operations has been secured largely from Mondi Ltd, with contributions from the Mazda Wildlife Fund. Prior to 2001, the programme was known as the Rennies Wetlands Project, with corporate sponsors including Rennies Ltd, South African Breweries, and the Mazda Wildlife Fund.

1.4.1 Key reasons for working with the plantation forestry sector and specifically Mondi

In response to the wetland crisis, in 1997 the MWP identified the plantation forestry industry as a sector to begin working closely with as an entry point to improve the management of South Africa’s wetlands. The broad reasoning for this was that the sector was: highly organised and well structured; consisted of a few major land holders; had already been under sustained pressure from environmental lobby groups with regard to the impact of plantations on water resources; and was obligated to meet certain environmental standards by the international Forestry Stewardship Council’s (FSC) environmental certification system to which all large plantation companies were committed. In addition, the MWP manager had developed prior relations with the plantation forestry sector as a result of working on plantation issues with other environmental lobby groups (Lindley, 2005).
Figure 1.1  A typical type of wetland found in a well managed plantation forestry area, called a wet grassland.

More specific to Mondi, one of the key reasons for Mondi in 1997 to be a suitable partner was that Mondi was one of the largest land holders of wetlands (Figure 1.1) in the country with property in the provinces of KwaZulu-Natal and Mpumalanga. Of the 311,645 ha of land Mondi currently manage, 203,172 hectares are commercial timber plantations, and 108,473 ha are classified as ‘open areas’ that are unplanted to timber and consist of a mosaic of grassland, indigenous forest, and a sizable 19,500 ha of wetlands (Walters, Kotze, & Job, 2011). Critically, Mondi was also the company most willing and proactive to engage with the MWP (at the time called the Rennies Wetlands Project) on wetland issues. At a meeting called by the MWP in 1997, at which all plantation forestry companies were asked by the MWP to collaboratively develop a way forward for the industry to begin managing its wetlands more sustainably, Mondi was the first company to volunteer to work with the MWP on a wetland delineation method acceptable to the industry (Lindley, 2009a). Due this commitment of collaborative wetland work, Mondi was therefore seen to be the most appropriate plantation forestry company to begin working with.
1.4.2 Mondi’s environmental commitment

Mondi has been a company committed to improving its environmental practices for many years. Even though it might not be doing this to the expectations of all conservation organisations, it has certainly been trying. Mondi first developed a range of environmental policies including a grassland policy, wetland policy, natural resource use policy, and an alien plant control policy amongst others, which stipulated the company’s commitment to managing those areas not planted to trees. Mondi was the first commercial timber company in South Africa to achieve FSC environmental certification in 1997. This indicates that Mondi had already committed to managing its open areas and its forestry operations in an environmentally responsible manner a number of years prior to this. Achieving FSC certification is a time consuming process, and a significant amount of work was required to reach this point. In reaffirming this commitment in 2009, Mondi’s environmental manager of forestry operations highlighted that:

A key commitment to sustainability is the active stewardship of land, fresh water systems and biodiversity. On land that Mondi lease, own or manage Mondi has committed to proactively identifying and protecting High Conservation Value Areas and striving to maintain or enhance the critical environmental and social values of the associated ecosystems. This provides Mondi with national stature and international recognition of environmental responsibility. Mondi gets technical and financial support for wetland management from the MWP and Working for Wetlands, which contributes to Mondi’s water impact offsets/mitigation. Wetland rehabilitation has been identified as a high impact project related to poverty alleviation, environmental education, catchment management, water, biodiversity and brand loyalty. In recent years Mondi has been developing an approach called ‘responsible forestry’, a science-based method involving key stakeholders. In South Africa, Mondi are committed to minimising the impact of its plantations on the environment. Mondi has recognised that water is the most important environmental issue in many areas. As a result, Mondi have for some years been working closely with NGOs and scientific institutions, such as universities and research centers, to gain a fuller understanding of plantation water issues. The MWP is making a substantial contribution to the protection and rehabilitation of wetlands in South Africa, and the new [funding] agreement [with Mondi] includes a particular focus on wetlands in poor rural communities and incapacitated municipalities. (C. Burchmore, 11 February, 2009)

All of Mondi’s sustainability reports examined from 2007 to 2011 emphasise the company’s environmental commitment quite explicitly. For example, in the 2011 Sustainability Report, among the many references given to this commitment, Mondi clearly stated its responsibility to biodiversity and ecosystem conservation:
We recognise our responsibility to conserve our High Value Conservation [HCV] natural resources and, where possible, to help restore ecosystems that have been damaged by our activities or other, historical activities. We actively support the preservation of HCV areas in both Russia and South Africa. The identification and protection of HCV areas helps us to manage our impacts on biodiversity. (Mondi, 2011, p.29)

This environmental commitment that Mondi has made since the early 1990s, demonstrates why Mondi were in the beginning, and currently are, so open and willing to work with the MWP to improve the management of wetlands on its landholdings.

1.4.3 The need to support Mondi staff with wetland management expertise

While specialising in environmental management, Mondi’s environmental staff have a broad understanding of environmental issues that are required to support the forestry operations staff who are responsible for managing the plantations and non-planted open areas between them, including wetlands and grasslands. The environmental staff understandably cannot have a detailed understanding of all environmental issues, such as wetlands. Mondi therefore requires the support of the MWP for specialist advice on managing wetlands, as well as support for developing the wetland competence of staff working in environment, forestry operations and community engagement (Figure 1.2). Wetland management issues that Mondi staff are required to deal with include: delineation of wetland boundaries to ensure that plantation trees are not within the wetland or surrounding buffer area; minimising the impact of all forestry operations on wetlands through developing and applying best practices; assessing the condition of key wetlands and improving their management; rehabilitating degraded wetlands; and supporting the sustainable utilisation of wetland resources by neighbouring communities.
1.5 Description of the wetland related social-ecological issues in Mondi

Within a wetland context, the overarching social-ecological issue of concern is how a wetland and its immediate surrounding catchment area is used and managed by wetland users and owners, their inter-relationships on its use, the impact this has on the integrity of the wetland, and its ability to provide a variety of ecosystem services to society. Understanding the relationships between a wetland and the people who use and manage it, is therefore fundamental to supporting the social change required for its better management.

In order to unpack this further, it is important to understand who directly or indirectly has a relationship with wetlands in the plantation forestry context of Mondi. There are three main groups:

---

Figure 1.2 Working with Mondi foresters and environmental specialists in the field mapping wetland sites, as well as taking senior managers into the field to learn how to do wetland delineation.
Mondi staff who have a direct relationship with the wetland include the foresters, area managers, environmental specialists and community engagement facilitators. The more senior operations managers also have an important relationship with the wetland that they are often unaware of, since their allocation of resources, economic imperatives, and resulting decision making may indirectly affect how the wetland is managed by foresters.

Contractors and their workers to whom Mondi have outsourced the silviculture and harvesting operations. Over the past 15 years there has been a trend in the forestry industry to contract out the silviculture and harvesting operations to contractors who are then managed by the Mondi employed foresters.

Communal land users who live on Mondi land or adjacent to it, and are often the most direct users of wetland resources for grazing of livestock, water supply and cultivation. Members of this community may also be workers employed by Mondi, but are most often people who over the years have informally settled on the land, many of whom have lived there for decades.

Each of these groups has a different social-ecological relationship with the wetland depending on the extent of their interactions with it. These interactions present a variety of social-ecological issues, which in turn affect the health of the wetland and the ecosystem services the wetland provides to those who directly use the wetland as well as those living further down the catchment. Poor wetland management results in a number of risks to Mondi, as well as the communal wetland users and to society at large, who are often the main beneficiaries of wetland ecosystem services. The following sections paint a broad picture of the social-ecological relationships and associated issues between the wetland and these groups. I have documented this information predominantly drawing from my own experiences of working with Mondi over the past 16 years, but have supplemented it with other referenced sources where required.

1.5.1 Silviculture foresters

Silviculture foresters are the farm managers who are responsible for growing and harvesting the plantation trees that are required by Mondi’s pulp mills for manufacturing paper and packing materials. They also have the responsibility of managing the land. There is great pressure from senior management to be economically productive. In part this requires the silviculture foresters to grow as many trees as possible, in order to maximise profitability from Mondi’s land holdings. In the past, this often resulted in foresters planting up any area that was silviculturally suitable, to
eucalyptus, pine and wattle trees. These species of alien trees are all highly invasive if not managed appropriately, and are high water users compared to the natural vegetation they have replaced (Scott, 2005; Gush, Scott, Jewitt, Schulze, Lumsden, Hallowes, & Gorgons 2002; Dye, Jarmain, le Maitre, Everson, Gush, & Clulow, 2008). The interception and use of rain and groundwater by plantation trees in the catchment of a river and wetland is so significant that the Department of Water Affairs and Forestry declared the plantation forestry industry as a “stream flow reduction activity” (Department of Water Affairs and Forestry, 1998). This is the only crop in South Africa legislated as such, and stringent regulation is required by government for those wanting to grow plantation trees.

The following are examples of some social-ecological issues of importance to the forester derived from my own experiences of working with Mondi, as well as past MWP progress reports (Lindley, 2009a), and supported by the research of Kotze (2004) and Walters, Kotze & Job (2011):

- **Plantations incorrectly planted in, or too close, to wetlands:** These incorrect plantings often occurred because foresters simply did not know where the edge of a wetland was. This can be difficult to determine as a wetland boundary will expand and contract in association with the seasonal fluctuations of the water table. Plantation trees consume more water than wetland and vegetation, and the planting of trees in wetlands, or too close to the edge of wetlands, has often resulted in wetlands gradually drying up as the trees grow and mature. This has a significant impact on ecosystem integrity and limits a wetland’s ability to provide the ecosystem services that may be beneficial to wetland users in the area, as well as to society further downstream. Compounding this is the poor control and management of plantation tree infestations ‘escaping’ from adjacent plantations and ‘invading’ the wetland, which then outcompete and use more water than the indigenous wetland plants.

- **Alien invasive plant species:** Non-plantation alien plant infestations such as bugweed (*Solanum mauritianum*), bramble (*Rubus cuneifolius*), and lantana (*Lantana camara*) have the tendency to invade wetlands, riparian areas and surrounding grassland areas that have been disturbed (Le Maitre, van Wilgen, Gelderblom, Bailey, Chapman, & Nel, 2002). This disturbance may be caused directly or indirectly through plantation forestry operations, and/or surrounding plantations which have intercepted and reduced the flow of water into the wetland. The
inefficient management and spread of these species changes the vegetation composition of the wetland, as well as its integrity, and the provision of ecosystem services.

- **Burning of wetlands:** Inappropriate burning practices of wetlands for firebreaks to protect the plantations can lead to reduced biodiversity, gully erosion in the wetlands, destruction of peat soils, and a loss of ecosystem integrity. The erosion can alter the hydrological regime leading to permanent wetland desiccation. However, foresters are required by the South African National Veld and Forest Fire Act (South African Government, 1998) to burn firebreaks to protect the plantations. It is therefore important when burning wetlands to reduce the impact as much as possible.

- **Roads through wetlands:** In the past many wetlands on Mondi landholdings have been degraded by erosion and/or excesses sedimentation of the wetland, arising from inappropriate road design and poor maintenance of roads in the catchment, as well as those crossing wetlands (Kotze, 2004). Foresters need to construct roads through wetlands for the fighting of plantation fires, as well as for access for silviculture and harvesting activities. An efficiently linked road system taking the shortest possible routes, which often means crossing wetlands, can reduce fuel costs for the harvesting machinery. Gully erosion frequently occurs when roads crossing a wetland are not appropriately designed or maintained. For example, when water flow is concentrated through too few culverts at the crossing, or when the road surface crossing is not hardened, both can result in erosion and a loss in ecosystem integrity.

- **Drains dug for cultivation:** Drains dug by previous landowners for commercially cultivating dryland crops are a common occurrence on many of Mondi’s wetlands. Although often dug many years prior to Mondi owning the land, the drains continue to alter the hydrology and therefore integrity of the wetlands. These drains and existing gully erosion from past activities need to be rehabilitated to restore the water flow and wetland health.

- **Wetland resource use:** Most wetlands on Mondi landholdings are grazed by livestock, some owned by Mondi staff, but mostly by cattle owned by communal wetland users, many of whom illegally moved onto Mondi’s landholdings often decades ago. Excessive grazing and over trampling can lead to gully erosion occurring in the wetland if not managed wisely. As with inappropriate burning practices, this can lead to a drying out of the wetland. Many communities living on Mondi landholdings harvest wetland plants for traditional and tourist crafts and house construction. Wetland soils are cultivated for subsistence crops to increase food security.
Medicinal plants are also harvested. Mondi acknowledges this use of wetland resources by communal land users needs to be promoted. However, it needs to be managed wisely or over use will result in wetland degradation. These uses of the wetland need to be managed appropriately under the guidance of the foresters, who are ultimately responsible for what happens on the land they manage.

The silviculture foresters are therefore not only responsible for managing the land on which the plantation trees are grown. They are also the custodians of all open natural areas that have not been planted to trees, such as wetlands, grasslands and indigenous forests. This means they are also responsible for reducing the impact of their plantation operations on these surrounding natural areas. A significant axis of tension therefore arises between the use of the land to its maximum potential for economic gain, resource allocation for the management of these natural areas, and the custodianship of these ecosystems that provide important benefits to wetland users, both in the immediate area as well as downstream to society.

Silviculture foresters are trained in the growing of plantation trees (silviculture), and the management of silviculture contractors and workers. Their understanding about wetlands and environmental issues is limited, although they often do have a love for the outdoors hence their choice of a field-based career. This poses a dilemma in that those who are provided with the company mandate to manage the natural resources, are also those with limited ecological and environmental understanding. The forester’s job is to grow and harvest trees in the most economically viable and profitable way. However, this needs to be done in a way that meets certain environmental standards, such as those prescribed by the FSC, to which Mondi is a signatory. The challenge arises in that foresters are mandated to grow their trees in a way that limits their impact on the natural environment as well as manage the wetlands, grasslands and indigenous forests, with a limited understanding of this natural environment. In theory, the foresters are supposed to call on the environmental specialists for environmental advice such as for wetland management. However, since environmental management is not considered as an operational issue core to growing and harvesting timber, but rather as a support function, in practice it is very easy to overlook. A forester’s primary responsibility is to grow trees, and to do it fast and with as few costs as possible. Therefore, at an operational level, wetland and environmental management tend to be
seen as secondary issues which are ‘nice to have’, as they do not directly contribute to the profit line. During an economic downturn when budgets are cut, it is usually these environmental activities that are the first to be reduced. These issues are exacerbated when foresters are not aware of the environmental imperative.

1.5.2 Environmental specialists

The role of the environmental specialists is to support foresters with the environmental expertise needed to manage the areas not under plantation trees, including wetlands. Since environmental management is extremely broad, the environmental specialists cannot be expected to have detailed knowledge about all aspects of environmental management such as wetlands. They therefore tend to have a broad understanding of environmental issues, and bring in specific subject specialists when required. Since the environmental specialists are a support service and few in number (only 3 people), they effectively have limited authoritative control over the foresters’ actions. Although logically one might think that the environmental specialists have jurisdiction and the power to enforce the environmental rules of Mondi and legislation, in practice this does not always happen. The huge area of land managed by Mondi combined with the economic imperative of foresters and the company tends to result in it being very difficult for the environmental specialists to control poor environmental and wetland management. An axis of tension therefore exists between the environmental specialists who provide ecological advice but have a limited mandate for managing the land, and the forester who has ultimate control over it.

1.5.3 Mondi community engagement facilitators

The responsibility of Mondi’s community engagement facilitators (CEF) are to engage with those communal land users living adjacent to Mondi land, or who have settled on Mondi land over the past decades, and they assist the foresters with any social issues that may arise between the community and the company. They also support the communities with various health, education and more recently, housing concerns, but have little understanding about wetlands or environmental issues. Since the communal land users resort to wetland resources for grazing, water supply, cultivation of crops and harvesting of wetland plants, it would seem likely that the community engagement facilitators would work in partnership with the forester and environmental
specialist to support the sustainable use of the wetland. However co-working between the three parties on the communal use of wetlands on Mondi property seldom appears to occur. This research has tried to deeper understand why this is the case.

1.5.4 Senior and area managers

Although often not directly having a relationship with the wetland, the financial decisions of senior and area management can have a strong influence on wetland management and use. For example, the greater the pressure placed on foresters to increase the number of cubic metres of wood grown on each estate, the greater the chances of planting up existing grasslands and wetlands that may seem to be insignificant at a local level. My past experiences have shown that with an economic downturn, environmental management issues such as the control of alien plant infestations, road construction, environmental staff and contracted environmental expertise, are amongst the first to be cut. Without always realising the full implications of their decisions to cut costs, management unknowingly encourage this to happen.

1.5.5 Contractors and their workers

Beginning in 1997, in line with the international trend within the plantation forestry industry, Mondi began to outsource the silviculture and harvesting operations to contractors (Clarke, 2012). Part of the reason for this was to shift the often complex and onerous management responsibility of workers across to the contractors, reducing the company’s exposure to the new labour laws of the country, which were seen to favour the workers, as well as worker and trade union issues. The contractor route was seen to simplify matters and create opportunities for the growth of small black empowerment businesses opportunities (ibid.). This led to a change in the responsibilities of operational management (including foresters) from managing teams of Mondi’s own silviculture and harvesting workers, to managing contractors who took over this work. Part of the responsibility of being custodians of the land began to be subtly and perhaps unintentionally shifted onto the contractors who did the physical planting and growing of the plantation trees, and therefore worked most closely with the land. The focus of the foresters was concentrated on managing contractors, with less emphasis being placed on managing land use. Most importantly this may have contributed to disjointed responsibility and accountability for forestry environmental
management practices, including managing the impact of plantation forestry operations on wetlands.

1.5.6 Communal wetland users

Over the years, thousands of homesteads have been illegally established on many of Mondi’s estates. Some of the homestead inhabitants were previously employed by Mondi, some currently by the contractors implementing silviculture and harvesting contracts, some have simply appeared and settled on the land, while others have been born and raised in these settlements. Due to South Africa’s legacy of apartheid when people of colour were not allowed to own land, Mondi currently has a programme securing land tenureship for these land users. Many people living in these homesteads use the wetland natural resources to maintain and if possible improve their livelihoods. In the Piet Retief area where over 10 000 people live in these homesteads, 8 000 cattle have been recorded (C. Pieters, personal communication, December 22, 2008). These cattle depend to a greater degree on the grazing and water provided by the wetlands and their adjacent buffer zones from where the plantations begin. The Mondi State of Wetlands Report substantiates the wide use of wetland natural resources by the communal wetland users:

The extent of direct use of the Mondi wetlands by humans is noteworthy. In several instances people relied upon the wetland directly for the provision of water for drinking and household purposes (e.g. Holmesdale and Inverness). Use of wetland resources for food crop production was an important service in northern KwaZulu-Natal and southern Mpumalanga where food gardens were commonly found within the wetlands assessed. The significance of these food gardens to local livelihood strategies and food security was not investigated but is likely to be important. Grazing (harvestable resources) of wetlands is an important ecosystem service in 64% of the wetlands. Herds of over 100 were counted in some wetlands and clearly this activity contributes significantly to livelihoods of local grazers. (Walters, Kotze, & Job, 2011, p.12)

However, despite the wide use of the wetlands by communal wetland users, the Mondi foresters, environmental specialists, and community engagement facilitators seldom worked together as a team with these communities to improve the use of wetland resources. There appears to be a disconnect in this regard, as few people are prepared to work together to acknowledge the wetland use issues, and manage them appropriately. The reasons for this are multidimensional and not entirely clear. However, an example follows of why this may be happening. The foresters’ primary
job is to grow trees, and not necessarily manage wetlands, or get involved in issues of communal wetland use. The community engagement facilitators see themselves purely as facilitating interactions between the community and Mondi staff on social issues of concern, and not working on wetland and environmental management issues (P. Luthada, personal communication, December 18, 2008). The environmental specialists know little about how to work with communities, are not wetland specialists so justifiably only have a broad understanding of wetlands, and therefore tend to concentrate on working with the foresters on broader environmental issues. This poor collaboration means that appropriate management of the wetland can be very weak. However the key may be to better understand why collaboration is poor.

The wetland related social-ecological issues discussed in this section are important to manage appropriately, if Mondi is to minimise the environmental risk of its operations to the business.

1.6 Water scarcity, wetlands and business risk

Ulrich Beck defines risk as “a systematic way of dealing with hazards and insecurities induced and introduced by modernisation itself”. He further says that “risks have something to do with anticipation and destruction that has not yet happened but is threatening, and of course in that sense risks are already real today” (Beck, 1992, p.21). The following sections explain how water scarcity and poor wetland management pose a business risk to Mondi that has to be managed appropriately if the company is to maintain its licence to trade.

1.6.1 Water scarcity and risk

South Africa is a water scarce country, which is destined to become significantly water stressed in the near future (Turton, 2008). It is estimated that the gap between water demand and supply is projected to reach 17% in South Africa by 2030 (Creamer, 2011). The recently proposed revision of the South African National Water Resource strategy notes that “in many parts of the country we have either reached or are fast approaching the point at which all of our financially viable freshwater resources are fully utilised” (Department of Water Affairs, 2012, p.13). The demand for water will continue to increase as the economic and social needs of the country grow. The balance between water demand and supply will become extremely difficult, unless water use is managed
much more efficiently. For example, agriculture in South Africa currently accounts for over 60% of the country’s water use (ibid.). WWF-South Africa notes that “farmers will have to double their use of water by 2050 if they are to meet growing food demands using current farming practices. To avoid a crisis, water supply needs to be enhanced and water use efficiency increased” (WWFb, 2010). Compounding the water availability and use dilemma is the poor health of the freshwater ecosystems that naturally manage the water resources of South Africa. The proposed National Water Resource strategy highlights this:

Our water ecosystems are not in a healthy state. Of the 223 river ecosystem types, 60% are threatened with 25% of these critically endangered. Less than 15% of river ecosystems are located within protected areas, many of which are threatened and degraded by upstream human activities. Of 792 wetland ecosystems, 65% have been identified as threatened and 48% critically endangered. Furthermore, 31% of fresh water fish species indigenous to South Africa are threatened. This is of enormous concern, given the crucial role of wetlands in delivering ecosystem services such as water purification, flood regulation and drought mitigation. This situation has negative impacts on human health, on rural communities directly dependent on water-related ecosystems such as wetlands for their livelihoods and on the mainstream economy and demands drastic intervention. (ibid., p.16)

The lack of an adequate supply of water and the deteriorating health of freshwater ecosystems can therefore be seen to be one of the biggest risks to the South African economy and well-being of its citizens. With the increasing use of water by agriculture, mining, domestic use, and manufacturing industries, the inefficient use of this precious natural resource will further increase this risk.

1.6.2 The business risk associated with inadequate water and ecosystem management

Recognising the role that business has to play in water resource management, the South African government, in its proposed revision of the National Water Resource Strategy, has urged the business sector to commit to improved water use practices by strongly stating that: “Water risk to business is real. Companies across several industry sectors should start to take the lead in quantifying their exposure to water risk, and should develop plans to mitigate these risks” (Department of Water Affairs, 2012, p.21). At a global business scale, the World Resources Institute, together with the World Business Council for Sustainable Development and the Meridian Institute, recently went further and linked the impact of businesses on ecosystems together with resulting risks to the business: “Ecosystem degradation is highly relevant to business because
companies not only impact ecosystems and the services they provide but also depend on them. Ecosystem degradation, therefore, can pose a number of risks to corporate performance as well as create new business opportunities (Hanson, Ranganathan, Iceland, & Finisdore, 2012). They went on to identify these risks as being operational, regulatory, reputational, market and financing risks. In an effort to help corporates manage these risks, and integrate them into their operational strategies, these three organisations have recently developed the Corporate Ecosystems Review, which is “a methodology that helps managers identify the connections between a company’s impact or dependence on ecosystem services and potential business risks or opportunities” (ibid., p.8). International companies such as Rio Tinto (mining), Syngenta (agribusiness) and Mondi (paper and packaging) were the first companies to trial the Ecosystem Review to minimise their business risk. As of 2012, over 300 companies now use the tool worldwide (ibid.). This information highlights how many corporates are now taking the business risks of their operations impacting on ecosystems and their associated ecosystem services, extremely seriously.

1.6.3 The risk of plantations to South African water security

Most of South Africa’s water resources are generated in the high rainfall areas of river catchments in the eastern part of the country stretching from Mpumalanga, through KwaZulu-Natal, and into the North Eastern Cape, which strongly correlates with the areas where plantations are situated (Dye, et al., 2008). As discussed previously, the alien tree species grown in commercial plantations such as eucalyptus, pine and wattle, use far more water than the indigenous vegetation they have replaced (Gush, et al., 2002; Scott, 2005). For this reason, the growing of plantation trees has been declared by legislation as a stream flow reduction activity, resulting in the industry being highly regulated (Department of Water Affairs and Forestry, 2008). The high water use by plantations is exacerbated by trees that are planted directly in a wetland, or immediately adjacent to it in the ‘buffer’ area between the wetland edge and the boundary in the terrestrial area, where plantation trees have privileged access to the groundwater of the wetland. The high water usage of the timber industry can therefore be seen as a risk to the water security of not only downstream water users, but the whole of South Africa since water is a crucial driver of the economy. Insufficient water in the future will be a fundamental developmental constraint (Turton, 2008) and will have a significant negative impact on the country’s economy. As such, South Africans will continue to ask in the future if water use by plantation trees is indeed the most efficient use of our water resources.
1.6.4 The water and wetlands business risk to Mondi’s plantation forestry operations

Mondi are well aware of the risk that water scarcity in South Africa poses to their South African business operations. Most recently, this was publically highlighted in the company’s 2010 Sustainable Development Report: “We understand that water is a scarce resource globally and have committed to its responsible use and custodianship. We recognise that in water-scarce areas there may be significant risks to our operations and communities which need to be understood, planned for and dealt with effectively and efficiently” (Mondi, 2010, p.34). In the 2011 Sustainable Development Report, Mondi again recognised that the company is a high water user, and reports that it has undertaken a detailed water footprint of the company’s South African operations, including its impact on changes in natural cycles of freshwater ecosystems (Mondi, 2011). The 2011 report further stresses Mondi’s commitment to wetland management: “one of the areas in which the company can have the greatest impact is in the stewardship of wetlands … because Mondi’s commercial activities use significant volumes of water, we also rely on healthy wetlands and riparian zones” (Mondi, 2011, p.40). However, awareness of the business risk that water scarcity poses to Mondi is not new. Mondi and other plantation forestry companies became acutely aware of this during the early 1990s, many years earlier than most companies in other business sectors. This realisation arose during a period when relations between environmental lobby and plantation forestry companies were extremely tense over the impact of plantations reducing water resources available to downstream water users (Johns, 1993; Cellier, 1994). The adverse media generated negative publicity during this period for the forestry industry, compounding further pressure for forestry companies to reduce their impact on water resources. The negative publicity increased the business risk to these companies, especially to the share prices of those listed on stock exchanges, or belonging to holding companies who were listed. At this time Mondi was owned by Anglo American, one of the largest mining companies listed on the Johannesburg Stock Exchange.

It was during the mid 1990s that Mondi and other plantation forestry companies were in the process of getting Forestry Stewardship Council (FSC) environmental certification for many of their plantations. This provided them with the environmental assurance against the environmental risks, which they required to maintain access to European and other developed markets with higher pulp and packaging prices (Clarke, 2012). Without the certification, they could lose the access to these
preferential markets. In order for Mondi to maintain FSC certification, and to protect itself against the water risk, the company therefore needed to reduce the impact of its plantations on water resources such as wetlands and riparian areas. In part, this meant better wetland management. For these, and other reasons, in 1997 Mondi was the first plantation forestry company to engage the MWP on wetland issues, most specifically on refining a method to delineate wetlands, ensuring plantation trees were not planted within them or the surrounding 20m buffer area (Lindley, 2009a). Mondi led the industry in working collaboratively with the wetland community of practice and the Department of Water Affairs and Forestry to do this.

Since Mondi have approximately 311 000 ha of landholdings, with over 19 500 ha of wetlands on this land, poor wetland management will impact negatively on wetland integrity and the associated ecosystem services on which society depends. This does not only mean risk to those users of wetland resources who may live close to the wetland and directly depend on these resources to maintain their livelihoods, but also those farmers, villages, towns and associated industries who indirectly depend on the ecosystem services of wetlands many hundreds of kilometres further down the catchment. According to Beck (1992) “in the risk society the unknown and unintended consequences come to be a dominant force in history and society”. As the demand for water outstrips supply in the near future, water will become a significant determining force for economic strength, power, inequities and social justice. The actions of high water use companies, such as Mondi, will therefore have a significant impact on society, and be under severe public scrutiny. Realising this, in 1997 Mondi was willing to work with the MWP to improve the management of its wetlands.

1.7 Past approaches used by the MWP in working with Mondi to strengthen wetland management

In the past most wetlands on Mondi landholdings have been degraded to differing degrees by a number of impacts caused by poor wetland and catchment management (section 1.5.1). The MWP needed to work with Mondi on mitigating these impacts, if the wetlands on Mondi landholdings were to continue to provide ecosystem benefits to society, and to reduce the business risk to Mondi.
The MWP realised from its first involvement with Mondi in 1997 that it could not support Mondi to improve its wetland management better by simply waving a wand of wetland knowledge and telling relevant forestry, environmental and community engagement staff how to do it better. For this reason the MWP supported these staff for more than a decade through collaboratively working on a number of carefully thought out strategies and approaches developed by working with the Mondi environmental staff. These strategies and approaches worked to encourage the growth and development of wetland enthusiasm, wetland interest, wetland knowledge, wetland skills and wetland experiences of the staff responsible for wetland management (Lindley, 2009a). These included:

1. **Raising awareness and developing basic wetland understanding**: Initially the MWP focused on raising wetland awareness and developing a better understanding of wetlands amongst the environmental staff, foresters, area and senior managers. This was done predominantly through ad hoc discussions in the field and numerous presentations at Mondi offices across their landholdings.

2. **Capacity building**: In parallel with the awareness raising, the MWP also concentrated on developing the wetland capacity of foresters and environmental staff during the first seven years of the partnership from 1997 to 2003. Informal and unstructured learning took place in the field when working on ad hoc wetland management issues and planned surveys assessing the condition of wetlands. Many formally structured wetland courses were also run for foresters, environmental staff, and social development facilitators, in an attempt to develop Mondi’s competence to manage its wetlands better. These courses focused on wetland delineation (Figure 1.3), assessment of a wetland’s condition, and wetland management. After 2003, the formal capacity building efforts declined significantly, and informal learning dominated as the need arose from individual Mondi staff who wanted to engage with local wetland issues in greater depth.
Figure 1.3  Training Mondi foresters to delineate wetlands by, for example, looking at the differences of the red soil colour of terrestrial soils compared to the black colour of wetland soils.

3. **Surveys assessing wetland condition**: Numerous surveys were undertaken by the MWP together with Mondi foresters, environmental staff and volunteers in the early stages of the partnership with Mondi. They generated a large amount of wetland enthusiasm and wetland passion among those participating. The surveys were a useful method of strengthening staff understanding of wetlands, encouraging staff to get involved in wetland conservation and identifying potential wetland champions within Mondi. The surveys predominantly took place from 1997 to 2002, and played a key role in catalysing much of the wetland rehabilitation in which Mondi subsequently got involved. After this period, as the available time for Mondi staff to work in their wetlands began to decline, so did the number of field-based surveys.

4. **Developing new wetland knowledge**: The fieldwork with Mondi included assessing wetland condition, wetland delineation, wetland rehabilitation and management. The wetland community of practice in South Africa was still relatively young in the first five years of the partnership with Mondi, and as a result a considerable amount of new wetland knowledge on these issues was co-constructed by Mondi together with the MWP (and other partners as well). This new knowledge was consequently shared with the broader wetland community, and added to. Most of this was achieved through a process of group co-learning in the field. From the end of 2003 until this PhD research project was started in 2009, there was a decline of the co-creation of new knowledge between Mondi and the MWP.
5. **Wetland management tools**: Three key tools were developed to support Mondi (and the broader forestry industry) manage their wetlands better. Wetlands delineation guidelines were co-constructed with Mondi and the industry over a period of six years from 1998 to 2003, and have become an integral part of Mondi’s operational guidelines. Wetlands management guidelines were developed in 2003 to support the implementation of the wetland policy that Mondi developed in 2002 to guide its wetland conservation work and how silviculture practices could mitigate their impact on wetlands, but the guidelines have only ever been partially implemented. They were developed predominantly by a consultant contracted by the MWP to work together with MWP staff, with only partial involvement of Mondi staff. Three videos on wetland management were made in 2003 by MWP staff and a professional film company, and paid for by Mondi, to support wetland learning for foresters, communal wetland users, and farmers. Mondi environmental staff were trained how to use additional wetland management tools, developed by the MWP and research partners, that were not specific to plantation forestry. These included Wet-EcoServices and Wet-Health, which were used to assess what functions a particular wetland was performing, and its condition.

6. **Localised strategic partnerships**: Realising that the MWP could not work on all of Mondi’s landholdings, localised strategic partnerships were developed with key willing environmental and forestry operational staff that were based in areas of high wetland importance. Often the choice of where to work was directed by where willing Mondi staff were identified. Initially these areas included Northern East Cape Forests (NECF) in the Eastern Cape, which Mondi has subsequently sold, and areas in KwaZulu-Natal and Mpumalanga provinces near the towns of Pietermaritzburg, Paulpietersberg and Piet Retief. In later years (after 2003) the work became more reactionary to Mondi’s needs and took place wherever the need arose across its landholdings. A map situating the areas of these landholdings and major cities, has been included in section 4.4.1

Prior to the research and learning that arose from this thesis research, the past approaches of how MWP staff worked with Mondi as mentioned above, had a simplistic understanding of how adults learnt and the dynamics of social change. This was based on ‘gut feel’ and what MWP staff thought would work best. This led us to the false assumption that these logically thought out activities and ways of working that led to the development of wetland interest and passion, wetland knowledge,
and wetland skills, would automatically result in the long term social change required to improve wetland management practices.

1.8 Past MWP support has not resulted in the changes required

Past MWP support has not resulted in the changes required for Mondi to maintain and improve the integrity of its wetland over the long term, despite Mondi having environmental and wetland policies promoting better environmental and wetland management as responsible plantation forestry practices. Over the past 16 years, the collaborative work of Mondi and the MWP has contributed to several important successes in responding to the above-mentioned social-ecological issues. These include some significant achievements, especially in wetland delineation and the removal of trees incorrectly planted in wetlands and their adjacent buffer zones, but also wetland rehabilitation and the development of a wetland management policy (Lindley, 2009a). However, despite the huge amount of collaborative work over the years, collectively these individual actions and achievements do not appear to have resulted in the human capacity development and institutional changes necessary to support a continual and long-term improvement in wetland integrity and sustainability practices. The expectation was that after so many years of support from the MWP, Mondi staff would be well capacitated, wetland management would be well integrated into forestry operations, and most importantly, the condition of the wetlands on Mondi landholdings would be continually improving.

The MWP conducted a State of Wetlands Report from 2009-2010, which assessed the health of key wetlands on Mondi landholdings. It also projected the future condition of these wetlands over the following five years, if current wetland management practices were continued. The findings of the report indicated that overall wetland condition was not improving:

Generally the wetlands assessed were either largely (50%) or moderately (43%) modified, suggesting that these wetlands are significantly degraded. Only Inverness [wetland] in the KwaZulu-Natal Midlands had an overall health score (B) suggesting the wetland is in good condition with only small changes to the ecosystem processes and a small loss of natural biota. Overall the future prediction for the health of the wetlands over the next five years was for little change for better or worse. Of great concern is the predicted deterioration in health of Langepan Vlei and of the Kwambonambi Swamp Forest, both in Zululand, particularly as both represent wetland vegetation types critically important in meeting our
national and provincial biodiversity targets. The negative impacts on individual components of wetlands are important to consider. Three high value systems’ vegetation components are predicted to decline in the next five years: Inverness in the KwaZulu-Natal Midlands, Kwambonambi Swamp Forest and Langepan Vlei. The latter two wetlands’ impacted hydrology is negatively affecting the vegetation, while at Inverness invasions of invasive alien plants, excessive sedimentation and overgrazing are linked to the decline. (Walters, Kotze, & Job, 2011, p.10)

The report went on to highlight that “the most important impact on the wetlands assessed in terms of its ubiquity and intensity of impact was reduced water inputs to the wetland from the catchment caused by afforestation … the highest management priorities identified during the study are for invasive alien plants, fire management and grazing” (ibid., p.13). However, on the positive side the State of Wetlands Report also said that “Nkonzo in the KwaZulu-Natal Midlands and Fernwoods Pan in Zululand are wetlands that are predicted to improve significantly. This is linked to the recent delineation and clear felling of timber that was historically growing within the wetlands and an effective alien plant eradication programme within the wetlands” (ibid., p.11). Nobody is exactly sure why, after so many years of the MWP working together with Mondi, wetland management has not improved as well as it was expected. A factor that may have influenced this is that Mondi had yet to develop an integrated approach to its wetland management. However contextual issues, such as the past restructuring within Mondi that has unsettled staff, and various institutional factors, could also have had an influence.

1.8.1 A lack of an integrated approach to wetland management

Despite all the years of working on trying to improve its wetland management, Mondi has yet to develop an integrated approach to wetland management within its forestry operations. The main challenges still being faced include those practices and activities that have a negative impact on wetland integrity including incorrect burning practices for fire breaks, poorly managed livestock grazing, road crossings inappropriately constructed through wetlands, and the lack of continued management of alien plant control programmes in and around wetlands. This was most recently highlighted by the state of wetlands report that assessed the health of a representative sample of Mondi’s wetlands across its landholdings (Walters, Kotze, & Job, 2011). During 2008 Mondi almost lost its FSC environmental certification, in part, due to poor alien invasive plant control on its property including in wetlands and riparian areas. Since the main challenges still are those practices
that have a negative impact on wetland integrity, this indicates that wetland management within Mondi has a fair distance to go, before it can be considered well managed. Earlier preliminary research has shown that even after a lengthy period of working together with Mondi with initial successes, a few of which continue today such as the withdrawal of timber from wetlands, a broad range of long term wetland sustainability practices are not significantly integrated into the field operations of those staff who are responsible for wetlands (Lindley, 2009b). This includes the foresters, environmental specialists, community engagement facilitators, and operations management. The reasons why long-term wetland sustainability practices are not integrated into forestry operations are complex, and as a result they are not always well understood. Initial research (Lindley, 2009b) has revealed that some reasons for this may include: varying levels of wetland knowledge and understanding by the different staff responsible for supporting the wetland management function; cases of minimal collaboration and learning between staff working on common wetland issues; a poor understanding of the social-ecological context in which wetland management takes place; a poor understanding of the importance of wetland sustainability practices to Mondi business operations as well as to society; and a lack of organisational memory when staff leave the company and the resulting weak support provided to enable newcomers to understand the importance of wetlands, and how to implement wetland sustainability practices. However, further research is required to determine whether this is indeed the case, and how to overcome whatever factors may be inhibiting a broad range of wetland sustainability practices from being integrated into Mondi’s forestry operations.

1.8.2 Mondi restructuring contributes to the changing landscape in working with Mondi

After reflecting on past MWP progress reports (Lindley, 2009a), the effectiveness of Mondi’s wetland management appears to have begun declining from approximately 2002. As mentioned above, there may be many reasons for this, but restructuring within Mondi is an important contextual issue to take into consideration. After restructuring within the company in 1999, the responsibilities of the environmental staff were broadened to take on the additional task of working on safety and health issues in addition to their environmental responsibilities. Over the following years, this led to some environmental staff leaving the company and not being replaced. In 2005 Mondi employed an extra six environmental staff to boost their environmental performance and to replace those environmental staff who had left over the previous two to three
years. However, after a new round of restructuring, the new environmental staff were no longer independent of forestry operations and became part of the four autonomously run business units which were based on geographical areas. Instead of reporting to the national environmental manager, they had to report directly to the business unit manager. To compound matters, all of Mondi’s operations (mills and forestry operations) underwent significant restructuring from late 2006 to early 2007. This was an attempt to cut costs and improve efficiency of the operations and management. From late 2006 to mid 2008 the Managing Director of Mondi Business Paper South Africa was replaced twice, and the operations manager of forestry, three times (Lindley, 2009b). The discontinuity of leadership, differing management styles of new senior managers, and the general restructuring, had fractured staff morale, appeared to have battered Mondi’s corporate culture developed over the years, and shook staff loyalty towards the company. During 2006 the price of energy escalated alarmingly, and the pulp price decreased which all had a significant impact on company profitability. Cumulatively, these issues contributed to a wave of staff instability and some staff became disgruntled. As a result, five of the seven staff of Mondi’s new environmental team resigned during 2007, including the environmental manager. This further reduced Mondi’s ability to implement its environmental responsibility.

1.8.3 Institutional factors affecting an enabling environment

Another important consideration is that institutional factors can play a significant role in creating the enabling surroundings in which appropriate education and learning processes may flourish or not (Boreham & Morgan, 2004). The restructuring, as mentioned in section 1.8.2, affected the way in which the MWP and Mondi were able to work together. The enabling space that allowed for the MWP to proactively work and learn together with Mondi staff on joint projects, had decreased during this period, and the MWP slowly began to work less and less with Mondi staff in a strategic and meaningful way. The decline of environmental staff with whom the MWP was supposed to be supporting, further limited the opportunities for working with Mondi. In addition to the unstable work environment of the remaining environmental staff, the decline in staff resulted in an increased workload and more priorities than they could cope with. They had other environmental issues of importance to concentrate on rather than wetlands. This may have contributed to the lack of implementation of wetland management plans, that had been developed (Lindley, 2009b). The restructuring of environmental lines of responsibility, further reduced the effective co-ordination of
Mondi’s environmental capacity. This meant that the MWP staff struggled to understand how to support Mondi more effectively to manage its wetlands better.

These above mentioned factors within Mondi, may have contributed towards inhibiting the human capacity development and institutional changes necessary to support a continual and long-term improvement in wetland integrity and sustainability practices. However, nobody is sure if this is the case or not, or if there are other factors at play. All the MWP staff had a natural science based university education, and were proficient in the technicalities of wetlands conservation. My previous university education was Zoology and Entomology based, and my past research experiences revolved around tick ecology relating to cattle behaviour, and esoteric topics such as analysing the sperm morphology of limpets using transmission electron microscopy (Hodgson, Bernard & Lindley, 1991). An important factor may therefore have been that MWP staff had no depth of understanding of the social sciences and social processes. Apart from the practical knowledge of our past experiences, we knew little about how adults learnt both informally and formally, the dynamics of social change, and how to support social change for better wetland management within the continually changing and complex business environment of Mondi. Our approach to social processes used to be based on our own rational and rather linear logic of how we thought social change could be catalysed (Lindley, 2003). We never realised the need to understand the social sciences. We were wetland conservationists, not social scientists, and we thought that environmental degradation was an ecological crisis, not a social crisis. This lack of understanding would have also contributed to the unrealistic expectation that the MWP support provided to Mondi was sufficient for a long term change in wetland practices. In an attempt to better understand social processes and social issues, I realised it was important to work with Mondi staff in a more informed way, through an exploratory research-based process to identify, understand and work towards overcoming what was really inhibiting the improvement of long-term wetland management. This was the reason for this research.

1.9 Aim of the research

The research was oriented to support expansive social learning processes between those Mondi staff who have a responsibility to manage wetlands, to identify factors inhibiting wetland management, better understand the root causes of them, and develop solutions. The purpose of
the research was to investigate adult learning within an organisational setting, and understand how the emergence of staff agency can support organisational learning and development and change to improve wetland management. The aim of the research was therefore not only to identify and deal with the inhibiting factors, but to rather understand, if changes happened, the logic behind the realities of how the change processes emerged. This would then explain if expansive social learning could strengthen wetland sustainability practices of a large corporate landowner, and if so, how it could do this.

Through the research process, I have attempted to not only learn about how adults learn within an organisational setting, and how organisational development and change emerges from the interaction between organisational structures and the growing agency of staff, but also to improve collaboration and co-learning between Mondi staff; broaden staff understanding of the importance of wetland sustainability practices to business operations and to society; encourage staff to develop a deeper understanding of the history of the present and the institutional challenges that may be inhibiting wetland sustainability practices; and develop greater staff reflexivity and agency to manage Mondi’s wetlands.

In working towards the research aim, the research was directed to answer the following three research questions:

1. What tensions and contradictions exist in wetland management in a plantation forestry company?
2. Can expansive learning begin to address the tensions and contradictions that exist in wetland management in a plantation forestry company, for improved sustainability practices?
3. Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?
1.10 Overview of the study design

The study begins with this chapter that has introduced the research, the need for it, and posed the three research questions. It then goes on to trace the literature that has guided my thinking towards using cultural historical activity theory and expansive learning theory that made up the theoretical framework of the research (chapter 2). These theories are then explained in detail together with critical realism, a philosophical orientation that provided the research with ontological depth (chapter 3).

The data generation and analysis was carried out over five research phases as shown in table 1.1 below (table 4.1 provides a more detailed description and timeline of the research process phases, data generation and analysis stages) based on the six-step expansive learning cycle as a methodology used for implementing the theoretical framework (chapter 4). The data was generated through a series of interviews, interventionist workshops, and wetland field projects, and then analysed using different methods of inference during each phase.

During phase one (chapters 5 and 6), 17 interviews were held with Mondi staff responsible for wetland management (foresters, community engagement facilitators and environmental specialists) to understand how they were learning and practising wetland management prior to the research. Second generation CHAT was used to analyse the data to develop a contextual profile of the activity systems of the foresters, community engagement facilitators, and environmental specialists. During phase two (chapters 5 and 6), two interventionist workshops were held. Third generation CHAT was used to surface the tensions and contradictions between these interacting activity systems, that were inhibiting wetland management from being integrated into plantation forestry operations, as well as inhibiting improved wetland practice. Mondi staff then developed and tested solutions to deal with the tensions and contradictions. These solutions were implemented through a number of projects as phase 3 (chapter 7) of the research. The changes in wetland learning and practice that emerged from these projects were shared with broader groups of senior and middle level management and operational field staff. This was done through five progress review workshops, a senior management meeting and a middle management seminar. Phase four (chapter 7) took place through nine reflective interviews, when key staff reflected on the expansive learning process and what learning and changed practices had emerged from it. A
fifth phase (chapter 8) of the research then used the morphogenetic framework as a methodological tool of realist social theory to further analyse the data from the previous four phases, to explain how the changes in learning and wetland management practice were happening. Lastly, the research conclusions are drawn together, reflections on the research process shared, and recommendations for future research presented (chapter 9).

The theory of expansive learning has provided the study with a theoretical understanding of how organisational learning and development occurs. It has supported the research process to determine if learning is happening at the boundaries of the interacting activity systems, and if so, how it is happening, using the contradictions to catalyse this boundary crossing. Expansive learning has also provided the theoretical support for the research in its attempt to catalyse new collective work practices, as well as new practices of thinking and discourse. CHAT and expansive learning have therefore supported the study to better understand the different relations, contradictions, and tensions within and between the three activity systems that contribute to, and constrain, the past management of wetlands, and potentially will improve wetland sustainability practices. Critical Realism has provided an ontological depth to the research by enabling a more sophisticated understanding of the contradictions and generative mechanisms that are inhibiting improved wetland sustainability practices and their integration into plantation forestry operations. Social realist theory has helped to understand the detail of how the social changes are actually taking place.
Table 1.1 The research phases

<table>
<thead>
<tr>
<th>Research phase</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
<th>Phase 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expansive learning steps</strong></td>
<td>Step 1: Questioning how Mondi staff were learning and practising wetland management</td>
<td>Step 2: Analysis identifying tensions and contradictions</td>
<td>Step 3: Modelling new solutions to deal with contradictions</td>
<td>Step 5: Implementing new models as wetland projects</td>
<td>Step 6: Reflecting on the expansive learning process and results</td>
</tr>
<tr>
<td><strong>Methods of data generation with analysis after each step</strong></td>
<td>17 interviews</td>
<td>Workshop #1</td>
<td>Workshop #2</td>
<td>Projects</td>
<td>5 progress review workshops</td>
</tr>
</tbody>
</table>

| Chapter | 5 and 6 | 5 and 6 | 5 and 6 | 7 | 7 | 7 | 7 | 8 |

33
1.11 **Overview of the thesis**

This thesis has been divided into nine chapters, and a brief overview of the subsequent eight chapters follows:

**Chapter 2** presents an overview of the literature that has guided my thinking in understanding social and organisational learning processes that would be most appropriate to this environmental education research. It concludes with the epistemological theories that support answering the research questions: cultural historical activity theory and the theory of expansive learning.

**Chapter 3** explains this epistemological framework in more detail, as well as how the philosophy of original or basic critical realism provides ontological depth to the research, through supporting a deeper understanding of cultural historical activity theory and expansive learning. An overview is provided of realist social theory, which developed out of critical realism as an ontologically located theory of how and why social change occurs or does not, together with an explanation of how it could support this research.

**Chapter 4** describes the five phases of the research, and expansive learning cycle as a methodology for applying cultural historical activity theory, and more precisely the theory of expansive learning (table 1.1). The morphogenetic framework is described as a methodological complement to realist social theory, which I have used as an analytical tool to help explain how the change in learning and practice has happened. The reasons for choosing a case study approach are explained, as well as the selection of the case study areas and research participants. The interventionist approach of using Change Laboratory workshops as a method for implementing the expansive learning cycle methodology is explained. The different tools and methods of inference used to generate and analyse the research data are described. The criteria I have used for validating the trustworthiness of the research are given, and the ethical considerations and responsibilities that guided the research are provided.

**Chapter 5** presents the data generated through phase 1 and 2 of the research. It begins with the data generated from the interviews with Mondi staff which explored how they were learning and
practising wetland sustainability, and various tensions and contradictions that were identified from the interviews as inhibiting improved wetland management practices. The data from the interventionist workshops is then presented where participants deepened their understanding of tensions and contradictions, identified a range of possible solutions, and consequently developed an action and implementation plan designed to begin dealing with the contradictions. The chapter ends with the data of how the participants tested the viability of their implementation plan against the tensions and contradictions identified.

Chapter 6 discusses the research findings from phase 1 and 2, which are presented as three analytical statements that have emerged from the research. Evidence is provided of the crucial role that expansive learning started to play in strengthening the reflexivity and agency of Mondi staff, required to improve wetland sustainability practices within Mondi. The chapter also highlights the critical relationship between the wetland management practices, expansive social learning processes, and organisational development, and why harmonisation between the three is so essential. Through these findings, the first and second research questions are answered on what tensions and contradictions exist in wetland management in Mondi, and whether expansive social learning can begin to address these tensions and contradictions.

Chapter 7 presents the data generated during the phase 3 and 4 of the research, providing evidence of the explicit and tacit personal changes that began to emerge from the research participants implementing the solutions they developed. This analysis begins to answer the first part of my third research question: Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?

Chapter 8 documents the organisational changes that have emerged during phase 5 of the research. This is done through using Margaret Archer’s framework as an analytical framework to deeper understand the details of how these changes emerged, answering the last part of the third research question on how organisational learning and development occur.
Chapter 9 concludes the research project where recommendations are drawn together from the different chapters, reflections of the research journey are shared, and recommendations for further research are proposed.

1.12 Conclusion

This chapter has provided the historical foundation to the research, by painting a broad picture that gave rise to the need for the research and its associated research questions. It describes the context in which the research is situated. An overview of all the chapters has also been given, to highlight the logical flow of the thesis, and to describe how the three research questions have been addressed. In this way the chapter has introduced the beginning of the research journey which unfolds over the following nine chapters.
CHAPTER TWO:

Reviewing social learning processes relevant to improving wetland practice

2.1 Introduction

In this chapter I present an overview of the literature that has guided my thinking in understanding social and organisational learning processes that would be most appropriate to this research, concluding with the epistemological theories I have drawn on. I begin with the MWP questioning the theory that underpinned its practical wetland conservation work, and how this discontinuity led to our ‘discovery’ of social learning which deeply resonated with our practical experiences. I have then described very broadly how environmental learning has changed, starting from its narrow instrumentalist origins, to evolve into environmental learning that now takes on a socially critical learning orientation, which is an approach that resonates most with me due to the MWP experiences. I then go on to explore what social learning is, drawing on literature from the socially critical orientation, and highlight key elements that stood out in the environmental education literature as being important for this study. The notion of ontological collapse is explained, and how the literature review aims to prevent my research from falling into this trap. Learning in organisations is discussed, highlighting the difference between organisational learning and the learning organisation, leading onto the socio-cultural approach to organisational learning as originating from Vygotsky. A short historical perspective is provided on the socio-cultural origins of learning emerging from the work of Vygotsky and his Russian colleagues, which formed the epistemological roots for a number of theories of organisational learning, such as communities of practice and expansive learning. I have then narrowed the literature review to introduce the two epistemological theories that I have chosen to work with in answering my research questions: cultural historical activity theory and the theory of expansive learning.
2.1.1 Questioning the theory supporting MWP’s work

In 2005, after 15 years of groundbreaking work, catalysing and supporting government, industry and commercial and communal farmers to manage South Africa’s wetlands better, the MWP began to reach for coherent theory that was congruent with the grounded action that we and our project partners were involved in. It was at this time that the MWP underwent a formative evaluation (Rosenberg & Taylor, 2005) and through this process the MWP staff began to discover the importance of better understanding how adults learn, how to support social change, and the importance of having grounded theory to support our wetland conservation practice. In hindsight we now realise, that in our charismatic enthusiasm to practically bring about change in wetland management, we didn’t appreciate how unclear and undifferentiated our theories were. In making the assumption that we were practical people doing practical work, we felt that we didn’t need theory or an academic perspective. We simply went out into the field, and got people working on wetlands. Apparently this is not uncommon: Meyers (2006) points out that many practitioners also see theory as being useless to their practice. However, this disregard for theory prevented us understanding and articulating the thinking behind what we were doing. It was only when external consultants conducted a formative evaluation together with MWP staff in 2005, that we became aware of this misconception. We began to discover that the assumption that we were practical was in fact a dogmatic form of thinking. This inhibited us from engaging in broader theoretical perspectives, and engaging in more responsive, reflexive, socially relevant, and contextual ways of working. On further searching we discovered that we indeed did have theory, but one that at times had a structural functionalist approach and a positivistic leaning, which was inhibiting our attempts to support change orientated learning. At times (although not always), in our somewhat obsessive efforts to get our wetland conservation message across to the ‘others’ who managed and used wetlands, we may have failed to involve people meaningfully in responding to the wetland crisis.

2.1.2 Discovering the relevance of social learning to the MWP’s work

After probing our work more deeply, MWP staff discovered that the theories of social learning deeply resonated with our experiences of wetland conservation practice. It clarified, gave reason to, and supported our recognition that an important element of supporting the social change required for improved wetland management lies – at least partly – in learning. Not any learning, but meaningful and transformative learning that is change orientated. We discovered through the
wisdom of others, such as Arjen Wals, that “forcing consensus on how people should live their lives is undesirable from a deep democracy perspective, and from an emancipatory education perspective it is essentially ‘mis-educative’” (Wals, 2007a, p.43). We found that this meant moving away from our dominant understanding that learning was essentially about MWP staff developing expert derived predetermined wetland solutions and what we thought was the right way of doing things, towards learning serving as a valuable social process of combining a diversity of opinions, beliefs and ways of doing things and co-constructing solutions to wetland problems.

It was through these realisations and developing a basic understanding of social learning, that my research interest around social learning has grown, as an orientation to learning that may support the MWP to work with its partners in more meaningful ways. As a result, my research interest revolves around investigating how informal adult learning with an orientation to expansive social learning processes may support organisational learning and development for better wetland sustainability practices within Mondi (section 1.9). It is hoped that an interventionist based research approach such as that reported in this study, would encourage Mondi staff to become more critically reflexive and begin co-constructing creative solutions to complex and continually changing wetland and environmental problems within the company.

Preliminary research to this thesis concluded by recommending that new learning opportunities need to be made available to Mondi staff to learn more about how to strengthen their wetland practices:

Emerging from this research is a clear need to strengthen and broaden existing learning opportunities in a more informed way than in the past, and institutionalise it within Mondi . . . the MWP is well positioned to support Mondi to develop a structured but flexible learning framework for relevant staff to develop the environmental competence so they can better consider, understand, and act more appropriately on wetland issues and risks. At the same time the wetland community of practice in Mondi can be strengthened. This is no easy task, and it is recommended that future research is undertaken to explore what might be the most appropriate way of doing this . . . it was concluded that the existing [Mondi training] programme could be expanded to include an environmental and wetland training component, and even look at the possibility of supporting Mondi to grow into a “learning organisation” to strengthen organisational resilience during future troubled times, allowing for wetland work to continue long after the MWP’s existence. A recommendation for future research could be to pursue this. A crucial question to ask would be: ‘could the MWP support institutional
resilience for better wetland management during unstable times through institutionalising appropriate learning processes? (Lindley, 2009b, p.28)

This recommendation has led to my current research that will hopefully begin to enable better alternative ways for Mondi staff to work and learn together to improve wetland management.

2.1.3. Confusion when reading social learning literature

Although I knew that social learning resonated with the MWP experiences, when I started to read the social learning literature, I discovered how broad the literature was with many different interpretations of what social learning actually is. A large portion of the literature did not trace its origins back to where the social in social learning, and the learning in social learning emerged from. I found this confusing, as at times I found contradictions in what the literature said, and could not clearly figure out which of the many paths of thinking on social learning I wanted to follow. I therefore found it important to describe how environmental learning has changed in orientation over the years, and led to the path of social learning I have worked with in this study. This chapter has therefore been written as a way of helping me understand how I could come to a decision on which approach to social learning and learning in organisations could best guide my research. For this reason I had to go back in time to first understand more about how the different paradigms of environmental learning had evolved towards a socially critical orientation.

2.2. Changing paradigms of environmental learning

In order to develop a broader and deeper understanding of social learning that can support Mondi in better managing its wetlands, I found it important to first look back into history to get a brief idea of how environmental education has developed over time. This will highlight the progression of environmental education thinking, and the kinds of learning processes that are relevant to transformative learning and that potentially support a change in environmental practices.

2.2.1 The narrow instrumental origins of environmental education

Annette Gough firmly believes the roots of environmental education lie in the instrumentalist orientation of scientific environmentalism. She encapsulates this orientation as meaning, “where
the earth is conceived as an object of instrumental value, there only to meet the human needs” (Gough, 1993, p.38). Strong words, but this is not surprising considering science gave birth to the period of modernism, in the early stage of the Enlightenment in the sixteen and seventeenth centuries. Since then modernism has become the dominant worldview, together with an associated instrumentalist understanding of the earth’s value and use. This in turn has led to the risks of modern society which Ulrich Beck (1992) warns us of having evolved from the vast techno-economic development strides modernity has made driven by the generation of wealth. This he says has brought with it the social production of risks, as mentioned in section 1.6. Since risks are unseen, have not yet happened, and are anticipated with destruction, it makes them harder to deal with, especially as science has often not kept pace in developing the technology for dealing with risk when it becomes reality.

In order to counter the environmental problems and risks that arose with modernity and human instrumental use of the earth and its resources, many scientists and environmentalists viewed education as a tool of instrumental value in helping to solve these issues. They saw it as important for persuading society to act in the common interest of a better environment. Interestingly, Gough (1993) highlights that it was the scientists of the 1960s and 1970s, such as Rachel Carson, who reasoned that environmental education was an essential response to remedy the problems giving rise to the environmental crisis. It was during this period that environmental education also began to be seen from a more holistic perspective, supporting better understanding of the root causes of degradation, interdisciplinarity, critical thinking, and being concerned with values promoting feelings of concern for the environment. This led to learners contributing more to planning of their own learning experiences and developing solutions to environmental problems, as reflected in the principles of the Tbilisi Declaration (UNESCO/UNEP, 1978). However, many educators were uncomfortable with this as it did not fit in well with the traditional forms of education at the time, whose orientation tended towards transmitting information from the learned to the learner along a well-defined power gradient. When attempts to change were made, educators often left out the tricky areas of values, participation and decision making, but kept in the relatively un-contentious ecological aspects (Gough, 1993). Gough expands her view by drawing from Paul Hart who saw the instrumentalist approach to solving environmental problems as developing a rational and linear strategy based on science to develop plans, conduct research, and implement the findings as
management actions and education programmes aimed at integrating economic development with the conservation of natural resources. This approach, Hart argues, will never amount to any significant change, as it attempts to create a better environment without changing the underlying causes of the problems (Hart as cited in Gough, 1993, p.40). In a similar vein, Ian Robottom in his seminal paper on *Technocratic Environmental Education* (1991) talks about the modernist belief that science and technological progress, combined with the public having the right information, would result in remedies to environmental challenges. He explains that “our rationality came to be of a technocratic kind, marked by a dominant and almost blind faith in the capacities and qualities of science ... to deal effectively and efficiently with a range of problems” (p.20).

It was within this culture of scientific environmentalism with a strong instrumentalist orientation that environmental education grew. As a result environmental education tended towards the approach of teaching ready-made knowledge that was transmitted to learners. However, in the early 1990s many scientists and environmental educationists began to question this ideological view. Ian Robottom (1991), for example, firmly believed that environmental education was at a crossroads, after being so heavily influenced by the unfailing belief that science had all the answers to our environmental problems. Scientists such as Fritjof Capra also began to question the modernist ideology, and began to view the environment as being interdisciplinary, interconnected, and seen from a more holistic perspective (Capra, 1994). Others, including Birch, influenced by postmodernism, argued that we needed a new trajectory, with a postmodern ecological worldview. However Birch warned that this will not be an easy change, and that we shouldn’t underestimate the enormity of it: “The reformation of modernism into post modernism involves a radical transformation of science, religion and culture that constitutes a revolution even greater than the Scientific Revolution and the Enlightenment” (Birch, as cited in Gough 1993, p.42).

### 2.2.2 A broadening of perspectives on environmental education research

This new environmental education trajectory into the postmodern world was opened up by researchers such as Giovanna Di Chiro who saw the environment as “the conceptual interactions between our physical surroundings and the social, political and economic forces that organise us in the context of these surroundings” (Di Chiro, as cited in Robottom, 1991, p.21). This was important, as it signals the social construction of environmental problems and their causes as lying in social
practices. Therefore, environmental solutions need to be re-directed at the social and economic, and political causes of the degradation. Later, Irwin (1995) went on to say this quite explicitly:

Environmental problems are not problems of our surroundings, but – in their origins and through their consequences – are thoroughly social problems, problems of people, their history, their living conditions, their relation to the world and reality, their social, cultural and living conditions. (p.168)

In 1990, a landmark symposium was held by the North American Association for Environmental Education with the title “Contesting Paradigms in Environmental Education” in an effort to stimulate discussion on a range of alternative approaches to environmental education research. It was here that the prevailing scientific/instrumentalist approach to environmental education and its impact on the philosophy of environmental education was critically discussed with a wide range of researchers and practitioners (Robottom & Hart, 1993). Alternative approaches such as interpretive and critical reflective research were proposed as a means of improving the theory and practice of environmental educational research. Contentious papers such as Ian Robottom’s “Beyond Behaviourism”, Arjen Wals’s “Critical Phenomenology”, Paul Hart’s “Critically Reflective Inquiry”, and Tom Marcinkowski’s review of the “Quantitative Paradigm” set the philosophical debate alive in North America, and bought the intellectual discussions on modernist and alternative learning theories to a head in the environmental education community (Mrazek, 1993, 2003). The tipping point had been reached where sufficient momentum had been gathered to initiate a broadening of the trajectory for environmental education research, to mainstream many of these alternative approaches, ideologies and learning theories.

2.2.3 A socially critical orientation to environmental learning

A socially critical orientation to learning was one of these alternative approaches that emerged, as an approach that is able to support learners to realise the social reality of environmental problems being socially constructed, as well as being reconstructed by social, political and historical processes that they have been involved in themselves (Greenall Gough & Robottom, 1993). It is therefore an orientation that takes into consideration the complexity of environmental issues, which had now expanded to include the understanding that environmental issues are actually social problems in origin. A number of other researchers such as Hines, Hungerford, Kyburz-Graber, and Ballantyne, all increasingly recognised that only learning about the technical aspects of ecology was insufficient
to solve environmental problems (Meyers, 2006). They realised it was imperative to strengthen learner understanding of the socio-political systems that have an impact on the values, beliefs and actions people have towards the environment, and support the development of the ability of learners to engage with these systems (ibid.).

Drawing on critical theory, John Fien (1993) placed ideology as being core to determining the values and social impacts of environmental education. Although the meaning of ideology changes according to the context in which is being used, he understood it in a socially critical or transformative orientation to education context to mean the concepts, beliefs and values that provide the lens through which one’s worldview is seen. Fien (1993) described the mainstream education ideologies as being differentiated into three meta-orientations. He used the terms previously suggested by Kemmis, Cole and Suggett, to explain the beliefs and assumptions supporting each of them, as being useful in identifying the different approaches used in environmental education. The first meta-orientation Fien describes as being the vocational or neo-classical orientation. This is very similar to the scientific/instrumentalist approach to environmental education, mentioned previously, which is based on behaviourist learning theory such as that of Pavlov, Guthrie and Skinner. A strong power gradient between teacher and learner is present, skills are provided to the learners to support them in the workplace, knowledge boundaries are rigid and knowledge is seen to be scientifically objective. Fien then goes on to describe the liberal or progressive orientation, which prepares learners for life rather than only providing learners with skills for the workplace. It provides a broad based education built on the major social and scientific disciplines, supports open enquiry based teaching styles, views knowledge as an individual matter, negotiates course content with learners, values individual achievement and is based on constructivist-interactionist learning theory that supports the growth of cognitive structures through interaction. The desired outcome is a ‘well educated’ learner. However, this orientation to learning has been described by Kemmis (as quoted in Fien, 1993, p.22) as “the cultured person’s and survivors view of education as it fails to provide adequately for those students whose social class or learning skills do not provide for success in a meritocratic world”. The last orientation which Fien discusses is the socially critical, which is based on some of the main ideas of the liberal/progressive orientation, but importantly expands them into a social framework. Knowledge is therefore acknowledged as being socially co-constructed between learners and teacher with a
prominence of learning in the community, democratic decision making, and shared decision-making. It is through socially critical learning that Fien advocates we can “seek[s] to educate students to be aware of the ideological origins of their existing beliefs and purposes in life, conscious of the inequalities and other problems created by unequal power relations in society, and willing and empowered to think and act in the interests of social justice and democratic principles” (Fien, 1993, p.19). A socially critical or transformative approach to education was therefore an important re-orientation for environmental education to take, since it crystallised alternative ideas of learning that had been floating around on the periphery of education theory for a while, but which had largely been ignored by the over-powering traditional behavioural and cognitive orientations to education.

When reflecting on the MWP’s past work with Mondi, it is clear that unconsciously all three orientations were used, but not necessarily in an appropriate mix. Ironically, in the first seven years of working with Mondi (1997 – 2003), the MWP worked with an approach to learning that had strong elements of a socially critical orientation by co-constructing knowledge and understanding with forestry operations staff (section 1.7). This was also the time when the most significant wetland management progress was achieved. However as time progressed and institutional changes within the company arose, much of the MWP’s approach to learning took on elements of a more liberal and even a neo-classical orientation. At times the MWP certainly fell into the deficit approach of developing the capacity of Mondi staff to better manage their wetlands. Interestingly, this was when the wetland management in Mondi began to stagnate. Alan Irwin famously sums up the deficit approach as:

Surely if members of the public don’t support our environmental campaign, or recognise our environmental achievements, it must be due either to their lack of understanding or in our inadequate communication of the facts? The deficit approach to the public, suggests that further information and careful persuasion is all that is required to ‘win public groups over’ to one’s own point of view. Typically also, the deficit approach suggests that public groups are merely blank sheets of paper upon which various environmental messages can be written. (2001, p.95)

It is interesting that elements of this approach manifested in the latter stages of working with Mondi, from 2004 – 2009 when this research began, rather than in the beginning when one might have assumed this would have taken place. However, from the preliminary research I undertook
(Lindley 2009b), it is clear that the MWP needed to better understand transformative social learning processes in order to re-orientate how to work with Mondi, and to provide more of a socially critical orientation to its collaborative work with Mondi staff.

2.2.4 The emergence of social learning in the environmental context

An important aspect of socially critical learning is that it embraces the notion that the risks posed by modernity require new ways of thinking, learning and doing that are contextually situated, and supported by social learning processes which promote the development of dialogue and reflection, with the ultimate aim of taking action and supporting change. This type of learning is seen to support the development of critical understanding, critical assessment, and the commitment to transform society (Gough, 1997). This is a key shift in thinking that surfaced the importance of social learning processes in education shaping the outcomes, rather than predetermined knowledge and objectives. Alan Irwin (2001) extended this to include the importance of understanding environmental issues within particular social contexts, and the importance of ‘public knowledge’ and learning from each other. When learning takes cognisance of the surrounding context of environmental problems he states that “[an] even wider variety of knowledge claims and forms of evidence come into play ... on that basis, ‘situated’ knowledge becomes an important theme ... knowledge should not be taken to imply a static or fixed category ... but rather a process of sense making within particular social and personal contexts” (p.96). In this way, many environmental educators began to view social learning as a reflective process that could support society to work towards sustainability. For example Daniela Tilbury (2007) explicitly states that “sustainability is essentially an on-going social learning process” (p.117); Dyball, Brown and Keen (2007) consider that improving the sustainability of environmental practices unavoidably includes social learning processes; and Wals (2007a) recognises that the never-ending journey of sustainability emphasises that social learning is learning which acknowledges that once solutions have been found, the goal posts have often been moved yet again, and better more suited solutions need to be explored. When learning and sustainability are seen in this light, many of today’s ‘best practices’ often become tomorrow’s worst; hence sustainability needs to be seen as a journey of continual improvement.
2.3 Understanding what social learning is

The literature in the field of social learning is vast. It is a meeting place for different perspectives of learning in a social context that has grown out of the disciplines of psychology, sociology, education, management studies, and environmental management amongst others. As a result there are many different meaning of social learning, relating both to the social aspects of social learning, as well as the learning aspects of social learning (Wals 2007b; Pahl-Wostl, Craps, Dewulf, Mostert, Tabara, & Taillieu, 2007; Armitage, Marschke, & Plummer, 2008; Kilvington, 2010; Reed, Evely, Cundill, Fazey, Glass, Laing, Newig, Parrish, Prell, Raymond, & Stringer, 2010; Cundill & Rodela, 2012). For example, Kilvington (2010) highlights that to some, social learning is considered as an end state, while to others it is considered as a means to the end. A helpful explanation is provided by Wals who describes his way around the confusion of numerous descriptions of social learning: “it is safe to say that social learning tends to refer to learning that takes place when divergent interests, norms, values and constructions of reality meet in an environment that is conducive to meaningful inter-action” (2007a, p.39). This debate about what social learning is, has been around for a while, and will probably continue for years to come. However it was Parson and Clark who almost 20 years ago summed up this confusion rather eloquently, describing why the debate still continues today:

The term social learning conceals great diversity. That many researchers describe the phenomenon they are examining as ‘social learning’ does not necessarily indicate a common theoretical perspective, disciplinary heritage, or even language. Rather the contributions employ the language, concepts, and research methods of half a dozen major disciplines; they focus on individuals, groups, formal organisations, professional communities, or entire societies; they use different definitions of learning, of what it means for learning to be “social”, and of theory. The deepest difference is that for some, social learning, means learning by individuals that takes place in social settings and/or is socially conditioned; for others it means learning by social aggregates. (Parson and Clarke, as cited in Glasser, 2007, p.48)

After reading a mountain of literature on social learning, and becoming confused about the many different and conflicting viewpoints, I finally discovered how extremely important it is to be aware of the diverging ontological (and epistemological) origins of much of the literature. I learnt to understand that when reading the wide variety of literature available, it is possible to differentiate between authors’ ontological positions and that this could help to develop a coherence in the way of engaging with the vast body of social learning literature.
2.3.1 The risk of ontological collapse

There is a danger that social learning can be objectified and used as a tool to achieve certain outcomes, rather than seeing it as a learning process with a socially critical orientation where the outcomes are not predetermined. Lotz-Sisitka, Mukute and Belay (2012) believe that this can easily happen when the meanings and the theoretical origins of the ‘social’ and the ‘learning’ aspects of social learning are not well understood, leading to ontological collapse of research and practice. They view this as frequently occurring in the natural resource management research literature. Although my research lies in environmental education, its context is firmly placed within in the natural resource management field of wetlands. It was therefore important that I took notice of this mistake and did not make the same errors in my research and the literature that I drew from.

Common misunderstandings of social learning in natural resource management

Due to the complexity of natural resource management and the increased recognition that many of the ecological problems of managers stem from social issues, many managers have resorted to more participatory approaches to deal with this complexity and the uncertainties that are associated with it. The notion of social learning therefore became seen as a useful aid to supporting this participatory approach, as it was seen to enhance the adaptive capacity of those stakeholders who have an interest in natural resource use and management, through their improved participation in decision-making (Pahl-Wostl, et al., 2007; Armitage, Marschke & Plummer, 2008; Roux, Murray, Nel, Hill, Roux, & Driver, 2011; Cundill, Cummings, Biggs, & Fabricius, 2011).

What becomes strikingly apparent, however, in the many interpretations of social learning, is that due consideration and understanding is not given to the social or learning aspects of social learning and how this is related to social change. This is highlighted by Reed et al. (2010), who after reviewing the social learning literature in natural resource management, identified three main problems with the concept of social learning as it was used. Firstly, researchers and practitioners often conflated social learning with participation. While participation may lead to social learning, it does not necessarily mean that participation will automatically result in social learning or even social change. Secondly, they highlighted that the literature often conflated the social processes of learning with its potential outcome, to the point that the product of social learning was valued more highly than the processes. This was seen to be problematic because other processes that have
nothing to do with learning, such as financial incentives, may also lead to the same outcome without social learning having taken place. Thirdly, the literature seldom differentiated, or explained the interplay between social leaning occurring at an individual level, and that occurring at a much broader group, community or society scale, despite social learning being seen as an important process contributing towards social change. Reed, et al. (2010) argue that this lack of conceptual clarity of social learning has limited our understanding of the mechanisms by which social learning takes place, and understanding if social learning has indeed occurred, and most importantly, how social learning can support social change. Cundill and Rodela (2012) attribute this confusion in the literature to originating from the same term being used for very different processes which each having very different outcomes, depending on the different management paradigms. To avoid this confusion, they recommend that researchers need to be very clear on how they define social learning, and most importantly locate the historical development of their thinking around social learning.

Rodela, Cundill and Wals (2012) emphasise the necessity of this point in their systematic review of social learning in the natural resource management literature. They found that in over half of the papers they reviewed social learning was the empirical focus of the research, but the emergent generative processes of social learning that led to the change in the people and the context in which they worked, were not even analysed. Compounding this, it was also found that the ontological position of the researchers was not congruent with their chosen methodologies and methods: “often papers will state up front or at least suggest that the reality in which the research takes place is ‘multi-interpretable’ and highly contextual, yet the methodologies and methods chosen tend to look for universal conclusions and transferable results suggesting single realities and concrete universalism” (p.34).

The importance of understanding antecedent literatures to prevent ontological collapse
Lotz-Sisitka, Mukute and Belay (2012) concur with the conclusions of Rodela, Cundill and Wals (2012), and explicitly pointed out that it was a common trait in the natural resource management literature for researchers to ‘borrow’ aspects from learning theories such as Wenger’s community of practice and Bateson’s triple loop learning, with little depth of understanding the social and learning theories on which they were based. However, they are also quick to say that this is a
characteristic that can be similarly seen in some elements of environmental education research into social learning. They therefore argue that it is imperative to understand the antecedent literatures that provide a clear understanding of the theories supporting the social nature of social learning, and the learning that occurs in social learning. They argue that a genealogical tracing of the literature will help clarify “what social learning might be, how it emerges in and as a social process of learning, and how it can be understood in relation to human agency, the mobilization of which is a necessary condition for social learning results to emerge” (ibid., p.58). They suggest further that it is only through developing these understandings that researchers will be able to be explicit in explaining how ontological, epistemological and axiological dynamics shape social learning. This, they argue, also shapes the choice of methodologies and methods for studying social learning processes. Failure to do this, leads to what Sfard calls an ‘ontological collapse’ (as cited in Lotz-Sisitka, Mukute and Belay, 2012, p.58). Referring to Sfard, Lotz-Sisitka, Mukute and Belay describe how ontological collapse in social learning research occurs when insufficient understanding of the social processes of learning and social change gives rise to these social processes being objectified through a) reification: when the dominant social learning discourse is about what social learning is, its outcomes, and the competencies required for social learning, with far less focus on the how – processes and actions that facilitate and support social learning process to occur; and b) social alienation: when explanations of social learning outcomes such as co-management of natural resources are said to occur virtually on their own, without sufficient consideration given to who is actually doing these processes and how they are doing them. To avoid the errors of reification and alienation, it is therefore critical to illuminate the processes that make up what it is to be social, and to participate socially in learning and change processes. It is into this trap that much of the social learning literature in natural resource management has fallen as Cundill and Rodela (2012) discovered, and to which Lotz-Sisitka, Mukute and Belay (2012) daringly responded that “one could argue that the emerging popularity and emphasis on social learning in the natural resource management arena is a response to the ontological collapse associated with natural resource management sciences” (p.58)

2.4 Elements of social learning important to my research

While I thought it important to raise the potential problem of ontological collapse, the aim of this section is not to trace the genealogy of the approach to social learning that I draw on in this
research. Chapter 3 deals with this in more depth. Instead I have taken Margaret Kilvington’s cue, when she concludes from her review of the social learning literature that “it is arguably more helpful to regard social learning as a collection of elements critical to understanding and supporting the social and situational factors that underpin complex environmental problem solving” (Kilvington, 2010, p.65). In the following sections, while being mindful of the notion of ontological collapse in selecting key references, I introduce particular elements of social learning that are helpful to develop a broad based understanding of social learning in the field of environmental education, and as found helpful to this research. I have not gone into depth in describing these elements, as my aim is to highlight only important aspects of them.

2.4.1 Importance of valuing social learning processes over products

An element of social learning that I consider as paramount, is that the processes of how social learning takes place are as important as its outcomes. This point is strongly made by Wals and van der Leij (2007) who emphasises that regardless of how social learning may be defined, perhaps the most pertinent point is that the crux of social learning is not what people need to know which could be seen in the light of the scientific instrumentalist orientation, but rather how people learn and what they want to learn, and how they will be able to challenge and transcend societal norms for a more sustainable future. However, Reed et al. (2010) report that there is often confusion between interpreting social learning as a process of people learning from each other, and seeing it as an outcome of these social interactions. As a result, the social learning processes and products are often conflated, with primacy being given to the outcomes such as improved environmental management, or enhanced stakeholder capacity and empowerment. Although social learning is both a process and a product, it is important in educational research, to understand and facilitate the social processes of learning, rather than to only focus on the learning outcomes. In many instances, senior management of organisations, donors and politicians often want to hear more about the outcomes of a social learning project, than the processes. This therefore becomes a major driver for learning that is outcome driven, creating an axis of tension, that continually needs to be balanced.
2.4.2 Needing to bridge the gap between knowing and doing

Most of the literature on social learning implies directly or indirectly that social change is one of the outcomes of social learning (Tilbury, 2007 & 2011; Lotz-Sisitka & Le Grange, 2010; Reed, et al., 2010). However, this outcome is often not realised. As Harold Glasser (2007) saliently points out, there is a growing concern with environmental learning that results in a lack of environmental action. He sees a massive gap occurring between the sustainability that many in society are calling for, and what is actually happening in practice. Glasser explains that despite the massive awareness of our unsustainable lifestyles, ample evidence of the impact of it, and even a concern to do something about it, we still do not see sufficient action being taken to work towards what he terms ‘eco-cultural sustainability’. This is not a new finding, as Hungerford and Volk (1990) also reported over 20 years ago that changes in the availability and understanding of environmental knowledge do not necessarily result in changes in environmental attitudes and behaviour. Ironically, through my reading, it has become apparent that the bulk of the social learning literature is particularly weak in explaining theoretically exactly how social change comes about through learning in participation, and together with poorly understood social learning processes, this may be a reason contributing towards this gap that Glasser describes. For example, there is little reference in the social learning literature to what underlying mechanisms are playing an important role in the change process, and to the interplay between these mechanisms that may give rise to social change or reproduction. There appears to be little engagement in the social learning literature with theories of social change, such as Archer’s (1995) theory of morphogenetic change that explains how the interactions between the emergent properties and powers of structure, culture, and agency result in social stasis or change. I will not engage in greater depth on this as chapter 3 provides more insight into this. However, what this does highlight is that as environmental educators, instead of assuming that social change will automatically emerge from our social learning interventions, we need to carefully consider and understand how people learn in social learning contexts, how people can meaningfully participate in social learning, what exactly social change is and the dynamics of it, the role social learning can play in supporting social change, and how we can better facilitate environmental learning to support the social change for improved environmental practices. My research hopes to build on what other researchers have already discovered, and strengthen and add to some of the gaps that I see as being present.
2.4.3 Changing values, beliefs, ideologies and assumptions

Researchers such as Glasser (2007) believe that it is only through learning that we develop the values, concerns and attitudes, which make up our perception of reality. Therefore it is only through participative learning about new information different to our own that we can test our own values and concerns against our reality, and re-orientate our values and actions. The social change that is required to re-orientate a change in values, beliefs and ideologies in how society uses and manages its natural environment, will therefore require a special type of learning. Wals and Heymann (2004) consider this approach to learning as needing to take place in rich social contexts where people with a diversity of views, assumptions, values, and ideologies are provided with the opportunity to safely discuss their worldviews without a fear of retribution, but that this discussion needs to take place within a facilitated environment of moderate dissonance and divergent views.

Dissonance as a precondition for learning

The dissonance aspect of this approach is interesting, and not widely recognised by educators and researchers as being important to learning for improved sustainability practices. This is surprising when one considers the quantum changes that are required to address the sustainability challenges the world currently faces. However, Wals and Heymann (2004) see the conflicts that emerge from discussing divergent views as a prerequisite for the type of learning required, rather than as a barrier to learning. They call for a rethink of the role of conflict in learning: “Dealing with this complexity and uncertainty, with conflicting norms, values, and interests in a world characterized by ever-expanding globalization requires a re-conceptualization of the role of conflict in transformative learning processes” (p.129). Although Glasser (2007) also promotes the use of conflict in social learning, and says that, if used in a positive way, it can prevent complacency and encourage innovative thinking, he does not expand this. In discussing the important attributes of meaningful dialogue, both Fischer (2004) and Kadlec and Friedman (2007) also note that exposing conflicts of interest leads to expanded capacity, rather than polarisation as long as the right conditions and design of the facilitation are put in place. In fact Kadlec and Friedman found that conflict of interests actually legitimised the deliberation process, and Fischer is quite explicit in saying that conflict and disagreement should be seen as preconditions to the development of social
understanding. Although these authors state the importance of dissonance to deliberation and learning, none of them explicate it further. Wals and Heymann (2004), on the other hand, open up the idea in more depth through their process of dialogical deconstruction. They raise the importance of providing sufficient ‘space’ for dialogue on contentious issues, and claim that this learning space needs to be ‘safe’ and free from reprisal, retributions, ridicule, scorn and contempt, if the conflicts and their underlying sources are to be explicated, deconstructed, and understood. Dialogue is seen as a crucial component of the learning process in dealing with conflict:

Through dialogue an understanding and appreciation of social learning, the role of conflict and diversity, and an awareness of different norms, values, interests and constructions of reality, their underlying assumptions and their history, may develop between participants. Viewed as such, dialogue becomes both a purpose and a possibility for acting and forms the basis for purposeful action. (Wals and Heymann, 2004, p.131)

Deconstruction through dialogue is therefore seen to be a crucial process that can help unravel people’s preconceptions, assumptions and ideologies that frame their thinking. When this is done in a collaborative and safe learning space, and dissonance is used to catalyse the unravelling of people’s divergent views on conflicting issues and if managed appropriately, Wals and Heymann believe that people can begin to recognise and review how they see issues and are in turn exposed to the deconstructed frames of others:

Participants then confront the way they ascribe meaning to their ideas, interests, values, and knowledge. Rather than focusing on their often persistent frames of reality, attention is immediately shifted to their prior perceptions and process of sense making. This guided self-confrontation usually leads to an increased understanding of the different frames that can be found within the group of involved stakeholders. Participants become aware that people’s frames are rooted in different contexts of sense and meaning making. (Wals & Heymann, 2004, p.135)

Once this deconstruction of their own and each other’s views has occurred, then participants are challenged to collaboratively reconstruct new lenses and solutions together. It is this emergent awareness and dialogic deconstruction of one’s own frames or lenses, and those of others, and the reconstruction of new ones, that Wals and Heymann see as being critical steps in transformative social learning.
Dialogical social learning and thought processes
Although dialogue is an important part of social learning, Selby’s (2007) concept of dialogical social learning can further strengthen and support the process of deconstruction that Wals and Heymann discuss. Drawing on Bohm’s concept of dialogue and expanding it, Selby (2007) explains how it is critical to focus on thought processes that are at the core of dialogue, rather than on the thoughts themselves, because thought processes are the origin of the problems we are faced with. He therefore proposes dialogical social learning as a way of “creating contexts, climates and personal and collective dispositions whereby a “flowing through” (Bohm, 1998, p.118) can occur, out of which radically new ways of seeing the world may emerge” (p.170). Selby characterises dialogic social learning as having the following fundamental thought processes: empathic and alert listening; participants being aware of their own emotional and somatic responses to what others say; sharing perceptions of what they consider others to be saying as misperceptions; explicitly suspending their assumptions and opinions in the company of others; halting the impulse of necessity to argue on issues that one feels are not negotiable; being open, honest and collaborative in what one thinks and says; and revealing one’s tacit thoughts in the open and exploring with others if these thoughts resonate with them. Selby therefore believes that it is these types of thought processes of dialogical social learning that can support deep and meaningful individual and collective learning and potentially catalyse transformation. However, he also highlights the important role that facilitators play in not merely creating an environment for dialogic social learning to take place, but with supporting participants to understand and develop these thought processes of dialogical social learning. If the facilitator is successful, he suggests that the facilitator actually becomes a participant as the coherence in the group begins to grow and the need for a facilitator is reduced.

2.4.4 The necessity of deliberating democratically
From the discussions above, it is clear that social learning is seen as a key component supporting society to move towards a more equitable and just world through a deliberative and democratic approach to social change. Therefore the theory of deliberative democracy is also of interest to educators working with a social learning orientation. The converse is also true, with writers of deliberative democracy also recognising the importance of social learning to deliberative democracy theory, and calling for greater consideration to be given to social learning in this field.
(Fischer, 2004). At this point, it is important to highlight the difference between dialogue and deliberation, as both words are often used in the social learning literature interchangeably. Kadlec and Friedman (2007) usefully describe the key difference between the two, as hinging on the problem-orientation of deliberation:

Whereas dialogue is about understanding and exchanging viewpoints with others, deliberation is about exploring a common problem by bringing as many perspectives to bear on the problem as possible. Dialogue is of course an integral component and tool of deliberation, but the guiding and central role of the common problem at hand is a defining feature only of deliberation. (p.14)

As Rodela (2012) has shown, some researchers in the natural resource management literature have recently taken a turn towards deliberative democracy in an effort to challenge established environmental practices and collaboratively develop new and improved ways of knowing and doing. Although there are many interpretations of deliberative democracy, and recently Elstub (2010) has written about the third generation versions of this theory, I will use the understanding of Seyla Benhabib, one of the established writers in the field, to form the base of my understanding. Benhabib (1996) describes her model of deliberative democracy as providing the possibility for the public to freely deliberate matters of mutual interest and concern, in which the agenda is open and not narrowly restricted. As with Wals and Heymann (2004), Benhabib believes that deliberative democracy acknowledges the conflicting values and interests in social life, and that this conflict is a starting point from which deliberative democracy proceeds. She views deliberative democracy as a process of reasoning, rather than as a regulative principle, and it is seen to apply to deliberations and reflections at a personal as well as collective level. Drawing on the discourse model of ethics and politics which develops a procedure for public deliberations that are free, Benhabib suggests that deliberative democracy processes allow for the emergence of information that is required to overcome problems because it “allow[s] the expression of arguments in the light of which opinions and beliefs need to be revised, and because they lead to the formation of conclusions that can be challenged publically for good reasons. Furthermore, such procedures allow self referential critique of their own uses and abuses” (ibid., p.87). While these broad principles of deliberative democracy are similar to those espoused by the type of social learning discussed so far, with deliberative democracy, comes a word of warning that is also relevant to social learning. For example Dryzek (2000), who has been critical of deliberative democracy, argues that deliberative democracy is not
sufficiently critical in its orientation to established institutional power structures. He has therefore developed a more critical understanding of deliberative democracy which he calls discursive democracy. However, two key criticisms that I thought were most relevant to my research are those raised by Young (1996), Sanders (1997), and Kadlec and Friedman (2007).

**Deliberative democracy and equality of participation**

Even though dialogue and deliberation are seen to be essential elements of both deliberative democracy and social learning, in her critique of deliberative democracy Lynn Sanders (1997) explains that the process of deliberation may not always be that democratic, since it cannot guarantee equal participation by all. She raises two important criticisms. The first criticism is that some people are better empowered by privilege of their higher quality of education, higher social and economic standing, and cultural predispositions to clearly and logically present their argument. This inequality is amplified by the prejudice that some people are more inclined to hear the arguments of certain groups above those of others. Sanders believes that the people who are most disadvantaged to participate in democratic deliberations tend to include racial minorities, woman, and poorer people. Due to the subtlety of this kind of social power, Sanders emphasises that those disadvantaged, may not even be aware of their disadvantage. Marion Young expands on this further, by arguing that social powers can prevent equality in deliberations because of an “internalised sense of the right one has to speak or not to speak, and from the devaluation of some people’s style of speech and the elevation of others” (1996, p.122). Therefore Young highlights how social power can enter into speech, and the importance of being aware of the cultural specificity of deliberations. Using an example, she points out that in formal deliberations white middle class people with a better education are apt to talk with greater authority as if they have a right to speak. Other culturally differentiated and socially unequal groups may feel intimidated by the formality of the occasion and the need to put forward an argument infused with coherent logic and reasoning, perhaps in a second language, in front of others. This results in the disadvantaged either not speaking or seen by those in authority as to be speaking in a disruptive way, with the authoritative group often failing to recognise this devaluation, exclusion, and silencing. It is due to power relations such as these that Kadlec and Friedman (2007) consider that, despite being inclusive and democratic, deliberative forums are still undermined. In a country like South Africa, with its undemocratic history of social prejudice and unequal education, these issues raised by
Sanders and Young are particularly important for facilitators of social learning to bear in mind when working with people who have diverse histories and experiences.

**Deliberative democracy and pursuing a common goal**

A second criticism that both Sanders and Young raise, is the undemocratic intentions of deliberations that attempt to pursue a common interest and achieve a common goal, where differing views may prevent this. Sanders (1997) views compromise as often being seen as way of working towards this common goal. But as she warns of the potential underbelly of compromise:

> In settings where there are gross inequities in power and status, calling for compromise may be perilously close to suppressing the challenging perspectives of marginalised groups. Such suppression, when it occurs, is not democratic. And averting it requires an ability to notice which individuals regularly have more power than others, and whose perspectives regularly dominate. (1997, p.362)

Young (1996) also voices concerns that democratic discussions that assume unity in working towards the ‘common good’ may inherently contain another mechanism of exclusion. She argues that when participants from different cultures and social positions and with different symbolic privilege, deliberate what the common good is, the perspectives of the privileged will most likely prevail in deciding this. This means that the less privileged have to set aside their interests and experiences for the sake of the common good, which is defined in a way that is biased against them. While the settings that environmental education takes place in, may not occur in situations dominated by what Sanders calls “gross inequities in power and status”, the principle and cautionary notes of what Sanders and Young raise for facilitators of environmental learning are certainly important to remember, especially in situations where power differentials are strong, as often found in corporate and government institutions.

**Structuring deliberations to take into consideration group dynamics**

When engaging in dialogical social learning, it is important to learn from these criticisms of deliberative democracy. Effective ways of facilitation will have to allow for this and if possible, not only strengthen the participatory skills of those who struggle to participate equally, but strengthen the skills of facilitators to be able to recognise and cope with these inequities, while creating a safe space for dialogue and deliberation. It is in light of this, Sanders (1997) emphasises that how one
structures the group deliberations to take into consideration group dynamics is of vital importance, if one is to find a way to ensure that everyone participates and their views are considered by all. Kadlec and Friedman (2007) take this further, by proposing three important challenges for facilitators to integrate into the deliberation process: a) the challenges of control, in which the person in control of designing and facilitating the deliberation should not have a large stake in the outcomes of the deliberation process; b) the challenge of design, in which, for example, marginalised stakeholders are given the voice to enable their participation, and deliberations are begun by first hearing the experiences and viewpoints of these individuals. Instead of seeking consensus, they advise deliberation to rather work towards a confluence of ideas and possibilities, such as a common problem around which a diversity of opinions can be heard. In this way participants can learn to cross mental boundaries, explore a diversity of viewpoints, and through the deliberations develop mutual respect for each other. The notion of the ideas confluencing therefore induces greater possibilities of participants working together, despite opposing differences in opinion, than attempting to reach static conclusions through consensus and compromise; and c) the challenge of understanding how deliberative democracy can lead to social change.

2.4.5 Learning with an epistemology orientated to risk

As mentioned in section 2.2.1, Beck highlights that we live in a risk society. Therefore many of the environmental issues and risks that we face today and in the future are unknown, and if we do know of them we may not truly understand the magnitude or implications of the risks. A typical and highly topical example of this is the rapidly growing concerns with climate change, and the related risks posed to society. When living in this uncertain and ever changing world, society will not always have the knowledge it needs to deal with these risks. Beck therefore calls for education that can play an important role of supporting society to work towards a reflexive modernisation (Beck, 1992). In responding to this call, Lotz-Sisitka and Le Grange (2010) suggest that this now introduces a new epistemology into education that revolves around risk, rather than certainty. In discussing an education response to climate change, increasingly seen as the greatest risk ever posed to humankind, they point out that if society is to continually adapt to this changing context, then learning needs to be exploratory and open-ended, rather than being based on what is already known, which has often given rise to the risk in the first place. Therefore what needs to be learned,
cannot always be known beforehand, and this requires a society with an ability to be critically reflexive, to be able to work and learn together to understand the root causes of environmental degradation, and to cultivate new adaptation practices together with people who have the ability to develop the capacity for change and re-orientation.

The importance of reflexivity

The notion of reflexivity is seen as a critical aspect of social learning, especially in learning that will need to respond to the growing environmental risks. Drawing on critical realism and cultural historical activity theory, Lotz-Sisitka, Mukute and Belay (2012) explain reflexivity as being a conversation occurring within an individual’s mind that is essential to the emergence of agency, enabling people to engage with conflict and a range of different opinions of others, to shape the collaborative learning that is situated within a social, historical and material context. Bolton also describes reflexivity as being an internal process of “finding strategies for looking at our own thought processes, values, prejudices and habitual action as if we were onlookers” (2005, p.7). This is similar to how Wals (2007a) describes reflexivity, as a critical property that encourages people to reflect and question and, if necessary, break away from existing paradigms and ways of doing things. Likewise, Dyball, Brown and Keen (2007) value reflexivity due to its potential for exposing institutional, political, cultural and theoretical contexts that influence the way we learn, the values we develop and our resulting actions. According to Wals (2007a), reflexivity in social learning is important to help people move away from seeing learning as about expert derived predetermined solutions and the right way of doing things, towards a process where learning can help develop knowledge, values and action competence of an individual or group’s ability to participate more fully and effectively in making their own choices and taking responsibility for developing solutions and actions to complex and continually changing problems. In this way, Wals believes that social learning is an approach that does not to tell people what they should know or be able to do, but rather encourages an understanding of how people learn, and what they want to learn to help them recognise, evaluate and think innovatively around existing ways of doing things, preconceptions, social norms and personal biases. It helps people to build on their existing knowledge, skills and perhaps develop different ways of looking at the world. When viewed in this way, social learning is seen to be a broader more open-ended approach to learning that is more responsive to a variety of contextual situations, reflexive in orientation, and able to support
learning in a risk society. This is the type of learning that Glasser (2007) calls active social learning, which is very different to passive social learning.

**Active and passive social learning**

Glasser (2007) defines passive social learning as occurring when one learns from the prior learning of others, such as the learning that occurs when reading a newspaper or attending a lecture. It therefore relies on receiving the knowledge of others, which mostly must be accepted uncritically together with the values and assumptions with which the knowledge was originally generated. However, active social learning is intrinsically dialogical, and developed from the conscious communication between two or more people. Glasser separates active social learning into three categories which are defined by differing levels of participation: hierarchical social learning which is based on rigid relationships such as between teachers and learners; non-hierarchical where two people share their expert knowledge; and co-learning which is founded on the non-hierarchical level but is differentiated by full participation and trust, and shared exploration and investigation. It is this co-learning which Glasser believes is the most important: there is critical evaluation of existing knowledge and problems, engagement with a broad array of views, and feedback from others of our own views. Finally, new understandings and knowledge are co-constructed and applied to deal with real world problems. An important aspect of active social learning is therefore that it involves practice, or learning by doing:

> open and active processes of learning can also be described as learning by doing, discovery learning, hands on learning, or experiential learning. What these have in common is that the learner becomes socially, culturally, and cognitively involved in a reflexive learning process. The learner is encouraged to investigate the world, find out about it with others, and engage in collaborative reflections and change orientated actions. (United Nations Environment Programme, 2006, p.28)

However practice and investigation need an enabling environment to support them. This is why Glasser (2007) believes that active social learning will succeed when it takes place in collaborative partnerships of shared interest, that are built on mutual respect and trust, tolerance, share a common language, and aim towards an objective that all in the partnership want to achieve. It is this type of active social learning that is important to my research with Mondi. We do not know the reasons why wetland management is not improving, and therefore it is important to work with Mondi staff to investigate and understand the root causes and to co-construct solutions.
A critical element of the type of active social learning that can support people to deal with risk rather than certainty is that it obviously requires participation with others. However, it is crucial that participation is seen as an integral aspect of the learning process, rather than as a tool to be used for specific purposes. This will prevent learning from being manipulated for specific outcomes, resulting in participation as a political process. For this reason, a better understanding of participation in social learning is required.

2.4.6 Understanding the meaning of participation in social learning

As alluded to in the sections above, understanding what is meant by participation is critical to social learning. This section will be taking a closer look at the meaning of participation, firstly in the social development world where researchers first started to focus on understanding what it meant, and then understanding participation in an environmental education context.

The meaning of participation in social development

Rahnema’s (1992) seminal critical review of the concept and practice of participation in the field of social development emphasised how the meaning of participation has a wide variety of understandings for different people. Although his research was in the field of social development, it has significant relevance to participation in social learning. Importantly, he highlighted that there is a history of practice of not meeting the theory of participation, especially when the potential of participatory processes to counter dominant authority is not recognised. Rahnema takes his cue for defining participation from the Oxford English Dictionary in which “participation is ‘the action or fact of partaking, having or forming a part of’. In that sense, participation could be either transitive or intransitive; either moral, amoral or immoral; either forced or free; either manipulative or spontaneous” (Rahnema, 1992, p.116). He goes on to explain how each of these forms of participation varies widely:

Transitive forms of participation are, by definition, orientated towards a specific goal or target. By contrast, in its intransitive forms, the subject lives the partaking process without any predefined purpose ... participation requires a moral aspect, according to the ethically defined nature of the goal it pursues. It is generally associated with moral or desirable goals and, as such, given a positive connotation. It seldom comes to mind that the act of partaking
may apply to evil or malicious purposes ... participation tends to be perceived as a free exercise. This perception neither conforms to the meaning of the word, nor the way in which it is translated into practice. For, more often than not, people are asked or dragged into participating in operations of no interest to them, in the very name of participation ... this leads us finally to distinguish between manipulated, or teleguided, forms of participation, and spontaneous ones. In the former, the participants do not feel they are being forced into doing something, but are actually led to take actions which are inspired or directed by centres out of their control. (p.116)

After critically examining the literature in a social development context, Rahnema points out that the word ‘participation’ has now morphed into modern jargon and mainstream rhetoric often used for manipulative purposes, especially by politicians and development agencies. Although Rahnema’s seminal work reviewed the literature in the field of social development, it is also useful for developing a more in-depth understanding of the different interpretations of participation in learning and natural resource management. In a similar vein, Lotz-Sisitka and Burt (2006) also point out the diversity of views of what participation means, in their critical review of participatory practice in integrated water resource management in South Africa. This diversity has led to confusion in both the public and the government as to what participation actually means, and has therefore inhibited participatory practices in managing water resources (of which wetlands are an important part). Lotz-Sisitka and Burt therefore called for a deeper understanding of participation by both government and water resource stakeholders.

**The meaning of participation in environmental education**

In environmental education, participation is also seen to be a key objective and approach for learning, hence the interest in social learning. However, the misinterpretation of it has also led to misleading approaches to education and environmental education. Lotz-Sisitka and O’Donoghue (2008) have found that environmental education in South Africa often does not adequately consider the conceptual and practical difficulties that are characteristic of pedagogies of participation. Their research demonstrates that participatory processes in education for social transformation can become individualised and self-referential, despite its supposed democratic principles, constructivist approach to education and purpose of educating for sustainable development. This, they argue, can give the false impression that the social processes associated with participatory forms of professional development can lead to “an illusion of change, even as participants engage in activities with a heavily mediated script, for participatory forms of
engagement, such that participatory education becomes an idealised process that is not open to
critical scrutiny” (p.112). It is this conclusion that has led Lotz-Sisitka and O’Donoghue to warn us
that the rise in usage of participatory processes in education for improving environmental practices,
has often led to a twisting of participatory social learning processes that subtly pass on
predetermined sustainability ideals to participants to remould to their own context through
collaborative capacity development activities. Therefore the participation processes are structured
for the emancipation of the participants, but the knowledge, ideology, morals, ethics and standards
are based on the ideals of others. Contextualised historical knowledge, experiences, opinions, and
existing learning materials, are often excluded. A strong parallel is clearly drawn with Elliot Eisner’s
(1985) null or hidden curriculum where he differentiates between what is explicitly taught, and
what is neglected and not taught, such as the tacit and covert inherent values, beliefs and
ideologies lying behind knowledge, and the reason behind why certain knowledge is privileged
above other knowledge.

Lotz-Sisitka and O’Donoghue (2008) further emphasise that the learning in these previously
mentioned activities is scaffolded through the careful guidance and mediation of capacity
development trainers or facilitators with their own environment and sustainability ideals, who
assume that once participants are suitably capacitated and empowered, the newly learnt
predetermined sustainability ideals will trickle down and become integrated into the participants’
contextualised workplace and everyday life. Therefore the principles of participation were
instrumentally applied in the name of capacity development. It is with this insight that Lotz-Sisitka
and O’Donoghue critically comment that in the eager effort to promote participative democracy, no
opportunity was provided to critique the ideology of the participative practices nor their
pedagogical assumptions. Their conclusion perfectly sums up the participation in learning faux-pas
in the following quote: “The worm in the apple of these emerging pedagogies of participation in
education is an equating of a culture of reflexive activity for changed practice with a situated social
process of reflexive practice, and a conflating of these within a single process of facilitated
participation in scaffolded, choreographed education activity” (ibid., p.120). It is therefore critical in
my research that I do not commit the same mistake. This twisting of understanding to participatory
approaches to learning for capacity development and social change could well be a key factor
contributing to what Glasser (2007) terms the ‘gap’ between people being aware of environmental
problems and having the knowledge to deal with them, but not being able to take action to solve them.

2.4.7 Different epistemologies of learning give rise to different understandings of participation

When examining the three mainstream perspectives on learning (section 2.2.3), it is possible to see differences in the understanding of participatory learning, due to their epistemological orientations. This can provide further insight into the observations of Lotz-Sisitka and O’Donoghue (2008). Reid and Nikel (2008) examine these differences in participation according to the behaviourist, cognitive and situative traditions of learning theory. Focussing on the latter two, Reid and Nikel illustrated the ambiguities that arise from the different interpretations of participation as related to the differing epistemological stances, and the diversity of views on learning, knowledge and knowing. They describe learning from a cognitive perspective, as being “an active, constructive, cumulative, and goal orientated process. The learner is positioned as the key agent rather than a passive recipient in a teaching situation ... thus the learner’s active participation is not just a desirable emancipatory boom; rather, as in development, it is viewed as a necessity for learning to occur, to last, and be both effective and efficient” (p.39). However, in contrast to the cognitive perspective, Reid and Nikel emphasise that situational perspectives on learning “relocates the focus on the individual by emphasising the communal and relational aspects of the individual’s participation in learning. Thus while cognitive theories have emphasised the active involvement of the individual, from a situative perspective we must consider active involvement in terms of ‘participation in a community’ (p.41). This social orientation to learning is based on learning as participation in practices that take place in the context of us living in the world while participating with others. In this way, learning is therefore a social experience reflecting the deeply social nature of human beings.

This contrasts with the learning that dominates most formal education systems which is based on the assumption that learning takes place as an individual cognitive process, and is separated from our daily activities of living in the world. However, Reid and Nikel conclude that while comparisons of different perspectives of participation help identify their differing characteristics, it is important to not necessarily see social learning as being more important than cognitive learning. It is important to have both, since different situations require different approaches to participation in
environmental learning. There however is a crucial need to protect against the risk of this seemingly relativist orientation, to ensure that participation in education does not become fashionable jargon and that its meaning and use is not lost, as Rahnema (1992) reports has happened in social development. Reid and Nikel (2008) therefore strongly recommend prevention of this slippage through critically exploring and examining the underlying social, political, ideological and instrumental properties of participatory environmental learning. This is how those interested in participatory learning can meaningfully probe and reflect on the ethical purpose of environmental education, and the quality of participation and participatory approaches to learning. They firmly believe that this kind of investigation:

... reveals that teaching and learning convey a serious ethical enterprise, exhibiting substantial ontological, epistemological, and relational dimensions … As Simovska (2000, and chapter 4 by Simovska, this volume) argues, this is where we might begin to distinguish the authentic and inauthentic, as well as the genuine and tokenistic, in participatory activities and discourses of participation. (2008, p.44)

2.4.8 Conclusion
Although there are many more key elements of social learning than I have written about in this section, I have selected the ones discussed above as being most relevant to developing a broad based understanding of social learning to inform this research. Writing this section has helped me to develop a deeper understanding of social learning, enabled me to more helpfully define what I think social learning is, and it has played an important role in influencing this research project. I do feel, however, that it is important to stress that social learning will not be the magic bullet to resolve all sustainability challenges, but it needs to be seen as one of the key approaches to learning that may be integrated into other orientations of learning and practice. In this way, social learning can provide a useful background to support collective decision making and action.

2.5 Organisational learning
Since my research is investigating adult learning within an organisational setting, and how the emergence of staff agency can support organisational development and change to improve wetland management, it is important to understand what the literature says about how learning takes place in organisations. This requires exploring the concept of organisational learning. In the
organisational learning literature, social learning theory has been integrated into organisational learning and become known as: situated learning (after Brown and Duguid), actor network theory (after Fox), learning as cultural processes (after Cook and Yanow), practice based learning (after Gherardi), and cultural historical activity theory (after Engeström). However, before focusing on organisational learning within a cultural historical activity theory approach, which will form the foundation of this research, it is important to take a step back, and explore broadly what the literature says about the type of learning that helps organisations to develop and change.

2.5.1 Introducing learning for organisational development and change

There is a huge bank of literature on how learning helps organisations to change (Senge, 1990; Easterby-Smith & Araujo, 1999; Popper & Lipshitz, 2000; Elkjaer, 2004; Bapuji & Crossan, 2004; Rebelo & Gomes, 2008). A key thread running through much of this research is understanding both how people learn as individuals in organisations, as well as the notion that organisations can learn through staff learning and sharing their knowledge with others in the organisation resulting in learning taking place at the organisational level (Rebelo & Gomes, 2008). Although the concept of organisational learning (OL) goes back to the mid 1960s, the work of Argyris and Schön in the late 1970s was one of the first significant contributors towards developing and introducing OL into the organisational sciences (Antonacopoulou, 2004). Easterby-Smith, Antonacopoulou, Simm, and Lyles (2004) highlight some major contributions to the field of organisational learning as arising from a number of researchers working in different fields: Argyris and Schön’s (1978) contribution towards the development of the concept of single and double loop learning, highlighting that organisations have different levels of learning; Hedeberg’s (1981) notion of unlearning suggesting that learning and change in organisations may be inhibited by the inability of people to forget and unlearn what they have previously learnt; the introduction of the concept of the learning organisation (LO) and its popularisation in the 1990s by contributors such as Senge (1990), who developed tools to support organisations transform into a learning organisation solving practical internal problems and providing organisations with the competitive advantage and improved performance; researchers such as Brown and Duguid (1991) and Cook and Yanow (1993) introducing a socio-cultural perspective into organisational learning, building on the concepts of situated learning and communities of practice; and the importance of learning across boundaries which consolidated

2.5.2 The ‘split’ in organisational learning and the learning organisation

Due to organisational learning (OL) attracting researchers from a variety of disciplines, including economics, psychology, sociology, management, and education, each with differing ontological and epistemological positions, the field has become conceptually fragmented and highly debated (Easterby-Smith & Araujo, 1999; Boreham & Morgan, 2004; Rebelo & Gomes, 2008). In addition, many corporates and consultancies who realised the importance of OL to improving business performance, concentrated on developing various models and tools to support companies develop into a learning organisation (LO) to improve effectiveness and profitability (Peters, 1987; Senge, 1990). These two factors have been critical in shaping the OL field. Rather like the confusion in the literature on how to define social learning, debate is rife as to how OL and LO should be defined, and this looks set to continue into the future. However, it is important to situate this Mondi case study in the domain of learning in organisations most congruent with the epistemological and ontological orientation of this study, and therefore the OL and LO terrain needs to be briefly mapped out.

As a result of this debate, two distinct branches of literature began to develop along the lines of the two concepts of OL and that of LO (Easterby-Smith & Araujo, 1999; Rebelo & Gomes 2008). The former focuses on exploring and understanding the processes of individual and collective learning in the organisational context. It is therefore descriptive and represented by academics. The second group takes a LO perspective that was more prescriptive and practical, and made up predominantly of consultants (or consulting academics). Models and tools are developed to support organisations develop policies and strategies to specifically promote and institutionalise learning within them. This helped organisations to adapt to uncertainty, increase their business performance and therefore gain the competitive edge.
2.5.3 The popularity of the learning organisation and criticisms of it

The LO concept gained significant popularity, especially in the context of the global economic recession of the late 1980s and early 1990s, and with it a proliferation of publications during what is described as the LO golden era of the 1990s (Rebelo & Gomes, 2008). Learning therefore became a key issue for organisational sciences and managers. The popular writings of Tom Peters (1987) and Peter Senge (1990), among others, became very compelling for guiding corporate organisations to develop into learning organisations, to improve their productivity and profitability. In the beginning of my readings about learning in organisations, I was very interested in the idea of working with this branch of literature since Mondi was a corporate that we wanted to support improve wetland management through strengthening learning within the organisation. This literature gave some appealing tools to support this. However with continued reading, I discovered that with this surge of interest in LO and abundant publications, came a confusing assortment of definitions and the resulting conflation and mixing up of the concepts of OL and LO. This gave rise to an increasing number of critical reviews in the literature (Popper & Lipshitz, 2000; Fenwick, 2001; Örtenblad, 2001 & 2005; Rebelo and Gomes, 2008), with some notable comments. For example, Rebelo and Gomes were particularly scathing, saying that during the late 1990s and early 2000s “these concepts seem to have been turned upside down, characterized by criticisms of the concepts themselves, of the messianic idea that LO concept is the salvation of organisations, of the fashion effect that has contributed, to a great extent, to weak conceptual clarification and to a narrow and unsubstantiated empirical basis...” (2008, p.299). Strong criticism also came from Fenwick (2001). Amongst these criticisms Fenwick believed that the concept of the LO saw the organisation as the sole frame for learning to take place in, reducing possibilities for individual learning and potentially providing a narrow focus on what was counted as knowledge in the organisation’s view; managers and educators, with their sole concern over the health of the organisation, were cast in a dominant role over employees who were often seen as deficit learners; primacy was given to instrumental knowledge, and solving problems with it; critical reflection was usurped by the organisation and its interests; and dialogues were depended on for learning with little consideration given to potential social power imbalances reducing equitable participation. Although these criticisms may sound harsh, it is important to note that Fenwick does highlight that the aim of these criticisms were not to consign LO to the dustbin and disregard the concept, but rather to clarify its discourse and stimulate debate and improved understanding.
2.5.4 Individual and collective learning in organisations

Elkjaer’s perspective on the debate between OL and LO neatly encapsulates one of the key elements of learning in organisations, that Fenwick (2001) has already touched on, and is important in differentiating between OL and LO. Elkjaer is so emphatic on the importance of the social aspect of OL that she insists “a theory on OL/LO must take its point of departure in a social learning theory. In other words, it should acknowledge that learning in organisations also has a social aspect. It is not merely an individual affair, as it takes place within the realm of collective human actions and interactions” (1999, p.76). This is a key point that Elkjaer uses to distinguishes between authors such as Senge who see OL and LO as a management tool and requires that organisations be understood as systems, and those who see OL from a socio-cultural learning perspective (discussed more in the section below) such as Brown and Duguid (1991) and Cook and Yanow (1993). Much like Fenwick (2001), Elkjaer believes that when the concepts of OL/LO are used as tools to bring about organisational change, these tools are used as instruments to control organisational processes and bring members’ behaviour into line with that of the organisation. This attempt to alter the thinking, values, beliefs and therefore actions of people, is contrary to the social learning orientation to OL.

Authors such as Senge, who see OL/LO as a management tool, base their work on needing to see organisations from a systems perspective. This Senge says can be used as a framework for understanding interrelationships and patterns of change, as well as the structures that lie beneath complex organisational issues in order to see a picture of the whole organisation (Senge, 1990). However, Elkjaer (1999) insists that this perspective is founded on learning which concentrates on individual cognition. She claims that although it may seem a contradiction in light of systems thinking seeing the whole and not the parts, “it is as if the systems perspective, through its reification of organisational structures and processes, has lost sight of the importance of collective human actions and interactions and, thus of a social theory of learning. The organisational perspective in this approach becomes the perspective of individuals who – separately – encounter organisational structures and processes” (Elkjaer, 1999, p.78). Through this statement, Elkjaer suggests that the concept of LO faces ontological collapse (a notion discussed in section 2.3.1). She therefore sees the management tool approach of OL/LO as being based on the fact that learning takes place as individual cognition through the acquisition of skills and knowledge. This is contrary
to the socio-cultural approach to OL that rather sees learning as taking place through social interaction situated within the work environment of the organisation (Elkjaer, 2004).

Lee and Roth (2007) take the discussion on individual and collective learning further, concluding that it is problematic to separate individual and collective learning. They consider that researchers investigating learning in organisations have sidelined how organisations and their staff presuppose each other, and rather deduced that organisations are structures that determine the actions of the staff. Lee and Roth conducted a longitudinal ethnographic study attempting to understand who learns in organisations and how. This study demonstrated “a way of framing individual and collective learning as coinciding as soon as individual and collective are theorized dialectically: in each individual act, the organisation is both presupposed and constituted” (2007, p.104). Thus the organisation and its staff are interdependent. They therefore saw no separation between individual and collective learning because they both exist dialectically, since individuals make up an organisation, which acts back on the individuals by either enabling or constraining them. Learning is therefore seen as a result of the interaction between the organisational structure and agency of individuals, without structure determining agency. Although Lee and Roth see actions as taking place collectively, they state that it is the individuals that make these actions happen. From these actions outcomes emerge, which open up new possibilities for further actions in the future. This reproduces existing possibilities, while also presenting new ones, therefore demonstrating that learning within organisations is a dialectical process. They conclude that “dynamic and expansively learning organisations presuppose dynamic and expansive individuals; dynamic and expansive individuals presuppose dynamic and expansively learning organisations” (ibid., p.104).

2.5.5 The socio-cultural approach to organisational learning

Even though much of the literature is divided on OL and LO, most authors accept that the two concepts are interrelated, and the one is dependent on the other. Therefore boxing the literature into two different branches may seem too simplistic. However, it does make navigating through the sea of literature a little easier, and importantly helped me decide which literature was most useful for this study.
This research, constituted as a case study of Mondi, is trying to understand if organisational learning and development can be strengthened within the company to improve its wetland sustainability practices, and if so, how this is happening and what learning and development processes are playing an important role. For this reason it is important to follow the OL literature. Within the OL branch of literature, Easterby-Smith and Araujo (1999) distinguish between those authors who emphasise the technical processes and those that highlight the social processes of OL. They see the first group as those researchers who come from a technical perspective, and view OL as the gathering, analysing and reacting to information that arises both within the organisation and outside it. This typically includes the work of researchers such as Argyris and Schön. Easterby-Smith and Araujo then name a second group of researchers who come from a different epistemological position that I am more interested in. These researchers have chosen to understand organisational learning as being socially constructed, as a political process that needs to be engaged with rather than avoided and nullified; and learning is seen as a cultural artefact that is considered as part of the organisational culture. They therefore rather focus on social and cultural processes, and understanding how people make sense of experiences in the workplace arising from both tacit and explicit sources.

Boreham and Morgan (2004) define this socio-cultural approach to OL as learning that is “perceived as being embedded in social and cultural contexts, and best understood as a form of participation in those contexts. This concept of learning implies the simultaneous transformation of social practices and the individuals who participate in them, and thus the social and individual dimensions of learning are mutually constitutive” (p.308). Boreham and Morgan believe that dialogue is the foundational process of learning at its core, which is contrary to the belief of many American management theorists, such as Senge (1990), who use dialogue as a tool at specific stages in the organisational learning process. Importantly, they also identify relational practices as being the social structure to integrate dialogue and organisational learning through promoting staff collaboration. Reporting from a case study they undertook, Boreham and Morgan identified three relational practices as being crucial for the pedagogy of organisation learning in terms of participation in these practices: firstly, the space for staff to create shared meaning needs to be created; secondly, power relationships need to be re-constituted; and, thirdly cultural tools need to be provided to mediate learning. They found that if staff of an organisation were the carriers of
these practices, the organisational culture was shaped to sustain a period of learning when staff went about their everyday interactions.

This socio-cultural approach that has been described would broadly include the work of Engeström (1987), Brown and Duguid (1991), Lave and Wenger (1991), Cook and Yanow (1993), Elkjaer (1999 & 2004). Within these approaches to organisational learning, I focus first on the literature exploring learning as participation in communities of practice of Lave and Wenger (1991) and Wenger (1998b), and then expansive learning after Engeström (1987), as these organisational learning theories are of most relevance to this research.

### 2.6 Social learning as a community of practice

During the late 1980s, Jean Lave and Etienne Wenger began to investigate how learning might take place in situations of co-participation. Instead of probing what sorts of cognitive processes were important, they rather looked at what social processes were best able to provide the framework for meaningful learning to occur. As a result of this searching, they developed the concept ‘communities of practice’ (COP) in 1991 to best explain their model of situated learning as a form of social structure in which collectives of people who are interested in the same topic or activity, learn to improve their knowledge and skills through frequent interactions around this topic or activity (Wenger, 2006). Wenger has gone on to work with a number of corporates to help them strengthen learning within these organisations, using the concept of COPs.

#### 2.6.1 A broad understanding of communities of practice

In their book *Cultivating Communities of Practice*, Wenger, McDermott and Snyder (2002) describe these communities as being made up of people who meet on a regular basis because they value the collaborative sharing of ideas, challenges, and attempting to find solutions. In the process they develop new knowledge that is both tacit and explicit, new ways of doing things, new tools, and stronger relations between themselves. It is through the generation of this knowledge, the value that they place in the collaborative learning, and knowing that they are amongst people who understand and value each other’s perspectives, that members become informally bound to their COP. With time, members develop a unique understanding of their practice, together with a shared
body of knowledge, approaches and practices. Members of the community begin to value their relationships and the social bonding that emerges between them through this common interest. It is these social processes that help to forge individual identities and perhaps even collective identities as a COP. Participants are therefore actively involved in the COPs, and develop identities in relation to them (Wenger, 1998). Learning in a COP is therefore not simply an individual learning in a social context. Lave (1991) is quite clear about this; she considers:

... learning not as a process of socially shared cognition that results in the end in the internalization of knowledge by individuals, but as a process of becoming a member of a sustained community of practice. Developing an identity as a member of a community and becoming knowledgably skillful are part of the same process, with the former motivating, shaping, and giving meaning to the latter, which it subsumes. (p.65)

Fenwick adds to this explanation of learning in a COP, by describing how individuals consequently learn through interactions with the community, its tools, and the activity itself:

... individuals learn as they participate by interacting with the community (with its history, assumptions and cultural values, rules, and patterns of relationship), the tools at hand (including objects, technology, languages, and images), and the moment’s activity (its purposes, norms, and practical challenges). Knowledge emerges as a result of these elements interacting. (2000, p.253)

When understanding how learning is taking place, the community is therefore seen to be the primary unit of analysis. Importantly, this has moved the focus of education research away from concentrating on the individual to more broadly taking into consideration the social context in which learning takes place (Hughes, Jewson & Unwin, 2007).

**The concept of legitimate peripheral participation**

The concept of legitimate peripheral participation characterises how learning takes place within a COP (Wenger, 1998b), which Lave and Wenger (1991) describe as follows. COPs consist of a mix of people who may have relatively little experience in the practice of the group (the newcomers), as well as those who have been around longer (the old timers), and who have been able to develop more knowledge and experience than the newcomers. The newcomers most often begin to learn at the periphery of the community with simple tasks. As they learn more with the support of more knowledgeable people at its centre, newcomers can move towards the centre of the community as
their tasks become more fundamental and begin to make a greater contribution to the co-generation of knowledge and understanding of the practice. As this progressive involvement increases, so the overall picture of the activity of the COP emerges for the newcomers. The relationships, identities, and activities that form and support the generation of knowledge and practice between the newcomers and those who have been around for a while is what is referred to as legitimate peripheral participation. This reflects the social process of newcomers working towards becoming full participants in the practice, providing continuity to the practice of the old timers, as well as the replacement of the older practices and ultimately the old timers themselves. It is important to note that the old and new members are reliant on one another, with new members needing to learn and older members needing to carry on the COP. The achievements of both new and old members depend on the eventual replacement of old timers by newcomers, who in turn become old timers themselves. It is the tensions that this introduces into processes of learning that Lave (1991) says is critical.

Learning through COPs is therefore more than ‘learning by doing’. It is seen as a process of social participation, rather than an acquisition of knowledge only. The situation of the learning is therefore crucial to this process. In this way Lave (1991) describes legitimate peripheral participation as a process that:

... offers a two-way bridge between the development of knowledgeable skill and identity – the production of persons – and the production and reproduction of communities of practice. Newcomers become old timers through a social process of increasingly centripetal participation, which depends on legitimate access to ongoing community practice. Newcomers develop a changing understanding of practice over time from improvised opportunities to participate peripherally in ongoing activities of the community. Knowledgeable skill is encompassed in the process of assuming an identity as a practitioner, of becoming a full participant, an old timer. (p.68)

An important aspect of legitimate peripheral participation is the learning by COP members that are at the periphery of the community, and whose participation may not necessarily be active. Many of these members may be quiet and watch the proceedings of the active members of the community, as they often feel that their opinions are not valuable, appropriate, or they feel awkward voicing them. However, Wenger, McDermott and Snyder (2002) believe that this type of learning is
essential in a COP, as they might still be intently participating but rather in their own minds without expressing this vocally, through what Archer (2000) would call the ‘inner conversation’. In their own way, these members of the COP may be learning through their private conversations. Therefore it is important not to dismiss this apparent passive participation, as a lack of interest or participation where no learning may be occurring. It is this type of learning by peripheral members of the COP that Rogoff et al. (2003) call learning through intent participation. Their research indicates that observation can be a crucial aspect of participation. This is important as it is very easy to dismiss the quietness of newcomers as a lack of interest and will to learn. However, Rogoff et al. (2003) have clearly shown that people can learn by actively observing and listening to those who are more knowledgeable while participating in the activities of the COP. This notion of learning in a COP needs to be kept in mind when working in the complex cultural context that makes up South Africa. The culture of some racial groups may mean stricter rules of engagement between members of a community of practice (Ndletyana, 2003). This can result in learning with intent participation playing an important role in the learning processes of a COP.

**Participation in communities of practice**

The main pillar on which COPs rest is that of participation. But not just any participation such as attending local events or meetings, but meaningful participation that involves the active participation of people in the practices of social communities, such as those involved in the management of Mondi’s wetlands, and the building of individual and collective identities corresponding to these communities. In order for social participation to be considered as a learning process in a COP, Wenger (1998a; 2000a) highlights how important it is that participation involves discussion amongst members around four components. Firstly, he says that members need to have meaning, as a way of talking about our ability to experience our life and the world as meaningful in a shared area of interest that members are committed to. Secondly, members are practitioners, and therefore must engage in a shared practice, as a way of talking about shared experiences, tools, vocabulary, lessons learnt and understandings that sustain co-engagement in action. Practice is what differentiates a COP from a community of people interested in a specific subject or activity. Thirdly, being a community provides a way of talking about the social formations that delineate our practice and through participation in this community, we develop our competence. Members must participate in joint activities, develop relationships so they can work together, share information,
learn from each other, and bind together to form a social identity. Lastly Wenger highlights the development of an identity, as a way of talking about how this learning supports the growth of an individual’s identity of who they are, as well as in relation to that community. Therefore to develop COPs, these four characteristics have to be cultivated at the same time. This essentially is what defines a COP and enables it to manage knowledge.

Wenger, McDermott and Snyder (2002) maintain that COPs are literally everywhere, all around us, and we already participate in many of them without consciously knowing it. They have been around for a long time, but they have mostly not been recognised as such. It is only when they are given a name that we are able to better understand the importance of the informal learning that is generated within these social learning processes, and we can actively and consciously nurture and support their growth. In other words, a COP can be seen as the ‘living curriculum’ that an apprentice uses to learn about a trade from a master (Wenger, 2000a). Importantly as Lave points out that learning between the master and apprentice is not of a transmissive orientation: “the terms master and apprentice, as they are used here, are not intended as a disguise for teacher-pupil relations: Masters usually do not have a direct, didactic impact on apprentices' learning activity, although they are often crucial in providing newcomers to a community with legitimate access to its practices” (1991, p.68). Wenger believes that it is this type of social learning that can support personal transformation, and so help to develop one’s own identity. It is this deep-seated transformation of individuals, and as a collective, that has the potential to support organisational learning for improved sustainability practices.

2.6.2 The use of communities of practice by corporates

The concept of a COP has been successfully integrated into the operations of many leading business companies and organisations, such as Daimler Chrysler, British Petroleum, Xerox, and the World Bank (Wenger, 2004). These companies have used COPs to manage their knowledge strategically, as their traditional forms of knowledge management revolving around information systems was insufficient. Wenger (1998b) highlights how even in large organisations such as corporates, people learn through participating with a collection of people with whom they frequently interact. It is these communities that he says are the most active and versatile resources of knowledge and which form the foundation of an organisation’s ability to understand and learn.
In providing guidance to companies wanting to cultivate COPs, Wenger defines the word ‘management’ as to “care for, grow, steward, and make more useful” (Wenger, 2004, p.1), rather than some more conservative traditional understandings of the word. In a fun, but meaningful way, he also defines knowledge as “when you have it, you are likely to understand situations and do the right thing; when you don’t, you are in trouble” (ibid.). Wenger goes on to argue that knowledge management lies with the practitioners who do the hard practical work that makes the money for a company, rather than merely with the professional managers who manage those who do this work. He bases this on the argument that it is the practitioners who mostly use knowledge in their daily activities, and who are therefore in a better place to manage it, bearing in mind that this knowledge is socially constructed together with their colleagues; it is too multifaceted for any one individual to generate on their own (e.g. wetland management practices as discussed in chapter 1). Practitioners have a special relationship with each other, as they share problems, perspectives, debate possible solutions, and understand where each other is coming from. This relationship of trust and striving for a common good, allows them to learn from one another and build on each other’s experiences, as was evident in the early MWP engagements with Mondi staff. This is why practitioners are so good at managing knowledge, and this, Wenger says, is where COPs are so important. They provide the social framework for the management of knowledge in the care of the practitioners, and not necessarily professional managers. This is the reason, Wenger argues, that “communities of practice are the cornerstone of knowledge management” (2004, p.2) within an organisation.

2.6.3 Cultivating communities of practice

COPs exist because of their capacity to create excitement, value, and relevance amongst their members about the topic or activity that has brought them together, as well as their ability to attract new members. Wenger, McDermott and Snyder (2002) believe that it is this aliveness within the community that is a key element of cultivating successful COPs. In the early period of the MWP working with Mondi staff on surveys assessing wetland health, and rehabilitating degraded wetlands, a similar excitement and aliveness could be found between the Mondi foresters and the environmental staff. In those days there were no community engagement facilitators, so they were obviously not included. So many elements of the COP discussed so far, resonate deeply with my
experiences of how we used to work together with Mondi staff to try and strengthen staff wetland knowledge and experiences to catalyse improved wetland management. One of the reasons may also be that we did not have any grounded theory that supported our practice, such as that which the concept of communities of practice proposes, and rather worked with how we thought we best, and were therefore guided by our own ideologies and beliefs. However, as described in chapter 1, for a number of speculated reasons, the enthusiasm, interest and ability of Mondi staff to continue this wetlands work declined.

In an effort to design, catalyse and nurture a COP, based on supporting and growing this aliveness that Wenger et al. highlight as being so important, they have shared seven principles that are at the heart of cultivating a successful COP (2002, pp.51-63). These principles are not meant as recipes for cultivating COPs or ensuring predetermined results, since COPs are supposed to grow organically; rather, they demonstrate the thinking behind the evolution and growth of a COP, and provide catalysts for creating the liveliness, passion, energy and relationships required for the continued voluntary participation of members and the growth and development of the COP. These principles are:

1. **Design for evolution:** Design a COP so that it is flexible enough to accommodate the evolution that a COP requires to grow organically.

2. **Open dialogue between inside and outside perspectives:** Encourage new information to be brought from outside the COP, so that there is dialogue between the perspectives of members in the community as well as those outside it, on what the COP could achieve and possibilities that the insiders may not see.

3. **Invite different levels of participation:** Invite members to participate in the COP at different levels of participation, encouraging movement between these levels, and making all participants feel like they are full members, irrespective of their level of participation. These levels range from the small core group of members who actively participate, take on projects and lead the COP; to the active group who are also small in number and participate in activities, but less frequently and actively than the core group; to the majority of the COP members on the periphery who essentially watch what the core and active members are
doing; and lastly, to those people who are outside the community, who are not members and do not participate, but who are interested in the COP.

4. **Developing both public and private spaces**: Develop both public spaces that are open to all community members for informal discussions around current issues, as well as private spaces where one-on-one deeper networking, information sharing, and dialogue between community members may take place. The key is to develop activities that use the strengths of one space to support the growth of the other space.

5. **Focus on value**: Focus on creating value through activities, events, and relationships that encourages the emergence of members to realise and be explicit about the value that the COP brings to them. Many of these activities may be small everyday informal interactions, such as discussions to solve a problem that at the time may appear meaningless, but later an idea may be realised and implemented.

6. **Combine familiarity and excitement**: Combine regular meetings and activities (which provide a sense of familiarity and comfort as a stable and safe platform for open and free discussions, for making connections and building relationships) with events that generate excitement and vibrancy, a sense of adventure, and most importantly, provide and generate divergent ideas and thinking.

7. **Create a rhythm for the community**: Creating a blend of these different community events is important in influencing the heartbeat and therefore the rhythm of a community, which is a key pointer of how alive a community is. For example, finding the balance between a mix of open community meetings that provide a diversity of new and stimulating ideas and opinions, and frequent small group dialogues that focus on particular issues and projects and provide the security of close relationships between individuals, influences this community rhythm. Rhythms change as the community grows and evolves, but it is important to find the right rhythm during different growth periods.

**2.6.4 The potential relevance of communities of practice to Mondi**

The principles highlighted above may be an important guide for supporting the different Mondi staff who are responsible for wetland management, to strengthen their wetland knowledge and practice and learn to work better together through using a COP approach. The COP can provide the social framework to encourage the collective responsibility of wetland management, and
strengthen organisational learning and development. At present, the main responsibility for wetland management is supposed to be shouldered by the foresters, but in reality it is fragmented between the foresters, environmental specialists, and community engagement facilitators all working in relatively independent and un-harmonised roles, as reported in chapter 1. In addition, the level of wetland knowledge differs significantly between the environmental specialists who have a good basic understanding of wetlands but need to develop more depth to their understanding, and the foresters and community engagement facilitators who generally have a superficial and rudimentary knowledge of wetlands and their wise use. Since COPs are not bound by formal boundaries, it is anticipated that the concept can provide a good framework to encourage Mondi employees to work together across traditional professional boundaries, integrating the different skills of the foresters, environmental specialists, and community engagement facilitators. Through collaborative efforts these practitioners may be able to work towards collectively understanding their wetlands better as well as identifying and addressing any contradictions and axes of tensions that may be inhibiting the coordination, learning, and effective practice of wetland management. In this way, wetland management may become better integrated into the forestry operations, which was one of the original problems identified in chapter 1 as inhibiting the improvement of wetland management.

Since it is the COP that could steward the wetland knowledge within Mondi, when staff leave the company an informal structure will be available to support the professional learning and development of new replacement staff, thereby increasing organisational memory which as mentioned in chapter 1, has been a challenge for Mondi in the past. In this way, COPs have the potential to sustain the organisational learning, development, and knowledge management structures required to induct new staff into wetland management, providing for the continuity of knowledge and practice so lacking in the past.

COPs therefore have the potential to connect the ideals of Mondi’s wetland management enshrined in its environmental management strategy to its environmental performance, by focusing on improved wetland related learning, knowledge management, and practice.
2.6.5 A critical view of communities of practice

Although the COP approach to learning is a very appealing model of learning, knowledge management and professional development, it does have a number of critics. It is important to understand some of the criticisms that have been levelled against COPs, to see whether the COP approach is best suited to this research, rather than another model of organisational learning and development.

A critical reflection by Wenger, McDermott and Snyder

Wenger et al. (2002) provide an insightful account of what they see as the downsides of COPs. This includes highlighting how tensions within an individual COP can lead to a number of disorders within it such as factionalism, narcissism, disconnectedness, egalitarianism, and dogmatism, effectively reducing the effectiveness of the COP. They also list the downsides of a constellation of COPs. While acknowledging that crossing boundaries between COPs can be a catalyst for deep learning, they warn that the development of boundaries between COPs can either inhibit movement of knowledge outside them, or that knowledge can leak outside the organisational boundaries. They also focus on typical organisational barriers that can inhibit the development of COPs, such as an organisational culture that does not acknowledge the importance of learning and may even resist it, or the overly focussed attention by management on the short term concrete outcomes, or illogical office politics. While acknowledging that there is no way to prevent these downsides, they stress how important it is to identify and be aware of such potential pitfalls, and to work with them to try to overcome them. In light of these shortcomings they also provide a variety of measures to counter them.

However, there are a number of more substantial criticisms levelled against the concept of a COP and how learning takes place within it, in addition to the downsides of the practical application of cultivating COPs that Wenger et al. have raised. Some of these critical views most relevant to this research follow. What is interesting is that none of the researchers do entirely dismiss the concept of a COP as a model of professional learning and development, but highlight these shortcomings in order to strengthen it.
Conceptual limitations of learning in a COP

Anne Edwards (2005a), although not criticising the COP approach to learning as she sees many aspects of it as being valuable, noted three broad limitations regarding the concept of learning. These limitations were mostly drawn from Wenger’s (1998b) work on the learning, meaning and identity of COPs, rather than from that of Jean Lave, whose work she acknowledged as not always having these shortcomings. Firstly, Edwards felt that the idea of a COP is too loose; this leads to ambiguities, and it needs tighter boundaries to delineate exactly what it is. She explains that defining a COP as a community where members mutually engage, have a joint enterprise and a shared repertoire, as Wenger (1998b) describes, is too broad. Edwards states that this could include a community of customers all using a shop loyalty card, or being stuck in traffic after work each evening, at the same bottleneck, with a whole lot of other drivers could also be termed a community of practice. Hughes et al. (2007) have a similar concern, and warn that “the concept has been applied so widely that, on occasion, it has seemed in danger of losing specificity and analytical edge, sliding into a catch-all descriptive term” (p.4). Fuller (2007) believes that it is this lack of clarity of defining COPs, that has made is difficult to operationalise the concept of a COP in a consistent way. This is certainly a recent impression that I have gained in my wetland and education conservation work, where colleagues frequently use the concept of a COP as a simplistic and popularised term without actually understanding it meaning. Secondly, Edwards (2005a) does not see how a COP approach enables participants to learn something new that is not already known. She criticises the lack of explanation of how new knowledge is generated and learnt. Similarly, Fuller (2007), expresses her concern, that political and economic realities and changes are a constant, unstable and unpredictable feature of most organisations, and she questions how the concept of COPs will be able to generate the new knowledge enabling them to deal with this continual change. This is of concern to my research, since neither the Mondi staff nor I know what is inhibiting the wetland learning and practice in Mondi, and we need to find this out. I therefore need a theoretical basis that can support the development of this new knowledge. The third limitation and the most critical one noted by Edwards was that a COP does not clarify what is learnt, but only what the COP does. She therefore believes that the concept of learning in and through a COP needs to be refined, and that it is important to understand better how learning by members is evidenced in a COP.
Criticisms of the participatory aspect of learning in a COP

In discussing how Lave and Wenger’s work had been pivotal in focusing the attention of researchers and educators away from the traditional ‘learning through acquisition’ approach, and to the ‘learning through participation’ approach, Fuller (2007) notes three other important criticisms of the participatory aspect of learning in a COP. She drew on research undertaken by Hager who believed that the participation metaphor of learning should also include aspects of acquisition, and therefore should include both ‘process and product’. Fuller cited Hager as having the following three key criticisms of how Lave and Wenger described learning through participation:

First it overlooks the importance of the process of ‘construction’ in the social world in which learning, the self and the world are mutually constituted and reconstituted. Second, he [Hager] points out that there is something inherently conservative about the notion of participation, in that it aligns with continuity and reproduction rather than discontinuity and transformation. Hence in Lave and Wenger’s terms, a successful path from legitimate to full participation typically appears to occur with minimal changes to practice or social relations . . . finally, Hager . . . objects to the idea that ‘participation’ (or for that matter any other factor) can provide an explanation for learning that has universal applicability. (Hager, as cited in Fuller, 2007, p.22)

One of Fuller’s (2007) remaining criticisms, is that learning in a COP concentrates too much on learning that takes place within the community, and it fails to acknowledge the importance of learning across the boundaries that are present in multiple social settings and networks of relationships that characterise learning that might take place at the boundaries of a communities.

Marginalisation of individual cognitive processes

A concern that has already been discussed earlier in a number of the sections above, but arises again in the context of a COP, is that of the COP approach to learning sidelines the importance of the individual cognitive processes in the learning, in favour of the experience of learning that is situated in community based social processes. Billett (2007) feels strongly about this, and believes it is important to highlight the individual within social learning and practice. He stresses that the relations between members and the COP as an entity are relational. Billet explains that:

... rather than the individual being posterior to the social practice in which they engage, the relationship is agentic on both sides. That is, while the social situation can press its case through its norms and practice, these are mediated by the individual’s agency in the form of
what others describe in terms of individuals’ subjectivity, intentionality and interest. (2007, p.56)

Billet’s research demonstrates that the individual plays a central role in mediating their learning within the social experience of a COP, with an individual’s personal factors such as agency, interest, intentionality, and their conceptions playing an important role. An interdependence arises between the personal and social elements that are relational. Understanding the relations between the individuals and the social practices is thus of critical importance to understanding how learning is taking place. Billett’s research has highlighted how the personal histories and experiences of people played a critical role in moulding how they interacted with the norms of the workplace and their practice, despite the situated-ness of their learning and practice. In this way, Billet sees the personal within social practice as key for individual learning as well the reproduction of the practice of the community.

Instrumental use of a COP for achieving organisational goals
An important criticism of COP is made by Hughes et al. (2007): it refers back to the differentiation between organisational learning and the learning organisation discussed earlier in section 2.5.2. Hughes et al. discusses the original theory of learning that Lave and Wenger (1991) developed as an academic approach to carefully reveal how learning is taking place as participation, and therefore learning as it actually is, through legitimate peripheral participation. He then highlights how this theory of learning has become lost in its translation to becoming a model of how learning should be, through the COP approach. Ironically, the former could be seen as being more aligned to the academically orientated organisational learning branch of the literature, and the latter to belonging to the learning organisation branch where the consulting world uses the COP approach as a tool to prescribe how learning should take place. Billett (2007) goes so far as to say that Wenger’s (1998) later research took an important turn from the original 1991 work, where he uses the COP approach as a tool to manage individuals’ learning and professional development in a decidedly instrumental way, designed to achieve a number of organisational goals. Hughes et al. (2007) are concerned that the COP approach has now grown to be so popular with practitioners and workplace management consultants, who interestingly he refers to as the ‘COP consultancy movement’, which in the process the original theory of learning through legitimate peripheral participation has lost its currency. This ambiguity has resulted in many researchers and
practitioners being uncertain how to use the COP approach. This has led Hughes et al. to ask: “should it be superimposed onto other concrete learning contexts? Should it be used as a model of practice? Or should it be revised with recourse to further research in a way that is different from how it has been ‘practised’ and presented in Lave and Wenger’s work?” (2007, p.36). These are indeed important questions to be considered in this research.

The lack of an historical approach to COPs
A last important criticism that I have noted, was that made by Engeström (2007a). He identified that the concept of a COP takes little consideration of the history of the present, and he views this as being a very ahistorical way of understanding learning in communities: “neither Lave and Wenger (1991) nor Wenger (1998) situate their communities of practice in the history of real societies and patterns of organising work. Wenger (1998, pp.87-89) does take up history, but only as a general and abstract issue of remembering and forgetting, reification and participation” (ibid., p.43) Engeström criticises this lack of understanding the past, especially considering the importance of the master-apprentice relationship that is core to the centripetal movement of newcomers at the periphery of a COP who gradually evolve to become old timers in the centre. The apprenticeship case studies that Lave and Wenger presented in their seminal 1991 text Situated Learning: Legitimate Peripheral Participation, formed the basis of the empirical evidence supporting their theory of situated learning as participation in a community. Historically Engeström says this master-apprentice relationship has seen a significant amount of oppression by the masters, and rebellions by apprentices against their masters. Since this centripetal movement is a core aspect of a COP, Engeström views the historical development of a COP and its context as being critical to understanding how learning is taking place as participation in that community.

The shortcomings of the concept of COP as mentioned in this section cannot be ignored, and need to be taken into account in developing the theoretical framework for this research. However, as mentioned in the beginning of this section, it is important to keep in mind that none of these authors criticising the COP approach dismissed the concept. Instead, they were pointing out its weaknesses, which need to be considered and overcome or worked around in order to strengthen this approach to situated learning. If these shortcomings are dealt with, it may be possible to use elements of the COP approach to support organisational learning and development in Mondi for
improved wetland practices, together with another broadly epistemologically compatible model with a similar, but also uniquely different, participatory social learning orientation. These criticisms of the COP approach, led me to search for another model of organisational learning, which had potential to be able to deal better with the shortcomings highlighted in this section, not entirely dispensing with the COP approach. This is the expansive learning approach to organisational learning, which is derived from Cultural Historical Activity Theory.

2.7 Expansive learning and CHAT as an approach to organisational learning

Within the broad socio-cultural approach to organisational learning mentioned in section 2.5.5, Finnish researcher Yrjö Engeström has developed a special kind of organisational learning called ‘expansive learning’ that is based on cultural historical activity theory (CHAT) (Engeström, 1987; Virkkunen & Kuutti, 2000). Interestingly, even though Rebelo and Gomes (2008) analysed the evolution of the concepts of organisational learning and the learning organisation over the past 20 years, covering many of the key authors and raising some very pertinent future research issues, they appear to have overlooked some critical OL work in the cultural historical activity field led by Engeström. So too has most of the mainstream literature on OL, even that within the socio-cultural approach. A reason for this oversight could be that the field of activity research appears disinclined to get involved in the mainstream OL/LO debate, and seldom uses the words ‘organisational learning’ or ‘learning organisation’ in its writings. Another reason could be that a significant amount of research on activity systems also focuses on inter-organisational learning, not just intra-organisational learning, such as those captured in the book *Activity Theory in Practice: Promoting learning across boundaries and agencies* (Daniels, Edwards, Engeström, Gallagher, & Ludvigsen, 2013). These reasons may have contributed to this oversight; however, expansive learning clearly fits into the concept of OL, and the literature on activity theory is growing rapidly and fairly extensively, and therefore warrants attention in this research.

A brief introduction to expansive learning

Engeström (2001) believes that most standard theories of learning focus on learners or organisations acquiring stable knowledge that is reasonably defined from a more learned teacher who knows what needs to be learned, and this results in some lasting change in behaviour. However, he poses the problem that much of the learning that takes place in organisations violates
this presumption, as in the workplace people are often learning knowledge that is not stable or known beforehand. The combined training of individual staff to develop new skills and knowledge will not help face these learning challenges. The problem is therefore an organisational learning one that cannot be solved by training individuals only. Engeström says that it is important to learn new forms of activity that have not yet been identified, resulting in learning as the new forms of activity are being created, without a more knowledgeable teacher who knows the answer, although external knowledge of the activity may exist elsewhere. It is this type of learning that can support the development of a reflexive society to deal with the growing risks faced by society, as discussed in section 2.4.5. Engeström is also adamant that “theories of organisational learning are typically weak in spelling out the specific processes or actions that make the learning process” (2000, p.150). This is echoed by Boreham and Morgan who conducted a socio-cultural analysis of OL and stated that “the concept of organisational learning has been widely debated and frequently contested by educationalists, but the specific processes and actions which constitute this form of learning have received relatively little research attention” (2004, p.307). Engeström has therefore put forward the theory of expansive learning to understand the type of learning required to learn new knowledge and new forms of activity that are not previously known, and the expansive learning cycle as a methodology for empirically researching OL this, discussed in more depth in the next chapter.

2.8 Conclusion

Based on the review above, it would seem that CHAT and expansive learning can provide a rigorous epistemological framework that can help to address the three research questions posed in section 1.9. CHAT and expansive learning are able to overcome many of the shortcomings posed by the COP approach listed in section 2.6.4, and this will become more apparent in the next chapter which will describe the potential of CHAT and expansive learning in more detail. Through providing an epistemological framework that overcomes some of the problems of COP social learning theory, CHAT and expansive learning could offer theoretical guidance that can potentially enable the MWP to work together with Mondi in a more meaningful way to explore if expansive social learning processes can contribute to developing staff reflexivity and agency for improved wetland sustainability practices. Additionally, it rises to the challenge that Wals posed to environmental educators when he stated that “a key challenge for EE, ESD, EFS, and LfS lies in facilitating dialogical
social learning that helps create a more reflexive society capable to respond adequately to emerging crises and challenges irrespective of their label” (2007, p.43).

There are aspects of the concept of COP which are of value to my research, despite the shortcomings mentioned. Although not a core part of the research, I would like to see if, through the collaborative efforts of the expansive learning process, a community of wetland practice emerges as a social learning structure may be able to support participating Mondi staff after this research has ended. This may allow for continual interaction of staff on a regular basis in order to grow and expand wetland knowledge and management into the future. The COP may also have the potential to sustain the knowledge management structures required to induct new staff into wetland management and provide for the continuity of knowledge and practice so lacking in the past.
CHAPTER THREE:

Theoretical and philosophical framework

3.1 Introduction

In this chapter I begin by explaining CHAT and the theory of expansive learning used to guide social learning processes in this study. The philosophy of critical realism provides ontological depth to the research, and helps to deepen understanding of CHAT and expansive learning. For this reason, the chapter then goes on to discuss critical realism as a philosophy underlabouring CHAT and expansive learning. Archer’s realist social theory, which developed out of critical realism as an ontologically located theory of how and why social change occurs, takes account of socio-cultural interaction, structural interaction, and the formation of new knowledge and practice. This strengthens interpretation of changes emerging from CHAT and expansive learning analyses. The chapter presents the theoretical and philosophical framework of the thesis in this order, and demonstrates how my thinking and reading expanded and grew, as I strengthened the research with greater ontological depth and social theory, while retaining the internal consistency between ontology and epistemology. Each aspect of the framework is discussed, and its relevance to the research highlighted.

3.2 Epistemological theories supporting the research

Part of the research explores if a number of Mondi staff who have a responsibility for wetlands, can be supported through interventionist research to identify and deal with factors seen to be inhibiting wetland sustainability practices. In order to do this it is important to probe beneath the surface of these factors, and identify the root causes that have inhibited transformation so far. According to Engeström (1987, 2000, 2001) and Daniels (2008) these causes are most likely to be related to various tensions and contradictions of cultural and historical origin. For this reason and the additional reasoning discussed in chapter 2, I drew upon cultural historical activity theory (CHAT) and the theory of expansive learning in mobilising collective agency to improve wetland
3.3 The origins of CHAT and Expansive Learning

The concept of organisational learning can be situated within a strong theoretical framework based on Russian psychologist Lev Vygotsky’s principle that mind cannot exist outside of social practice (Boreham and Morgan, 2004). It therefore has a long rich history stretching back to the 1920s being founded on the work of Vygotsky. Leont’ev and Luria were two of Vygotsky’s colleagues who first began to use the term ‘activity’, and went on to develop his work as CHAT. More recently in the 1980s and 1990s, CHAT has been further developed by others including James Wertsch, with significant developments by Yrjö Engeström who based the theory of expansive learning on it (Engeström 2001; Daniels, 2008). Therefore, although the first researchers to write about organisational learning in any detail were Argyris and Schön in the late 1970s, Boreham and Morgan believe that “Vygotsky and Leont’ev provide a more rigorous account of organisational learning than Argyris and Schön (1996 – first edition 1978)” (2004, p.309).

Before further discussing CHAT and expansive learning as theories providing an orientation to organisational learning, it is important to trace their historic roots back to Vygotsky and the evolution of CHAT. What follows is a brief overview of the life of Vygotsky and the theoretical concepts that he developed which have formed the basis from which CHAT and expansive learning have emerged. Although this historic detail might appear to be superfluous, I found it helped me to better understand and situate the historical context, thinking, and theoretical basis of social learning from where CHAT emerged. It also ‘personalised’ CHAT and helped it to come alive in my mind, rather than it being an abstract theoretical construct.

3.3.1 Vygotsky’s life in a nutshell

Lev Semenovich Vygotsky was born in 1896 in Belarus, a republic that was previously part of Russia. He grew up in a middle class Jewish family of eight children. Vygotsky was an exceptional student from an early age, taking a great interest in philosophy and history. Fortunately he was accepted
into the University of Moscow, despite the anti-Semitic quota system that limited the entry of Jewish students. Here he studied law, and philosophy as a subject on the side since the study of philosophy at the university was restricted. After graduating, Vygotsky became a teacher in the town of Gomel in 1917, where he taught his favourite subjects of literature and philosophy at a vocational school, and then psychology at a local teachers college (Vygodskaya, 1995). It was here that he married Roza Smekhova in 1924, and had two daughters. Vygotsky excelled at his post in Gomel, and set up a psychological laboratory to conduct scientific experiments from which he produced his first psychology reports. These formed the basis of a paper he presented at the prestigious Russian Psycho-neurological Congress in Leningrad in 1924 criticising the work of Pavlov’s reflexology/behavioural approach to psychology which was dominant at the time. The presentation was well received and this launched his career in Psychology. After the Congress, he was immediately offered a post at the Institute of Experimental Psychology of Moscow, which he accepted at the age of 27. It was here that Vygotsky worked with two other renowned psychologists, Aleksei Leont’ev and Alexander Luria, and together they became a closely knit research team. He became leader of the team, and together they undertook a critical review of contemporary psychology. Vygotsky would only live 10 more years during which he produced his massive volumes of 270 pieces of scientific work (Vygodskaya, 1995) that changed the world of psychology as we know it today. Life was not always smooth in the political turmoil of Russia in the 1930s of the Stalin era, where the work of Vygotsky and other psychology researchers working in the field of paedology fell foul of the thinking of Stalin’s regime. This difference in ideologies resulted in the practice of paedology being prohibited just before Vygotsky’s death, and his name and work being banned in the Soviet Union for over 20 years. Amazingly the importance of Vygotsky’s work has only been recognised in the West during the last 30 years. Although one of Vygotsky’s most recognised books, Thought and Language was first published in English in the 1960s, it was only when Mind in Society was published in 1978, that his work became widely noticed and valued by researchers in the West. Tragically, after contracting tuberculosis in 1925 from his brother whom he was caring for, Lev Vygotsky died in 1934 at the young age of 37. Many consider him to be a genius, to have accomplished so much in the world of psychology in such a short lifespan.
3.3.2 Influence of Marxism on Vygotsky’s thinking

Vygotsky’s thinking was heavily influenced by his socio-cultural context and political beliefs. He strongly believed that the Russian revolution would improve the condition of the Russian people and bring about a more equitable classless society. Vygotsky therefore applied the principles of Marxist thinking to understand the nature of human psychology (Ratner, 1998). He staunchly worked towards developing a Marxist psychology, which Edwards describes as “a psychology that explained how the collective was incorporated into the individual through processes of mediation and which could be used to transform ways of thinking and acting to the benefit of the greater good” (2005a, p.55). Vygotsky was passionate about his work and stressed that, "Marxist psychology is not a school amidst schools, but the only genuine psychology as a science. A psychology other than this cannot exist. And the other way around: everything that was and is genuinely scientific belongs to Marxist psychology" (Vygotsky, as quoted in Ratner, 1998, p.456). For Marxists there was no distinction between social and individual development, therefore social theory formed a critical part of their psychology, philosophy and education theory. For Vygotsky the psychology of education was a field that was close to his heart, to which he dedicated a fair proportion of his research time.

3.3.3 Vygotsky’s theoretical concepts

Based on Marxist social theory, Vygotsky drew on dialectical methods on which to base his approach to individual psychology (Daniels, 2004), as opposed to the mechanistic approach of Pavlov’s reflexology school of thinking which dominated psychology at the time. Vygotsky’s theoretical orientation can best be understood through three general themes that cannot be seen as separate or hierarchal. An understanding of their interconnectedness is vital for understanding his approach.

a) Genetic or developmental analysis: It was from this dialectical approach that Vygotsky developed his genetic analysis to mental development that he called the general genetic law of cultural development. This theorised mental development as a socio-genetic process with learning resulting from social interactions between individuals and society, with the internalisation of culture and social relationships (Wertsch, 1991). He firmly believed that “the specific structures and processes of intra-mental functioning can be traced to their genetic precursors on the inter-mental
plane” (ibid, p.27). Vygotsky therefore made genetic analysis the basis on which he studied mental development. The analysis assumed that one can only understand different phenomena of mental functioning if the origin and historical transition of these phenomena are understood (ibid.). Therefore the history of these phenomena is the foundation of the analysis, and should not be seen as being secondary in importance.

b) Higher mental functioning of individuals is social on origin: Vygotsky saw cognitive abilities as higher mental functions (abstract reasoning, language, logical memory and decision making), which have their origins in human interaction and evolve through the transition of lower mental functions (such as those children are born with, including elementary perception, attention and will) (The Mozart of Psychology: Lev Semenovich Vygotsky, 2005). He therefore believed that it was important to understand the social relations in which an individual lives if one is to understand the individual. Hence social processes give rise to individual processes, and “interpersonal/inter-mental processes are the precursors and necessary condition for the emergence of individual/intra-mental (psychological) processes” (Cole & Wertsch, 1996, p.254). Vygotsky was quite clear about this in his notion of the ‘zone of proximal development’. He defined this zone as the distance between a child’s “actual development level as determined by independent problem solving and the level of potential development [the higher level] as determined through problem solving under adult guidance or collaboration with more capable peers” (Vygotsky, 1978, p.86). The potential that each person has for learning is therefore shaped by the social environment in which the learning occurs. Vygotsky saw the transition from lower to higher mental functions as being facilitated by mediated activities and psychological tools, which allows humans to move from impulsive behaviour to instrumental action. It is through the social interaction of the zone of proximal development that we learn to use the psychological tools at our disposal (Nicholl, 1998).

c) The notion of mediation by tools or artefacts: Vygotsky believed that human thought and action is mediated by psychological tools (or signs, such as language) and technical tools (such computers, axes and ploughs) at both an individual and social level. He used this idea to develop a unit of analysis that demonstrated how a child (the subject) was thinking, through the way a child uses a tool to act on and change problem (the object) the child was working on (Edwards, 2005a). The tool therefore mediates the child’s action, which in turn reveals how the child is thinking about working
on the problem. This became Vygotsky’s greatest contribution to the world of psychology, as Engeström explains:

The insertion of cultural artifacts into human actions was revolutionary in that the basic unit of analysis now overcame the split between the Cartesian individual and the untouchable societal structure. The individual could no longer be understood without his or her cultural means; and the society could no longer be understood without the agency of individuals who use and produce artifacts. This meant that objects ceased to be just raw material for the formation of logical operations in the subject as they were for Piaget. Objects became cultural entities and the object-orientedness of action became the key to understanding human psyche. (2001, p.134)

Vygotsky’s work focused more on psychological (signs) than technical tools, and it was his interest in human semiotic action that highlighted the role of sign systems, such as language, in inter-mental and intra-mental functioning. He therefore saw language and other sign systems as mediating human action (Wertsch, 1991). Language is probably the most important psychological tool that mediates human thoughts, feelings and behaviours. It helps us construct reality, and gives us the tools to develop self-awareness that determine our actions. Vygotsky therefore believed that language was the vehicle that we use to carry the concepts that help us make sense of the world around us, and act on it. Therefore the more sophisticated the concepts, the more able we are to act in and on our surrounding world (Edwards, 2005a). Trish Nicholl sums up the importance of the notion of mediation by psychological tools to learning in saying that “what we learn will depend on the psychological tools available to us, and which tools are available will depend on the culture we live in. Our thoughts, our actions, and our experiences are culturally mediated” (Nicholl, 1998). This underscores Vygotsky’s famous summation: “the central fact about our psychology is the fact of mediation” (Vygotsky 1982, as cited in Cole and Wertsch, 1996 p.252).

3.3.4 The use of Vygotsky’s ideas

Vygotsky’s sociocultural approach to cognitive development has been recognised as having significant implications for cognitive science, and as a result a number of theoretical approaches have arisen that consider cognition as being situated and/or distributed. Some of these include cultural historical activity theory, sociocultural approaches, situated learning models and distributed cognitional approaches (Daniels, 2004). Building on these, a number of theories have developed that are been applied in a variety of social learning contexts, including communities of
practice, cultural historical activity theory, and expansive learning. Now that a broad picture has been painted of the historical roots of CHAT, I will begin to expand from the theoretical concepts of Vygotsky to the emergence of the concept of the activity system, and the evolvement of CHAT, as developed by two of Vygotsky’s colleagues Aleksei Leont’ev and Alexander Luria, and more recently, by Engeström and others. Out of this development of CHAT, grew the theory of expansive learning.

3.4 Cultural Historical Activity Theory

Drawing on the historic work of Vygotsky, Leont’ev, Luria and other Russian researchers as well as the more recent work of Engeström, three generations of CHAT can be outlined that began with Vygotsky’s work in the 1920s, with each generation building on the strengths of the previous one (Engeström, 2000 & 2001; Daniels, 2008).

3.4.1 First generation CHAT

First generation CHAT, draws mostly from Vygotsky’s work of mediated action as a unit of analysis, and is depicted by the simple traditional triangle representing the subject working towards the object or problem (not to be confused with the objective) through the mediation of tools of practice or cultural artefacts reflecting a history of past learning by others.

![Figure 3.1 A first generation model of mediated action (adapted from Engeström, 2001, p.134).](image)
The understanding that cultural artefacts mediated the action of people, was critical, as it highlighted that:

... the individual could no longer be understood without his or her cultural means; and the society could no longer be understood without the agency of individuals who use and produce artefacts ... objects [therefore] became cultural entities and the object-orientedness of action became key to understanding human psyche. (Engeström, 2001, p.134)

However the key shortcoming of first generation CHAT was that the unit of analysis remained at the level of the individual, which was overcome by second generation CHAT (Engeström, 2001). Although first generation CHAT will not be used in my research, it is briefly presented here to provide an overview of the progressive development of the three generations of CHAT.

3.4.2 Second generation CHAT

Following on Vygotsky’s work, two of his colleagues, Leont’ev and Luria, also believed that people’s interaction with the world is culturally mediated by tools and concepts developed by society over the history of its development. Therefore, the mediating tools and concepts that people use on a daily basis contain the experiences, knowledge, and practices of people from the past (Engeström, 1987; Virkkunen and Kuutti, 2000). As explained earlier, language was seen to be the ultimate in tools that plays a key role in cultural mediation. Drawing from this understanding, Leont’ev and Luria saw the actions of people as always being situated in a historically developed context of collective practice, which they first termed the activity (Virkkunen and Kuutti, 2000) and which later became known as the activity system.

Predominantly through the work of Leont’ev, the focus was moved away from Vygotsky’s mediation through tools, with its limitation that the unit of analysis focused on the individual (Engeström, 2001), and towards the importance of the object, its cultural construction, how it was understood by those working towards it, and what activities arose from this focus on it (Edwards, 2005a). Leont’ev therefore recognised that the real motive of an activity was its object, and those involved in the collective activity of working on the object (Edwards, 2005b; Engeström, 2001). This is a critical point, as Edwards notes:
The idea of the object motive importantly recognises that our actions are elicited by our interpretations of the object and by ways of engaging with the object that are possible in different sets of socially and historically situated practices. Leont’ev’s work takes us to the idea that a collective activity shapes the object and possible responses to it. (2005b, p.4)

This highlights that different activities have different objectives (Daniels, 2008). Leont’ev then broadened Vygotsky’s basic concept of first generation CHAT from the individual action to the collective activity, through using descriptive narrative approaches (such as the famous example of primitive hunters separating into the beaters and the catchers) to highlight mediating tools of practice as the crucial component through which its relationship with three new aspects of the activity system needed to be focused on. Later in the mid-1980s, Engeström incorporated the descriptive approaches of this broader collective activity system, and developed it further, to include the social or collective elements of an activity system as the additional elements of rules, community of practice, and division of labour to form the graphic model of the activity system as we know it today (Engeström, 2001; Daniels, 2008). Collectively these six elements became known as the activity system, which worked towards achieving a desired outcome, as represented in Figure 3.2 below.

Figure 3.2 A second generation mediating triangle of a cultural and historically constituted activity system (adapted from Engeström, 1987, p.178).
The key aspect of this new broader activity system was that it highlighted the multifaceted inter-relationships between the subject and the community of practice; therefore the mediation focus should be on the relationships between all the elements of the activity system (Engeström, 2001). This essentially takes stronger account of contextual and power relations in the mediation process. Second generation CHAT thus supports the search for insights into the relationships and interactions that exist within an activity system. It does this through examining the relationships and interactions between subjects and the objects they are working on, mediating tools and artefacts that are used, rules that govern the use of the system, the community of practice involved in the system, and a division of labour among those working in the system; all taking place in a cultural and historically constituted activity system (Daniels, 2008).

**An example of second generation CHAT**

The following example of foresters being the farm managers, who need to manage wetlands in Mondi, can be used to explain the activity system of second generation CHAT. The foresters (the subjects) are motivated towards the better management of wetlands on their landholdings (the object), which is mediated by a variety of tools or cultural artefacts reflecting a collective history of past learning by others, such as interaction with their Mondi colleagues and external specialists, past experiences, guidelines and reports, experimenting, and occasional workshops (the tools). Foresters don’t manage wetlands on their own, they work in collaboration with other Mondi staff, neighbouring communities, conservation contractors and specialist consultants on wetland sustainability practices (the community of practice). However, cultural factors and conventions govern how foresters manage the wetland resources such as Mondi policies and procedures, the National Water Act, community relations, trust and beliefs (the rules). The work is divided as foresters depend on community engagement facilitators to develop relations with communities and collaboratively manage wetland resource use by communities, contractors for clearing alien plants and burning firebreaks, and environmental specialists for conservation advice (division of labour). The community of practice, rules, division of labour, and tools all play an important mediation role in supporting the subject work towards the object. Collectively, these components are called the activity system. The study of the activity is therefore is not about what an individual (or group of individuals) is, or is not doing, but rather focuses on the interaction between an individual (or group of individuals) and these other components in a historically developing institutional setting.
3.4.3 Third generation CHAT

The third generation CHAT focuses on interactions that occur between two or more second generation activity systems, that are working on a shared object, and the complexities that arise when their boundaries meet and are crossed (figure 3.3) (Engeström, 2008). An example of this would include the interactions that occur when the separate activity systems of the foresters, community engagement facilitators and environmental specialists meet in order to manage wetlands on Mondi land. Collectively, these interacting activity systems are known as third generation CHAT.

![Diagram](image)

**Figure 3.3** Third generation activity theory: 2 activity systems with a partially shared objective as a minimum unit of analysis. (Engeström, 2008, p.14).

It is during this interactive boundary crossing that most of the learning occurs as the object of an activity system moves from being an object that is not reflected upon and simply worked upon by the subject(s) of an activity system (object 1 in figure 3.3), to being a object that is collectively worked on by the interacting activity systems, and therefore becomes collectively meaningful (object 2), to lastly evolving to be an object that is co-constructed by the interacting activity systems and becomes a new reconceptualised object (object 3) (Engeström, 2001). The unit of analysis in third generation activity theory becomes the joint activity or practice that the interacting...
network of activity systems are acting on, instead of the individual activity as in second generation CHAT (Daniels, 2008). In this way the analysis looks at social transformation through analysing the structure of the social world and the dissonance that occurs in social practice which is created by contradictions that occur within and between activity systems (ibid.). It is the contradictions that are considered to be the triggers of change and development (Engeström, 2001) that result in reconceptualisation of the object.

3.4.4 Five principles forming the basis of CHAT

Engeström suggests that five principles form the basis of CHAT in its current form (Engeström, 2001).

1. The first principle is that the main unit of analysis is a collective activity system that is object orientated and which is mediated through tools of practice, and is viewed in a network of relations to other activity systems.
2. The second principle is that the activity system is multi-voiced. It is made up of different participants who have multiple cultures, traditions, ideologies, and opinions, which are sources of both tensions and innovations, requiring deconstruction and negotiation. With interacting networks of activity systems, these multiple ‘voices’ are multiplied significantly. The focus is therefore on these multiple voices and the dissonance arising from it, which gives rise to the innovation and change.
3. The third principle acknowledges that activity systems can only be understood against the local history of their activity and objects, as well as that of the tools of practice that have shaped the historic development of the activity systems over lengthy periods of time.
4. The fourth principle highlights the pivotal function of contradictions that develop from the historically accumulated tensions arising within and between activity systems over a period of time, as the basis of innovation, change, and therefore development.
5. The fifth principle most importantly declares that expansive transformation in activity systems is possible when the object and the motive of the activity are reconceptualised so that a broader number of possibilities arise than were associated with the original form of the activity. This happens when contradictions stimulate some participants to question the status quo of the
activity, and they begin to collaboratively work with other participants to deliberatively change the norms and reconceptualise the object of the activity.

3.5 Theory of Expansive Learning

It is out of the above-mentioned theoretical basis provided by CHAT that the theory of expansive learning has grown as a social learning theory supporting the deepening of understanding organisational learning.

3.5.1 An overview of expansive learning

Most standard theories of learning focus on learners or organisations acquiring stable knowledge that is reasonably defined from a more learned teacher who knows what needs to be learned, and this then results in some lasting change in behaviour (Engeström, 2001). However, Engeström poses the problem that much of the learning that takes place in organisations violates this presumption, as in the workplace people are often learning knowledge that is not stable or known beforehand (ibid.). He believes that it is important to learn new forms of activity that have not yet been identified, resulting in learning as the new forms of activity are being created, without a more knowledgeable teacher who knows the answer. Engeström and Kerosuo (2007) have therefore put forward the theory of expansive learning to understand how people learn in these situations, which is especially applicable to understanding how people learn in organisations:

Within the framework of activity theory, a theory of expansive learning (Engeström, 1987, 2001) has been worked out and used in numerous studies since the late 1980s. The theory builds upon the idea of learning as a longitudinal process in which participants of an activity system take specific learning actions to analyse the inner contradictions of their activity, then to design and implement a new model for their activity that radically expands its object, opening up new possibilities for action and development. (p.339)

Expansive learning draws from Bateson’s idea of level 3 learning, where an individual, or group of people, begins to deeply interrogate the sense and meaning of the context in which they live and work, and through this questioning begins to co-construct a broader context collectively with the other participants (Engeström, 2001). Engeström believes that “the theory of expansive learning develops Bateson’s idea into a systematic framework. Level 3 learning is seen as a learning activity
which has its own typical actions and tools” (ibid., p.139). Seen in this light, level 3 learning involves looking at problems in new ways, and developing new tools to work with these problems, empowering subjects to transform the activity system and expand the object of the activity (Daniels, 2008). This is when expansive learning occurs, which Daniels et al. define as “the capacity of participants in an activity to interpret and expand the definition of the object of activity and respond to it in increasingly rich ways” (Daniels, Leadbetter, Warmington, Edwards, Martin, Popova, Apostolov, Middleton, & Brown, 2007, p.523). In this way, new knowledge and practices are created, and improved professional practice occurs. Engeström and Kerosuo consider these outcomes of expansive learning as being very different, even contrary, to the outcomes of traditional theories of learning: “theories of learning typically speak of the outcomes of learning in terms of knowledge, skills and changed patterns of behaviour. In expansive learning, the outcomes are expanded objects and new collective work practices, including practices of thinking and discourse” (2007, p.339).

Since expansive learning is built on CHAT and it uses the activity system as its unit of analysis. Virkkunen and Kuutti (2000) view this to be crucial because a unit of analysis that is based on historicity is critical to understanding the interactions between different features of organisational learning. This is a point that Daniels et al. (2007) also stress: “without a substantial understanding of the historically changing character of the work done in a given organisation, theories of organisational and professional learning are likely to remain too general and abstract to capture the emerging possibilities and new forms of learning” (p.524). Most other theories of OL do not take history into account. The activity system is therefore used to analyse problems of organisational learning that are specific to the history of the organisation as well as to stimulate a collective learning process. Virkkunen and Kuutti therefore staunchly believe that one of the key issues constraining research progress in deepening an understanding of organisational learning, has been the inclination to analyse the issues in ahistorical and universal terms:

Organisational learning is a cultural process which changes in the course of history. The activities in organisations, the problems in realizing these activities, the possible means of solving the problems, as well as the obstacles of learning, are historically specific. They are determined by the local and historical form of the activity and the available cultural means of solving the problems. We cannot proceed in understanding organisational learning
without analysing concretely the historical development of both the problems to be mastered, and the possible mechanisms for learning. (ibid., p.292)

In addition to understanding the historic development of activity systems, the role of contradictions within and between activity systems, and boundary crossing between interacting networks of activity systems, are also of critical importance to understanding expansive learning.

3.5.2 The important role of contradictions

As highlighted above, a critical element of an activity system is the object of that activity, or the partially shared object of a network of interacting activity systems, which the subjects of the activity system/s are working on. In the Mondi case study this would be the foresters, CEFs and environmental specialists working on the shared objective of wetland management. However, each person involved in that activity will have a slightly different idea of what the object should look like and the purpose of the activity, depending on their context, their historic involvement, and their values and beliefs. Consequently, within the activity system there are multiple views of people, that don’t always agree with each other. The activity system is therefore seen to be multi-voiced (Engeström, 2001). The multi-voicedness is multiplied in interacting activity systems.

Due to Leont‘ev’s focus on the object–orientated activity, as differentiated from Vygotsky’s mediation focused psychology, and the multiple voices that interpret the object of the activity in different ways, these changes in the way the object is interpreted can give rise to a number of tensions and contradictions (Edwards, 2005b).

In CHAT and expansive learning it is these tensions and contradictions within the organisation that are the key vehicle for bringing about organisational learning and change (Virkkunen and Kuutti, 2000). In an attempt to understand them more deeply, Engeström views contradictions as being of cultural and historical origins, dialectical and generative in nature, and supporting the development of reflexivity and agency of those people within the activity system to change the object they are working towards (Engeström, 1987, 2008). In defining what contradictions are, Engeström stresses, “contradictions are not the same as problems or conflicts. Contradictions are historically accumulating structural tensions within and between activity systems” (2001, p.137). Virkkunen
and Kuutti expand on this definition by explaining that “contradictions are fundamental tensions and misalignments in the structure that typically manifest themselves as problems, ruptures, and breakdowns in the functioning of an activity system ... the actors try to remove these disturbances by changing and developing the cultural mediators of the activity” (2000, p.302). They do this through developing new cultural tools and artefacts, and new rules and divisions of labour within the activity system. In this way the participants of the activity system change the activity system, through catalysing a collaborative reinterpretation of the object, as they realign themselves in relation to the object and to each other (Edwards, 2005b). Engeström (2001) suggests that expansive transformation is possible when the object and the motive of the activity are reconceptualised by the people of the activity system, so that a broader orientation to the activity is perceived than that which was initially conceptualised, and additional possibilities are developed that had previously not been thought about. This is when the learning that has taken place is called expansive learning and better professional practices are developed. Edwards (2005b) further clarifies this reconceptualisation as:

Changing systems through provoking a collective reinterpretation of the object [better wetland management]. As a result of these reinterpretations a system is reconfigured as participants reposition themselves in relation to the object and to each other [wetland management is rather seen as better business practice for increased profits]. (p.4)

These changes in interpretation of the object are seen by Engeström as revealed most importantly by the collective discussion and debate of the tensions and contradictions that arise from mediation between the different components of the activity system (Edwards, 2005b). It is this conflictual questioning of current practice that supports practitioners to focus on the root causes of the problems that are preventing transformation from occurring (Engeström, 2000). There can be four different types of contradictions that appear at different stages of the expansive learning process: primary, secondary, tertiary and quaternary contradictions (Engeström & Sannino, 2010). Primary contradictions occur within the elements of the activity system; secondary contradictions between two or more elements of the same activity system; tertiary contradictions occur between the reconceptualised new version of an activity system and remnants of its older version; and external quaternary contradictions occur between multiple interacting activity systems. My research focuses predominantly on the external quaternary contradictions that occur between the
interacting activity systems of the foresters, CEFs and environmental specialists, and the surrounding institutional setting of Mondi.

Contradictions are therefore important for organisational learning, because they can inhibit possibilities for individual and social learning and the improvement of collaborative practices. However, if these contradictions are overcome by the actors in the activity systems, then this can lead to the individual and collective learning that is required for developing new forms of activity and professional practice that result in expansion of the object that is being worked on.

3.5.3 Boundary crossing as a form of horizontal learning across different professional practices

Traditional models of learning and the development of professional expertise imply that learning tends to be a vertical process of developing and attaining higher levels of competence over time. However, Engeström believes that the notion of horizontal learning also takes place: “recent activity – theoretical research (e.g. Engeström, 1996a) suggests that a complementary perspective is constructed, namely that of horizontal or sideways learning and development” (2000, p.970). It is from this perspective that Engeström has developed the notion of boundary crossing. Here workers from different professions each with their own ‘tribal’ boundaries created by the associated knowledge, expertise, values, beliefs, ideologies, assumptions and identities of their professions, collaborate across their professional boundaries to deliberate amongst themselves within a boundary zone, or space, where a dialogic exchange of different viewpoints, new ideas and possibilities are used to co-construct and develop new professional practices that cross traditional professional boundaries (Warmington, Daniels, Edwards, Brown, Leadbetter, Martin & Middleton, 2004; Daniels et al., 2007). This is quite contrary to the traditional theories of professional learning that tend to focus on the anxieties created at the interface of different professional boundaries (ibid.). The space between different professional boundaries, or the boundary zone, lets practitioners from different professions express alternative views and challenge each other’s viewpoints as well as decisions and thinking from higher management levels in an organisation, in order to develop a new model of activity (Daniels, 2008). Boundary zones are not neutral or comfortable spaces to be in, due to the melting pot of different viewpoints that emerge as participants negotiate different professional identities, meaning systems and associated motives (Edwards 2009). However they are critical spaces for learning in organisations, as it is through the
deliberations that occur in the boundary zones, that any collaboration arises (ibid.). Therefore the concept of boundary crossing can be used to analyse how the participants from different professions are able to work and learn together to develop a new model of activity. In many ways this is a similar social learning process that Wals and Heymann (2007) and other researchers raise as being important (see section 2.4.3) and that discusses the importance of dissonance as being a trigger for learning. Here conflicts that emerge from discussing divergent views are seen as a prerequisite for social learning, rather than being a barrier to learning. Central to this is the notion of deconstruction through dialogue to make visible the values, beliefs, ideologies and assumptions of different participants when they are provided with a safe collaborative space, or the boundary zone, in which to do this. When this is done, participants can co-construct new ways of understanding and new sustainability practices. This section clearly highlights that an essential aspect of CHAT and expansive learning, is for organisational staff to be able to interact in a safe space where professional boundaries cross in order to maximise the possibilities of learning from each other and co-constructing new practices and activities.

3.5.4 The use of CHAT and expansive learning as an epistemological framework to support organisational learning and development

Virkkunen and Kuutti’s empirical study (2000) to understand what OL processes and actions could support government building inspectors to work more effectively to improve the safety on building sites around Finland, highlighted some important conclusions on OL. CHAT and expansive learning were used as an epistemological framework and the expansive learning cycle as the methodology (which will be discussed further in chapter 4) to guide the research. They concluded that since OL is local and specific to each organisational situation it therefore has to be analysed in a historical framework, that uses conceptual tools to support organisational staff to analyse problems specific to their practice. They attributed the cognitive changes within individuals and the collective changes in practice to occur during the process of developing new forms of interaction between organisational staff and those they worked with outside the organisation. Critically they found that this change in interaction came about due to collectively developing new cultural tools and artefacts to mediate these new ways of learning and working together. Virkkunen and Kuutti therefore stress the importance of cognitive change being brought about though social interaction and collective practice. Elkjaer (2004) expands on this by drawing from Dewey’s concepts of
experience and inquiry. She explains that Dewey saw experience as being “the actual process of ‘living’ and the result hereof. Experience is the continual transaction and mutual formation of the individual and the environment and the product hereof. Thus experience is at one and the same time a process and a product – or a result of the process” (Dewey, as quoted by Elkjaer, 2004, p.423). Dewey regarded thinking and reflection as tools to be used in enquiry, and that enquiry was a prerequisite for learning to take place. He thus saw reflection and critical thinking as important concepts to be used in inquiry (ibid.). Therefore Dewey saw inquiry as the door through which people have experiences, and it is through critical reflection of that enquiry they become more knowledgeable. This also helps to explain how increased participant interaction stimulated the collaborative processes of experience, enquiry and critical reflection, and the resulting development of new cultural tools and artefacts which mediated the cognitive changes within individuals and the collective changes in practice that Virkkunen and Kuutti (2000) observed.

From this, Virkkunen and Kuutti (2000) concluded that “OL is a complex interplay between individual and collective learning; actors, intentional actions, and given structures and processes; radical and incremental changes; cognitive development and development of new tools and structures” (p.316). For this reason they believe it is important to have a unit of analysis that takes all these variables into consideration. They therefore stress that “without a systemic unit of analysis that takes the socially constructed object of activity as its starting point, an attempt to understand the historically developed problems of the activity and to intervene in its development would not have succeeded” (ibid., p.314). Importantly, the activity system supported organisational staff to theoretically analyse the cause of the problems and disturbances that inhibited learning and practice of their daily work. This clearly illustrates the importance of having the activity system as a theoretical systemic unit of analysis that allows researchers of OL to take into account the socio-cultural history of practice in organisations, and analyse the interrelations between the different elements of an activity system or between a network of activity systems. This example also illustrates how the theory of expansive learning, and its methodological component the expansive learning cycle, supported by CHAT, provides a good insight into the process and actions of how organisational learning and change can be catalysed and analysed through identifying and dealing with organisational contradictions that have accumulated historically over time.
3.5.5 Criteria for what constitutes learning in the organisational and professional learning context of this study

Taking into consideration the type of learning that this study is interested in, as described in chapter 2 and more specifically in sections 3.5.1, 3.5.2, 3.5.3, and 3.5.4, it is important to define what expansive social learning looks like, in order to recognise it during the analysis of the data. This will help to determine the learning progression of the participants involved in the research project. It is important to reiterate (section 3.5.1) that Engeström and Kerosuo consider the outcomes of expansive learning as being very different, even contrary, to the outcomes of traditional theories of learning: “theories of learning typically speak of the outcomes of learning in terms of knowledge, skills and changed patterns of behaviour. In expansive learning, the outcomes are expanded objects and new collective work practices, including practices of thinking and discourse” (2007, p.339). Therefore the following criteria help to clarify what constitutes learning in the context of this study, which focuses on expansive social learning related to wetland management practices.

1. Participants are able to deeply interrogate the sense, meaning and their understanding of the context in which they work, and through this questioning they begin to co-construct a broader context collectively with the other participants (Engeström, 2001).

2. Participants are able to develop an understanding of the historically changing character of the work done in their organisation (Virkkunen and Kuutti; Daniels, et al., 2007).

3. Participants develop a broader orientation, perception and understanding of the activity than that which was initially conceptualised, and additional possibilities are developed that had previously not been thought about (Engestrom, 2001).

4. Participants are able to develop new knowledge and create new collective work practices (Daniels, et al., 2007), including practices of thinking and discourse (Engeström and Kerosuo, 2007).

5. Participants are able to co-construct new professional practices that cross traditional professional ‘tribal’ boundaries (Warmington, et al., 2007).

6. Participants are able to collectively look at problems in new ways, and develop new tools to work with these problems, empowering the subjects to transform the activity system and collectively expand the object of the activity (Daniels, 2008).
It is also important to clarify what is meant by participants developing their ‘understanding’ of how they view the issues they are dealing with. I interpret this to mean that participants are able to develop new understandings that can be qualified as:

- a *deeper* understanding of, for example, wetland issues resulting in knowing more about wetlands management;
- a *broader* understanding, demonstrating that participants have a broader knowledge of wetland management in the organisational context and how different players need to work together;
- an *expanded* understanding revealing that participants have built on each other’s learning and expanded their learning from knowing what they did as an individual to more collaborative, collective, social learning, demonstrating that participants have scaffolded their learning on the comments and dialogue that occurred during the expansive learning processes/workshops;
- an *increased sophistication* in understanding, signifying that the learning of participants has become more multi-dimensional and complex, more socially integrative, and more organisationally embedded. For example as participants begin to realise that contradictions identified inhibit learning, they could show understanding that the social structures and cultural systems of the organisation are contributing to this, rather than individual personalities, and that the institutional enabling environment for learning is not present or optimal.

### 3.6 Broad philosophical orientation

A broad critical science philosophical orientation, with an interest in emancipatory change and interpretation, is seen as best suited to answering the research questions in this study. The research investigates changes in activity systems through improving participant collaboration, probing of contextual and structural tensions contradictions and understandings, as well as strengthening staff reflexivity and agency for change orientated responses to environmental issues. As such this intends to support participants to probe historical, cultural and structural tensions and contradictions within Mondi, deconstruct their own ideologies, values and beliefs, as well as
develop a critical understanding of the organisation they work for, and its cultural and historically shaped practices, and engage participants in a process of co-constructing new knowledge and ways of doing so in an expansive learning process. Such a research process seeks to encourage emancipation through supporting transformative learning (Janse van Rensburg, 2001a) of those involved to better manage Mondi’s wetlands. This epistemological process involves inter-subjective objectivity and critical dialogue amongst participants, and an ontological perspective that takes account of both the social constructions of participants, and cultural, historical and material antecedents, and which reflects a critical realist ontology and epistemology.

### 3.7 Philosophy of Critical Realism

Critical realism is a philosophy of the social sciences developed in the mid 70s, and based on the leading work of Roy Bhaskar together with other researchers such as Harre, Sayer, Benton, Archer, Keat and Urry, and Outhwaite amongst others (Benton & Craib, 2001; Delanty, 2005). There are three dimensions to critical realism, with each expanding on the previous dimension. These are original or basic critical realism, dialectical critical realism, and meta-reality (Bhaskar, 2012). For the purposes of this study, I have only used basic critical realism, and therefore from here onwards, when I mention critical realism in this thesis, I will be talking only about basic critical realism, not the other two dimensions. Basic critical realism recognises that realities underlying knowledge do exist, and that an external real world exists acting independently of our knowing of it (Sayer, 2000), aspects of which become known to us through language. Critical realism therefore suggests that reality is not always as it appears at first sight, and that it is important to dig below the surface and into history, to get beneath potentially misleading appearances to the ontological depths of reality. In this way, critical realism helps researchers to avoid conflating what we experience by finding out what is, with what can be known, in what Bhaskar (2008) calls the ‘epistemic fallacy’. This he describes as “the view that statements about being can be reduced to or analysed in terms of statements about knowledge; i.e. that ontological questions can always be transposed into epistemological terms. The idea that being can always be analysed in terms of our knowledge of being” (ibid., 2008, p.26).

Critical realists believe that this external social world that lies below the surface of the observable and experience (as generated by the empirical reality), is in principle knowable and to some degree
can be changed if it is discovered (Benton & Craib, 2001). As Delanty highlights “realists therefore
do not make the naïve assumption that reality is easily observable, but rather claim reality as
morphologically ‘emergent’. Therefore there can be no simple recourse to observable causes, as in
the positivistic approach to causation where regular occurrences must be explained in terms of
observable cause and effect” (2005, p.145). The notion of emergence is central to critical realism, in
which the coming together of more than one feature, forms new phenomena having properties
that cannot be reduced to either of the original parts (Sayer, 2000). Critical realists further believe
that due to aspects of reality existing independently of our knowing, and the need to investigate
beneath the observable to overcome misleading appearances, our current understanding will
always be subject to correction as new knowledge comes to light. Knowledge is therefore also
fallible and incomplete. Our knowledge is therefore only provisional since our experience of the
world is always theory laden and our current beliefs may need to be corrected contingent on new
observations, interpretations and theoretical reasoning (Sayer, 2000; Benton & Craib, 2001).

3.7.1 A stratified ontology

Bhaskar (2008) sees the realist ontology as consisting of three stratified levels or domains. The first
layer of reality is the ‘Real’, which is whatever exists, despite whether people are aware of it or not.
The Real is known as an intransitive, or unchanging world, which is made up of generative
mechanisms such as structures with properties and causal powers. This world is “relatively
independent of the patterns of events and the actions of men alike” (ibid., p.46). It is from these
generative mechanisms that the second layer emerges, that of the ‘Actual’, which is the reality of
events that happen when (and if) the generative mechanisms of the Real are activated. As with
generative mechanisms, Bhaskar believes that “events must occur independently of the
experiences in which they are apprehended” (ibid., p.46). It is from these events, that the third
‘Empirical’ layer of reality emerges, which essentially is the realm of human experiences and
observations. The Empirical is known as the transitive, or changing world, and is made up of our
multiple and varied socially determined conceptions of reality. As Bhaskar explains:

The concept of the empirical world is anthropocentric. The world is what men [humans] can
experience. But the couple of this concept, and from a realist meta-perspective necessary to
sustain it, is the absence of the concept of the antecedent social activity necessary to make
experience significant in science. And this has the objectionable ideological consequence (from
It is important to note that both the generative, or causal, mechanisms of the Real and the events of the Actual are not necessarily reflected in the experiences of the empirical (Delanty, 2005). Therefore one cannot rely on the Empirical to reveal the causal effects of phenomena. Sayer (2000) reminds us that although seeing or naming things makes us more confident that something exists, this does not mean that if we cannot see or name it, it does not exist. He goes on to explain that in light of this, one of the most distinctive features of realism is its acceptance of causal criterion as well. Therefore, reasoning can be made for the existence of something unobservable, by seeing the effects of it. This is known as inference by retroduction (section 4.6).

3.7.2 Generative mechanisms

Generative mechanisms are clearly central to critical realism, and therefore it will be helpful to have a broad overview of what they are. In discussing generative mechanisms, Carter and New (2004) explain that social and cultural structures are generative mechanisms because when their causal powers are activated, they work to make something happen. But they are also emphatic in stating, “categorically, that mechanisms in social life never work mechanically” (ibid., p.27) on their own. The actions and therefore agency of people are required to mediate the effects of these structures, since nothing happens in social life without the activation of the causal powers of people (such as the power to decide). Consequently realists see social and cultural structures as having the power to be causally efficacious, in that they enable some actions that would otherwise not be possible, and constrain other actions (Benton & Craib, 2001; Cater & New, 2004).

The explanation of phenomena by critical realists thus depends on identifying causal mechanisms, understanding how they work, and if they have been activated, under what conditions (Sayer, 2000). Delanty (2005) stresses how important it is for the researchers to dig deep into the structures of social reality to reveal these generative or causal mechanisms, if one is to gain an understanding of the Real world. He sums up the aim of critical realists to “investigate the mechanisms by which effects operate, the powers and properties that they produce and the intricate inter-linkages between the different levels of structures which all make causation very complex and thus, irreducible to single factors” (ibid., 2005, p.147). However it is important to remember a point that Boughey and McKenna (in
Critical realism is therefore able to support social science to provide explanatory knowledge of reality as it really exists, enabling it to serve an emancipatory function (Delanty, 2005). However, a key element of critical realism is that the powers, caused by the mechanisms in the Real, may exist even though they are unexercised (Sayer, 2007). Therefore what has happened does not prevent ideas of what could happen. In this way, Sayer emphasises a realist ontology allows us to appreciate how we could change things about ourselves, which presently we may not be doing. Bhaskar also saw a close link between critical realism and emancipatory politics, through the close relationship between knowledge of oneself and society with emancipation, or freedom from domination (Benton & Craib, 2001).

CHAT and expansive learning are epistemological theories that can also work towards emancipation through providing guidance to deeper understand activity systems by revealing and working with contradictions that are of cultural, social and historical origins, and often unknown to those within the activity systems. Critical realism can therefore complement these two epistemological theories, by acting as an underlabouring philosophy, providing ontological depth. It can therefore support the investigation of a deeper reality from which the generative mechanisms and contradictions emerged, which may exist independent of Mondi staff or MWP staff knowing it.

3.8 Realist Social Theory

Critical Realism is a philosophy with an ontological focus that underlabours the social sciences, by providing a realist framework for compatible social theories that seek to explain society (Sayer, 2000). This is important for social theory because as Archer explains, ontology “acts as both gatekeeper and bouncer of methodology” (Archer, 1995, p.22). Realist social theory, which has developed out of critical realism, is an ontologically located theory of how and why social change occurs, or does not. It is, therefore, a sociological theory that has an ontological perspective as its
basis. Realist social theory, which is predominantly based on the work of Margaret Archer, explains how society changes over time or remains in a state of stasis, depending on the complex interplay between what Archer calls the parts (social structures and cultural systems) and the people (agency). Archer considers the beliefs and courses of action of people are guided by the social context in which they live (Archer, 1995). In this way, the agency of people is influenced by the social structures and cultural systems within their context, but this is not deterministic (Carter & New, 2004). Therefore people may have a choice of what to do, but this choice is limited by these social and cultural structures that people do not choose (ibid.). However, if the agency of people is developed, then there is the possibility that people can act back on these structures and change them, thus their destiny is not solely determined by the structures. Thus human action is conditioned, but not determined by pre-existing social structures. If change in Mondi’s wetland sustainability practices is brought about through the intended expansive learning process of working with Mondi staff, then realist social theory will provide the theoretical guidance to understand the detail of how this change has happened. If the status quo remains, and no change occurs, then it will also help explain this stasis.

3.8.1 The relationship between structure and agency

There are a number of strong views on how this interaction, mentioned above, between society and people occurs, which goes to the core of social theorising. Archer (1995) views the relationship between structure and agency in four ways. This first way is what she calls ‘downwards conflation’ of social theorising, put forward by early protagonists of the ‘Science of Society’ such as Comte and Durkheim. Their ontological position viewed individuals as being indeterminate and moulded by society, whose structures control causation, thereby operating in a unilateral and downwards manner. In this way causal primacy is given to the structures of society, which dominates over agency.

The second way Archer calls ‘upwards conflation’ representing the ontological position of ‘individualism’, including key theorists such as Mills and Weber, which advocates that social reality is only made up of individuals and their activities. The structure agency issue is viewed from an opposing perspective to the Science of Society, but this time it is the social structure that is indeterminate. People are seen to hold causal primacy in shaping society, which cannot react back
to influence individual people. The causal power therefore occurs in a one-way upwards direction. Archer strongly rejects these views of conflationary social theorising “which either deny people all freedom because of their involvement in society or leave their freedom completely untrammelled by their social involvements” (Archer, 1995, p.4).

The third view of structure and agency Archer calls ‘central conflation’, and this view is held by structuration theorists such as Giddens, who see structure and agency as being mutually constitutive, thereby compacting and therefore conflating the ontological strata into one, rather than disentangling them. Archer (1995) believes that this means that the properties of structure and agency cannot be examined separately, and therefore the interplay between structure and agency cannot be analysed and emergence cannot be explained. It therefore becomes impossible to see when people are able to bring about change.

The fourth view of the relationship between structure and agency is one put forward by social realists such as Archer, Sayer and Pawson. Their ontological view is that structure and agency each possess distinct properties and powers of their own (Carter & New, 2004). Social realists believe that the agency of people is influenced by the properties and powers of social structures and cultural systems (together known simply as structures or ‘parts’ as Archer calls them) within their context; but through interaction with these structures, people can also develop the properties and powers to change them (Archer, 1995). In this way social realists believe that although society shapes the agency of people, people can in turn develop the agency to act on and change society.

Social realists consequently emphasise the emergent properties and powers of both structure and agency (which structurationists explicitly reject), but consider them as unique to each other as well as being irreducible to one another (Archer, 1995, 2000). Critically Archer says that because they are irreducible to each other, structure and agency are separable by definition because of these properties and powers that are unique to each of them, and their emergence from each other justifies their differentiation. Therefore understanding the interplay between them becomes vital (Archer, 1995). This means that Archer’s realist social theory required a methodology based on the guiding principle of analytical dualism where the analysis of structure and agency are done separately in order to understand the interplay between them (ibid.). This methodology Archer
developed as the morphogenetic framework, which will be discussed in greater depth in chapter 4. It is through using this methodology based on analytical dualism that “explanation[s] of why things social are so and not otherwise depends on an account of how the properties and powers of the ‘people’ causally intertwine with those of the ‘parts’ ” (ibid., p.15). It is this central focus on interplay and emergence, underpinned by analytical dualism, which differentiates this non-conflationary theorising of structure and agency from those who believe in central conflation.

3.8.2 Properties and powers of the parts and the people

Archer strongly believes that despite the independence of individuals, social structures and cultural systems with each possessing distinct properties and powers operating at the level of the Real, both social structures and cultural systems are the result of social relations that can only be elaborated through the agency of individuals. Archer is quite clear on this when she explains that “structural and cultural properties (SEPs and CEPs) only emerge through the activities of people (PEPs), and they are only causally efficacious through the activities of people” (Archer, 2000, p.307). She goes on to explain that structural and cultural properties emerge from a number of intended and unintended consequences, and that it is only when these properties have emerged, that they that they can exercise their powers of constraint and enablement by moulding the situations that people find themselves in. Carter and New (2004) provide a good example of a property of social structures and cultural systems as being their anteriority; meaning they existed prior to us being born into the world, such as the linguistic and legal systems that came before us. Another important property of these structures is that they are relatively enduring and long lasting. These properties then generate the powers of social structures and cultural systems to enable and constrain certain actions, over generations or even centuries. As an example of key properties of people that are relevant to agency, they cite reflexivity, self-consciousness, emotionality, and intentionality. These properties then allow people certain powers of agency. It is these causal powers which, Archer says, allow people to critically reflect on their social context, develop alternative solutions to it, learn and act reflexively to collaboratively transform it with other people, rather than being passive recipients of it (Archer, 2000). Seen in this way Carter and New state that people can develop the agency to control their destiny, as opposed to society determining their future: “as reflexive beings capable of highly sophisticated symbolic communication, human beings are able to formulate projects, develop plans, have ambitions, and pursue interests. This
ontological endowment means that it is people that make history” (2004, p.5). This prime power of agency means that people can change or strengthen the social structures and cultural systems they encounter to achieve their own interests. These unique properties and powers of social structures and cultural systems, and the agency of people, highlights their independence and irreducibility to each other. In this way, the conventional thinking of social theorising in which “humanity grows weak so that society can grow strong” sheds little light on how society and people change over time (Archer, 2000, p.306). Archer stresses that it will only be once the properties and powers of people are fully recognised and analysed in combination with those properties and powers of the social structures and cultural systems, that the re-emergence of humanity will take its rightful place in social theory with the solving of what Archer calls the “‘vexatious fact of society’; that we humans form society through our activities, but that we ourselves are also shaped by it” (ibid., p.307). Therefore it is critical to identify and differentiate between the emergent properties and powers of the people and the structures, if one is to understand the interplay between them.

Archer believes that the most important property and power people have is our ‘inner conversation’. This is the form of communication between people and reality, and is how we use our personal emergent powers on and in the world (ibid.). Archer explains the inner conversation as a form of referential reflexivity where we think about the world, where we are in it, and where we should be in it. It is here in this inner conversation that we have the greatest of human powers; the ability to reconstruct the possibilities of how we would like ourselves and society to be. To achieve this requires work in the world by ourselves and other people. However, the inner conversation provides the space where the causal structural and cultural powers of external reality can mix together with those of our own personal powers. This dialogue that occurs within our minds, does not simply provide us with our view of the world, it determines how we are in the world. It is therefore the inner conversation within people that mediates the emergence of internal change within ourselves and the external change in society.

3.9 Conclusion

This chapter has outlined the theoretical and philosophical framework that has guided the study, and provided justification for the methodologies I have used for this research, which will be discussed further in chapter 4. It has been explained how CHAT and expansive learning can support
the study to develop a deeper understanding of the different relations, contradictions, and tensions within and between these three activity systems that contribute to, and constrain, the past management of wetlands, and potentially improve wetland sustainability practices. Expansive learning has been described as providing theoretical support for the research in its attempt to catalyse new collective work practices, as well as new practices of thinking and discourse. An overview of critical realism was provided, which has given ontological depth to the research by enabling a more sophisticated understanding of the contradictions and generative mechanisms that are inhibiting improved wetland sustainability practices and their integration into plantation forestry operations. Lastly, social realist theory was explained as helping to understand the detail of how the social changes took place during the research.
CHAPTER FOUR:

Methodology and methods

4.1 Introduction

In this chapter the expansive learning cycle is described as a methodology for applying cultural historical activity theory, and more precisely the theory of expansive learning. This has the potential for enabling Mondi staff to co-generate new knowledge, learning, and practices through mobilising their agency to identify and deeper understand the underlying tensions and contradictions that may have hindered past efforts towards improving wetland sustainability on Mondi land, and begin to develop and implement solutions to overcome them. Previously, the existing knowledge of the Mondi staff was inadequate to identify and deal with factors that were inhibiting wetland sustainability practices (section 1.8). The morphogenetic framework is described as a methodological complement to realist social theory, which I have used as an analytical tool to help explain how the change in learning and practice has happened. The reasons for choosing a case study approach are explained, as well as the selection of the case study areas and research participants. The interventionist approach of using Change Laboratory workshops as a method for implementing the expansive learning cycle methodology is explained. Based on a critical realist ontology and the theoretical framework the research is using, the different tools and methods of inference used to generate and analyse the research data are described. The criteria I have used for validating the trustworthiness of the research are given, and the ethical considerations and responsibilities that guided the research are provided.

4.2 Expansive learning cycle as a methodology for applying CHAT and the theory of expansive learning

As discussed in the previous chapter, Engeström has put forward the theory of expansive learning, which is based on his development of CHAT, to understand how change orientated learning takes place in the workplace as a way of empirically researching organisational learning and development
when knowledge that is not stable or known beforehand. Engeström believes that this type of learning accounts for most learning in organisations, and he has therefore developed the expansive learning cycle, or Developmental Work Research as it is sometimes called, to provide what he calls “a methodology for applying activity theory, specifically the theory of expansive learning, in the world of work, technology and organisations.” (Engeström, as cited in Warmington, Daniels, Edwards, Leadbetter, Martin, Middleton, Parson, & Popova, 2005, p.2). The expansive learning cycle is therefore a methodology for conducting empirical research to better understand the learning processes and actions of organisational learning and development. This methodology, together with the Change Laboratory method that is discussed in section 4.5, will support answering my first and second research questions, and the part of my third:

1. What tensions and contradictions exist in wetland management in a plantation forestry company?
2. Can expansive learning begin to address the tensions and contradictions that exist in wetland management in a plantation forestry company, for improved sustainability practices?
3. Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?

I have therefore used the expansive learning cycle as a methodology for guiding the research process which has the potential to enable Mondi staff to co-generate new knowledge, learning, and practices for wetland management through mobilising their agency to identify, understand and redress those contradictions that inhibited this in the past. It is critical to note that even though it will be important to the Mondi research participants to identify and deal with these contradictions, a crucial facet of the research is to foreground the processes that surfaced the contradictions and deepened stakeholders’ understanding and learning, rather than the tensions and contradictions themselves. Therefore, through the expansive learning process, the tensions and contradictions become generative as a tool supporting social learning, rather than a means to an end where universal consensus is reached on how to circumvent the contradictions.
4.2.1 Summary of the expansive learning cycle

Engeström’s expansive learning cycle provides a research intervention that can stimulate expansive and therefore organisational learning, and is based on seven sequential steps (2000).

![Sequence of learning actions in an expansive learning cycle](image)

1. **QUESTIONING**
   - need state
   - double bind

2. **ANALYSIS**
   - resistance
   - double bind

3. **MODELLING NEW SOLUTION**
   - adjustment, enrichment
   - breakthrough

4. **EXAMINING AND TESTING THE NEW MODEL**
   - adjustment, enrichment

5. **IMPLEMENTING THE NEW MODEL**
   - stabilisation
   - adjustment, enrichment

6. **REFLECTING ON THE PROCESS**
   - resistance

7. **CONSOLIDATION AND GENERALIZING THE NEW PRACTICE**
   - stabilisation

**Figure 4.1** Sequence of learning actions in an expansive learning cycle (Engeström, 2010, p.8).

Firstly, current practices are questioned based on ethnographic evidence. Due to the multiple viewpoints of participants, this questioning of current practice can be conflictual in nature as it supports practitioners to focus on the root causes of the problems that are preventing...
transformation from occurring. This is a key step in the expansive learning cycle, as Engeström (2001) believes that most models of OL are based on the assumption that what needs to be created and learnt is a decision of management and not the staff that report to them. Hence the first stage of staff learning is unproblematic and conflict free. This, Engeström says, is exemplified in Nonaka and Takeuchi’s well-known model of OL that is founded on conversions between explicit and tacit knowledge (ibid., 2001). In stark contrast to these other models of OL, the first stage of expansive learning is rich in conflict, when existing standard organisational practices are rigorously questioned. This conflict is the critical trigger of organisational learning in the expansive learning process. This is a view similar to Wals and Heymann (2004), Glasser (2007) and Elkjaer (2005a&b) who all see the conflicts that emerge from discussing disturbances with divergent participant views as a prerequisite for learning, rather than as a barrier to learning (section 2.4.3).

This vigorous questioning leads to the second step of deeply analysing the cultural and historical origins of current practices following onto more detailed and better articulated questioning of the existing practices. The questioning and analysis are aimed at identifying and defining problems, and most importantly the tensions and contradictions that lie behind them. It is out of this dialogic questioning that new opportunities and more informed practice potentially begin to emerge. The third step or strategic action, is modelling of new solutions and alternative ways of working and learning. The fourth step in the expansive learning cycle examines the new model through critical discussion to better grasp its viability. The fifth step relies on implementing the model and monitoring the effectiveness of it, and the sixth step involves reflecting on the process of the expansive learning cycle and its outcomes. Lastly, the seventh step revolves around consolidating the practice. It is important to note that although the seven steps of the expansive leaning cycle may appear to occur in a logical sequence, they do not necessarily follow each other. Progress in the cycle from one step to the next is not deterministic, and it may actually fluctuate between steps, be obstructed, or revert back to a previous step (Virkkunen & Kuutti, 2000). As the following section highlights, the expansive learning cycle is not a cycle of continuous successive steps, but rather one of smaller cycles within a larger one, with key actions attempting to understand the direction of change being repeated as multiple discontinuities arise.
4.2.2 The importance of the expansive learning cycle being both continuous and discontinuous

Engeström, Kerosuo and Kajamaa (2007) believe that, contrary to what much of the literature would have us believe, organisational learning is not a continuous and linear process of accumulating experience and learning new routines. They quote Dierkes in pointing out that “an implicit assumption in much of the literature is that processes of organisational learning and knowledge creation progress smoothly along an anticipated trajectory once they have been set in motion” (Dierkes, et al., as quoted by Engeström, et al., 2007, p.322). Engeström et al. claim that the opposite is in fact true and that expansive learning is both continuous and discontinuous, with this being a key aspect of organisational learning and development.

Drawing from an empirically based study tracking organisational learning in two Finnish primary health care organisations over a 15 year period, Engeström et al. (2007) found that large cycles of expansive learning may take several years, and out of these, new forms of organisational learning and working are developed. These large cycles emerge from many smaller cycles of new innovative learning and working which occur one after the other. The smaller cycles may be represented by one expansive learning project in the organisation ending and a new one starting. However, the occurrence of many of these smaller consecutive cycles of new ways of learning and working together does not guarantee that a larger cycle of expansive learning is happening. Importantly, their research highlighted that breaks happen between the ending of one small cycle, or project, and the beginning of the next. If the breaks are not bridged, then the larger cycle may not materialise and long-term change does not occur. Engeström et al. term these breaks as either mundane discontinuities or directional discontinuities, and highlight that the theory of expansive learning expects these breaks and wants to overcome them. Mundane discontinuities may be bridged by actions that allow the new small cycle to build on what the previous one has produced. This often requires the support of management to implement actions that ensure the continuity of the expansive learning process. However, directional discontinuities are more significant, and require additional historical analysis of the problems and new modelling of solutions that may require a total change of direction. If new alternative directions are not discussed, then the larger cycle of expansive learning may come to an end, resulting in no long-term change in practice.
The concept of bridging between these smaller cycles of expansive learning is therefore a critical one for the continuity of the expansive learning process and organisational change. The empirical study of Engeström et al. highlighted how vital it is for management to continually be involved in bridging, if expansive learning is to result in organisational development and change. If the cycles are not bridged, then the process of expansive learning may break down into a number of isolated projects and may not result in organisational development and change.

4.2.3 Similarity between Wals’ six steps of social learning and the expansive learning cycle

It is interesting to note that while Wals and Heymann (2004) and Wals (2007) admit that it is hard to deconstruct social learning into a convenient logical cycle that can be implemented, like Engeström they also provided six sequential activities to guide the design of social learning. They begin with an orientation and exploration phase, which involves identifying who the key participants are, and identifying important issues of concern (which in the above summary of the expansive learning process, Engeström highlights are not the same as tensions and contradictions) that mobilise the participants prior knowledge and understanding. This is aimed at increasing their motivation and purpose. The second activity revolves around raising self-awareness of how individuals frame or understand the issues or problems identified. The third activity of Wals and Heymann’s social learning process is when participants deconstruct their own frames of the issues to better understand their current ideologies, values and beliefs on which this frame was built. This is done through a process of clarifying the issues and being exposed to the frames of others that may conflict with their own, or provide an alternative perspective. In doing so the participants challenge their own frames and those of others. This is a crucial step towards understanding the issues and problems. The fourth activity involves reframing and co-creating new ideas and working together with the other participants, which is catalysed by the discomfort of deconstructing one’s own frame, and being enthused by the alternative ideas of others. The fifth activity transforms the emerging ideas into actions that all participants work on together and tests them to see if they resolve the issues and problems initially identified. The last activity is a process of reflective evaluation, which reviews the success of the actions and the changes that have been brought about, relative to how they were originally framed.
Much like Engeström (2000) who sees the conflicting nature of questioning of current practice and identification of contradictions as essential to confronting the root causes of the problem, as has been stated previously (section 2.4.3), Wals and Heymann (2004) and Wals (2007) also see disagreement and conflict as a trigger to initiate social learning. Both therefore see discontinuities as a crucial step in the process of transformational learning. However, the significant difference is that Engeström views the discontinuities as being tensions and contradictions of historical and cultural origin that take place within and between activity systems, with the tensions and contradictions often not initially apparent to the participants in the expansive learning process. Wals and Heymann on the other hand see discontinuities simply as problems that cause ruptures in practice. Clearly both Wals and Heymann’s sequential activities of social learning, and Engeström’s cycle of expansive learning actions are remarkably similar in many ways, but each have their own strengths and differences. One of the most important strengths of the expansive learning cycle is that it is explicitly based on the solid theoretical foundations of CHAT and its antecedent literatures, whereas the theoretical foundations of Wals and Heymann appear to be less explicit.

An important point to note is that from chapter 6 onwards, I have started to differentiate between ‘expansive learning’ and ‘expansive social learning’. The reason being that as my research played out and I looked at the findings, it seemed possible to call the learning taking place expansive social learning, because I could see social learning to have taken place through the expansive learning intervention. I therefore felt the ‘social’ aspect of expansive learning is so important and descriptive of the types of learning processes that constitute expansive learning, that it needed to be explicitly included. I have therefore kept true to Engeström’s theory of expansive learning, and only referred to ‘expansive learning’ when talking about the theory as it is used in the literature. However when speaking more broadly, for example about expansive learning processes, I have used the words ‘expansive social learning’.

4.3 Morphogenetic framework as a methodology for applying realist social theory

The expansive learning cycle serves as the methodological complement of CHAT and the theory of expansive learning, in guiding the research process to determine if expansive learning can support a change in organisational learning and development. To analyse this change and explain the details of how this change has taken place, or why it has not, I have drawn upon realist social theory and
the morphogenetic framework. This will support answering the ‘how’ aspect of my third research question: ‘Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?’

In section 3.8, I have described how, according to Margaret Archer’s realist social theory, society changes over time or remains in a state of stasis, depending on the complex interplay between what she calls the parts (social structures and cultural systems) and the people (agency). Archer (1995) recommends that the social analyst requires practical guidelines to analyse and explain this interplay between the pre-existing social structures with their properties and causal powers, and the people with their associated properties and causal powers. She has therefore put forward her morphogenetic framework as a methodology to analyse this interaction over time, and to determine why change happens or does not happen. The basic morphogenetic cycle (figure 4.2) is seen as three never-ending phases of 1) structural conditioning, 2) socio-cultural interaction, and 3) structural elaboration or reproduction (Archer, 1995).

![Diagram of Archer's basic morphogenetic and morphostatic cycle](image)

**Figure 4.2** The three phases of Archer’s basic morphogenetic and morphostatic cycle, where ‘T’ is time (Archer, 1995, p.157).

Archer believes that the morphogenetic framework is:

. . . the practical complement of social realism because it supplies a genuine method of conceptualising how the interplay between structure [in which Archer includes cultural systems] and agency can be analysed over time and space. It is based on two basic
suppositions: 1) That structure necessarily **pre-dates** the action/s leading to its reproduction or transformation. 2) That structural elaboration necessarily **post-dates** the action sequences which gave rise to it. (ibid., p.15)

In this way social structures are the results of previous social interactions between people in the past who have conditioned the context in which people currently find themselves. The way in which the current people respond to this context, will then shape the social structures that future people will find themselves in (Wheelahan, 2007). However, the ability of people to respond will be limited by the ‘degrees of freedom’ that the social structures allow, which sets the boundaries of agency (Archer, 1995). The temporal dimension is therefore a critical part of the morphogenetic framework.

Archer puts forward the morphogenetic framework as the way of operationalising analytical dualism where the analysis of structure and agency are done separately in order to understand the interplay between them (Archer, 1995). She therefore highlights that “since we are indeed dealing with emergent properties in the analysis of structure, culture and agency, then in fact we are also concerned with three kinds of cycles, each of which has relative autonomy and yet interacts with the others” (Archer, 1995, p.192). For this reason Archer suggests that the morphogenetic framework should be applied separately to structure, cultural and agential systems. However, even though the three cycles of structure, culture and agency are analysed separately, Archer highlights that in society they do interact at the common middle phase of social/socio-cultural interaction:

The three [cycles] are continuously operative in society and are always interrelated because they intersect in their middle element - since all generative mechanisms are only influential through people. Yet they also have relative autonomy from one another and therefore may be out of synchrony; with one fostering morphogenesis and another morphostasis. Whether they are or not, what is involved is the confluence of three sets of emergent properties and by theorizing how (the different states of) their generative powers interlock, then we can extend firmer expectations as to outcomes than if dealing with emergence confronting nothing but contingency. (1995, p.193)

The following explanation provides more detail on the three separate morphogenetic cycles of structure, culture and agency.
4.3.1 Morphogenetic cycle of structure

Figure 4.3 illustrates how Archer sees the morphogenetic framework as applied to social structures, and the resulting morphogenesis/stasis of these structures.

The first phase of structural conditioning is represented by T1. This represents the time at which the existing properties of the structures, which have developed as a result of a previous morphogenetic cycle, provide a context for the structural conditioning of the agents. These existing properties of the structures therefore mould the context agents involuntarily find themselves in, predisposing them to respond with certain actions (Luckett, 2012). Using the Mondi case study as an example, this could be the period when the properties and powers of the operational structures of the company condition staff (agents) to do their jobs in a certain business orientated way. T2 – T3 represents what happens during social interaction when a group of agents interact with the structures. For example, Mondi staff may begin to ask themselves if these structures limit their possibilities for working collaboratively together, or if the structures resulted in staff working in professional job description silos with little possibility for interaction between them. It is during this period of social interaction that the agency of Mondi staff is exercised as personal emergent properties and powers, and the original structures may begin to be transformed. T4 represents the results of this social interaction, and whether it has transformed the structures and elaboration has occurred (morphogenesis), or maintained the status quo and reproduced the structures (morphostasis). Since the morphogenetic cycle is endless, T4 then becomes the new T1 in the new cycle.
Luckett (2012) highlights that whatever emerges from the T2 – T3 period of social interaction is dependent on the context of the situation and cannot be predicted, but that the analysis of the history of this context is necessary to explain the outcomes of this social interaction. Archer explains the importance of this unpredictability in saying that “society is that which nobody wants, in the form in which they encounter it, for it is an unintended consequence” (1995, p.165), and the reason she gives for this is that “society depends upon reflection without embodying it (contra idealism), and is reliant upon agents wanting change yet rarely changes in the way anybody wants. And this is because of the unpredictable interplay of the two sets of emergent, irreducible and autonomous causal powers pertaining respectively to structure and agency” (ibid., p.75). Importantly this highlights that one cannot predict the outcomes of the expansive learning process in advance, because change cannot be predicted in an open system such as which society is. The researcher therefore has to guide the expansive learning process, let it take its course, and see what outcomes emerge from it.

4.3.2 Morphogenetic cycle of culture

Figure 4.4 illustrates the morphogenesis/stasis of the cultural system, which is very similar to that of the structural system.

![Diagram of morphogenetic cycle of culture](image)

Archer highlights this similarity in saying: “culture is approached analytically in exactly the same way as structure, for it is just as appropriate to speak of cultural as of social structures.” (2000,
Using the Mondi example, the first phase of this cycle T1, would be the time representing the current corporate culture of Mondi that was developed during the previous morphogenetic cycle. As with the framework when it was applied to social structures, the context for cultural conditioning has therefore already developed, and it conditions the staff to act in certain ways when they start their employment with the company during this period. It is only during the second phase of the cycle, which T2 – T3 represents, that Mondi staff begin to interact with the cultural conditioning of Mondi, question it, begin to understand it, and attempt to transform it. Depending on the outcomes of this interaction, the cultural system of Mondi will either be elaborated or reproduced, which is represented by T4.

### 4.3.3 Morphogenetic cycle of agency

Figure 4.5 shows the morphogenesis/stasis of corporate agency as Archer describes it.

![Diagram](image)

**Figure 4.5** The morphogenesis of corporate agency (Archer 2000, p.268).

The indeterminacy of the morphogenetic cycles is partially due to the types of agents and the agency they are able to bring to bear on social structures and cultural systems. From a morphogenetic perspective, Archer defines agents as simply being people that “are the agents of the socio-cultural system into which they are born ... and equally they are agents of the systemic
features they transform (since groups and collectivities are modified in the process)” (Archer, 1995, p.257). Archer describes two types of agency that can be found at T1, as primary agency and corporate agency. Primary agents, she says, are “collectivities [of people] sharing the same life chances” (Archer, 2000, p.263). For example, those Mondi staff going about their daily work and being shaped by the conditioning of the emergent properties and powers of the social structures and cultural systems of Mondi, could be seen as primary agents. Therefore they influence the situation of their work, by exercising their primary agency of doing the job at hand. However also at T1, there are some primary agents who in the search for change may have organised themselves into interest groups to undertake collective action, so they can achieve a particular activity or goal for change within an institutional context. These people have transformed themselves into corporate agents, by using their personal emergent powers of reflexivity to undertake this collective action (Archer, 2000). Collective action is therefore seen as an emergent property of agency, although the power of the structural and cultural context of the corporate agents constrains or enables the power of agents to engage in this collective action. Archer highlights the importance of corporate agents as being groups of people who know what they want to achieve, can articulate it to others, have organised themselves to do this, and most critically they can bring about collaborative action to elaborate or reproduce the structural or cultural system (Archer, 1995). Archer therefore differentiates primary agents from corporate agents, as collectivities of people that lack an interest in changing the status quo either in society or an institutional sector. Primary agents also do not have any say in shaping the structural and cultural systems of their context (Archer, 2000). T2 – T3 is the period when group interaction occurs between the primary and corporate agents. Depending on this interaction either group reproduction will occur at T4 and the status quo remains, or group elaboration and the development of agency will take place with an increase of corporate agents. A third type of agency can also be developed as some corporate agents are then transformed into what Archer (1995) calls social actors who can in turn effect change at a cultural and structural level. These social actors may be described as people who have a social role to play, such as being a manager in Mondi, in which the role itself possess certain properties and powers that cannot only be attributed to the characteristics of the individuals who occupy them. The agency therefore conditions, but does not determine, the individual who inhabits this social role. The role of the manager will therefore have its own properties and constraining and
enabling powers, which can be effected in slightly different ways, depending on the individual occupying that managerial role.

The above description of the morphogenetic framework explains how to begin to separately analyse the three cycles of structure, culture and agency, through the concept of analytical dualism. Archer neatly brings them together again by highlighting the importance of also analysing the histories of emergence between these three cycles, by “examining the interplay within and between the three cycles, for the ultimate benefit of analytical dualism is that it is not a static method of differentiation but a tool for examining the dynamics by which the ‘parts’ and the ‘people’ shape and re-shape one another through their reciprocal interaction over time” (Archer, 1995, p.194). Therefore these three cycles of structure, culture and agency, do not occur in isolation of one another, and it is the interaction, interplay, and relations between the three that bring about the emergence of social change. For this reason, these three cycles need to be brought together again to explain how change emerges from their interaction. For clarity of understanding and explaining how this interplay and integration of the three morphogenetic cycles occurs to bring about social change, in my analysis I will therefore describe the three cycles as combined in the same T1-T4 phases, but still analytically still separating them to explain the relationality.

4.4 Case study approach

Since the research follows a critical science orientation and a critical realist ontology with an interest in social change, the research required in-depth and explanatory descriptions of complex social phenomena in a real life context, which explain the process of expansive learning and how it contributes to organisational learning and development for improved wetland management in Mondi. Cultural, historical and contemporary events and relations needed to be examined, without the behaviours of the participants being manipulated. A case study approach was therefore seen as being well suited, as it allowed the research to keep the characteristics of these real life events as holistic and meaningful as the real life situation, while understanding that the boundaries between the phenomenon and its context are not distinct (Yin, 2009). When conducting an empirical enquiry of an education case study, Bassey (1999) believes that it is important to ensure that the case study occurs within a well defined localised boundary of time and space; examines interesting aspects of an education activity; occurs predominantly in its natural context, and the research is conducted to
inform the decisions of key decision makers and/or practitioners. The case study approach was therefore further seen as being appropriate, since my research sought to examine a specific activity of wetland management by a specific group of people that takes place in its natural context within a corporate organisation, and with the aim of developing new practices and new knowledge for the benefit of the research participants as well as the organisation. Lastly, since the research was guided by the expansive learning cycle methodology, which requires using a specific interventionist method of change laboratory workshops in which to conduct the research as highlighted in section 4.5, a case study approach was concluded as being well suited.

4.4.1 Selection of case study areas and participants.

The case study focused on four business unit areas of Mondi, which comprise all Mondi’s landholdings, situated in KwaZulu-Natal and Mpumalanga provinces in South Africa (figure 4.6).

![Map with research study region highlighted](image)

**Figure 4.6** Map with research study region highlighted (Tourist map of South Africa, 2013).

The four business unit areas are the Mondi-Shanduka Area near the Drakensberg mountains (1), the Greytown Area near the city Pietermaritzburg (2), the Umfolozi Area in Zululand (3), and Central Area near the town of Piet Retief (4) as highlighted in figure 4.7.
These areas were chosen as they represent the core areas of Mondi’s plantation forestry operations, and were areas that all had significant wetlands that required improved wetland management. It was felt that by conducting the research in these areas, there would be sufficient contact with most of the key staff in Mondi who were responsible for managing wetlands. This would therefore provide the expansive learning process with a good chance of a meaningful result.

Seventeen Mondi staff were selected from the four areas to form the core group of research participants that participated during all four phases of the research (sections 1.10 and 4.6), with...
whom most of the data would be generated. This number of participants was chosen as it was seen to be a size of group that was most importantly, small enough to be able to work with in a meaningful expansive learning process, but large enough be able to generate sufficient data. Of these seventeen participants four were woman, ten were White and seven Black. The low number of woman was due to forestry operations being traditionally dominated by men, rather than a preference to have men as research participants. From each of these areas, there was a minimum of one forester, one environmental specialist, and one community engagement facilitator who had all worked together to varying degrees. An additional two other foresters from the Zululand and Greytown areas also participated. The research participants were selected according to the three job descriptions that were responsible for some degree of wetland management in these areas, and individuals within these job descriptions that were most likely to have differing opinions and be willing to express them in a group. Three managers were also selected to participate, including the environmental manager and training manager both from the Mondi head office in Pietermaritzburg as well as the Greytown Forestry Area Manager. The managers were chosen to be able to provide a broader and more strategic insight to the deliberations from a middle level management viewpoint. Where possible, most participating staff were selected on the basis of having a minimum of five years of working experience with the company, to be able to provide greater depth to the historical perspective. During phase three of the research (section 4.6.3), the number of research participants was expanded to fifty five participants when additional foresters, CEFs and forestry area managers from the four business unit areas were invited to participate in sessions reflecting on the outcomes of the expansive learning process. These additional participants were not selected, or restricted to the number of fifty five, but chose to be involved after invitations were sent out to attend research feedback sessions to find out more about the research project. In addition to the Mondi employees, two MWP staff members who work with Mondi on wetland management participated in the research, as well as me. The method used to generate the data for the four phases of the research, was through an interventionist approach of change laboratory workshops, which is outlined in the following section.
An interventionist approach of Change Laboratory workshops as a method for data generation

In the mid 1990s Yrjö Engeström and co-researchers developed a workshop intervention toolkit called Change Laboratory, which is typically conducted in an activity system that needs significant transformation (Engeström, Virkkunen, Helle, Pihlaja, & Poikela, 1996). The Change Laboratory has been designed as a method to complement Engeström’s methodological expansive learning cycle, and has been fine-tuned by Engeström over the past 20 years. Based on Vygotsky’s concept of double stimulation, it consists of 5-10 workshop sessions each lasting about two hours involving practitioners, professional managers and the interventionist researchers who facilitate the process. The sessions may be arranged either as one session per workshop, or as multiple sessions in a fewer number of longer workshops, as was the case for this research.

These workshop sessions take research participants through the seven different steps of the expansive learning cycle. Through reflexive deliberations participants analyse the historically emerging tensions and contradictions in the interacting activity systems, looking at the past, present and future periods of time, and develop solutions to deal with the contradictions in an effort to expand and co-construct a new reconceptualised object (improved wetland management) of the interacting activity systems. A typical Change Laboratory setting was used, where participants are seated specifically in a horse shoe arrangement all facing the data projection screen where mirror data is presented and events and ideas are recorded from the past, present and the future.

Although I have tried to follow Engeström’s Change Laboratory method and the key processes he advocates as closely as possible, I have also not been a slave to the method. I have used it as a foundation for the research, and slightly adapted its use to the context and situation of working with Mondi plantation forestry staff. I have therefore altered the name of ‘Change Laboratory workshops’ that Engeström uses to describe the workshops that form a critical part of the Change Laboratory method, to ‘interventionist workshops’ which to me more aptly describes what they were. An overview of how I used the Change Laboratory method follows.
The foundation of the Change Laboratory is built on the ethnographic data gathered from the activity setting (Engeström, 2008), forming step one of the expansive learning cycle. It is here that crucial issues, problems, insights, tensions, dilemmas and innovative solutions from the past, present and future practices were recorded through interviews with key individual practitioners and managers before running the first interventionist workshop. The data, which includes the emerging tensions and preliminary contradictions identified from the interviews, was then brought into the first workshop consisting of a number of two-hour sessions. The data was ‘used as a mirror’ to reflect the data captured from those initially interviewed back to the participants, and to catalyse interaction between the workshop participants in order to analyse the tensions and preliminary contradictions. It is here that participants began to deconstruct their own frames of how they view the issues, and are challenged by the views of others in a similar way that Wals (2007) describes. This formed step two of the expansive learning cycle.

Drawing on Vygotsky’s concept of double stimulation, which Engeström (2008) sees as playing a crucial role in transformative learning, the mirror data of this first interventionist workshop provided the participants with the first stimulus. This first stimulus is when the participants are presented with a problem that they cannot solve on their own with their current understanding and knowledge. The second stimulus is when they are provided with a tool that can be used as an instrument for better understanding the problem and participants are able to develop solutions to it (Mukute, 2010). The concept of double stimulation is crucial. It is described by Van der Veer and Valsiner, in double stimulation experiments as “the subject is put in a structured situation where a problem exists ... and the subject is provided with active guidance towards the construction of a new means to the end of a solution to the problem” (Veer & Valsiner, as quoted by Engeström, 2008, p.8). This concept supports participants to enter what Vygotsky calls the zone of proximal development (ZPD). The concept of the ZPD, which as discussed in section 3.3.3, many consider to be his most profound contribution to the education debate, provides a key to understanding how social and participatory learning occurs. Using an example of development in children, which he also saw as being applicable to adult learning, Vygotsky defined the ZPD as the distance between a child’s “actual development level as determined by independent problem solving and the level of potential development [the higher level] as determined through problem solving under adult guidance or collaboration with more capable peers” (Vygotsky, 1978, p.86). In the change
laboratory method the ZPD is seen as a collective ZPD of all the participants, rather than only being an individual ZPD as described above by Vygotsky (Mukute, 2010). In this way, the collective ZPD leads to learning at an individual cognitive growth level, as well as at a collective, organisational level through cultural change in social practice, as described in section 2.5.4.

Conceptual tools such as the CHAT triangles demonstrating the different components of the activity system, or questions designed to stimulate further self questioning, are then introduced at the beginning of the second interventionist workshop (again consisting of a number of two-hour sessions) to facilitate a deeper analysis of the data by the participants, identifying additional tensions and contradictions as well as their root causes. This Engeström (2008) terms the second stimulus, where he advocates the conceptual models of the researchers are reworked together with the deeper insights gained by the participants. Using this second stimulus, participants were challenged to use the conceptual tools to reconstruct more meaningful designs of the activity system they were aiming to transform. In other words, the interventionist workshops encouraged participants to expand the object of the activity system, and develop new tools, rules, and division of labour to provide new solutions overcoming the inhibiting factors that prevented transformational learning from happening. This formed the third step of the expansive learning cycle. During the last part of this second interventionist workshop, participants evaluated the newly modelled solutions, to check that they would potentially work in dealing with the contradictions, as the fourth step in the expansive learning cycle. The new solutions were then implemented as pilot projects, forming the fifth step in the expansive learning cycle. Four reflective workshops and nine reflective interviews were then undertaken to reflect on and evaluate the outcomes of the pilot projects as a sixth step, and to lastly consolidate the new wetland management practices as a seventh step in the expansive learning cycle. It is this Change Laboratory process that Engeström (2008) believes will provide the opportunities to gather a rich collection of longitudinal data on the transformations involved in expansive learning. For this reason I have used the change laboratory approach in my research, as providing a method of implementing the expansive learning cycle.

Engeström’s paper ‘From design experiments to formative interventions’ (2008) provides a well thought out detailed account of how the expansive learning cycle as a methodology can be
implemented through the Change Laboratory workshop method, in trying to recapture the object in a hospital surgery unit. This paper, together with Daniels (2008), has provided solid guidance to me in understanding how to run interventionist workshops. So too has Mukute (2010) who used the same methodology and interventionist workshops to explore expansive learning processes in sustainable agriculture workplace contexts in South Africa, Lesotho and Zimbabwe. However, there are many other published cases of researchers using variants of the Change Laboratory workshops. Others that deepened my understanding include: Launis, Virtanen and Ruotsala’s paper ‘Change workshops as a tool in organisational boundary crossing’ (2007); Ala-Laurinaho and Koli’s paper ‘Disturbance analysis as a springboard for understanding service concepts’ (2007); Hill’s paper ‘Workplace learning in the New Zealand apple industry network’ (2007); and Virtanen, Ruotsala and Launis’s paper ‘Ground handling work in change: Disturbances as a tool for developing work’ (2007).

4.6 Data generation and analysis

Instruments used for data generation

The theoretical framework of CHAT and expansive learning, together with the methodology of the expansive learning cycle and the case study approach, have all provided the guidance for determining the use of the Change Laboratory method to bring about changes in organisational learning and development to improve wetland management practices. The Change Laboratory method has in turn provided the guidance for choosing which instruments were required for generating the data. These instruments for phase one and phase two data generation were semi-structured interviews and interventionist workshops; progress review workshops for phase three; and reflective interviews for phase four. Since most of the data generated was verbal and rich in a language sense, the research is qualitative in nature. Due to the expansive scope of the data, this study generated an extensive empirical foundation totalling 50½ hours of voice recordings, which resulted in 464 pages of transcriptions. Therefore it was not possible to bring levels of detail to the fore for every claim made in the thesis, but there is a clear data trail for all the claims made, which emerged from the strong foundation of data that was analysed. For this reason, it was not always possible to present the data as quotes from the interviews and discussions, for example in chapter 5. I have therefore summarised the data in my own words and for transparency provided references to the specific places in the original transcriptions where the evidence can be found. The
original transcriptions may be found in the appendices on the CD attached to this thesis. However where possible I have tried to include quotes from the original conversations, for example in chapter 7 to provide a thick description and to share insights directly from the data where these were most suited to the presentation of the findings.

**Modes of inference used in analysis**

The data from all the five phases has been analysed using inductive, abductive and retroductive modes of inference. Danermark, Ekström, Jacobsen and Karlsson describe inference as “descriptions of various procedures, ways of reasoning and arguing applied when we in science relate the particular to the general. Characteristic of inference is that from one thing conclusions are drawn about something else” (2002, p.75). An explanation of each of these modes of inference follows, as well as a description as to how they were used in the research.

**a) Induction**

Using the inductive mode of inference when analysing data allows “research findings to emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured methodologies” (Thomas, 2006, p.238). In this way, patterns emerging from the data are identified in relation to answering the research questions. The outcome of using this mode of inference is the development of categories or themes, which summarise the raw data. It is therefore a very useful first level of analysis that can be used for reducing large data sets, such as those I have generated during this research, to manageable portions of data that crystallise the essence of what elements, themes and patterns are emerging from the data. After carefully reading the data many times, I used this mode of inference to analyse and code specific pieces of text in the raw data of interest to answering the research questions, and then categorised these coded texts in order to develop analytical memos (Bassey, 1999) which summarise key aspects of the data. I then developed analytical statements (ibid.) that presented the crux of the findings that emerged from the data in the analytical memos (appendices 4; 6; 7b; 8; 9; and 11).
Inductive inference allows for general conclusions to be made from a small number of individual phenomena, which are assumed to be true for a much broader number of phenomena that have not been observed (Danermark, et al., 2002). Therefore induction begins from data that is known, and comes to more generalised conclusions that go beyond that which is known. For example, drawing conclusions from interviewing a number of Mondi staff about wetland learning and practice, and making the assumption that the same may be true for all Mondi staff. The most important question therefore becomes whether the views of those interviewed reflects the interests of most of the Mondi staff. Therefore there is a risk that conclusions drawn from inductive analysis may be incorrect, although the data on which they are based is true. To guard against this I have selected research participants representing all three professional job descriptions that are responsible for wetland management, across all four business unit areas of Mondi. In addition, the conclusions that emerged from the research during phase one and two, were tested and corroborated not only with the research participants, but also with an expanded number of participants through the five progress review workshops held during phase three. However, it is recognised that in terms of critical realist ontology, one of the limitations of inductive inference is that conclusions can only be made at the level of the empirical. As Danermark et al. point out “induction gives no guidance as to how, from something observable, we can reach knowledge of underlying structures and mechanisms; it is limited to conclusions of empirical generalizations and regularities” (2002, p.87). Therefore in trying to understand the detail of how the changes in organisational learning and development were happening, abduction and retroduction were also employed, which are both important modes of inference to be used in research that supports a critical realist ontology (ibid.).

**b) Abduction**

Abductive inference is required when conclusions need to be drawn from circumstances and structures that are not provided by individual empirical data. Abduction helps to take concrete events, and uses a conceptual framework of ideas or a theory to re-describe, re-interpret or re-contextualise these so that a different and maybe deeper understanding and insight of the original idea is developed (Danermark, et al., 2002). Re-description, or re-contextualisation is therefore the central part of abduction. Importantly, through re-
contextualisation, new meaning is derived from phenomenon which is already known, as “we introduce new ideas of how individual phenomena are part of the structure and internal relations” (ibid., p.96). However, Danermark et al., stress that abductive logic does not result in absolute truths, but through re-descriptions, it does provide a better and deeper knowledge of the case being studied. In highlighting the importance of abstraction to social science research, they crystallise the essence of social science analysis as being:

... essentially a matter of using theories and frames of interpretation to gain a deeper knowledge of social meanings, structures and mechanisms. In this way we build up knowledge that cannot be reduced to empirical facts and thus cannot be tested in line with the same logic as the testing of empirical predictions. (Danermark, et al., 2002, p.92)

In this research, I have used CHAT, the theory of expansive learning, and Archer’s realist social theory together with her morphogenetic framework, as theoretical lenses to analyse and re-describe the data using abduction. This allowed for example, for a re-contextualising of the problems that the Mondi staff explained as inhibiting wetland learning and practice, and to understand these problems in a new way as much deeper-seated institutional contradictions and associated tensions. Another example of abductive inference, was the use of second generation CHAT as a theoretical framework to re-describe the interview data (phase one) on how Mondi staff learnt about wetlands and practised wetland management as the three activity systems of foresters, CEFs and environmental specialists. Importantly, the use of abductive inference and Archer’s morphogenetic framework supported analysis of the data to reveal that the actions of the Mondi staff were conditioned to a certain degree through the structural influences of the Mondi corporate culture, and the institutional structuring of work operations. It then helped to explain how the interaction of the staff with these structures resulted in the beginning of organisational development and learning, and changed wetland practice. These examples provide an insight into how the abductive mode of inference was used in analysing the data (see chapters 5, 6 and 8).

c) Retroduction

Retroduction is also a mode of inference important to critical realist research. Retroduction supports the researcher to analyse what basic transfactual conditions have created the ‘social meanings, structures and mechanisms’ that Danermark et al. highlight above as being
revealed through abductive logic. In this way, Danermark et al., see retroductive logic as being able to help the researcher to ask “what are the basic characteristics of the general structures from which we start, in abduction, when we interpret and re-contextualize particular actions and events?” (2002, p.96). Retroduction therefore allows the researcher to dig deep to understand not only more about these structures, but also what generative mechanisms at the level of the Real are causing the social structures and cultural systems, which are in turn conditioning the agency of people at the level of the actual and the empirical.

Although the data generated in each of the four phases needed to be analysed at the end of each phase in order to feed into the subsequent phase, phase five is purely an analytical phase that draws on the data generated in all the previous phases.
<table>
<thead>
<tr>
<th>Research phase</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
<th>Phase 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expansive learning step</td>
<td>Step 1: Questioning</td>
<td>Step 2: Analysis</td>
<td>Step 3: Modelling new solutions. <strong>Step 4:</strong> Examining and testing new models</td>
<td>Step 5: Implementing new models</td>
<td>Step 6: Reflecting on the process and results <strong>Step 7:</strong> Consolidation</td>
</tr>
<tr>
<td>Data generation</td>
<td>17 interviews – learning and practice Questions (appendices 1 &amp; 10a) Transcriptions (appendix 10a)</td>
<td>Workshop #1 Transcriptions (appendix 10b)</td>
<td>Workshop #2 Transcriptions (appendix 10c) Action and implementation plan or project solutions (appendix 7a)</td>
<td>Projects implementation - solutions</td>
<td>5 progress review workshops Transcriptions (appendix 10d) Management meeting &amp; seminar Transcriptions (appendix 10e)</td>
</tr>
<tr>
<td>Research question</td>
<td>#1</td>
<td>#1</td>
<td>#2</td>
<td>#3</td>
<td>#3</td>
</tr>
</tbody>
</table>
4.6.1 Data from interviews (Phase 1)

Data generation

In step one of the expansive learning cycle, current practices are questioned based on ethnographic evidence. It is here that crucial issues, problems, insights, tensions, dilemmas and innovative solutions from the past, present and future practices were recorded through interviews with key practitioners and managers before the first interventionist workshop where they could be collaboratively discussed. Seventeen semi-structured interviews were undertaken with Mondi staff from 25 February to 4 March 2010. The aim of the interviews was to describe, as explained in section 4.4.1, a) a ‘picture’ of the three main activity systems involved in wetland management; b) identify potential challenges and difficulties inhibiting wetland sustainability practices; and c) possible solutions to overcome them. Interviews took the “interview guided approach” as referred to by Patton (as cited in Cohen, Manion, & Morrison, 2000, p.271), with Seidman’s (1998) interviewing techniques most useful when conducting the interviews. It is important to acknowledge that the power relations between the interviewer (myself) and the participants being interviewed, had the potential to reduce the objectivity of the information provided in the interviews. Although this type of power relationship cannot be eliminated, I found it important to be aware of and acknowledge it, in order to reflexively take this into account when conducting the interviews and analysing the data.

To gain an insight into how these staff were learning and practicing wetland management, a number of questions were explored during the interviews. Although the questions differed slightly according to the three different job descriptions, each question was developed to illuminate a different element of the activity system they were part of: the object of their work; the outcome they were aiming for; the tools that mediated their work in achieving the object of the activity system; the rules that governed the use of the system; the community of practice they worked with; and how the labour was divided within this community. Any challenges and difficulties staff may have experienced that inhibited their learning and practice of wetland management were also discussed. This helped surface the tensions and preliminary contradictions that were evident between the three activity systems. During the interviews, potential solutions were also discussed to deal with the challenges and difficulties that staff thought might strengthen their wetland learning and practice. An example of the questions used when interviewing foresters has been
attached as appendix 1. A full list of all questions used during the interviews of the environmental specialists and community engagement facilitators can be found included on the compact disc as appendix 10a, which contains the full case study records.

Each interview averaged a little less than forty minutes, with a total of 10½ hours of data being captured on a digital voice recorder. All interviews were transcribed, totalling 162 pages. An example of one transcribed interview is included as appendix 2. The complete set of transcriptions of all 17 Mondi staff interviews is included on the compact disc (appendix 10a).

**Data analysis**

**Reflexity required for analysing data**

Interviews are social constructions, and as such take place within a socio-cultural perspective as well as within a situated perspective on learning, that is dialogical in character and can involve learning during the interview process. This means that since the participant being interviewed may be learning while the interview progresses, it is not a simple matter of using interviews for defining the starting point for what people know when later analysing what learning changes might have occurred as the research project progresses. However, the expansive learning process is a process of data synthesis that starts from the activity system analysis for the contextual profiles and the surfacing of the tensions and preliminary contradictions in phase 1, which is then presented to participants as mirror data for them to reflect on during phase 2 (section 4.2). The data generated during this period is therefore used as a starting point to work with the participants in an interventionist collaborative way. Therefore the expansive learning methodology allows for the interviews in phase 1 to be taken as the starting point for determining what knowledge and understanding participants have come into the expansive learning process with. The interviews have therefore not taken place in the traditional form of ethnographic interviews, but rather in the form that the expansive learning methodology has guided.

When analysing the data, I also found that I had to be alert to the bias of participant perspectives that could be connected to their working position. Therefore I found that it was important for me to think about, for example, how a participants’ working position could have influenced their response. In this way I have been reflexive and conscious of these issues raised above, when
participants were interviewed and the data analysed for determining what changes in learning had occurred.

**Broad analytical steps and indexing system**

In order to assist in grouping the interview data into specific themes for ease of analysis, the six elements of the second generation CHAT activity system referred to in section 3.4.2 were used as a descriptive code to each aspect of the conversations (Cohen, Manion & Morrison, 2000). The interview data was therefore analysed using the abductive mode of inference to develop contextual profiles of each activity system (appendix 3). A simple indexing system was developed to allow for key data to be traced from the contextual profiles back to the source of the relevant interview. This consisted of one or two letters of the alphabet representing the person interviewed, followed by the letter ‘I’ referring to the interview, as opposed to data generated from the interventionist workshops. For example, a comment that is indexed with ‘Gi’ represents that it came from the interview held with person ‘G’.

Using the abductive mode of inference, third generation CHAT which takes collaborative practices between activity systems as the unit of analysis for activity theory, provided a theoretical and analytical lens to surface the key tensions and contradictions that needed further discussion during the two interventionist workshops of phase 2. This was done by first using the inductive mode of inference to develop an analytical memo (Bassey, 1999), by grouping the tensions under common themes that emerged from the interviews (appendix 4). When examining these thematic groupings using abductive analysis, twelve contradictions became clearly visible (appendix 5). Potential solutions arising from the interview conversations were also surfaced and collated into another analytical memo (appendix 6). The indexing system for tracing from which interview a particular comment in the analytical memos (appendix 4 and 6) came was made up of: the professional description category of the person who made the comment; the letters of the alphabet representing the same person who made the comment; the letter ‘I’ referring to the interview as opposed to the workshops; followed by the transcription page number that the conversation took place in. For example, a comment that is indexed with ‘Forester, GIP5’, represents a comment that came from page 5 of the interview transcription of a Forester named ‘G’. The professional description category was added to facilitate the ease of identifying from which professional orientation the comment was coming.
4.6.2 Data from interventionist workshops (Phase 2)

a) First interventionist workshop

Data generation

During the second step of the expansive learning cycle, the first interventionist workshop was held lasting eight hours consisting of seven sessions each approximately one hour long, and spread over two days from 19 – 20 April 2010. The first three sessions were held in the afternoon of day one, and the remaining four sessions held on the morning of day two. There were three reasons for breaking the workshop into two days: First to allow those participants coming from far the time to travel to the workshop venue while keeping the workshop period to two days. Secondly, and most importantly, to provide a long evening break for participants to informally reflect on the first day's proceedings on their own, as well as amongst themselves. Thirdly, to allow the participants from the different regions to get to know each other better, creating a ‘safer’ environment conducive for open dialogue during the following sessions.

This first workshop provided those Mondi staff interviewed with the space to collaboratively reflect on, and investigate all twelve of the emerging contradictions and associated tensions, insights, dilemmas and innovative solutions from the past, present and future practices recorded through the interviews. The workshop was therefore used to mirror the data captured from the interviews, and to catalyse interaction with and between the workshop participants for analysing the issues and problems. This built on the conclusions arising from the abductive analyses of step one, and followed onto more detailed and better articulated questioning of the existing practices.
It is during this first workshop that participants begin to deconstruct their own frames of how they view the issues, and are challenged by the views of others. The reflection by participants on the mirror data, was not about what they as individuals were or were not doing, but rather supported participants to focus on the interaction between themselves and other components of the historically developing institutional setting of Mondi. The process was therefore less accusatory and desensitises discussions between individuals, supporting the development of what Wals (2007) calls a ‘safe space’, allowing for more open debate and discussion. This is a crucial point, as due to the multiple viewpoints of participants and the generalisability of the conclusions from step one, this questioning of current practice was at times conflictual in nature. This conflict was important, because it supported workshop participants to focus on the root causes of the problems that were preventing transformation from occurring. Drawing on Vygotsky’s concept of double stimulation, this initial workshop provided the participants with the first stimulus.

The interventionist workshops are similar to focus groups (Krueger & Casey, 2000) in that they are essentially group interviews. However, rather than the traditional questioning and answering occurring between the researcher and the participants, the focus was on the interaction between
participants, and on issues provided for discussion by myself that were emergent from the contextual activity system analysis and reflections on this data. Therefore the participants interacted with each other and the mirror data rather than with me only, so that the views and reflexivity of the participants were allowed to emerge (Cohen, Manion & Morrison, 2000). It was therefore from this interaction between participants, that the data from the intervention workshops was generated.

At the end of interventionist workshop #1, participants reframed the twelve contradictions and prioritised two key contradictions they thought were inhibiting improved wetland management. During this prioritising process, participants decided to exclude some of the contradictions due to time constraints, and include others under the two key contradictions prioritised. The resulting prioritised contradictions can be seen in appendix 5. The development of the final contradictions contributed to answering my first research question: What tensions and contradictions exist in wetland management in a plantation forestry company?

Eight hours of workshop discussions were audio taped and transcribed, totalling 74 pages. The complete set of transcriptions of all seven sessions of workshop #1 is included on the compact disc as appendix 10b. Discussions were also captured on eight hours of video recordings. Mukute (2010) has shown that this, together with photographic evidence and documentary evidence, is a more reliable way of capturing expansive workshop data.

Data analysis
Using the inductive mode of inference, analytical memos of additional tensions and solutions that were surfaced during the discussions of workshop #1 were developed, and have been included as appendices 4 and 6. This information was then used in workshop #2, where participants were required to further analyse the root causes of the contradictions. The indexing system for tracing in workshop #1 the origin of a comment included in the analytical memos (appendix 4 and 6), was made up of: the professional description category of the person who made the comment; the letters of the alphabet representing the same person who made the comment; the letter ‘S’ and a number referring to which of the seven sessions in the workshops the comment was made; followed by the session transcription page number that the conversation took place in. For example a comment that is indexed with ‘Forester, GS3P5’, represents a comment that came from a
Forester named ‘G’, during session 3, and can be found on page 5 of the transcription. The video data was not analysed in the end, due to the enormity of the transcription data sets generated from all four phases of data generation, and because the transcriptions were clear and detailed enough. Video data was treated as ‘backup’ data for verification. It has therefore not been included in the case records.

b) Second interventionist workshop

Data generation

The third step of the expansive learning cycle took place as a second interventionist workshop lasting another eight hours, consisting of five sessions each from one to two hours long, and like the first workshop, spread over two days from 18 – 19 May 2010. A month long gap was provided between the two workshops, to accommodate the participants’ work schedules, which importantly allowed participants time in their workplace to reflect on the tensions, contradictions, and the deliberations of the first workshop. The first two sessions of the second workshop were held in the afternoon of day one, and the remaining three sessions held on the morning of day two. It was during this second interventionist workshop that further questioning was used as a tool to continue to probe the root causes of the two prioritised contradictions and their associated tensions. This facilitated a deeper analysis of the data by the participants, identifying additional tensions as well as their root causes. Engeström (2008) termed this the second stimulus, which was used to challenge participants to reconstruct different ways of engaging with the arising tensions and develop potential solutions leading to more meaningful designs of the activity systems they were aiming to transform. Consequently the workshop encouraged participants to begin expanding the object of each activity system, and develop new tools, rules, and division of labour to provide new solutions overcoming the factors inhibiting improved management of Mondi’s wetlands. Through this process participants were supported to develop an action (section 5.6) and implementation plan (section 5.7) which modelled new solutions in the form of projects and alternative ways of working and learning that the participants thought would lead to new practices. The final action plan has been included as appendix 7a.
As the fourth step in the expansive learning cycle, workshop participants examined this plan through critical discussion to better grasp its viability. This step took place at the end of the second workshop. The eight hours of discussions from the second interventionist workshop were also audio taped and transcribed, totalling 153 pages. The full transcription of the five sessions in workshop #2 has been included on the compact disc as appendix 10c.

**Data analysis**

Using the inductive mode of inference, an analytical memo was developed recording the main issues discussed during workshop #2, which revolved around the development of the action and implementation plan. The analytical memo has been included as appendix 7b. This was used, together with the analysis of data from workshop #1, and the analysis of data from phase 1, to develop analytical statements that helped to answer my second research question: Can expansive learning begin to address the tensions and contradictions that exist in wetland management in a plantation forestry company, for improved sustainability practices? The same indexing system as used for tracing comments in the analytical memo in workshop #1 was used for tracing comments
in workshop #2. The workshop proceedings were also captured on eight hours of video recordings, but this additional data was not analysed for the same reasons as stated for the first workshop.

4.6.3 Data from area wide progress review workshops and management meetings (Phase 3)

a) Implementation of projects
The fifth step of the expansive learning cycle relies on implementing the modelled solutions and monitoring the effectiveness of their implementation. After the second interventionist workshop participants went back to their workplaces, in their respective four geographically differentiated business unit areas, as well as the head office in Pietermaritzburg, the base for management. Over the following eight months the participants worked on implementing the projects and initiating the new ways of working and learning that formed the combined action and implementation plan. As the research facilitator, I purposely did not push the participants to do their projects, nor did I follow up during this eight-month period to see how they were progressing. I felt it important to let the participants decide if and how they wanted to progress with the projects they had decided to do. In this way I wanted the expansive learning process to carry on with minimal interference from me, in order to see what emerged. There was a risk in leaving the research participants to implement their projects on their own, in that they might not have implemented their projects, reducing the data sets and the possibilities for organisational change. However, after calculating the risk, I decided to rather see if the expansive learning process was able to carry on without the continual involvement of the facilitator. This is important to know, if this methodology is to be applicable in the workplace situation, where a facilitators time will be limited by the organisation due to costs of facilitators time. At the end of the research, I have reflected on this point in more detail (section 9.4.6).

b) Progress review workshops
Data generation
At the end of the eight-month implementation period, five progress review workshops (figure 4.10) were held between 14 – 22 February 2011. Each workshop lasted approximately 3½ hours (totalling approximately 17½ hours), and were held in each of the original four business unit areas of Mondi, as well as an additional new business area called the Paulpietersberg Area. The aims of the
workshops were to a) provide an opportunity for the CEF, forester and environmental specialist from that Area office area who were participating in the research, as well as the environmental manager and training manager from head office in Pietermaritzburg, to give feedback on their project implementation progress to the broader staff members of their Area office. These additional staff who were new to the research process included all the CEFs, foresters and area management staff of the area office; b) hear what these additional Mondi staff who were new to the research process, thought of the expansive learning research that was being undertaken, as well their views on the tensions and contradictions that emerged from phase one and two of the research; and c) see whether the involvement of a broader group of Mondi staff would encourage and perhaps mobilise additional support to the research participants to carry on implementing their projects, and perhaps catalyse additional improvement in wetland management outside of the projects included in the action and implementation plan developed from the second interventionist workshop. The reason for including the new area of Paulpietersberg, in addition to the original four areas, was an attempt to get feedback on the progress and emerging outcomes of the expansive learning process from a broader group of foresters, CEFs and area management staff who had no previous exposure to the research.
Figure 4.10 Research participants at the five progress review workshops held in each of the original four business unit areas of Mondi, as well as an additional new business area called the Paulpietersberg Area.
Discussions of the five workshops were audio taped totalling 17½ hours and transcribed totalling 168 pages. The complete set of transcriptions of all five workshops is included on the compact disc as appendix 10d.

Data analysis

As a first level of analysis using the inductive mode of inference, an analytical memo was developed that captured: a) key discussions of the progress participants had made on implementing the projects and initiating the new ways of working and learning that formed the combined action and implementation plan, developed during the second interventionist workshop of phase two; b) key opinions from the additional Mondi staff who were new to the research process, about the contradictions that emerged from phase one and two of the research; c) follow-up actions the broader group wished to take after the completion of the workshop; and d) reflections on the workshop. The analytical memo for these workshops has been included as appendix 8.

As a second level of analysis, the information from the analytical memo was further analysed using induction to determine what institutional, personal, and wetland management practice changes were beginning to emerge. A second, more concise, analytical memo was then developed, based on the six types of changes that began to emerge: 1) changes in processes, 2) changes in values, knowledge, and thinking, 3) changes in discourse, 4) changes in approach, 5) changes in practice, and 6) changes in structure. This more refined analytical memo has been included as appendix 9. This analysis began to answer the first part of my third research question: Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?

The indexing system for tracing the origin of a particular comment in the analytical memos (appendix 8 and 9), was based on the same format as for the indexing in the previous sections, as described in the following example: CEF, NPrW3P7 = CEF (representing the job description of the person who made the comment), 'N' (the person who made the comment, Pr (the name of the Area where the workshop was held), W3 (workshop #3), P7 (the page number in the transcription on which the comment can be found). Where discussions between multiple people have been quoted, the indexing only refers to the name of the workshop and not individual people quoted. Therefore if a group discussion in the same workshop that has been referred to above, needed to
be indexed, then it would read PrW3P7. Discussions were also captured on 17½ hours of video recordings, but as with the previous interventions workshops, the video data was not analysed in the end, due to the enormity of the transcription data sets generated from all four phases of data generation, and the similarity of the data sets. It has therefore not been included in the case records.

**Defining discourse in the context of data analysis**

For the purpose of analyzing the data, I have broadly defined discourse after Fairclough (2012) as the use of language in speech and writing, to categorise particular ways of representing different aspects of social life. In defining discourse Fairclough combines ideas from language theory and post-structural social theory. In his recent work, however, Fairclough draws on critical realist social theory after Bhaskar. Language theory sees discourse as social activity and interaction in real social practices. Post-structural social theory focuses on the social construction of reality and sees discourse as a form of knowledge. More recently, in working with Bhaskar’s philosophy, Fairclough has retained an interest in the social construction of meaning, but has recognized that not everything is socially constructed and there exists a reality outside of discourses. Importantly, Fairclough links social and organisational change with a change in discourse and social practice:

> Social change includes change in social practices and in the networking of social practices, how social practices are articulated together in the constitution of social fields, institutions and organizations, and in the relations between fields, institutions and organisations ... and in many cases, wider processes of social change can be seen as starting from change in discourse. (ibid., p.457)

The last point in this quote is important, as it highlights that a change in discourse, can be an indicator of much wider and more significant forms of social change in the future, which is highly relevant to section 9.3.5 on tacit and explicit changes. Fairclough describes the key objective of critical discourse analysis as:

> To give accounts ... of the ways in which and extent to which social changes are changes in discourse, and the relations between changes in discourse and changes in other, non-discursal, elements or ‘moments’ of social life ... The aim is also to identify through analysis the particular linguistic, semiotic and ‘interdiscursive’ features of ‘texts’ which are a part of processes of social change. (ibid., p.452)
While I did not use critical discourse analysis technically or methodologically in this thesis, theoretically this understanding of discourse analysis is suitable to my research, since it: “is characterized by a realist social ontology ... a dialectical view of the relationship between structure and agency, and of the relationship between discourse and other elements or ‘moments’ of social practices and social events” (ibid., p.453). It is important to note that I have not undertaken a detailed discourse analysis of the text in this research, but rather analysed the broad changes in discourse emerging from it.

c) Mondi senior management meeting and seminar

Data generation
The last grouping of data generated from phase three of the research, was: a) at the request of the Mondi senior management of forestry operations, a short 34 minute feedback session was given to the Mondi seniors executives at their monthly executive meeting called the LandForOpco meeting; and b) as a result of this meeting, the executives requested that I hold a two-hour seminar for senior and middle level management at head office. The aim of these two sessions was to: a) provide an overview of the expansive learning research process to the broader management of forestry operations; b) explain why and how the research was being conducted; c) share the preliminary results that were beginning to emerge from the research, and d) hear what the management thought of the research.
Figure 4.11  Mondi senior and middle level management during the seminar to share what was emerging from the expansive social learning process.

The two and a half hours of discussions from both the meeting and the seminar were audio taped and only relevant sections of both were transcribed, totalling 20 pages. The full transcriptions have been included on the compact disc as appendix 10e. All discussions were also captured on 2½ hours of video recordings, but as with the previous workshops, the video data was not analysed.

Data analysis

Using the inductive mode of analysis, an analytical memo was developed, but due to only a few key points of the conversations being identified as important to the research, they were integrated into the same analytical memo appendix 11 as for the data generated from the reflective interviews, as mentioned in the next section 4.6.4 below.
4.6.4 Data from reflective interviews (Phase 4)

Data generation
The sixth step of the expansive learning cycle involved reflecting on the process of the expansive learning cycle and its outcomes with some of the core research participants who took part in the interviews and interventionist workshops. Reflective interviews were held between 17 – 25 September 2012, with nine of the original seventeen core participants consisting of: three CEFs, two foresters, two environmental specialists, as well as two management staff being the environmental manager and a forestry area manager. The reflective interviews were conducted in same way as the semi-structured interviews in phase one, although they were designed to encourage the participants to reflect on the expansive learning process over the two and a half year period they were involved, and what it had meant to them. The seventh step of the expansive learning cycle revolves around consolidating the new practices. This step was part of the reflective interviews. It was thought to be sufficient as those taking part in the nine reflective interviews were considered to be the key participants who understood the purpose of the expansive learning process best, and therefore would be best placed to consolidate the new practices. The reflective interview questions have been included as appendix 12. Each interview lasted between 20 – 30 minutes long, with a total of a little less than four hours of data being captured on a digital voice recorder. All interviews were transcribed, totalling 55 pages. The complete set of transcriptions of all nine reflective interviews is included on the compact disc as appendix 10f.

Data analysis
Using the inductive mode of analysis, an analytical memo was developed by grouping those aspects of the conversations that fell into the six categories of change identified from the analysis of the data generated from the five progress review workshops in phase three, as well as any new potential barriers that may have arisen as a result of implementing the new practices. This analytical memo has been included as appendix 11. This analysis also contributed towards answering the first part of my third research question: Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?
The indexing system for tracing from which reflective interview a particular comment in the analytical memo (appendix 11) came, was based on the same format as for the previous indexing in the other sections, as described in the following example: CRIP2 = C (representing the person who made the comment), RI (reflective interview), P2 (pg #2 of interview). An example of the indexing for the management seminar, which was also included in this analytical memo is: CSEMP2P3 = C (representing the person who made the comment), SEM (seminar), S2 (session 2), P3 (page #3 of seminar transcription). An example of the indexing for the LandForOpco meeting, which was also included in this analytical memo is: VOPCOP1 = V (representing the person who made the comment), OPCO (LandForOpco meeting), P1 (Page #1 of meeting transcription).

4.6.5 Analysis of data using morphogenetic framework to identify how the changes emerged (Phase 5)

Phase five is purely an analytical phase that draws on the data generated and analysed in all the previous phases. In this phase, I drew upon realist social theory and its methodological complement, the morphogenetic framework (section 4.3) to analyse and explain the details of how the change resulting from the change laboratory method has happened, or why change has not happened. In accordance with a critical realist ontology, which attempts to understand what was happening at the levels of the Real, I used abduction to analyse the interplay between the emergent properties and powers of the social structures, cultural systems, and the people, to explain how these changes have or have not happened. I then used retroduction to determine what generative mechanisms may have caused the social structures and cultural systems to exist in the first place. This analysis of the data supported answering the ‘how’ part of my third research question: Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?

4.7 Validity of the research

The way we understand the world impacts not only on the philosophical research orientations, the methodologies, and methods of data generation and analysis that we use, but also the criteria for validating the trustworthiness of the research. It was therefore important to choose criteria for judging the quality of my research decisions based on the critical science orientation and the participatory methodology of the expansive learning process.
Janse van Rensburg notes that “critical researchers insist that all science is value laden ... they do not strive to reduce bias, but aim to develop inter-subjective objectivity through dialogue and critique among research participants” (2001a). Face validity, as described by Lather (1986), is therefore also an important validity criterion. This was partly achieved by all interview transcriptions being member checked, and an example of an email confirming this is attached as appendix 13. Peer review of the results of the analyses was undertaken with colleagues at work, and most importantly with the workshop participants to discuss, debate, clarify and develop a deeper insight into the issues, tensions and contradictions arising from the emerging conclusions generated through the interview analysis and workshops. Triangulation of data generated from the interviews and workshops served to increase the validity and confidence of the research (Cohen, Manion & Morrison, 2000). It was not always possible to go into the field to verify the data provided by the participants, therefore triangulation became an important means to verify the data. For example in section 7.2.1 the validity of a comment from an environmental specialist during a reflexive interview, explaining that the new induction process had improved the environmental understanding of new staff who had attended the new induction process (Enviro, LRIP3&4), was used as evidence to demonstrate how the induction structures and processes had begun to institutionalise staff environmental learning. This evidence was triangulated and corroborated by the similar views of two foresters, who had recently attended the induction process (Forester, TnPrW3P25; Forester, PbiGW3P1). Since I was a participant–observer in the interviews and workshops and my interpretation of the data was open to my own values and opinions, self-reflexivity and continually reflecting on what I did throughout the research process was very important for maintaining research validity (Janse van Rensburg, 2001b; Lather, 1986). Research on expansive learning supports the development of emancipation and empowerment leading towards social change. Therefore catalytic validity was an important criterion, to “judge the quality of the research by asking whether the study has actually ‘catalysed’ or brought about change” (Janse van Rensburg, 2001b, p.11). Chapters 5 – 8, clearly address this issue. To guard against my own ideological position clouding the analysis of the data and my conclusions, inter-subjective objectivity was continually promoted through dialogue and critique among the research participants, especially during the workshops (Janse van Rensburg, 2001b). In addition, I asked a fellow work colleague who has just embarked on her PhD in environmental learning and social change, to become a critical friend. She reviewed my research findings as the research process
progressed. In order to measure what I thought I was measuring, I also sought to ensure construct validity (Janse van Rensburg, 2001b) through careful attention to detail, and consistent ways of working with the theoretical framework of the study in relation to the data, findings and explanations.

4.8 Ethical considerations

Janse van Rensburg believes that as a social practice our research also has an impact on the world, and as such “it is vital that we take ethical responsibility for and are able to trust the research that we produce” (2001b, p.4). In addition, Bassey’s (1999) respect for truth, respect for democracy and respect for persons is useful for thinking about ethics. Since we live in a democratic South Africa, I have had the freedom to question Mondi staff about their wetland practices, develop my own ideas, criticise others, and publish my research findings. However with this freedom, I have also had the ethical responsibilities of respecting the truth and respecting the people with whom I will work. This means that I have had to be truthful in generating, analysing and reporting on the data from the interviews and interventionist workshops. Since all of the data will be generated through interviews and workshops, I have tried to recognise the initial ownership of the data by the people involved, and have respected their dignity and privacy.

It was foreseen that information that was potentially sensitive might be generated, so informed consent, confidentiality, and the consequences of the interviews were considered (Cohen, Manion, & Morrison, 2000). Therefore before the interviews or workshop occurred, potential participants were informed of the purposes of the study, the intended use of its results, potential consequences of the research, and who would benefit from the research (appendix 14). This was reiterated in more detail at the beginning of each interview and workshop. Informed consent was gained from each person involved in the interviews when arranging the interview, and again reiterated before the interview started. Permission to record the interviews and the interventionist workshops was sought before commencing, and participants were informed that they could request the recorder or video camera to be turned off at any time, or even stop their participation if they so wished. Interestingly many participants thought that this was odd. Although the issue of confidentiality and anonymity were explained to all, it was not requested. As the expansive learning process progressed, it became apparent that confidentiality was not an issue to the participants. Therefore
in reporting the results of the data and its analysis, although I have used an indexing system, the style of the reporting includes referring to, for example, the participants professional occupation and sometimes the geographical location where they worked. This has been done in order for the data presentation and analysis to be easier to interpret, explain, and to aid deeper understanding, both for the reader and myself. Member checking took place to verify the interview transcriptions (e.g. appendix 13), and the notes from both interventionist workshops #1 and #2 were sent to all participants (appendix 15). The analytical memos from each workshop were distributed to all participants after they had been written up, and the results of the research will be disseminated to all people who participated.

4.9 Conclusion

This chapter has provided an overview of the methodology, methods, and tools used to guide the generation of the research data and its analysis. Various criteria that I have used for validating the trustworthiness of the research were explained, as well as the ethical considerations that I was mindful of when conducting the research. In the following chapter the data for phase one and two of the research will be presented.
CHAPTER FIVE:
Understanding wetland management activity systems, inhibiting contradictions, and developing solutions to deal with them

5.1 Introduction

In this chapter I present the data generated from the interviews and two interventionist workshops representing phase one and two of the research, as explained in sections 4.6.1 and 4.6.2. The data generated during phase three and four will be presented in chapter 7. Due to the enormity of the data generated and the need to contain the length of the thesis, it was not possible to always present the data as quotes from the interviews and discussions. In much of this chapter, I have therefore summarised the data in my own words and for transparency provided references to the specific places in the original transcriptions where the evidence can be found. The original transcriptions may be found in the appendices on the CD attached to this thesis. For phase one and two, a description, or contextual profile, of the three main activity systems responsible for wetland management is provided. Key aspects of the discussions that gave rise to the tensions and contradictions that surfaced from the interviews, and the deepening of participant understanding of them during the interventionist workshops #1 and #2, have been presented for each of the prioritised contradictions that emerged from the data. Solutions that arose from the conversations during the interviews and workshops are also presented for each of the prioritised contradictions. The process of how the participants prioritised the contradictions is discussed. Key comments from conversations during the workshops are presented, demonstrating the process of how participants developed the action and implementation plans. Lastly, key points raised by participants while testing the potential of the plans for solving the tensions and contradictions are highlighted.

As discussed in chapter 4, an indexing system was developed to trace the data mentioned in this chapter back to the original interview and workshop transcriptions. Following are a few examples of the indexing system mentioned in chapter 4 (sections 4.6.1 and 4.6.2):
• For contextual profile data: A comment that is indexed with e.g. ‘GI’ represents that it came from a person called ‘G’, during an interview (I).

• For tensions and contradictions data from interviews: A comment that is indexed with e.g. ‘Forester, GIP5’, represents a comment that came from a forester called ‘G’, during an interview (I), and the comment can be found on page 5 (P5) of the interview transcription. The professional description category was added to facilitate the ease of identifying from which orientation the comment was coming as forester, CEF or environmental specialist (which was shortened to ‘enviro’).

• For tensions and contradictions data from workshops: A comment that is indexed with e.g. ‘Forester, GS3P5’ represents a comment that came from a forester called ‘G’, during workshop session 3 (S3), and the comment can be found on page 5 (P5) of the workshop session 3 transcription. Again, the professional description category was added to facilitate the ease of identifying from which orientation the comment was coming.

5.2 Description of the three wetland management activity systems in Mondi

There are three related activity systems in Mondi that are key to influencing the management of wetlands. These are the activity systems of the silviculture foresters who manage and take responsibility for the plantation estate and all its land including wetlands (section 1.5.1); the environmental specialists who advise the forester on wetland and environmental issues and guide Mondi’s environmental compliance (section 1.5.2); and the community engagement facilitators (CEF) who are the ‘relationship managers’ between Mondi and neighbouring communities, and who facilitate the use of wetland and other natural resources by communities (section 1.5.3). Although there are other related activity systems that also play a role in wetland management this research has concentrated on these three as they have the most important influence on how the wetlands are managed and natural resources used. The three activity systems are in turn surrounded by the institutional setting of Mondi. Using the abductive mode of inference, the interview data was analysed using second generation CHAT (section 3.4.2) as the theoretical framework to understand and describe each of the activity systems, and a contextual profile of each was developed. This has also formed the basis for exploring how the foresters, environmental specialists and CEFs are learning and practising wetlands management. The descriptions of the different activity systems have therefore been undertaken in order to develop contextual profiles.
of the activity systems, rather than making comparisons of, for example, rules and division of labour differences, across the systems.

5.2.1 Forester activity system

Silviculture foresters are the tree farmers within Mondi, and their main responsibility is to grow plantation trees. However they are also responsible for managing all the ‘open spaces’ that are not planted with trees, including the wetlands and grasslands. Using second generation CHAT to understand the activity system, the **OBJECT** of the foresters’ wetland work is to implement the management and use of wetlands resources on the estate that each forester manages. This includes wetlands delineation and extracting timber incorrectly planted in buffer zones (Srl, GI, PI); ensuring that any invasive alien plant infestations in wetlands/riparian areas and buffer zones are cleared, (Stl, Srl, Gi, WI); reducing the impact of roads crossing streams and road drainage from the catchment into wetlands (Srl, GI); regulating which neighbouring community members own cattle grazing on Mondi’s wetlands and grasslands through providing grazing permits (Stl, GI, WI, PI, OI); burning wetlands for firebreaks, wetland health, and managing illegally lit fires the community use to stimulate green winter grazing for livestock (Oi, Stl, GI, WI, PI); regulating the cultivation of wetlands for food gardens (Pl); and protecting biodiversity, especially crane species (endangered birds) where the cattle graze (Oi). The **OUTCOME** of this work is that Mondi have healthy wetlands providing a variety of ecosystem services (Oi, GI).

In working on the object of their activity system, foresters use a variety of **TOOLS** to mediate this process. These included informal learning experiences such as learning from colleagues in the forestry industry at Cedara (tertiary education), Ezemvelo KZN Wildlife (the provincial conservation body), Mondi’s environmental specialists, and external specialists who provide wetland advice (Oi, PI Stl, Srl, GI, WI). It also included learning from past wetland management experiences (Srl, GI, PI), and experimenting with different burning regimes to see how a wetland responds (WI). One of the formal training tools used were workshops demonstrating wetland delineation (Srl, GI). Tools containing wetland technical and education literature were also used by the foresters such as wetland specific burning management plans (Stl), broad wetland management guidelines and general literature on wetland burning (GI), various conservation monitoring reports (Srl), and learning from education materials provided by environmental specialists (Stl), Social processes
were identified as important tools, such as developing good relations with communities which allows for successful mosaic burning at Zoar wetland (GI), and CEF’s creating a conducive atmosphere with communities to reduce fires, enabling foresters to work more easily with them (PI). Lastly public information resources including public libraries, newspapers and pamphlets (PI), the internet (GI, WI), and reading the government gazette (PI) were also used.

In order for foresters to work on the object of the activity system, certain **RULES** govern how this is done. These rules revolve predominantly around the burning and grazing of wetlands. They include the issuing of grazing permits provided to the community so Mondi knows who owns the cattle that graze on their land (OI). In the past, foresters had a rule where they used to compound cattle if they became a problem, but they stopped this practice 18 months ago when the Land Department began and the position of CEFs was established (WI). Currently, in some areas community herdsman are used to control grazing (StI, GI). In other areas foresters have developed burning management plans that guide where a forester may burn and how often (StI). At some individual wetlands, such as Zoar wetland, biannual burning and cattle herding rules have been developed by the forester with the community members for cattle herdsmen (GI). However, rules to ensure rotation burning such as at Zoar don’t always work so well in most other wetlands (WI). For example communities in one area have a belief that summer rains will not come if wetlands are not burnt in the winter. This is the worst ecological time to burn wetlands, as well as the driest time of the year when foresters see fire as a high risk to the plantations (WI). The following three rules identified, cannot be grouped under a common heading. These include a rule observed by all Mondi staff, that foresters are individually responsible for everything that happens on their own estate, and as such have to manage with this responsibility (StI). However, if a forester wants to work with the neighbouring community they must first work through the CEF who already has a relationship with the community or risk getting blocked (PI). A last rule is unique to one forester, who says he sometimes stops cultivation of wetlands by the community members in his area, but as a rule, he always provides alternative cultivation areas in recently clear felled plantations (PI).

The **COMMUNITY** that foresters work with comprise the environmental specialists, CEFs, conservation contractors, and community members. Within this community the **DIVISION OF LABOUR** includes the environmental specialists who provide conservation advice on, for example alien plant clearing, environmental impact assessments, and training conservation teams (StI, GI,
The CEFs cultivate and maintain community relations, organise grazing permits, and arrange for foresters to speak to communities on common issues such as cattle trampling plantation trees, illegal burning of wetlands and grasslands, and gathering firewood for domestic use (OI, StI, GI, PI, WI). Lastly conservation contractors are contracted by the foresters to clear alien plants infestations and burn firebreaks (OI, StI, GI), and they in turn employ community members from the neighbouring communities to do this work.

**Mediating Tools:** The tools foresters are using to mediate their wetland sustainability practices include: interaction with their Mondi colleagues and external specialists, past experiences, guidelines and reports, experimenting, and occasional workshops.

**Subject:** Silviculture foresters

**Object:** Implementing the management and use (regulation) of wetland resources.

**Outcome:** Healthy wetlands providing ecosystem services.

**Rules:** Mondi policies and procedures, community relations trust and beliefs govern how foresters manage the wetland resources.

**Community:** Foresters work with CEFs, communities, environmental specialists, conservation contractors and specialist consultants on wetland sustainability practices.

**Division of labour:** Foresters depend on CEFs to develop relations with communities and collaboratively manage wetland resource use by communities; contractors for clearing alien plants and burning firebreaks; and environmental specialists for conservation advice.

**Figure 5.1** A summary of the wetland management activity system of silviculture foresters.

### 5.2.2 Environmental specialist activity system

The **OBJECT** of the environmental specialists wetland work is to advise foresters and CEFs on sustainability practices strengthening wetland management. This includes providing specialist advice to foresters and CEFs on: clearing alien plant infestations in wetlands/riparian areas/buffer zones (DbI, JI, LI, TI); the impact of roads in the catchment on rivers/wetlands and when roads cross them (DbI, JI, LI); rehabilitation of degraded wetlands (DbI); conserving endangered species (DbI);
wetland delineation (DbI, JI, LI); burning and mowing of firebreaks in wetlands and grasslands (DbI, JI, LI, TI); cattle grazing/trampling of wetlands and determining the carrying capacity of wetlands (DbI, JI, LI, TI); and erosion control in catchment (TI). The intended OUTCOME of the environmental specialist’s work is that Mondi have well managed wetlands and open areas (TI).

For the environmental specialists to achieve the object of their activity system, a variety of TOOLS mediate their work with foresters and CEFs on wetland sustainability practices. These include experiential engagements such as past experiences from developing the Gilboa wetland burning regime, and working at St Lucia wetland for 12 years for the provincial conservation authority, as well as reacting to inappropriate forestry practices, wetland management practice in the field, and learning through trial and error (DbI, LI). Interaction with other staff and specialist consultants when in the field such as CEFs, foresters, Mondi Wetlands Programme and wetland delineation consultants (BdI, JI, LI, TI) was also seen to be important, and knowing who to ask for help, when it was needed (JI). Management tools that are important, included the Forestry Stewardship Council based environmental audits (LI), and guidelines and management plans developed when the environmental team was more active in past (DbI). Knowledge production and sharing tools that are used include the KwaZulu-Natal wetland forum (DbI), courses on wetland basics and delineation (JI), scientific papers read when studying for post graduate degrees (LI), field days designed to raise wetland awareness with foresters (LI); as well as wetland management information found on the internet (LI, TI).

For environmental specialists to advise foresters and CEFs on sustainability practices, there are certain RULES. These included company rules, such as the Mondi firebreak burning rules (DbI), grazing contracts and permits which control which community members own cattle that graze on Mondi land (DbI, JI), Mondi’s wetland policy governing wetland management (DbI), and Mondi procedures ensuring legal compliance (JI). External legislation also governs how wetlands need to be managed, including environmental impact assessment legislation, and compliance with the international Forestry Stewardship Council’s environmental certification. The threat of losing this certification due to poor alien plant control was very real (LI). Lastly, there were the tacit rules not spoken about, but still very powerful. These included the reality of ‘community rules of engagement’, as well as the fact that Mondi has little control over its natural resource use (JI), and
that the trust between environmental specialists, foresters and CEFs governs their ability to work together (JI).

The environmental specialists work within a **COMMUNITY** of practice when advising on wetland sustainability practices. This community includes the foresters, CEFs, conservation contractors, neighbouring communities and the Department of Agriculture. Within this community the **DIVISION OF LABOUR** is divided up with the foresters working on wetland delineation, the impacts of roads, identification of where the community can most suitably graze their cattle, the burning of firebreaks in wetlands and grasslands, and controlling alien plant infestations (JI, LI, TI). The CEFs work with neighbouring communities on burning and livestock grazing issues (DbI, JI, TI). The conservation contractors burn the firebreaks and clear alien plant infestations (DbI, LI), and the security contractors in some instances also herd cattle (DbI).

**Mediating Tools:** The tools enviro specialists are using to mediate their work with foresters and CEFs on wetland sustainability practices include their past experiences, audits, management guidelines, infrequent courses and informal social learning.

**Rules:** Mondi policy and procedures, legislation and global certification, community will and trust in staff, govern the use and management of wetlands.

**Community:** Environmental specialists work with foresters, CEFs, conservation contractors, communities and the Department of Agriculture on wetland sustainability practices.

**Division of labour:** The environmental specialist depends on contractors to burn firebreaks, clear aliens, and herd cattle; CEFs to work with the community on burning and grazing issues; and foresters to implement wetland delineation, manage impact of roads on wetlands, burning, grazing and to control wetland resource use.

**Subject:** Environmental specialists

**Object:** Advising foresters and CEFs on sustainability practices strengthening wetland management.

**Outcome:** Well managed wetlands and open areas.

Figure 5.2  A summary of the wetland management activity system of environmental specialists.
5.2.3 Community Engagement Facilitator (CEF) activity system

The **OBJECT** of the CEF’s wetland work is to facilitate the community’s use of wetland resources on Mondi land. This includes being the interface between Mondi and community on all issues (NI), strengthening community environmental awareness (NI), and facilitating the community’s use of wetland resources for cattle grazing, sedges for weaving, medicinal plants, cultivation in wetlands, and resource use mapping (RI, VI, NI, ZI).

The intended **OUTCOME** of this work is that Mondi and communities are working and learning together to better manage wetlands (VI).

A variety of **TOOLS** are used by the CEFs to mediate their work with communities on wetland resource use. These include formal platforms for encouraging dialogue, including workshops and meetings with communities on cattle management which supported learning by all (NI), and cattle grazing committees, which unfortunately were not always as effective as had been hoped (RI). Informal learning spaces were important tools, such as informal discussions with communities using visual aids such as pamphlets to support these discussions (VI). Interactions between the CEFs and the environmental specialists during their daily work were an important learning space, especially when mapping natural resources on Mondi land (RI). In this same way, the CEFs learnt from foresters, community members and wetlands specialists (ZI, NI). Past experiences and observations enabled CEFs to monitor wetland health (VI). They gathered information on wetland resource use from a variety of education resources, including reading websites, scientific papers, magazines, pamphlets, and booklets (ZI, RI). CEFs also disseminated information to communities, by, for example, using wetland videos to explain wetland issues to them (ZI).

Certain cultural, social process, and Mondi policy and technical **RULES** govern how the CEFs do their work. Cultural rules include recognising that each community has a unique structure, culture and customs so approaches to each community will differ (VI). Another cultural rule is the belief by some communities that wetland sedges should only be cut in mid winter otherwise superstition dictates that thunderstorms bringing the rains will not occur in summer (RI). Social process rules include getting the approach to communities right, such as inviting people well in advance to
meetings, encouraging ownership and commitment to natural resource use, providing community members with good and bad feedback on how to improve their use of wetland resources, and praising them (VI). The importance of having the trust and transparency between communities and CEFs and foresters through working together was an important social process rule that determined the degree of collaboration (VI), as well as the need to work with communities on practical issues that would help them (VI). Mondi policy and technical rules include the Mondi environmental policy which governs issuing of resource use permits (RI, VI), having cattle committees and a cattle management strategy which are used to controlled grazing, but are now defunct (NI), and the issuing of permits for using Mondi’s natural resources (RI, NI, ZI).

The **COMMUNITY** of practice that the CEFs work with on wetland resource use includes neighbouring communities, consultants, foresters and environmental specialists.

The **DIVISION OF LABOUR** within the activity system is divided into: neighbouring communities that utilise wetland resources on Mondi land (VI, RI, NI, ZI); the foresters who decide where it is sustainable for community members to harvest wetland plants (ZI); environmental specialists who teach about resource mapping and monitoring the quantity of natural resources used (RI, ZI); CEFs from other areas who share experiences on field days (ZI); and Zakhe consultants who advise CEFs on a community cattle project in Piet Retief and probably will be working on an education programme with the communities in the future (NI). It is important to note that one CEF mentioned that the environmental specialist and forester should both be part of the community of practice, but in reality there is very little interaction with them (VI).
5.3 Identifying and then deepening an understanding of the tensions and contradictions within and between the three activity systems

Another area explored during the interviews included the challenges and difficulties the foresters, environmental specialists and CEFs may have experienced that inhibited their learning and practice of wetland management. By using CHAT as a theoretical lens to analyse the data, I was able to develop a better understanding of the activity system, which allowed for the tensions and contradictions (section 3.5.2) to emerge within and between the three activity systems. After inductively grouping the tensions according to their similarity of theme, I then abductively analysed the root causes. This resulted in the emergence of the twelve contradictions outlined in table 5.1 below. In this table, I have named each contradiction as being either a primary, secondary, tertiary,
or a quaternary contradiction. Primary contradictions occur within the elements of the activity system; secondary contradictions between two or more elements of the same activity system; tertiary contradictions occur between the reconceptualised new version of an activity system and remnants of its older version; and external quaternary contradictions occur between multiple interacting activity systems (Engeström & Saninno, 2010).

Table 5.1 A list of the twelve contradictions that emerged from the Mondi staff interviews as hindering wetland and other environmental sustainability practices.

<table>
<thead>
<tr>
<th>All contradictions as first identified from interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning. Quaternary (activity systems-institutional structure).</td>
</tr>
<tr>
<td>2. Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their attitudes/culture/individual complexity and resistance to change differs. Primary (individuals-individuals).</td>
</tr>
<tr>
<td>3. Between the loss of experience and skills from staff leaving, and the lack of a structure/willingness to share wetland knowledge and skills of old timers with newcomers. Primary and quaternary (activity systems – institutional structure)</td>
</tr>
<tr>
<td>4. Between CEFs, foresters and enviro specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and the Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach. Quaternary (activity systems-institutional structure).</td>
</tr>
<tr>
<td>5. Between stringent existing performance monitoring systems of e.g. silviculture, safety and alien clearing activities, and the lack of any wetland performance monitoring system. Quaternary (activity systems-institutional structure).</td>
</tr>
<tr>
<td>6. Between how Mondi want to manage its wetlands, and how external influences like local communities wants to use and manage the wetland resources. Quaternary (activity systems-institutional structure).</td>
</tr>
<tr>
<td>7. Between the demand for enviro specialist support, and the lack of staff to supply it. Quaternary (activity systems-institutional structure).</td>
</tr>
<tr>
<td>8. Between having dedicated operationally aligned conservation staff to solely take responsibility...</td>
</tr>
</tbody>
</table>
for wetland and environmental management, and integrating this responsibility into the silviculture foresters’ current workload. Quaternary (activity systems-institutional structure).

| 9. Between the **conservation practices that Mondi** has to implement, and practices of **neighbouring farmers** who do as they like. Quaternary (activity systems-activity system). |
| 10. Between implementing **general wetland management practices** and not knowing exactly what **desired state** the wetland is being managed for. Quaternary (activity systems-activity system). |
| 11. Between **Mondi managing the land sustainably now**, and how the **new landowners** will manage it in the future. Quaternary (activity systems-institutional structure). |
| 12. Between **senior staff talking the environmental talk**, and meaningfully understanding the talk so that they can **sincerely walk it**. Quaternary (activity systems-institutional structure). |

Once all the contradictions and associated tensions were surfaced from the interviews (table 5.1) they were shared as mirror data with those interviewed at the first interventionist workshop. This enabled participants to deepen their understanding of each contradiction before being able to prioritise which contradictions they would work on. During this workshop, the mirror data gave participants an opportunity to see the concerns that others had raised, together with their own, which collaboratively allowed for a rich discussion of the tensions and contradictions.

Later during the first interventionist workshop, participants went on to prioritise seven of these contradictions to work on, and reframed them by deciding to expand contradiction #1 to include contradictions #2, 3, and 10, and expand contradiction #4 to include contradictions #6 and 12. The two key prioritised contradictions as reframed at the end of workshop #1, are shown in Table 5.2 below.
Table 5.2 The two key prioritised contradictions as reframed at the end of workshop #1

1. Key contradiction #1: Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning (the workshop felt strongly that this applied externally to the communities as well).

- Contradiction #2 now integrated into #1: Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their differences in attitudes/culture/individual complexity and resistance to change.

- Contradiction #3 now integrated into #1: Between the loss of experience and skills from staff leaving, and the lack of a structure/willingness to share wetland knowledge and skills of old timers with newcomers.

- Contradiction #10 now integrated into #1: Between implementing general wetland management practices, and not knowing exactly what desired state the wetland is being managed for.

2. Key contradiction #2: Between CEFs, foresters and enviro specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and the Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach (internal and external silos - the workshop felt strongly that the community were a silo as well)

- Contradiction #6 now integrated into #2: Between how Mondi want to manage its wetlands, and how external influences like local communities want to use and manage the wetland resources (it was felt that the workshop needed to deal with Mondi’s relationship with the community under #2, rather than all the community natural resource issues).

- Contradiction #12 now integrated into #2: Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it.

Participants decided to leave out contradictions # 5, 7, 8, 9 and 11 (table 5.1), and explore them at a later date when more time was available. For this reason, only the data for these seven prioritised contradictions has been presented in the sections below. The numbering of each contradiction in the sections below is the original numbering, as presented at the beginning of the first interventionist workshop (table 5.1) before the reframing and prioritising by participants at the
end of the workshop (table 5.2), and therefore is not sequential. It is important that this numbering is kept for reference back to the original transcripts of this first workshop.

Data on the tensions which emerged from the interviews, that resulted in contradiction #1, has been presented in the ‘a’ section of 5.3.1 below. The same format has been followed when presenting the data for the other contradictions.

Once all the contradictions and associated tensions from the interviews had been surfaced (table 5.1) and shared as mirror data with those interviewed at the first interventionist workshop, the ensuing discussions enabled participants to raise additional tensions. This data has been presented in the ‘b’ section of 5.3.1 below. The same format has been followed when presenting the data for the other contradictions.

At the beginning of the second interventionist workshop, only contradiction #1 (which had now been reframed by participants to include contradictions #1, 2, 3 and 10) was discussed in more depth, in a last effort to further deepen our understanding of the causes of the tensions. The other contradictions were not discussed in greater depth, as participants felt they had understood them sufficiently. This data is presented in the ‘c’ section of 5.3.1 below. The same format has been followed when presenting the data for the other contradictions. However in some instances, if no additional information emerged during the discussions on the tensions of a contradiction during the second workshop, then no section ‘c’ was included. After this, workshop participants thought that they had explored the tensions and contradictions well enough to start developing model solutions.

The data has been presented in the form of those original contradictions selected by participants to work on (as listed in table 5.1), rather than in a combined form of the two prioritised contradictions (as listed in table 5.2), for ease of following the sequence of how the understanding of each contradiction may change during the progression from the interviews and through the two workshops.
5.3.1.a Tensions from interviews - contradiction #1: Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning

Four key groups of tensions emerged from interviews that led to the conclusion that generally staff learning about wetlands was weak, especially amongst the CEFs, and that there was no learning structure in place to strengthen it.

The first group of tensions revolved around staff lacking wetland management knowledge, information not being available in a usable form, and staff not having the time to learn. This was evident from comments during the interviews that staff lacked the knowledge to manage wetlands better, and therefore did not know any better (Manager, CIP7; Enviro, DbIP7); that although there is plenty of information available, they did not have the time to learn more (Enviro, TIP9; CEF, RIP6); and that the available information was not in a useable format (Manager, MIP5).

The second group of tensions highlighted specifically how CEFs had a weak understanding of wetlands and environmental issues (Enviro, LIP5). It was stated by an environmental specialist that CEFs are out of their depth on community grazing issues, and generally do not know how to tackle the issue (Enviro, JIP2). This comment was confirmed by a CEF who noted that one of the biggest challenges for them is that they know little about wetland and cattle management and that they need to learn this from the Department of Agriculture (CEF, NIP3,4&9). A second CEF acknowledged that he did not have sufficient wetland knowledge of natural resource use and therefore avoided answering difficult questions the community ask about wetlands (CEF, RIP3). And a third CEF recognised that he knew little about sustainably harvesting wetland resources, which is especially important as new community harvesters need to be taught how to do this (CEF, ZIP6). Surprisingly there was one CEF who was not even aware that Mondi had a wetland policy (CEF, RIP6).

The third group of tensions recognised the narrow understanding staff had of the importance of the broader environmental picture to Mondi’s business. For example, a forester said he was only told to delineate a wetland, but given no reason why it should be done. He would like to know the bigger contextual picture – how the delineation will help improve the water flow in the river, how his forestry practices will benefit or impact on the wetland, how the wetland functions etc.
information he said was not accessible to him (Forester, PIP7). This tension was also clearly articulated by the training manager, who noted that if staff with different jobs work more together they can see how their work fits into the bigger Mondi picture, and how they can contribute more to this (Manager, KIP8). The forestry area manager mentioned that staff have no ecosystem management learning or teaching on how to deal with this (Manager, MIP5), highlighting how they are not aware of the impact of their work on a system level of thinking.

The fourth group of tensions was highlighted by the training manager who said that there is no formalised learning plan/structure in place to support the learning of foresters, CEFs, and environmental specialists on environmental or any other issues (Manager, KIP2). In fact, she mentioned that there is very little training offered, unless they are selected to join the ‘talent group’ which concentrates more on personal growth or business issues, or go on foundational courses on basic management, basic negotiating, emotional intelligence, fire training, or short business management courses (Manager, KIP2). It was further stressed by a number of staff that there were insufficient field trips and learning spaces to share practical wetland knowledge between foresters, CEFs, and environmental specialists, and that this was complicated by time limits (everybody has too much to do) and geographic space across Mondi business units (Manager, CIP8&9; CEF, ZIP8; Forester, PIP6; Enviro, LIP8; Forester, SrIP7&9; Enviro, DbIP7&8). The environmental manager stated that the reason for this could be that learning is not top of the list on Mondi minds, and that this needs to change (Manager, CIP10). This was echoed by the training manager who believed that nobody in the past took training seriously and as a result there was no budget for it and no recognition; but this apparently is now changing with senior management being more supportive (Manager, KIP1). Lastly it was clear that although there were some learning materials on wetlands they were often of insufficient quality (Manager, KIP3; Manager, CIP10), and there was no learning structure to channel the use of existing wetland materials through (Manager, CIP10) to support staff development. This lack of investment in training of staff on core environmental issues, was clearly a significant risk to the long term sustainability of the company’s operations, considering the environmental impact of growing exotic plantation trees.

I then examined these four groups of tensions to determine what root causes might lie behind them. This resulted in the draft contradiction between the expectation of staff to work towards
improved wetland sustainability practices, and the lack of an institutional structure to support learning. This contradiction was then discussed by all participants at the first workshop.

5.3.1.b Tensions from workshop #1: Deepening an understanding of contradiction #1

When exploring the tensions collaboratively in the first workshop, to gain a better understanding of why staff and community learning on wetland and environmental sustainability practices is weak, the concerns that emerged could be grouped into four issues: there is no induction/handing over process over to new staff; there is a weak understanding by staff of each other’s fields in forestry, social and environmental issues and there is no structure to strengthen this; staff have lost the hunger and excitement to learn and teach; and there is weak personal interaction between staff. Each of these is discussed below.

It was an environmental specialist who first raised the issue of there being no induction or handing over process for new staff and new policies, which was also supported by the training manager (Enviro, JS2P2; Manager, KS2P3). Participants then began to discuss that most staff had a weak understanding of wetland basics, and that staff don’t need to be wetland experts, but they need to understand the basics so that they do not cause harm to wetlands in the process of doing their jobs (Enviro, JS2P2; Manager, MS2P3). The forestry area manager then went on to say that he thought that having no structure in place to strengthen informal learning went to the core of one of Mondi’s main problems (Manager, MS2P3).

An interesting point was also raised by a forester that the CEFs are not trained in broad forestry and environmental issues, yet they have to know about these issues to deal appropriately with communities who have successfully claimed land from Mondi and will enter into partnership with Mondi to continue growing trees. He explained that he thought Mondi had not realised that the CEFs will be the foresters of the future, which one of the CEFs agreed with (Forester, GS2P5; CEF, NS2P5). The discussion was then expanded by the training manager saying that foresters also needed to learn more of the CEFs’ social skills, and how to work with communities (Manager, KS2P6).
It was the forestry area manager who first raised the issue of how he thought staff had lost the hunger and excitement to learn and to teach (Manager, MS2P3&4), which sparked a whole discussion on fieldtrips. It was said that in the old days foresters used to visit each others plantations to learn from each other’s innovations, but that this didn’t happen so much now; the practice had virtually died out (Manager, MS2P3; Enviro, DbS2P3; Forester, SrS2P4). In fact a couple of participants said that you almost had to beg people to come to field days now (Forester, SrS2P4; Manager, CS2P4), and that management apparently see field trips as jolly outings and as a waste of time and not worth the money (Enviro, DbS2P3). The environmental manager complained that field staff were not proactive in requesting field days and it was “all push and no pull”, with the environmental specialist pushing and no pulling from the other staff (Manager, CS2P5). He attributed the reason to staff just not having the time to go on field days anymore (Manager, CS2P4), while an environmental specialist added that foresters have too many large demands on their time and too many other things to do (Enviro, JS2P5).

A number of tensions were raised about the weak personal interaction between staff. This was first mentioned by the forestry area manager saying we don’t talk to each other as much about important things like how we are managing our wetlands – just about ‘stupid things’ like how we can fix our computers (Manager, MS2P3). A forester continued this line of the discussion adding that there was no cross pollination between staff (Forester, GS2P3). Later the discussion was picked up with another participant saying that staff are so into doing their own work that they forget to help one another (Forester, StS2P6). A reason for this was given that staff may feel uncomfortable asking professionals from other job descriptions in other areas, how they are doing things in their areas, such as the Greytown CEF asking an environmental specialist in Zululand (Manager, MS2P7). An environmental specialist summed it up as the staff simply do not know each other as they should know each other (Enviro, TS2P7) so the chances for this happening are slim. Another interesting tension brought up by the forestry area manager highlighting weak staff interaction, was that managers do not get out to their staff and spend enough time with them in their jobs (Manager, MS2P7).
5.3.1.c Tensions from workshop #2: Further deepening an understanding of contradiction #1

A number of tensions arose from the second workshop that centred around the changing of the jobs of CEFs and foresters to suit the shifting business times, which had played a role in reducing the emphasis on wetland and general environmental management. At first a forester identified time availability as a problem, as staff are so overloaded with work (Forester, PS8P4). Following on from this, an environmental specialist asked how an organisation could structure itself to become an informal learning institution, and how a favourable environment could be created to encourage informal learning (Enviro, JS8P4). This appears to have catalysed the discussion on how job descriptions had changed. A second environmental specialist then stated that the foresters’ jobs have changed from being plantation farmers when they grew the trees with their own staff, to contracting the work out and being managers of contractors ensuring that they did the job and didn’t cheat Mondi. This he said has resulted in them losing pride in their plantations and the emphasis on wetlands then levelled out (Enviro, DbS8P4). The forestry area manager lamented that the above ‘ground’ issues (like wetland management and informal learning) are not important to Mondi anymore otherwise they’d make the time, have the structure, and foresters would focus on these issues (Manager, MS8P5). An environmental specialist complained that people don’t do something on environmental issues, if no report is required (Enviro, TS8P5) unlike safety statistics which require reports on specific dates and always gets done. A forester and the forestry area manager then noted that Mondi’s focus has shifted to safety and financial management which staff concentrated on, and everything else (such as environmental management) they said is dragged along from behind (Forester, GS8P5; manager, MS8P5). The forestry area manager was concerned that the forestry profession had become less important in Mondi’s business (including environmental management), while the management of safety, contractors, and finances had become more important (Manager, MS8P6&11). A forester added that his job description incorporated little on environmental management, but that safety issues took up almost 50% of his time (Forester, PS8P6). It was all summed up by a forester saying he thought that the nature of Mondi’s business has changed to suit the times, and that the CEF’s job was no longer merely to keep the community happy, but that the CEF was now a forester with CEF responsibilities. He went on to question whether Mondi had lost focus on keeping CEFs, and the rest of the staff, up to speed with the new skills required to do this work (Forester, SrS8P6). The forestry area manager
concluded by stating that he thought it was vital to shift the importance of environmental issues up, so that staff made the time to work on them (Manager, MS8P7).

The discussion then shifted towards the point that some of Mondi’s key customers had realised the importance of environmental certification from the global Forestry Stewardship Council (FSC), while many Mondi staff had not. The forestry area manager related how good environmental governance was required by three of Mondi’s largest customers, Waltons, Nedbank and Tongaat-Hulett, and how important this was to Mondi’s business (Manager, MS8P7). He said that these companies had actually requested fieldtrips to demonstrate how Mondi was sustainably managing its wetlands and open areas, and that their decision to purchase Mondi paper would be partly based on evidence of environmental performance that they saw firsthand in the field. Based on this he said that environmental management therefore needs to go up the priority list (Manager, MS8P7). A forester complained that young foresters do not understand what FSC really means, and that they see it is merely as an environmental checklist. He elaborated on how Mondi’s focus had changed to ensuring the FSC checklist is in place and passing the associated environmental audit, instead of understanding why they are doing what the checklist demands (Forester, GS8P8). Building on this comment, the environmental manager added that Mondi had become compliance driven with little understanding of why things were done in a certain environmental way (Manager, CS8P8).

Interestingly the forestry area manager observed that Mondi obtained FSC to gain market advantage as customers see FSC as being important to them buying Mondi’s paper, but staff only see FSC as a burden (Manager, MS8P9). The environmental manager added that in fact Mondi’s customers were not just using FSC, but also using the carbon footprints of companies, to guide who they bought paper from (Manager, CS8P9). Expanding on this, the forestry area manager added that Mondi’s customers were not taking FSC at face value; they are asking other questions such as around the company’s carbon footprint, the condition of Mondi’s wetlands, and how much water their plantation trees use (Manager, MS8P9). Therefore FSC is no longer seen as a market advantage; it merely allows a plantation forestry company entry into the market (Manager, CS8P9&10). In conclusion, a forester wisely questioned whether it was the staff on the ground who had lost their focus, rather than the company (Forester, GS8P10).

Lastly, a group of tensions emerged around the topic of how structural changes in Mondi over the last few years had contributed to reduced staff enthusiasm and trust. An environmental specialist
despaired that staff are not encouraged to ask why and question issues, and that the financial system and stringent policies have resulted in little trust in staff to make the right decisions. She went onto say that the hunger and excitement to learn has been ‘driven out’ of everyone over the last 5-10 years (Enviro, JS8P10&11). In agreement, the training manager expanded on this, saying that the era of one of the previous Mondi general managers had devastating effects on the hunger and excitement out of all staff, which had an impact on the whole organisation (Manager, KS8P12).

5.3.2.a Tensions from interviews - contradiction #2: Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their attitudes/culture/individual complexity and resistance to change differs

One key tension that emerged from the interviews was that a resistance to change and learning amongst some staff was an important stumbling block. Although the evidence for this tension came from only the training manager, it was seen to be an influential one, which was reflected in being chosen as one of the prioritised contradictions by participants in the first workshop. The substantiation for this came from the training manager noting that staff may not be open to acknowledging and strengthening their informal learning because of differences in culture/attitudes and the complexity of individuality (Manager, KIP3). She believed that that while some staff may recognise the importance of informal learning, others may resist it as their ability to accept change differs. This she said is most likely reinforced by the intense restructuring that Mondi has been through over the last five years which unsettled many staff members (Manager, KIP3&6). Later in the interview she bluntly stated that the greatest difficulty in strengthening learning in Mondi is resistance to change within some individuals (Manager, KIP6), and that if staff do not realise that rubbing shoulders with each other is a crucial part of informal learning, they may not be open to doing more of it (Manager, KIP8).

5.3.2.b Tensions from workshop #1: Deepening an understanding of contradiction #2

Although there was not a lot of discussion on why some staff recognise the importance of informal learning and others not, the key reasoning that was raised was similar to that in the previous section. The training manager referred to staff holding onto what they know best to give them stability during turbulent institutional changes, and also resist change (Manager, KS2P8). This was
said in reference to the significant institutional restructuring that Mondi had experienced over the past five years or more.

5.3.3.a **Tensions from interviews - contradiction #3**: Between the loss of experience and skills from staff leaving, and the lack of a structure and a willingness to share wetland knowledge and skills of old timers with newcomers

Two key tensions emerged from the interviews. The first was that there was a high turnover rate of foresters which often results in a high loss of institutional knowledge and a lot of re-inventing of the wheel (Forester, WIP13). This was supported by a CEF commenting on the Mondi Land Department’s biggest problem also being the high CEF turnover, and that communities only work with people they trust, which develops over time (CEF, VIP7). Therefore the continuity of work with communities is at risk when staff leave. The second tension was highlighted by the training manager, who said that there was no induction programme available for newcomers to ensure a smooth handover, but that one was currently being developed with longer term support (Manager, KIP3&4). She also questioned if a ‘buddy system’ would work, as not all older staff will want to take somebody under their wing to mentor them, and the geographic spread of staff is a problem (Manager, KIP3&4). This led to the conclusion that there was a loss of institutional knowledge and community relations when staff left because there was no structure to support the passing over of knowledge and maintenance of relations when staff left and new staff arrived.

5.3.3.b **Tensions from workshop #1**: Deepening an understanding of contradiction #3

In trying to understand the reasons why institutional knowledge is lost when staff leave, the discussion first led towards the low recognition that was given to the importance of losing relationships that had been developed with communities when staff leave (Enviro, JS3P1; CEF, NS3P1). It was noted that area managers seldom develop relationships with communities in their area, so that when a staff member leaves there is nobody to bridge that gap between older staff leaving and new staff arriving (Forester, PS3P4). The discussion then led to an enthusiastic debate amongst many of the participants on whether Mondi actually has a formal/informal structure to pass on knowledge from exiting staff to new staff or not (All participants, S3P1–3). For example, some said that there is no formal structure or hand over process from exiting staff, while
others said there were some informal procedures such as those older staff still in the area who could always pass on information to newer staff (Forester, SrS3P2; Enviro, JS3P1; Manager, CS3P1). However, as the forestry area manager pointed out not all staff are cut out to be mentors and this transfer of information does not always happen (Manager, MS3P4). No conclusion was reached but it was clear that there was currently no formal structure to ensure the handover of knowledge to newcomers, but that some informal processes resulted in passing on of some information.

5.3.4.a Tensions from interviews - contradiction #10: Between implementing general wetland management practices and not knowing exactly what desired state the wetland is being managed for

An interesting tension arose around staff not knowing what wetland state they were managing a wetland for. A number of staff mentioned that when managing for wetlands and open areas foresters do not know what desired state they are managing for, and if their current actions are improving wetland health or not (Forester, WIP12; Manager, MIP4&5; Forester, PIP7). As an example, an environmental specialist described how in Zululand they cannot burn wetlands regularly due to the high rainfall and green plants, which results in indigenous woody vegetation encroachment. The wetlands therefore changed to become forested wetlands and not the original herbaceous wetlands which use less water and are the historic wetland type. The environmental specialist was not sure whether it was best to manage for the original wetland type which uses less water or rather forested wetlands that use more water (Enviro, LIP2 &5). The environmental specialist said that this is where environmental specialists and foresters need to be advised by wetland specialists like the MWP, who can advise on what specifically needs to be done to manage a wetland for a specific state and purpose (Enviro, LIP9). In another instance a forester was sure that the wetland was overgrazed, but he had no evidence to prove it (Forester, GIP5). The forestry area manager summed it up well by saying that he was of the view that staff are not learning how to deal with ecosystem management because they lack a basic understanding of wetland health and ecosystem functioning, therefore it is hard for staff to value them (Manager, MIP3 &5). It was these comments that led to the surfacing of this contradiction.
5.3.4.b **Tensions from workshop #1: Deepening an understanding of contradiction #10**

Not much discussion was held on trying to understand why staff do not know what general wetland management practices they are managing for. The forestry area manager suggested that foresters and environmental specialists do not have sufficient wetland knowledge and research to make better decisions on what we need to manage for (Manager, MS6P5). In addition he added that wetland management decisions are not being handed over to new staff (Manager, MS6P5). However an environmental specialist, disagreed saying that it was not just a case of staff do not know what they are managing for, but rather that no decisions had been made for what they need to manage the wetland for (Enviro, LS6P5).

5.3.5a **Tensions from interviews - contradiction #4: Between CEFs, foresters and environmental specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and the Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach**

It became very clear that many staff work in their own job description silos, with few ad hoc interactions between them. This was reflected in many comments from CEFs, foresters and environmental specialists. An environmental specialist spoke about how foresters generally work in silos by concentrating on growing trees without much collaboration with other job descriptions also interested in land management (Enviro, DbIP4). On the other hand, a forester complained that he has river and grassland health monitoring reports but he has not implemented them because he does not have the time or capacity to go through them. He feels strongly that the environmental specialist needs to lead him through the report and tell him what to do, but this does not happen, as the reports only get emailed to him, with the expectation to automatically implement the recommendations (Forester, SrIP2&3). Along similar lines, a CEF stated frankly that he did not work at all with foresters, and doesn’t remember ever having had a conversation with a forester about wetlands (CEF, RIP4). Supporting this statement another CEF said that no foresters or environmental specialist had ever attended cattle committee workshops, but that a recent review had identified this as a weakness to be remedied (CEF, NIP5). A third CEF was quite pointed in his statement and summed up the CEF feeling by saying that he doesn’t learn much about wetlands from foresters or environmental specialists (CEF, VIP5). Rather surprisingly, the environmental manager mentioned that CEFs go to government extension staff for specialist advice rather than to
the Mondi environmental specialists (Manager, CIP1). This was confirmed by a CEF saying that if CEFs wanted to learn more about wetland and cattle management they need to learn this from the Department of Agriculture (CEF, NIP3,4&9). Strangely no mention was made of first asking Mondi’s in-house environmental specialists, further highlighting a huge communication gap. Despite this gap being recognised by some staff, it was interesting that not much had been done to remedy the situation. Clearly in many cases, but not all, staff from these three job descriptions are working in isolated silos.

In searching for the causes of this silo effect one of the CEFs showed great depth of reflection by commenting that Mondi’s restructuring and compartmentalising of community issues for the Land Division to deal with has resulted in foresters absolving themselves of this responsibility and concentrating on simply growing trees. This she believed had resulted in the foresters withdrawing their involvement in community based cattle projects, whereas before the restructuring, foresters were very involved. The CEF thought that the restructuring had therefore reinforced people working in silos, compounded by poor communication between job descriptions (CEF, NIP6&7). It was interesting that a forester also appears to have recognised this reasoning. He mentioned that when Mondi’s Land Department was first initiated, the foresters let them deal with all the community issues since they were ‘the social department’, not the foresters. But then with time he realised that CEFs did not have all the answers in dealing with community issues, so the forester began to attend community meetings as well. This he pleaded must continue. (Forester, PIP3).

Not only did staff recognise that the other job descriptions often worked in isolated silos on wetland and environmental issues, but they also recognised that they all need to collaborate as a team on common issues and that this rarely happens. A CEF realised that he needed to work more with the environmental specialist, but does not despite himself acknowledging a lack of knowledge on wetland resource use (CEF, RIP3). This was corroborated by another CEF who mentioned that he is working well with the forester (contrary to what the other CEFs said), but was concerned that he is not working well enough with the environmental specialist and he wants to improve this when managing wetland resource use by the community (CEF, ZIP5). An environmental specialist also noticed that the local CEF works independently with the silviculture foresters and himself, but they do not all sit down together to discuss common issues (Enviro, TIP9). This was echoed by a forester saying that the forester, CEF and environmental specialist never sat at the same table to discuss
specific wetland issues (Forester, PIP6). A CEF observed the same and said that it was rare that he worked with the forester and environmental specialist in the field on wetland issues, apart from informing the forester what he is doing and then reporting back at management meetings when he next saw the forester. He attributed this to poor communications between all three job descriptions (CEF, VIP2,3&8). This separation of jobs was well summed up by a forester saying that in the past the cattle and wetland management issues were seen as two separate issues worked on by the CEFs (for cattle) and foresters and environmental specialists (for wetlands). There was no integrated plan and no single person taking the lead (Forester, WIP10).

Staff working in isolated silos with minimal bridging connections is a reflection of staff having a narrow understanding and appreciation of the importance of the broader environmental picture to Mondi. This was echoed by the training manager saying that many staff work in silos, because they cannot grasp the concept that everything links together, and everything they do has an influence on everybody else and Mondi (Manager, KIP7). The training manager went on to say that if staff with different jobs work more together they can see how their work fits into the bigger Mondi picture, and how they can then contribute more to it (Manager, KIP8). The weak understanding of Mondi’s bigger picture is reflected in one of the CEFs not even being aware that Mondi had a wetland policy (CEF, RIP6).

It was these tensions of staff tending to work in their isolated job description space rather than collaboratively on common wetland and environmental issues, and not being able to see the bigger environmental picture that Mondi was working towards, which led to the emergence of the contradiction.

5.3.5.b Tensions from workshop #1: Deepening an understanding of contradiction #4

During workshop #1, considerable discussion was held on why staff work in silos. One of the key reasons emerging from the discussion was that communication was not the only problem; there was weak staff collaboration across job descriptions on common issues (Forester, SrS3P8; forester, GS3P10). A number of staff thought that they only worked together when there was a problem (Forester, PS3P7; Enviro, DbS3P11; Manager, MS3P14), and that staff were too focused on achieving their annual targets to the exclusion of involving others (CEF, VS3P7; CEF, ZS3P7).
forester highlighted that CEFs don’t really proactively engage the foresters in their work, and as a result foresters do not understand what the CEFs do and who decides what they do (Forester, SrS3P8). He went onto say that the gap is not only between the CEFs and the rest of the foresters, but also between the foresters and the environmental specialists (Forester, SrS3P11; Manager, MS3P11). A further insightful point was made by an environmental specialist: everybody needs to change their mindset about how we communicate with each other, if we want to change things (Enviro, JS3P11).

Another important insight into why staff work in silos concerned the lack of ‘space’ and leadership provided by management for staff to collaborate across silos. It was said that area managers and CEFs, foresters, environmental specialists do not meet regularly as a team to discuss common issues (Enviro, JS3P11), that the ‘space’ was not provided (Manager, CS3P14; Manager, MS3P14) to do this, and even at a higher level it didn’t happen (manager, MS3P14). This included the senior management meetings of the LandCo, and ForOpco. It was thought that the silos are connected too high up the senior management level rather than further down at the area management level, which was made worse with the recent restructuring (Forester, GS3P9; forester, SrS3P10), and that Mondi has become too bureaucratic further reinforcing the silo effect (Manager, MS3P12). The forestry area manager vented his frustration by complaining that in Mondi managers simply manage, double check, and triple check due to corporate governance demands and lack of trust. Managers, he said, do not have enough time to provide leadership to lead staff and are not given ‘the space’ to get their staff together (Manager, MS3P13&14). It was also felt that silos are strengthened because environment is not seen to be part of Mondi’s operations, but rather a support function, and it therefore gets pushed to the back by some area managers (Forester, GS3P14). One environmental manager proposed, interestingly, that maybe this contradiction was the result of other weaknesses or gaps within the company (Manager, CS3P12).

5.3.5.c Tensions from workshop #2: Further deepening an understanding of contradiction #4

There was relatively little discussion on further understanding the root causes of contradiction #4, as it was felt that this had been adequately done in workshop #1. However, those comments of interest included a forester who believed that communities are working in a silo as well, and this needed to be understood better for future collaborative work (Forester, PS11P2). As the facilitator,
I highlighted how silos are important for focusing people in their work, but the key is how bridges can be built between the silos (MWP, DIS11P2). This catalysed the forestry area manager to say that senior managers had recognised the problems associated with the silo effect, and had actually tasked the area managers with bridging silos, and included it almost as part of their job description (Manager, MS11P2). A forester then added that the recent restructuring resulting in the new ‘functionalisation’ had actually strengthened the silo effect from area manager upwards, and he believed that the key challenge to bridging the silos must be to ensure that information from management comes down to field staff at the bottom (Forester, SrS11P3). In an effort to ensure that the silos were bridged as well as possible, the forestry area manager concluded that all points in the action plan (that would be developed to deal with the contradictions) MUST apply to operations and support staff, contractors as well as communities (Manager, MS11P3).

5.3.6.a Tensions from interviews - contradiction #6: Between how Mondi want to manage its wetlands, and how external influences like local communities want to use and manage the wetland resources

The basis for this contradiction arises from a number of tensions staff raised around Mondi having little control over the use of its natural resources by neighbouring communities; Mondi and the community talking past each other; the communities not having much access to knowledge on natural resource use; and there being insufficient collaborative learning and working together between Mondi and the communities on natural resource issues.

A number of tensions surfacing from the interviews pointed towards Mondi generally having little control over natural resource use by neighbouring communities. For example, an environmental specialist talked about how Mondi wanted communities to use its natural resources, but that it has no control over those who use them (Enviro, JIP4). This concurred with what a CEF said, that Mondi had no control over wetland cultivation for food gardens, which has increased dramatically in a wetland in the Midlands where almost half of it is cultivated (CEF, RIP 3). In support of this, another CEF mentioned that Mondi allow the community to graze their cattle on its wetlands, but do not have the capacity to manage and control this (CEF, VIP4). Unplanned burning and grazing are seen to be amongst the biggest threats to wetlands and are both community related (Forester, WIP3; Forester, GIP4&9). However, when for environmental management reasons, certain
recommendations are made for foresters to burn the wetlands every two years, they say that they cannot do this because of the community burning them for cattle grazing every winter regardless of efforts to prevent this (Manager, CIP7; Forester, WIP3; Forester, GIP4; Enviro, JIP3; Forester, OIP3; Enviro, DbIP2&3). It was also added despite recommending fewer cattle graze the wetlands, they could not control the cattle numbers because of community resistance (Enviro, JIP3). It was mentioned that in one wetland the community do agree to block burning, and recommended burning regimes are successful, but this appears to be the exception rather than the rule (Forester, GIP5&6).

It was evident that Mondi staff and the communities had different views and ways of seeing the issues, which resulted in more talking past each other than a connection between. A forester was very frustrated that in past meetings with all cattle owners and their cattle committees, all had agreed to which wetlands and grasslands could be burnt or not, but all were still burnt annually by community members trying to stimulate the first green flush of grass for their cattle (Forester, GIP6). An environmental specialist blamed the community for not sticking to their permit grazing conditions (Enviro, DbIP2). One of the reasons another environmental specialist gave for CEFs, foresters and environmental specialists having all been ineffective in the past with managing community grazing issues, was because some of Mondi’s solutions (e.g. reducing cattle numbers and using a one herd system) cause conflict with the community due to differences in cultural thinking, and therefore differences in perceptions of natural resource use between the community and Mondi. She went on to say that Mondi are not against cattle grazing, but want to secure sufficient grazing for the future (Enviro, JIP34 &5). Compounding this, the community get scared off when Mondi try to formalise relations to develop solutions, as they have the impression that Mondi as trying to forbid their use of natural resources, especially the older people (CEF, RIP5). Essentially then, Mondi staff appear to have an insufficient understanding of community views on natural resource management, inhibiting meaningful engagement on these issues with the community (Enviro, JIP7). However, it was also felt that the inability of Mondi to resolve burning and grazing issues with communities is not simply about a lack of Mondi’s knowledge or will, but staff not knowing how to deal with this HUGE community issue (Enviro, JIP3). Another pertinent point was raised by a forester who believed that one of the reasons for not being able to successfully work with the community on resource use issues is that Mondi has been talking to individuals in the community and not the community as a whole (Forester, OIP4). This he said has resulted in a
fractured approach of entering into dialogue with the community. Clearly these tensions are revealing more than a communication issue; rather a broadening of understanding of each other’s views and ways of seeing the problem is needed.

While discussing with a CEF how he is learning about wetland resource use, it became apparent that there were no learning resource materials in Zulu. He mentioned that the community wanted to learn, but this inhibited the community’s access to wetland knowledge which contributed to their inappropriate use of the resources (CEF, ZIP6). This was echoed by another CEF who believed that since the community lack knowledge about wetlands they did not have the language to talk about them and their use (CEF, VIP3&8). A third CEF said that in light of the Mondi environmental policy calling for the sustainable use of natural resources, it was very hard to explain to communities the concept of sustainability and that this is sustainable and this is not (CEF, RIP6). However, it was recognised that the community also have a wealth of indigenous knowledge on resource use to share with Mondi, and that Mondi has not capitalised on this (CEF, VIP5). So it appears that there is not only a lack of access by the community to wetland knowledge, but also a lack of Mondi staff being open to the existing community knowledge.

5.3.6.b Workshop #1: Deepening an understanding of contradiction #6

In discussions about why Mondi has little control over the use of its natural resources, a number of issues emerged. Apparently in the Iswepe area near Piet Retief, there was control 20 years ago when each homestead was allowed seven cattle (Forester, SrS4P6), and then somewhere in between Mondi lost control. Now a forester says getting control back again will be very difficult (Forester, GS4P6). An environmental specialist added that now the problem is so big, that nobody knows where to start, as it consists of a mixture of political, emotional and human rights issues (Enviro, JS4P6). A CEF noted that it was more difficult to control resource use by communities who live on Mondi land and consider it their own (e.g. in the Piet Retief area), as opposed to neighbouring communities who lived on adjacent land (e.g. in the Richmond area) (CEF, NS4P6). However, comments from the forestry area manager probably crystallised the main cause as being the different value systems and visions of the community for resource use (large herds of cattle grazing, many huts and food gardens) compared to that of Mondi (no cattle, many wild animals, and nature conservation) (Manager, MS4P6&10).
5.3.7.a Tensions from interviews - contradiction #12: Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it

The tensions associated with this contradiction question senior management engagement with environmental issues. It was felt that there was a culture in Mondi that gave the forestry area manager a feeling that if you started diverging into environmental issues, you are wasting the company’s money and time (Manager, MIP5). He went onto stress this even further by saying he felt that senior management commitment for environmental management is present but the sincerity is not (Manager, MIP6). After exploring this further, he went on to say that there is a sense that senior management do not understand what environmental management entails on the ground, which provides less motivation for field staff to do it better. He went on to mention that the lack of a performance management system for senior managers to measure environmental performance of the company further entrenched this belief, which was echoed by one of the environmental specialists (Manager, MIP7; Enviro, DbIP9). Although this view was gathered from only two people, it raises an important issue of whether senior management really understand and practice the environmental commitment that they advocate for the company.

5.3.7b Tensions from workshop #1: Deepening an understanding of contradiction #12

When trying to understand why senior staff do not meaningfully understand environmental sustainability issues, there was a strong feeling from an environmental specialist that top management need to recommit to a total green policy (Enviro, DbS6P9). This catalysed a debate with the environmental manager who disagreed, and countered that senior management do have a massive green commitment (e.g. sitting on international environmental committees demonstrating that Mondi has to perform at that level) but there is a disconnect in how it filters down to staff on the ground (Manager, CS6P10). He expanded on this to say that senior management do not have the environmental understanding because those below them (‘us’) are not meaningfully supporting senior management to gain this understanding (Manager, CS6P12). In agreement the forestry area manager said that senior management are committed and the sincerity is there but they do not meaningfully understand the environmental issues and the consequences of what being totally committed to being green means (Manager, MS6P10&15). He added that senior staff did not give
adequate recognition for good environmental management (Manager, MS6P11). An environmental specialist went on to criticise senior management for only reacting to environmental issues when there is an environmental crisis like a Corrective Action Report (CAR) from the international Forestry Stewardship Council (FSC). An example of this was given as the alien plant issue that was only seen as important and reacted to when FSC issues a corrective action report despite previous staff warnings of the situation (Enviro, JS6P11). In fact the alien plant clearing is so efficient now that many staff saw environmental management as only alien plant clearing and spend large amounts of money on this (Manager, MS6P10). As a result, senior management were perceived as equating environmental excellence with no major FSC corrective action reports (Enviro, JS6P14). In conclusion, a forester summed up what he thought was the key reason for senior staff not really understanding environmental sustainability issues. He believed that conservation is still seen as the ‘black sheep’ with operations being king and coming first, then came safety, then lastly at the end came conservation (Forester, GS6P14).

5.4 How the group prioritised their chosen contradictions

It was only once all the contradictions and their associated tensions from the interviews (table 5.1) had been explored in more depth at the end of the first workshop that participants were able to prioritise the contradictions for developing solutions during the second workshop (table 5.2). This prioritisation has already been explained briefly at the beginning of section 5.3, due to not wanting to report on the data for contradictions # 5, 7, 8, 9 and 11 that were not prioritised. However, in order to keep to the sequencing of steps of the expansive learning process, I reiterate the prioritisation process here. The prioritisation process emerged from discussions on which contradictions participants thought were the most important, and ones that they had the potential to change. After much discussion it was decided that the two main contradictions were contradiction #1 on no recognised informal and formal learning plan/structure, and contradiction #4 on staff working in silos. It was recognised that five other contradictions were also important, but that they could be integrated into these main two (see table 5.2). Therefore the following contradictions were all integrated into main contradiction #1: #2 on resistance to change and learning; #3 on loss of institutional knowledge and relations; and #10 on not knowing what state the wetland is being managed for. The following two contradictions were also integrated into the
second main contradiction #4: contradiction #6 on Mondi having little control over its natural
resource use, and #2 on questioning senior management environmental sincerity.

5.5 Identifying possible solutions
During the interviews, potential solutions were discussed to deal with the challenges and
difficulties that Mondi staff thought might strengthen their wetland learning and practice. This data
is presented as section ‘a’ of each contradiction. Solutions also emerged during discussions of the
first interventionist workshop, and this data has been presented under section ‘b’ of each
contradiction in the sections below.

5.5.1.a Solutions from interviews - contradiction #1: Between the expectation of staff to improve
wetland sustainability practices, and no recognised informal and formal learning plan/structure
and learning materials in place to strengthen staff learning
Some of the solutions that emerged from conversations during the interviews revolved around four
groupings: holding more workshops and courses to improve communications, learning about
wetlands, and learning from/about/with each other; more field days to excite and motivate staff
and managers, share experiences, strengthen collaborative learning, and improve wetland
management; developing a toolkit of learning materials to support foresters and CEFs in their work
with communities; and formalising an ‘informal learning structure’ to provide the ‘space’ for
strengthening staff collaboration, learning, and solution development. The details of these four
groupings are presented below.

There was a need for wetland workshops to learn more generally about wetlands: more specifically
about how to convey sustainability issues to communities; how burning can reduce wetlands alien
plant infestation; and strengthen understanding on key issues that everybody needs to know such
as legislation (CEF, RIP3&6; Forester, StIP7; Manager, CIP8). A CEF suggested that the
communications between a CEF, forester, environmental specialist and the community could be
improved with the environmental specialist arranging workshops/refresher courses involving
everybody so that all could learn together, have more open discussions, and cultivate relationships
with each other (CEF, VIP3). Another CEF proposed a two-day session between foresters and CEFs
to learn more from each other, about each other, and how to work better together (CEF, NIP11). Another suggestion was to skill staff in how to deal with different people and how they learn (Enviro, JIP7).

More field days were requested to better understand wetland identification, delineation and how to sustainably grow food gardens in wetlands (CEF, ZIP7). More field days were also asked for within areas and between areas to share each other’s experiences and any innovative ideas, as well as each other’s successes and failures to encourage collaborative learning and confidence in doing the right thing (Forester, SrIP7; CEF, ZIP7; Enviro, LIP7). There was a suggestion to visit St Lucia to see what a well managed wetland looks like to inspire and motivate staff (Forester, PIP9). It was also suggested that senior management needed to visit the field more often to check environmental management and encourage and motivate staff to do their jobs better (Manager, MIP7).

It was suggested that an education toolkit be developed to support foresters and CEFs in their work with communities (Enviro, LIP6), but that it was important to first identify who would roll them out to the communities (CEF, VIP6).

The last group of proposed solutions revolved around learning structures. The environmental manager insightfully thought of the need to create and formalise a structure enabling more informal learning spaces on specific issues (e.g. alien clearing) where staff from different areas could share their experiences and learnings. This he said could also be integrated into staff key performance indicators (Manager, CIP8). The idea of initiating interest groups to strengthen informal learning was proposed by the training manager, so that discussing issues informally, growing intellectually and finding solutions becomes a way of life (Manager, KIP4&6). This she suggested would encourage more change management orientated towards collaboration and sharing ideas, acknowledging vulnerability, problem identification and solution development (Manager, KIP6). The training manager also thought that some kind of a buddy (peer mentoring) system would work if it was well structured and formalised (Manager, KIP4). Lastly the environmental manager recommended creating a learning structure for Mondi’s Land Department to use existing education materials like the Windows on our World: Wetlands. (Manager, CIP10).
5.5.1.b Solutions from workshop #1

Solutions that were suggested during the discussions in workshop #1 included improving wetland knowledge by getting the Mondi Wetlands Programme to run courses, as well as developing a tailor made wetland session in the induction process (Manager, MS2P3; Manager, KS2P3). It was strongly felt that CEFs do not need to be environmental specialists or foresters, but CEFs do need a broad understanding of these jobs to improve collaboration and effectiveness (Forester, GS2P6, CEF, NS2P6; Forester, SrS2P6). On the other hand it was also felt that foresters need more CEF skills, to help break silos down (Manager, KS2P6).

There was a strong suggestion to formalise field trips as part of Mondi’s informal learning structure (Enviro, DbS2P4; Forester, SrS2P4; Enviro, TS2P4), and that they need to be flexible to accommodate the huge demand on foresters’ time (Enviro, JS2P5). It was felt that in addition to formal field days, staff also needed to informally pop across to people in other offices to see what they are up to in the field on an ad hoc basis (Manager, MS2P4). When discussing who should lead this, both the forestry area manager and the environmental manager were of the opinion that the area managers need to drive staff more to find better ways of innovatively doing something (learning and teaching) because they are passionate about it (not forced), and that a culture change is required to do this if Mondi is to move to the next level of efficiency (Manager, MS2P5,8&9; Manager, CS2P9).

5.5.2.a Solutions from interviews - contradiction #2: Between individuals who recognise the importance of strengthening informal learning, and those who do not because their attitudes/culture/individual complexity and resistance to change differs

No solutions for this contradiction emerged from the interviews.

5.5.2.b Solutions from workshop #1

Only one recommendation emerged from the discussion of this contradiction and it was a recommendation that staff need to recognise that learning takes place every day, look for opportunities to do so (Manager, KS2P8), and “steal with your eyes” (Forester, GS2P10).
5.5.3.a Solutions from interviews - contradiction #3: Between the loss of experience and skills from staff leaving, and the lack of a structure and a willingness to share wetland knowledge and skills of old timers with newcomers

The only solution to emerge from the interviews was that a ‘buddy system’ (or mentoring system) may work to support new staff learn the ropes, if it is structured and formalised (Manager, KIP4).

5.5.3.b Solutions from workshop #1

It was decided that it is the responsibility of the managers to make sure that all important documents are saved in a specific computer file, enabling newcomers to access these (Manager, MS3P3; Enviro, TS3P3; forester, SrS3P3), and that no new structure was needed. Rather reinforce what exists and make sure it works (Manager, MS3P3).

5.5.4.a Solutions from interviews - contradiction #10: Between implementing general wetland management practices and not knowing exactly what desired state the wetland is being managed for

It was suggested to rather prioritise a wetland to work on and concentrate on managing a few important wetlands well (perhaps 10% of Mondi area) involving the communities, rather than trying to work with all wetlands with mediocre effort (Manager, CIP7; Forester, WIP12). Two foresters also said that it was important to identify a few wetlands in each area and monitor health to see if management actions were making a difference (Forester, WIP12; Forester, SIP7). Lastly, an environmental specialist recommended that wetland management plans are developed which state what is being managed for, and give training to foresters to implement them together with the environmental specialist (Enviro, LIP5).

5.5.4.b Solutions from workshop #1

Only one solution emerged from the workshop with the forestry area manager suggesting that learning and improving wetland knowledge and decision making is the key solution to improving wetland practice (Manager, MS6P6).
5.5.5a. **Solutions from interviews - contradiction #4:** Between CEFs, foresters and environmental specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach

Quite a few suggestions were made for how to strengthen teamwork between foresters, CEFs and environmental specialists on common issues. A forester mentioned that he needs to work more as a team with his local CEF with a structured approach to community education on burning and grazing not simply the individual people they issue permits to (Forester, OIP3&4). Another forester added that he would like to work closer with the CEF on grazing issues by having more meetings with the community and CEF in his area (Forester, PIP2). This was echoed by third forester saying that the CEF, forester, environmental specialist, and area manager must all work together if the cattle project in his area is to work (Forester, WIP10). A fourth forester described how he could work together with the CEF and environmental specialist as a team to educate the community about alien plant control, with the CEF spreading the message to community, and the environmental specialist identifying the plants (Forester, StIP5&6). A fifth forester suggested that the environmental specialist should proactively engage foresters in the field to see how environmental management is faring and explain various reports to enable working and learning together (Forester, SrIP4&6).

One CEF said that he needed to work closer with his local forester as one team on common issues (CEF, VIP2), and divide the labour so that the forester does not bear all the responsibility (CEF, VIP4). Another CEF said that he would like to meet and discuss with the environmental specialist and forester an approach for how he can work with them and the communities more as a team, since they had wetland (or other) knowledge which he needs to learn and share with communities (CEF, RIP3&4). A third CEF suggested that he needed to work more closely with the environmental specialist on quantifying community natural resource use relative to resources available (CEF, ZIP5). A fourth CEF said that the silos could be crossed by improving communication between foresters and CEFs on community issues (CEF, NIP7&8). She added that a two-day session between foresters and CEFs was needed to learn more from each other, about each other, and how to work together (CEF, NIP11).
Only one environmental specialist said that she would like to work more with foresters on awareness/education (Enviro, LIP5), and increase awareness days from one or two, to four per year to strengthen collaborative learning (Enviro, LIP8). She also added that more interaction between the environmental specialists and the broader wetland community of practice was needed to expand ideas beyond the few consultants Mondi uses (Enviro, LIP7). Although not a solution to bridging the silos, the training manager made an interesting comment which highlighted that the context for change is present. She said that more change management was needed, orientated towards collaboration and sharing ideas, acknowledging vulnerability, problem identification and solution development (Manager, KIP6), and that Mondi’s change in structure has strengthened the openness to new ideas (Manager, KIP7).

5.5.5.b Solutions from workshop #1

It was a CEF who suggested during the first workshop that the area manager needs to co-ordinate the actions needed to make sure staff do not work in silos (CEF, ZS3P7). A forester then mentioned that his area manager knows more about what his staff and the CEFs are doing than his boss because he is involved with them (Forester, SrS3P8). A couple of foresters then agreed that silos need to be tied up at the area manager level but the connection could also be even lower down at the forester, CEF and environmental specialist level (Forester, GS3P9&10; Forester, SrS3P10). Expanding this idea, a fourth forester said that the area manager needed to sit everybody down together to regularly discuss issues (Forester, PS3P11), to which an environmental specialist added this could be over a half hour cup of coffee together once a week, rather than half day meeting once a month; BUT that the most important point was that all staff need to change their mindset about how they communicated with each other (Enviro, JS3P11). Summing everything up, the environmental specialist said that changing the organisational structure would not help bridge the silos, but staff needed to collaborate together as a team, with daily communication between everybody (Enviro, JS3P11). The discussion was concluded with the forestry area manager stating that the Mondi leadership needs to tell people to work together, irrespective of any differences (Manager, MS3P13).
5.5.6.a Solutions from interviews - contradiction #6: Between how Mondi want to manage its wetlands, and how external influences like local communities want to use and manage the wetland resources

During the interviews, solutions were given on the need to strengthen relations with communities by constantly learning and working together on common issues. One CEF suggested that Mondi needs to engage communities on environmental issues by rather learning together not teaching or telling them (CEF, VIP3). Another suggested that the Mondi Land Department develop crafting or wetland cultivation groups and strengthen livestock owners groups to improve awareness, encourage their involvement, support their needs and develop relationships (CEF, RIP3). A good example of the community working well with a forester was given of the mosaic burning of Zoar wetland, which was successful because the forester had developed closer relations with the community and was in constant contact with them (Forester, GIP6).

Other solutions were proposed on developing awareness and education programmes for/with communities and schools. Suggestions were made of developing an awareness programme with the community to learn the consequences of cultivating in wetlands (CEF, RIP3); educating herdsman and cattle owners together to strengthen a common understanding and agreement of grazing management (CEF, NIP3); revising the cattle management strategy/management committees and developing/rolling out an education package to the community on cattle management (CEF, NIP2). Working with local schools was also mentioned, but it was important to identify who would take the lead to make this happen (CEF, VIP8).

Proposals were also made for developing strategies and plans for communities to use natural resources sustainably. One idea was for the community to employ herders and show them where to graze or not (Enviro, DbIP3). Another was to reduce cattle numbers and develop a grazing camp system, but this would be difficult as communities had not used a one herd system before (Enviro, JIP2). It was suggested that Mondi’s Land Department head up a programme encouraging communities to designate herders and allocate grazing areas, and to then educate communities on land carrying capacities, taking out old cattle like they do in commercial operations (Forester, GIP8, 9&13). Another suggestion was to provide alternative land to those community members currently
cultivating in wetlands for food gardening, to where plantations had been recently been clear felled (Forester, PIP5).

5.5.6.b Solutions from workshop #1

A number of key ideas were suggested during the first workshop that revolved around strengthening the equality of partnerships between Mondi and with communities. The forestry area manager started the discussion and said that a mindset change is required on Mondi’s behalf, and that perhaps Mondi needed to be educated by the community (Manager, MS4P6). A number of other staff agreed strongly, saying that things wouldn’t change until Mondi found out what the community’s vision is for natural resource use, and worked with them to co-learn and collaboratively make decisions; rather than going to the community to say this is what Mondi’s vision is, and that they must adhere to it (Forester, SrS4P7; Manager, MS4P7; Forester, StS4P7; CEF, NS4P7; CEF, VS4P9). It was also recognised that there is no one common answer, and solutions for each area and each community will be different (Enviro, JS4P6; CEF, VS4P9). The general feeling was summed up as being all about co-management rather than control of natural resource use (MWP, DIS4P10).

5.5.7.a Solutions from interviews - contradiction #12: Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it

Only one solution surfaced during the interviews for this contradiction, which was that senior management needed to visit the field more to strengthen their environmental understanding, inspect what is happening on the ground, and to motivate field staff (Manager, MIP4&7).

5.5.7.b Solutions from workshop #1

There was a feeling in the first workshop that senior management needed to strengthen their informal learning with staff to gain a better understanding of current environmental issues and practice. It was a forestry area manager who first suggested that it’s not so much about commitment and policies, but that more informal learning and rubbing shoulders was needed. He gave an example of senior management having a cup of coffee with staff informally discussing how Mondi are doing environmentally, which generates a good feel for current environmental issues.
(Manager, MS6P13). Others agreed and concluded that if Mondi can evolve into a learning organisation, then this contradiction might automatically solve itself (Enviro, JS6P13; Manager, MS6P13&16; Enviro, DbS6P13)

5.6 Developing a thirteen point draft action plan

Once Mondi staff had explored all the tensions and contradictions to better understand their root causes, and began to develop possible solutions during these explorations, a second interventionist workshop was held. The aim was to model solutions strengthening wetland learning and practice to deal with the prioritised contradictions. It was during the discussions of the first day of workshop #2, that the group identified thirteen key points that were then written down on a flipchart forming a draft action plan. The key turns in conversation from these discussions that led to the emergence of each action point are presented below. In some cases the discussion is fairly deep and extensive, while in others, not much of significance was discussed. The turns in conversations have been presented as they sequentially emerged. In most cases the discussion of action points has also been sequentially presented, except for the two action points on informal feedback sessions by management and face to face communication. This has been done for ease of presenting the data in a more coherent manner. Therefore the separations of the thirteen action points into sections below are merely artificial boundaries in one long discussion, with one action point often being catalysed by the previous one. In section 4.9 the workshop participants then further discussed and refined these points, and responsibilities were assigned to form the implementation plan.

5.6.1 Developing an induction programme

The training manager suggested that staff hunger and excitement to learn can be stimulated by putting fieldtrips and other interventions on individual staff career development plans, which get evaluated twice a year (Manager, KS8P12). It was further recommended that the career development plans be used as a management tool, and line managers need to take responsibility for developing staff career development plans, with support from the training manager (Manager, KS8P14). This led the training manager to mention that a new induction course was about to be approved by senior managers for implementation. (Manager, KS8P14). Picking up on this, a forester thought that an induction programme that takes into consideration both the generic induction into
the company, as well as a more specific local induction would be really important for new staff (Forester, GS8P14). The forestry area manager added that it was also important to get the order of priorities right for the induction, so that environmental issues did not come last (Manager, MS8P14). The training manager explained that the new three day induction course would begin with a generic section on Mondi that the human resource specialists would do, and afterwards a local induction of the area office would take place that line managers and environmental and forestry specialists would run (Manager, KS8P15). The environmental manager stressed that the generic induction should only take one day, and the rest of the induction should take place locally in the field. This he said would take far longer than two days that were planned (Manager, CS8P16). Since it was an issue of interest that staff wanted to work on, the induction programme emerged as the first point in the action plan.

5.6.2 State of Wetlands Report field days

The forestry area manager thought that the underlying cause of wetland decline was that Mondi had been through huge institutional changes and had a large staff turnover, and that the company is now is very different to that which it was three to six years ago (Manager, MS9P2). An environmental specialist added that the decline was also due to the ‘contractorisation’ of wetland delineation which externalised the responsibility, and that the foresters and contractors need to be better linked (Enviro, DbS9P5). In an effort to rekindle the enthusiasm and interest, a number of staff thought that there was a need to do more MWP run field days like in the past when the MWP walked the wetlands together with the foresters. They felt it excited staff and that wetland work stopped when the field trips tapered off (Manager, MS9P2; Forester, GS9P3&4; Manager, KS9P2; Enviro, DbS9P3). It was felt that Mondi needs to proactively use the MWP as a tool to help it, rather than MWP having to push for things to happen all the time (Enviro, JS9P3; Enviro, DbS9P4). The forestry manager then said that staff had reacted really well to a presentation on the State of Mondi’s Wetland Report in the first workshop, and believed there was a need to take foresters out into the wetlands again showing them what management recommendations emerged, but that the MWP cannot keep on walking our wetlands with Mondi like the old days (Manager, CS9P4). This then emerged as the second point on the action plan.
5.6.3 Using field days as an informal learning tool

The forestry area manager suggested that Mondi need to have successful environmental stories in each area, such as around wetland field days, crane projects, and focussing on motivational and positive issues that would excite staff (Manager, MS9P7). As the facilitator, I reminded participants that during the first workshop it was mentioned that it was hard to get staff to come on field days, and some said that you have to beg staff to come (MWP, DI9P8). There were suggestions for ways around this. A forester suggested that there was a need to plan field days ahead so people can fit them in (Forester, PS9P8). The forestry area manager suggested getting area managers involved to make sure staff went on field days (Manager, MS9P8). The environmental manager said it was important to have an environmental calendar to assist the planning of informal learning sessions such as field days (Manager, CS9P8), although an environmental specialist reminded everybody how difficult it is to find a day that suits everybody, no matter how much notice you give them (Enviro, JS9P9&11). Another suggestion came from a forester who believed that it was important to make field days small, local and personal, otherwise staff simply sit and watch and are not that involved (Forester, SrS9P9). Through this discussion it emerged that field days could be used as an informal learning tool to generate excitement, interest and strengthen wetland understanding, and the third action point surfaced.

5.6.4 Local wetland projects to strengthen staff collaboration

There was not very much discussion around this issue, but it was raised and was listed as a potential action point. Key points discussed included myself proposing that perhaps if there were local wetland projects, staff could collaboratively work on and have field days around them (MWP, DI9P11). Agreeing with this, the training manager saw this as a good way to break the silos between job descriptions, but noted that it needed to involve all stakeholders (Manager, KS9P12).

5.6.5 Area managers to promote field days

This discussion was instigated by the environmental manager, who felt that area managers need to push staff to hold field days and that this doesn’t have to be facilitated by external support functions, such as the environmental staff (Manager, CS9P13). Agreeing with this, the forestry area manager mentioned that it is written into the area manager’s key performance indicators to
undertake fieldtrips between the different area offices. Area managers had this mandate, but we need to stimulate an interest in them to do it (Manager, MS9P14). The environmental manager was in agreement, and added that it was also up to the support services (including environmental) to make the area managers excited; ensure field days happened; and tell area managers of exciting things not only in conservation but also broader issues in other areas that they may be of interest (Manager, CS9P14). Clearly it was seen that area managers could play an important role in catalysing field days, and this was added as the fifth action point.

5.6.6 Senior managers to motivate area managers to have field days
A short discussion led to this sixth action point emerging. Both the forestry area manager and a forester were of the opinion that senior managers must motivate and demand area managers to organise field days as a way of getting their staff excited to want to come to work in the morning (Manager, MS9P15; Forester, GS9P15).

5.6.7 Education of management on what informal learning is about
The development of the seventh action point was catalysed by an environmental specialist who felt that if informal learning was going to be formalised in Mondi then it was important to hold a workshop to introduce the area managers to informal learning, and demonstrate what it can do for them (Enviro, JS9P17). Picking up on this, the forestry area manager said he believed that informal learning such as through field days, braais, and other means, is a tool that management can use to help them manage their areas better (Manager, MS3P17). Expanding on this he thought that the culture of motivating staff is lacking (Manager, MS9P18), and that management (senior and area) need to provide more leadership and motivate staff, rather than simply managing by demanding a whole lot of checks on whether work is being done (Manager, MS9P19). However, the environmental manager questioned this, and said that senior management is committed: area managers have key performance indicators ensuring field days happened, but area management and support services are not making it happen, which is actually us, so we are responsible too (Manager, CS9P20). The forestry area manager who had originally raised this point agreed, and clarified that perhaps the senior management need to be reminded that some (but not all) area managers are not exciting their staff and creating the passion for these issues; they could use
informal learning and associated tools such as field days to catalyse this excitement (Manager, MS9P21). He summed up the discussion by emphasising that the message coming from the workshop was that staff have a hunger to be excited about their work, and it’s up to senior and area management to ignite that hunger (Manager, MS9P22).

5.6.8 Development of a toolbox of ideas to support informal learning

The discussion was catalysed by me saying that participants should not absolve themselves of all the responsibility and leave management to solve these issues. Participants needed to think about what they could do (MWP, DIS9P22). A forester then suggested that regular short and sharp toolbox talks need to be started again on wetland and other environmental issues (Forester, GS9P22). Toolbox talks were short talks designed to raise awareness on a variety of specific topics. They concentrated the essence of the topic under discussion into a short form that non-specialists of the topic could easily understand. This point was then expanded by the environmental manager who thought that a toolbox of ideas needed to be developed to catalyse and support informal learning (Manager, CS9P24), giving rise to the eighth action point.

5.6.9 More informal feedback sessions, in your face, and face to face communications

Three separate action points surfaced from this discussion, and have been included under this one heading as they are different forms of communication, and there was not a long conversation on each one point. Unlike all the previous action points listed above, each point in this section does not necessarily follow the next one sequentially in the larger discussion of the whole of section 4.7. This has been done for ease of presenting the communications data in a more coherent manner.

The ninth action point was suggested by a forester who said that staff need to have more informal feedback sessions with management sharing information of recent trips, meetings, and happenings they had experienced, so that staff can make other connections with their work, and feel part of the bigger Mondi picture (forester, PS9P15; manager, KS9P16). The forestry area manager added that this was required in the existing key performance indicators of managers (manager, MS9P16). He strongly felt that senior managers must demand that area managers give feedback from important meetings to staff (Manager, MS9P16).
Continuing from the end of section 4.7.8, the environmental manager suggested the tenth action point, when he went on to say that more in your face communications should also take place on important issues that are short and concise, with the approach of ‘let’s confront it, discuss it, and deal with it’ (Manager, CS9P24). A forester then added that it was important for Mondi to involve its neighbours in field days, to improve the communication and information flow between staff and local farmers as it used to happen in the old days (Forester, SrS9P25).

Lastly an environmental specialist emphasised that staff needed to communicate in a more meaningful way, and suggested that face to face discussions, on various reports for example, needed to take place, rather than simply sending emails which nobody read (Enviro, JS9P27). Many participants agreed to this point highlighting the relevance of it which led to the eleventh action point (Enviro, DbS3P28; forester, GS3P28; forester, St S3P28; forester, SrS3P28).

### 5.6.10 All staff need to have a slice of understanding of forestry, environmental and communities issues

This twelfth action point emerged from a discussion that staff need to have a ‘slice of understanding’ of forestry, environmental and community issues, to better understand the different components of Mondi and improve collaborative and independent working. The idea for this action point was catalysed by a CEF who said that to break down silos in Mondi everybody must help each other out and work across job descriptions if they can, instead of leaving it up to the most relevant job description to do it (CEF, VS9P25). This idea was further developed by another CEF who then suggested that all staff needed to have a ‘slice of understanding’ of forestry, environmental and community engagement work, to better understand the different components of Mondi’s operations which would improve collaborative working (CEF, RS9P26). In support of this suggestion, a forester mentioned that CEFs are becoming more important to plantation forestry, and that CEFs need a basic understanding of forestry and environmental issues (Forester, GS9P29). An environmental specialist expanded the idea to include the environmental specialists and foresters, who need to be sensitised to community issues as well (Enviro, JS9P29). Building on this, the training manager said that short courses could be developed and that individuals could decide which they want to go on, depending on their needs (Manager, KS9P29). The forestry area manager
was not sure if this formalised route of forcing staff to learn about the jobs of others would work (Manager, MS3P30). A forester disagreed, and supported the need for CEFs to go on a course to learn about, for example, wetlands and grazing, otherwise he questioned how CEFs could develop the ability to explain the concept of overgrazing to communities (Forester, GS9P30). After the illumination of this point the training manager agreed with the forester. She concluded the discussion by highlighting the importance of first laying a foundation of formal learning, and then topping that up with informal learning gained from the collaborative projects mentioned in section 4.7.4 (Manager, KS3P31).

5.6.11 Integration of environmental training into existing contractor training matrix

The thirteenth action point was initiated by a forester who first raised the need to also have environmental training for the contractors and therefore communities (who were often the same) at the same time as their training for safety, first aid, and peer education took place (Forester, PS9P31). Adding to this the training manager said she would integrate this training into the existing contractor training matrix (Manager, KS9P32). The need to develop environmental education materials on these issues was expressed by an environmental specialist, together with the need to educate facilitators on appropriate learning processes they could use, and how to best use materials effectively (Enviro, LS9P33&32; MWP, MS9P33). In conclusion, a forester suggested that the existing system for Safety, Health and Environment toolbox talks be used as a vehicle to educate contractors on environmental issues (Forester, GS9P34).

5.6.12 Some interesting observations

In reflection, at the end of the discussions of all thirteen action points, three interesting observations were made by participants. The forestry area manager noted that it would be a big achievement to raise senior management awareness of all of the concerns and solutions that have been raised so far from this multidisciplinary group (Manager, MS9P35). The environmental manager found it interesting that every time the discussion went up ‘a different alley’ the participants keep coming back to the developing list of points in the action plan (Manager, CS9P35). A last observation was made through a combination of reflections from the forestry area manager and myself, who highlighted that senior management cannot change everything; it’s up to us to
also do something; so when we say ‘they’ we are in fact talking about ‘we’ (Manager, MS9P36; MWP, DIS9P36).

5.7 Developing an implementation plan

As the workshop facilitator, I then grouped these thirteen points under four headings (tools, fieldwork, management and communications) at the end of day one, as a way of presenting them back to the participants at the beginning of day two of workshop #2. These were then reframed and refined by the workshop participants under three headings (learning tools, management and personalised interaction). The hour long discussions reflecting this reframing and refining process were processed and analysed, but have not been presented due to the space limitations.

Once the thirteen point draft action plan was reframed and refined by participants, they further developed it into a twelve point implementation plan. This required the participants to allocate responsibilities to themselves for implementing a part of the action plan. During this process, a further refining of the action points took place, as participants realised the need to deeper understand and test the solutions that they had developed to ensure that they could feasibly implement them. The key turns of discussions of this refining and decision making process are presented below under each action point of the evolving implementation plan. The final action plan to emerge from the workshop has been included as appendix 7a.

5.7.1 Strengthening the induction process for new staff

The training manager mentioned that the formal induction programme was almost finalised and that senior management were having a final look before its approval for implementation. She was of the view that that the biggest learning curve would be the ability of the line managers to induct new staff into their local offices (Manager, KS11P5). This sparked the forestry area manager to highlight that we needed to rather talk of new people and not new staff so that the induction programme applied to the contractors and communities as well (Manager, MS3P5). The training manager carried on to explain that the induction programme would consist of a skeleton pack with brief information about everything, then specialists would run more detailed sessions during the induction which they would have to prepare. The induction programme would consist of four days:
one for generic human resources/company information, and the other three days for specialist sessions on, for example, safety, silviculture, harvesting, environmental management etc. She was not sure how frequent the induction courses would be held for new people (Manager, KS11P6). It was then that both the environmental manager and a forester warned that a four day process would not work, and that a broader time frame was needed (Manager, CS11P7; Forester, GS11P7). They said that the specialists need to collate the required learning materials, and also create the space with the area manager to induct the new person. One day was seen to be too little, and it was felt that the induction needed to be done over a longer period and only after new staff had some operational experience. An environmental specialist built on this idea, saying that when a new person arrived they needed to go through the generic human resources/company information, and then their manager should give them an induction file with six months to complete all the specialist sessions (Enviro, JS11P7). After this induction process had been completed it should be signed off by the manager. Otherwise she said they will quickly forget the content of a four day course, without any experience to contextualise it. She concluded saying that the area manager needed to drive the induction process, but that it was the responsibility of the new staff to make sure they completed the induction process (Enviro, JS11P7). Many participants, including the training manager, agreed to this adaptation of the induction programme (Manager, KS11P7; Forester, GS11P7; Manager, MS11P7; Forester, SrS11P7; Enviro, TS11P7). In clarifying this adaptation, the forestry area manager reiterated that new staff therefore need to have each section of the induction process signed off by a particular specialist when it was done, before being able to complete the entire induction process. When they had done this, they could take their new staff ‘pink vest’ off (Manager, MS11P7). In agreement, the training manager said that she would try and change the induction programme to include the adapted process, once she has spoken to her manager (Manager, KS11P8).

A number of participants thought that the most difficult part would be to ensure that new staff completed the whole induction process (Forester, GS11P9; Manager, KS11P9; Enviro, LS11P9). Another environmental specialist suggested broadening the induction process to include existing staff, who could do different modules (as opposed to sections for new staff) on various aspects of Mondi’s work related to their jobs using the same induction concept (Enviro, TS11P9), which was agreed to by other participants (Manager, KS11P9; Manager, MS11P9; Enviro, LS11P9). Building on this further, the forestry area manager put forward that communities should also do the modules
(or whatever tool is suitable) and be signed off by the specialists, as the communities have been asking for more knowledge relevant to natural resource use (Manager, MS11P10). Others disagreed, saying that it was important to focus and reduce the number of actions in the implementation plan, and rather concentrate on Mondi staff before going broader to communities (Manager, CS11P10; Forester, OS11P11). Although some disagreed, the consensus was to narrow the process to Mondi staff only in an effort to not take on too much in the beginning.

An interesting debate was sparked by an environmental specialist suggesting that there was a need to collate existing relevant information and make it available on a disc for use on the induction programme (Enviro, DbS11P11). The forestry area manager was the only person strongly opposed to this, strongly saying an information pack should not be developed, and that it would not happen (Manager, MS11P12). His concern was based on who would have the time to develop the information pack. A heated debate punctuated with high levels of dissonance, discussion and collaborative decision making followed on whether information packs should be developed or not (Enviro, DbS11P12; Manager, MS11P12; Enviro, JS11P12; Manager, CS11P13; Forester, GS11P13). In support of the pack, an environmental specialist stated that a specialist needs an information pack to draw information from for a new person’s induction (Enviro, JS11P12). In agreement, another environmental specialist said that if a specialist left the employ of Mondi, then to ensure continuity the new specialist needed to know what information to use for the induction (Enviro, LS11P13). Others added that the information pack needed to consist of reference material that the specialist and induction person needed to know (Manager, CS11P13; Enviro, JS11P13), and that it was important to make sure that current localised environmental, social and forestry information is available and included in the induction process (Manager, MS11P14, Enviro, JS11P14). It was agreed would be called a reference list of information rather than an induction pack (Manager, CS11P13; Manager, MS11P13). Once consent had been reached, another debate arose on who would develop the reference lists for the specialist sessions other than the environmental session (which the environmental specialist agreed they would do) such as the community engagement, silviculture, harvesting, safety etc. (Manager, CS11P15; Manager, MS11P15; Forester, GS11P16; Manager, KS11P16). It was concluded that the manager of the induction programme would task each department to put together the relevant information themselves (Enviro, TS11P16; Manager, KS11P16; Forester, SrS11P16; Enviro, JS11P17; Manager, MS11P17).
In conclusion, the discussion on the induction programme was summed up as expanding from being a four day course, to rather being an induction process lasting 3-4 months with the new person being responsible for driving it together with the area manager (Forester, GS11P15; Manager, KS11P15). The following three responsibilities were assigned to support implementation of the induction process. The training manager was tasked with discussing the new expanded induction process with her manager for approval (Manager, KS11P9), and tasking him to ask each department to make sure the relevant information is available and included in the reference list of information to be used in the induction process (Manager, KS11P16). The environmental manager, with support from the MWP, was tasked with sourcing and making sure local environmental information is also available and included in the reference list (Manager, CS11P17).

5.7.2 Creating formal learning modules for existing staff

Three participants felt that staff need to identify gaps in their own knowledge, and included the need to go on certain training modules in their career development plans (Enviro, JS11P33; Forester, GS11P33; Manager, KS11P33). This catalysed a debate on who was going to drive the training of modules (Manager, KS11P33; Manager, MS11P33; CEF, VS11P33; Enviro, JS11P33). The forestry area manager suggested that it is a line manager’s responsibility to know what training staff need, and suggested asking the training manager to facilitate access to it (Manager, MS11P34; Manager, KS11P34). He added that it would be a huge achievement if every CEF could go on a forestry course over the next year (Manager, MS11P34). In conclusion, even though this action point was seen to be important, it was decided not to implement it until the induction process had started, and it was therefore excluded from the implementation plan (Manager, CS11P34; Manager, MS11P34; Manager, KS11P35; Forester, SrS11P34).

5.7.3 Development of a toolbox of methods and materials

Discussion was held, and it was agreed that it was important to develop not only a toolbox with environmental information but also information on what informal learning is, and provide methods for using different tools to catalyse it (Enviro, JS11P35&36, Enviro, LS11P35; Forester, GS11P35; Manager, CS11P36). A decision was made that the MWP would develop the toolbox (CS11P36;
MvS11P36), and that the toolbox materials would also be applicable to the information required for the induction process of new staff (Enviro, DbS11P37).

### 5.7.4 Integrating environmental toolbox information into the contractor training matrix

The training manager suggested and agreed to make sure that relevant environmental training materials were included in the safety, health and environment modules of the contractor training matrix, using information from the toolbox and modules mentioned in sections 4.7.2 and 4.7.3 (Manager, KS11P38). It was decided to rather use the word environmental courses not materials that need to be included in the matrix, as the training manager contracts the course development out to service providers who make their own materials verified by a training authority (Manager, MS11P40; Enviro, JS11P40).

### 5.7.5 MWP to hold field days on State of Wetlands Report recommendations

On finding out that the State of Wetlands Report (SWR) did not cover any wetlands in his area, a forester requested that the report be expanded to include some of his wetlands (Forester, SrS11P40). This was supported by the forestry area manager who said that the SWR should cover all areas in Mondi (Manager, MS11P41). It was then explained by myself and the manager who initiated the SWR that not all of Mondi’s wetlands can be assessed, as there are simply too many. There was a detailed process to select key wetlands for the SWR (MWP, DlS11P40; Manager, CS11P41). Only after these wetlands have been completed, would there be discussion with all those interested on the way forward (Manager, CS11P41). Both people querying this accepted the explanation, but the forestry area manager pointed out that the SWR could also be used as a process to motivate people across Mondi. If this is done then, at least one wetland needed to be assessed in each forester’s area, so nobody gets left out (Manager, MS11P41&43). While it was recognised that the SWR was not initially meant to motivate people, but rather to gather information on wetland health, it was acknowledged that the report could serve this dual function, and also be used as a vehicle to motivate and catalyse wetland interest and collaboration. In light of this, the training manager suggested that perhaps Calderwood and Seela wetlands be included in the SWR, as they are two of the chosen projects that staff could collaboratively work on (section 4.8.7) (Manager, KS11P41). It was then clarified by the environmental manager who initiated the
SWR that the basis on which wetlands were prioritised and chosen for the SWR, was based on data from the provincial government to give a regional perspective of the importance of the wetlands for e.g. hydrological flow and conservation (Manager, CS11P41). Little local (Mondi) information was used. He added that other wetlands could be included in the next phase at a later stage. The environmental manager went on to explain that the MWP would take local staff into the closest wetland to their areas, and explain the SWR process, the wetland management recommendations that emerged from it, and then see if it would be valuable to have the SWR process expanded to include more wetlands (Manager, CS11P42). He further stressed that SWR field days would be held in each area even if their wetlands were not included in the first phase of the SWR. In conclusion, it was reiterated by an environmental specialist and both the forestry area manager and environmental manager, that although the SWR was designed to assess the health of Mondi’s wetlands, they now realised that it could also be used as a vehicle or a tool to get staff into the field to motivate them to work on wetlands (Enviro, JS11P43; Manager, MS11P43; Manager, CS11P43).

5.7.6 Making local and cross-area field days happen

In discussing this point, the forestry area manager said that the existing key performance indicators of area managers need to be reinforced to have two field trips per year (Manager, MS11P44). Adding to this, the environmental manager suggested that as a support function, the environmental team needed to create the space/ideas and opportunities for field days across the different areas (Manager, CS11P44; Enviro, JS11P44). It was agreed that the environmental manager would make sure opportunities for creating spaces were identified, and that the forestry area manager would raise the issue at the area manager forum, encouraging participation across the areas (Manager, MS11P44; Manager, CS11P45). It was also suggested by a forester that local field days need to be aligned to a Mondi calendar of environmental events so that staff can have adequate notice and prepare ahead of time (Forester, PS11P45; CEF, ZS11P46). An environmental specialist added that the environmental specialists have chosen three to four special days for Mondi to celebrate, but that there was a need to choose special days together with the CEFs (Enviro, JS11P46). After the environmental manager suggested that environmental and social events/days need to be aligned with Mondi’s corporate social investment strategy (CSI), it was decided to rather align local field days according to this strategy (Manager, CS11P47; Enviro,
5.7.7 Selecting projects that staff can collaboratively work on

When discussing which projects staff could collaboratively work together on, the forestry area manager thought it was better to broaden existing projects to include all stakeholders, rather than starting from nothing and creating new projects that involve all stakeholders (Manager, MS11P19). In light of this, an environmental specialist proposed a good project for the Greytown area as Lake Merthley on the Homesdale plantation, which includes stewardship, wetland rehabilitation, endangered species and community issues (Enviro, DbS11P19). Picking up on this suggestion, the forestry area manager agreed, and suggested that the project could be run by a ‘Homesdale Wetlands Committee’, and all the other projects could also have their own committees to encourage collaboration (Manager, MS11P19). An environmental specialist suggested Calderwood wetland as a good project for the Drakensberg/Mondi-Shanduka area, as it has interesting community grazing issues (Enviro, DbS11P20). This was accepted by all. Another environmental specialist thought that Langepan, Mtunzini, or Geluck wetlands could be good projects for the Zululand area (Enviro, LS11P20). Listening to all these suggestions, the environmental manager said that it was important to select projects working on different issues in the different areas to broaden the experiences (Manager, CS11P20). He therefore proposed that the Zululand area chose the Landfontein land claim at Babanago, which was accepted (Manager, CS11P21; Enviro, LS11P21). The environmental manager proposed the existing livestock programme for the Piet Retief/Central area, which could concentrate on strengthening awareness and the capacity of communities to graze the land sustainably (Manager, CS11P21). This was also agreed to.

An environmental specialist raised the concern that someone needed to champion the implementation of these projects, and that we needed to keep track of lessons learnt during implementation, such as what worked and what didn’t (Enviro, JS11P22). The idea of establishing committees to champion and keep track of progress was again suggested (Manager, MS11P23; Enviro, LS11P23). This discussion led to the environmental manager proposing, with others agreeing, that in six months time the workshop participants should get together either as the same group, or as the committees which had been suggested, to look at progress made and share lessons.
learnt (Manager, CS11P23; Manager, MS11P23; Enviro, DBS11P23; Enviro, JS11P23). This was reiterated by others saying that it is important to see how the projects are strengthening informal learning and collaboration (Enviro, JS11P24, MWP, DIS11P24; Forester, GS11P24). The forestry area manager thought that rather than come together as one big group, it would be better for individual committees to present to a few key senior managers on how they were working together on a collaborative project (Manager, MS11P24). In the end it was decided to make a decision closer to the time on either getting together as one big group where everybody can learn from the other’s experiences or as a small group in each area (MWP, DIS11P24).

All staff were reminded by myself that they had to take responsibility for making projects happen as nobody would be chasing them (MWP, DIS11P25). An environmental specialist with support from the environmental manager thought that each project needed to have an area manager to enforce project implementation (Enviro, JS11P25; Manager, CS11P25), and I added that somebody had to lead to ensure that each project happened (MWP, DIS11P25). This led to a lengthy debate as the group decided which participant would be responsible for leading each of the four projects (Manager, MS11P25; Manager, KS11P25; Enviro, DBS11P25; Manager, CS11P26; Enviro, LS11P27; ZS11P27; Manager, KS11P27; Forester, SrS11P27; Enviro, TS11P27; CEF, RS11P28; Forester, SrS11P28). At the end of this selection process, the environmental manager noted that the Richmond area was the only area represented by the workshop participants that didn’t have a project (Manager, CS11P28). After more discussion Seele wetland was chosen for the Richmond area for the need to raise wetland awareness amongst neighbouring farmers, the need for wetland rehabilitation, and as Mondi owns most of catchment (Manager, CS11P28; Enviro, JS11P28&29; Forester, SrS11P29). An interesting observation was made by me that coincidently two foresters, two CEFs and an area manager were chosen to lead the five projects which was a good spread of job descriptions, with environmental specialists supporting the implementation (MWP, DIS11P27). It was again confirmed to meet in six months time to report back on lessons learnt and how informal learning and collaboration have improved since the projects started (MWP, DIS11P30; Enviro, JS11P30; Enviro, DBS11P30; Manager, KS11P30). A last observation from the environmental manager noted that there was only one participant (a forester) who was the sole representative from an area, who was not involved in a collaborative project. After another debate it was decided that he would support the Babanago project (a neighbouring area) and sit on this project.
committee, which was seen to be a good example of learning across two adjacent areas (Manager, CS11P31; Enviro, LS11P31; Forester, PS11P31; Manager, KS11P31).

5.7.8 Gaining support from area and senior management on the workshop process

The forestry area manager opened this discussion by saying that in talking to the environmental manager the previous night, they thought it was important to report back to senior management on the process of the workshop, so management could start to include relevant points from the implementation plan in their work (Manager, MS12P1). He went on to say that it was vital to use the environmental awareness/marketing issue with Waltons (a large customer of Mondi) as a vehicle to present it to senior management (Manager, MS12P1). Both managers also added that it was crucial to get the buy-in and understanding of the workshop process from area managers if the implementation plan is to succeed (Manager, CS12P1&2; manager, MS12P2). The forestry area manager mentioned that senior and area managers in the South Region were very interested in feedback from workshop #1, and wanted to hear about the results from this workshop, as they appear to be coming to similar conclusions independently (Manager, MS12P4). He went on to say how the objectivity of this workshop process was crucial as a selling point to management, as it could not be seen as staff simply pushing an agenda (Manager, MS12P4). It was decided that the forestry area manager and the environmental manager would both report back to senior management in head office, and the area managers of Central and South Regions on the workshop process and gain their support for the implementation plan (Manager, MS12P3&4; Manager, CS12P3&4). The MWP would be used as a resource when needed.

5.7.9 Senior management to create the space for area management to motivate staff

Without much discussion it was decided that the decisions taken in section 4.8.8 also applied to this action point (Manager, MS12P5; Manager, CS12P5; Enviro, LS12P5).

5.7.10 The need for feedback sessions by management to staff

The implementation of this action point was decided right from the start, with the training manager volunteering to speak to senior management to consider reintroducing the cascades and informal feedback sessions (Manager, KS12P5). Expanding on the issue, the forestry area manager said that
apart from isolated visits, senior management seldom visit the different areas and speak to staff, and that this included the Pietermaritzburg head office (Manager, MS12P6; Manager, KS12P6). He carried on to say that staff really appreciate it when senior management visit their areas (Manager, MS12P6). Apparently senior management in the South Region had already recognised this weakness and started to have a monthly meeting with all harvesting and silviculture staff, with meetings soon to be held in a different area every month. (Manager, MS12 P6). These monthly meetings he suggested are an opportunity for senior management to speak to all staff in the evenings and may be an opportunity for an environmental specialist to give a talk on environmental issues (Manager, MS12P6).

5.7.11 The importance of face to face report backs by specialists

It was decided that consultants doing specialist reports need to provide face to face feedback to the people who the report is intended for (Manager, CS12P7; Enviro, JS12P7). The environmental manager said that in future he would make sure that for environmental consultants this was included into their scope of work (Forester, SrS12P7; Manager, CS12P8). The forestry area manager suggested that the feedback doesn’t have to be long, just a cup of coffee with relevant people so they can understand and have an opportunity to question the report (Manager, MS12P8; Forester, SrS12P8). To highlight the problem, an environmental specialist mentioned that for the recent grassland surveys, the grassland specialist came, did the survey, left, and the environmental specialist didn’t even know he was there (Enviro, TS12P9).

5.7.12 More ‘in your face’ communications are needed rather than emailing

The environmental manager felt that although emailing is the standard communication procedure, more ‘in your face’ communication was needed to workshop new procedures, policies and guidelines with staff out (Manager, CS12P11). He explained that nobody remembers email messages but they do remember personal visits, which others also agreed to (Manager, CS12P11; Enviro, LS12P11; Manager, MS12P11). It was decided that the environmental manager would in future ensure that all future environmental policies and procedures would be interactively rolled out rather than electronically emailing them to people to read (Enviro, JS12P11; Forester, GS12P11; Enviro, LS12P11; Manager, CS12P12). The forestry area manager added that the induction process
needed to be workshoped face to face introducing it to everyone, otherwise people won’t buy into it via email (Manager, MS12P12). Agreeing with this suggestion, the training manager said she would workshop with line managers their role and responsibility in the induction process (Manager, KS12P12). She carried on to say that this is probably the most important aspect of induction (Manager, KS12P12; Manager, MS12P12; Forester, SrS12P12). A debate then began on whether the induction process should be workshoped with support staff as well as the line managers, so they are aware why they need to do the specialist induction training (Manager, MS12P13; Enviro, JS12P13; Manager, KS12P13). After some discussion, it was agreed that workshops to introduce the induction process would include line managers and support (Land Department and environmental specialist) staff (Manager, KS12P13).

5.7.13 The need to educate management on what informal learning is

A debate arose over whether this action point was already included in a number of previously mentioned points, as recorded in sections 4.8.3, 8, and 9 (CEF, ZS12P14; Forester, OS12P14; MWP, MvS12P14; Manager, CS12P14; Enviro, JS12P14; Manager, MS12P15). It was agreed that section 4.8.8 adequately covered this action point, but that the point discussed in section 4.8.8 would be expanded to explicitly include informal learning, therefore deleting this point from the implementation plan (Enviro, JS12P14; Manager, MS12P14, MWP, DlS12P15; Manager, KS12P14; Enviro, LS12P14).

5.8 Testing implementation plan against the original tensions and contradictions

The solutions that were developed in the previous sections were continually refined and tested by the participants as the discussions and debates took place. However, once the implementation plan had been finalised (appendix 7a), all the original contradictions and tensions were reread and the implementation plan evaluated to see if it solved the key contradictions and tensions that were prioritised in workshop #1. Although the discussions that emerged were not a thorough testing of the solutions, they do provide some of the participants’ concluding thoughts on the implementation plan.
The forestry area manager thought that most of the tensions and contradictions were covered by the implementation plan (Manager, KS12P16). However an environmental specialist believed that the plan was too thin on community involvement. She said it supported working better as a Mondi team but not that team working better with the community (Enviro, JS12P16). The training manager mentioned that the rider at the bottom of the implementation plan did include community involvement, as it said ‘the plan must apply to all support/operations staff, contractors and community’ (Manager, MS12P16). A forester interjected that the collaborative projects mentioned in the implementation plan did include involvement of the community, which he thought was adequate (Forester, OS12P17). Adding to this, a CEF thought that the induction process would involve the communities as well, but agreed that perhaps the plan needed to be more specific in terms of the community related tensions (CEF, ZS12P17). The discussion was concluded with the myself reminding participants that the plan is only the departure point for working collaboratively to solve some of the bigger issues which may take a couple of years to solve (MWP, DIS12P17; Forester, OS12P17).

Another issue raised by the forestry area manager was that the lack of staffing issue was never really solved. He thought that the participants almost gave up before we started to discuss it (Manager, MS12P17&18). Drawing on the discussion at the time, I suggested that the reason could have been that participants had earlier thought that they were powerless to do anything about it, and so decided to work around the issue (MWP, DIS12P17). This was perhaps why the contradiction was not prioritised by the group for further exploration. On another issue, a CEF asked if the implementation plan would really break down the tension which referred to ‘staff resistance to change’ (CEF, ZS12P18). I replied that hopefully the plan would strengthen how we learn together across different job descriptions which should weaken resistance to change (MWP, DIS12P18).

As the workshop facilitator, I said also that I believed the implementation plan took into account quite a few of the prioritised contradictions and associated tensions and, and that the correlation between the two had not been conscious which demonstrated that the group were on the right track (MWP, DIS12P19). In agreement, the forestry area manager reiterated what he said in the beginning; that the plan is good and it was interesting that many of these issues had already been identified (by others before), re-enforcing existing initiatives and providing confirmation of subjective views on some key issues raised by our group (Manager, MS12P19).
A forester reminded everybody that those participants not directly actioned in the implementation plan cannot sit back, relax and wait for those actioned to take the lead (Forester, PS12P20). Adding to this, I highlighted that the people listed on the implementation plan as actioned for certain tasks, are only expected to take the lead and be responsible for bringing together the others who will collectively implement the action point, but are not expected to do all the work themselves (MWP, DIS1220).

In conclusion, the forestry area manager asked the environmental manager whether he honestly believed that improvement of Mondi’s wetlands and following this workshop process was important to the company as a whole (Manager, MS12P21). In reply the environmental manager said emphatically ‘yes’, and that the director of Mondi’s forestry operations is talking about the same thing: evolving Mondi into a learning organisation (Manager, CS12P21; Manager, KS12P21). As the final word, the forestry area manager then said “OK, if you guys believe it is important, we will do it”. (Manager, MS12P21).

5.9 Conclusion

In this chapter I have presented the data generated from interviews with Mondi staff to develop descriptions of the three main activity systems responsible for wetland management. The tensions and contradictions that were seen to be inhibiting wetland management were also presented, as well as key parts of the discussions demonstrating Mondi staff deepening their understanding of them. A variety of solutions that emerged from the interviews and interventionist workshops were shared. Important elements of conversations that led to the development of both an action and an implementation plan were described. The implementation plan was finally tested against the tensions and contradictions originally surfaced from the interviews and workshop #1.
CHAPTER SIX:

Expansive social learning processes begin to strengthen the reflexivity and agency of Mondi staff for improved wetland sustainability practices

6.1 Introduction

In this chapter I present the key findings to emerge from phase one and two of the research in the form of three analytical statements, together with their supporting evidence. Through these findings, I have described how various learning processes and institutional factors emerged as important in beginning to support social learning between Mondi staff to identify and develop their understanding of the two contradictions they prioritised as inhibiting wetland management, and the solutions they developed to deal with them. Importantly the chapter provides evidence of the crucial role that expansive social learning has started to play in strengthening the reflexivity and agency of Mondi staff that is required to improve wetland sustainability practices within Mondi, which are a key aspect of initiating social change. It also highlights the critical relationship between the wetland management practices, expansive social learning processes, and organisational development, and why harmonisation between the three is so essential.

It is important to note what is meant by participants developing their ‘understanding’ of the contradictions and the issues they are dealing with (section 3.5.5). I interpret this to mean that participants are able to develop new understandings that can be qualified as:

- a deeper understanding of, for example, wetland issues resulting in knowing more about wetlands management;
- a broader understanding, demonstrating that participants have a broader knowledge of wetland management in the organisational context and how different players need to work together;
- an expanded understanding revealing that participants have built on each others learning and expanded their learning from knowing what they did as an individual to
more collaborative, collective, social learning, demonstrating that participants have scaffolded their learning on the comments and dialogue that occurred during the expansive learning workshops;

• an increased sophistication in understanding, signifying that the learning of participants has become more multi-dimensional, more socially integrative, and more organisationally embedded. For example as the participants began to realise that the contradictions identified inhibiting learning, they started to understand that the social structures and cultural systems of the organisation were contributing to this, rather than individual personalities, and that the institutional enabling environment was not present.

It is also important to reiterate what was said in chapter 4, that from chapter 6 onwards, I have started to differentiate between ‘expansive learning’ and ‘expansive social learning’. The reason being that as my research played out and I looked at the findings of it, it seemed possible to call the learning taking place expansive social learning, because I could see social learning having taken place through the expansive learning intervention. I felt the ‘social’ aspect of expansive learning was so important and descriptive of the types of learning processes that constitute expansive learning, that it needed to be explicitly included. As mentioned in section 4.2, I have therefore kept true to Engeström’s theory of expansive learning, and only referred to ‘expansive learning’ when talking about the theory as it is used in the literature. However when speaking more broadly, for example about expansive learning processes, I have used the words ‘expansive social learning’.

After carefully reading the data many times, the inductive mode of inference was used to analyse and code specific pieces of text in the raw data of interest to answering the research questions. These coded texts were then categorised in order to develop analytical memos (Bassey, 1999), which summarise key aspects of the data. It was from these data sets that three analytical statements (ibid.) were then then developed (section 4.6).
6.2 Analytical statement #1: The sophistication of participant understanding increased as the expansive learning process progressed

In section 5.3 the data has been arranged sequentially for each of the prioritised contradictions. When analysing the discussions within a temporal sequence, from the interviews through to the first and onto the second interventionist workshops, the data revealed that participants deepened and clarified their understanding of the tensions and contradictions and associated solutions as the discussions progressed. This finding supports the start of expansive learning, which Engeström reports the expansive learning cycle will cultivate (Engeström, 2000). However despite searching the literature, I have not been able to discover papers written on the expansive learning process which have documented empirical evidence of the progression of participants deepening their understanding from interviews through to the workshops which has resulted in a changing of the object they are working on, as I have described below. The literature I have found rather discusses how the partially shared object in interacting activity systems has expanded, with little detailed empirical evidence given of this progressive change. This has reduced the literature I could find to support my findings. In the sections below, I have presented evidence of the progressive change that resulted in the shared object of the three activity systems beginning to change. My lack of finding evidence in the literature could well be due to the nature of what can be recorded in a thesis relative to a paper or book chapter. A thesis is a genre of research writing that allows for this careful, detailed and descriptive work, which a paper does not have the luxury of permitting.

6.2.1 Interviews: Emergence of a shallow understanding of tensions and basic solutions.

The trend for contradiction #1

After analysing the tensions, and possible solutions, raised during the interviews that ultimately led to the formulation of the prioritised contradiction #1, it becomes apparent how the majority of the tensions are directed at a shallow understanding of ‘what the problem is’, and similarly solutions that were mostly directed at instrumentally solving these tensions. The evidence supporting this view is generated from the majority of tensions raised for contradiction #1 (section 5.3.1.a) which concerned staff lacking knowledge on wetland management; information not being in a usable form; staff not having the time to learn; and staff having a narrow understanding of the importance

1 The scope of the literature search covered the progressive expansive learning change in understanding, of professional learning in the workplace
of the broader environmental picture to Mondi. While these tensions are important, they are quite superficial, and are closely related to the more easily identifiable problems that were most likely at the forefront of participants’ minds. There is little thought of the root causes of these problems. Many of the solutions that participants thought of during the interviews were similar, and focussed more directly at solving these immediate tensions, without much understanding of what is causing the tensions (section 5.5.1.a). These included holding more workshops and courses to improve wetland knowledge, developing a toolkit of learning materials to support these activities, and running more field days to excite and motivate staff. In many cases, this reflects the shallow line of thinking that would lead most people to identify problems, and in a linear way develop solutions to overcome them at a relatively simplistic level. While these solutions are good ones and eventually were integrated in some form into the implementation plan, they are only part of the solutions, and do not take cognisance of the root causes of why staff learning is weak. Simply running more courses and developing learning materials will not overcome the contradiction. The solutions need to be broader and deeper, including an understanding of additional more tacit factors that may be inhibiting staff learning, such as the institutional tensions that were identified in the later workshops. Therefore working on their own without their colleagues but with facilitation by myself, participants were mostly unable to identify the deeper root causes of the tensions.

**The exception**

It is important to note that a few of the tensions raised during the interviews did begin to move towards understanding what gave rise to them, and towards understanding the core of the contradiction. The most significant of these was noted by the training manager who said that there was no formalised learning structure in place to support staff on wetland and environmental learning, and the environmental manager who mentioned that there were no learning structures to channel the use of existing learning materials (section 5.3.1.a). These are important tensions, interestingly both raised by management. A few others also touched on this, by stating that insufficient learning spaces were provided to share practical wetland knowledge between staff of the different job descriptions. But no one, at this stage, began to ask the deeper questions of why there was no learning structure, or why there were insufficient learning spaces, and how to go about rectifying this. The training manager suggested some insightful solutions around formalising a learning structure to enable more informal learning spaces, and initiating interest groups to strengthen informal learning (section 5.5.1.a). The environmental manager also suggested creating
a learning structure for Mondi’s Land Department to use existing learning materials. These suggested solutions did begin to move towards solving the contradiction, but were raised by only a few staff, and again most importantly by those in a management position. This finding is explored more in section 6.4. Interestingly this correlates with a finding of Engeström (2000), who also found that the idea of what ultimately became a key solution to improving the efficiency of a hospital surgery unit in Finland, was suggested in the first interventionist session, rather than surfacing in later sessions. This he said acted as an earlier than intended second Vygotskian stimulus, which catalysed further group discussions around the issue. However, he also mentions that it took another six sessions of a long and laborious process before the final solution took shape, which was also the case in this research with Mondi.

**The trend for contradiction #4**

When analysing the tensions for contradiction #4, a similar trend emerges. The broad groupings of these tensions include how much staff work in activity system (or job description) silos with a few ad hoc interactions between them; the recognition that staff need to collaborate as a team on common issues and that it rarely happens; and as for contradiction #1, that staff have a narrow understanding of the broader environmental picture to Mondi (section 5.3.5.a). These tensions identify that the silo effect is strong, with insufficient bridging between the silos. As Launis, Virtanen and Ruotsala (2007) point out, boundaries between different activity systems always exist, and are necessary to give shape to an organisation. However, it is these invisible boundaries that often go unnoticed, and can inhibit change and developmental processes in organisations. The realisation of this important tension was a major contributor to the development of the contradiction. However during the interviews, only one participant offered an explanation of the cause of the silos as the restructuring of the company over the past number of years, with another alluding to it (CEF, NIP6&7; forester, PIP3). None of the other participants touched on any of the root causes of the silos and a lack of bridging between them. This indicated that there was a shallow understanding of why staff worked in silos with little collaboration between them. A similar trend follows for solutions suggested by participants. These were grouped around strengthening teamwork between foresters, CEFs and environmental specialists on various projects that were of interest to all, and improving communications between staff of different job descriptions (section 5.5.5.a). As for contradiction #1, these solutions were important, and were ultimately integrated into the implementation plan, but they are directed at solving the tensions at face value, rather
than the underlying causes of them. The solutions are aimed at connecting the silos, but not at understanding why the silos are so strong and are not connected in the first place. If these core issues are not understood, then it is highly unlikely that attempts to resolve them will be successful in the longer term. Again these tensions and solutions reflect a lack of deeper understanding of the issue.

6.2.2 Workshop #1: Tensions and solutions begin to grasp an understanding of the contradictions

The tensions that emerged from the first workshop reflected the deeper thinking of participants which was supported by the workshop process. These discussions, facilitated by myself, explored why the tensions identified in the interviews occurred, in an attempt to identify the root causes of the tensions. Through this process, participant understanding of the tensions identified deepened, and the resulting solutions from the group became more sophisticated. Participants built on each other’s understanding, expanding their learning horizontally (Engeström, 2000; Warmington, et al., 2005) as they crossed boundaries between activity systems and began to form their own zone of proximal development as was the case for other researchers too (Engeström, 1987; Launis, Virtanen and Ruotsala, 2007).

The trend for contradiction #1

These discussions revolved around better understanding the reasons why staff learning on wetland and environmental sustainability practices is weak. Four groupings of tensions were identified (section 5.3.1.b): there is no induction or handing over process from staff leaving Mondi to new incoming staff; there is a weak understanding of each other’s fields in forestry, environmental and social issues with no structure to strengthen this; staff have lost the hunger and excitement to learn and teach; and there is weak interpersonal interaction between the staff. These tensions help clarify some of the underlying reasons for the original tensions raised in the interviews, which revolved around lacking wetland knowledge, not having the time to learn, and poor understanding of the broader environmental picture (section 5.3.1.a). The solutions that emerged from these discussions of contradiction #1 (section 5.5.1.b), also became more sophisticated and began to work towards resolving the contradiction, more so than those that emerged from the interviews. These solutions included developing a tailor made wetland session in the three-day induction
course for new staff, as a way of ensuring that new staff began their jobs with a basic understanding of wetlands that they could build on; encouraging a broadening of understanding of each other’s jobs to improve collaboration, effectiveness and connection of the silos, and acknowledging that having wetland knowledge was not enough on its own; formalising fieldtrips as part of an informal learning structure to ensure that the importance of them was recognised and that fieldtrips happened; and ensuring area managers encouraged more fieldtrips and informal office visits to strengthen relationships, collaboration, learning, job excitement and integrate this into a formalised informal learning structure (section 5.5.1.b). For the first time, area managers are seen to be crucial to the solutions, further highlighting the importance of institutional structures to strengthening learning. The significance of this finding is discussed further in section 6.4.2. These solutions begin to show how participants are realising the importance of developing solutions that start to go to the heart of the contradiction, compared to the solutions developed during the interviews which were more aligned to dealing with the tensions at face value.

**The trend for contradiction #4**

The same trend appears when analysing the tensions and solutions for contradiction #4. Building on the tensions identified in the interviews on staff working in silos and rarely working as a team, the group began to try to understand why staff worked in silos (section 5.3.5b). They came up with many more tensions that spoke to the weak collaboration across staff from the different job descriptions on common issues. Importantly, the discussion turned to the lack of space and leadership provided by management to support staff collaboration across the silos, identifying this as a root cause of the tensions. As for contradiction #1, this was also the first time that the group began to see the contribution of management to the development of the contradiction. The solutions that emerged from the discussions (section 5.5.5b) picked up on this, and a variety of solutions were proposed around management creating the spaces to strengthen communication between all and to improve collaboration across the job description silos. These solutions highlighted the crucial role that area managers have in strengthening staff wetland learning and practice, without which it may not happen.
6.2.3 Workshop #2: Emergence of a broader and deeper understanding of tensions and contradictions, and more sophisticated solutions

During the second workshop, participants began with a last attempt to expand their understanding of the underlying causes of the tensions that lead to contradiction #1, on the lack of a learning structure. This was not done for contradiction #4 as participants thought that they had sufficiently understood why many staff worked in silos without adequate bridging between them.

A broader understanding of tensions for contradiction #1

Interestingly, the majority of the discussions on contradiction #1 centred on understanding broader economic and structural issues. This is reflected in the tensions that arose around the discussion on the changing of the job descriptions of the foresters and CEF to suit the shifting business times; the realisation that some of Mondi’s key customers took environmental certification of Mondi’s forestry practice more seriously than many staff; and that the structural changes in Mondi had been responsible for stifling and reducing the enthusiasm and trust (section 5.3.1c). This indicates how staff understanding of the contradiction had begun to expand from the initial discussions during the interviews that were mostly centred around individual concerns of a lack of wetland knowledge, and the initial identification of relational tensions between the different job descriptions; to the discussions from workshop #1 that tried to understand these relational tensions; and the discussions from workshop #2 that began to explore the broader economic and structural issues that were important to gain a deeper understanding of the contradiction. This expanded understanding from the individual to the broader institutional and economic issues has enriched participant understanding of the contradictions, and provided a broader knowledge base from which to draw when the action and implementation plans were developed at the end of the workshop #2.

More sophisticated solutions in the action and implementation plans

The increased sophistication of solutions is clearly visible in the actions participants decided on, when they developed the implementation plan (sections 5.6 and 5.7) to begin dealing with the contradictions. The implementation plan includes some of the solutions that were first proposed in the interviews, such as the need for more fieldtrips, courses and a toolkit of information, and actions to strengthen teamwork and improved communication (sections 5.5.1.a & 5.5.5.a). It also
includes some of the solutions suggested in workshop #1 such as a formal three day induction course for new staff; the need for activities that strengthen a broader understanding of each other’s jobs; the need to formalise fieldtrips and develop an informal learning structure; the need for area managers to encourage field trips and management to create the spaces for improved communications and collaboration across job descriptions (section 5.5.1.b and 5.5.5.b). Finally in workshop #2, through the process of developing (section 5.6) and refining the action plan and then morphing the action plan into an implementation plan (section 5.7), these earlier solutions were further refined and expanded to become more sophisticated in order to deal with the contradictions. For example, a long discussion was held which resulted in expanding the three day induction course, and extending it to a more complex but in-depth and meaningful three to four month process that allowed for more responsibility being taken on by the area managers and the individuals doing the induction (section 5.7.1). The induction process was further expanded beyond new staff to also include existing staff doing different modules to gain a broader understanding of their jobs (section 5.7.2). The toolbox of information was extended to include methods of catalysing informal social learning (section 5.7.3). It was agreed to expand the existing contractor training programme to include information from the toolbox and induction programme (section 5.7.4). Instead of running field days on an ad hoc basis, it was decided to use the recommendations arising out of the state of the wetlands report currently being completed as a tool or vehicle to get staff into the field and to motivate staff to work on wetlands (section 5.7.5). It was further decided to reinforce existing performance indicators of all area managers to have two fieldtrips per year, to align field days promoting informal environmental learning to specific environmental days important to Mondi’s CSI strategy and social events, and to have field days catalysing the cross fertilisation of ideas between different forestry areas (section 5.7.6). As suggested in the interviews, specific wetland projects were chosen and each participant was allocated to work on one, to promote staff collaboration between different job descriptions (section 5.7.7). To monitor progress and lessons learnt, a formal collective feedback session was arranged for six months later. Recognising the important role of management which was identified in the first workshop (sections 5.5.1.b and 5.5.5b), the forestry and environmental managers were actioned by participants to provide feedback to both senior and area management on the expansive learning process so far, and obtain their commitment to support rolling out the implementation plan (sections 5.7.8 and 9). These two managers were further actioned by the participants to encourage senior management to give incentives to and create the space for areas managers to motivate their staff to carry out the
implementation plan. In an effort to strengthen personalised interaction between staff, the training manager was tasked to consult with senior management in an effort to revive informal feedback sessions by management for staff on various topics of interest (section 5.7.10). To make specialist environmental reports more relevant to operational staff, the environmental manager agreed to include in future specialist contracts that informal face to face feedback sessions on the report needed to take place (section 5.7.11). The same would apply to internal Mondi policies and procedures that staff needed to be informed of. In future, these policies and procedures would be done on an interactive basis, rather than by simply emailing them out (section 5.7.12).

6.2.4 Expansive social learning processes that supported participants to begin developing a deeper understanding of the tensions and contradictions

The implementation plan therefore highlights quite explicitly how participants have built on prior knowledge that was mobilised during the interviews (section 6.2.1), collective knowledge gained through the dialogic interaction between participants that is evident from the first workshop (section 6.2.2), and blended this together to develop the more sophisticated and multidimensional solutions evident in the implementation plan of the second workshop (section 6.2.3). Engeström (2000) and Warmington et al. (2005) both see this horizontal learning that took place between professionals from different activity systems, as being a crucial part of expansive learning. Working on their own, individuals would most likely not have been able to develop the in-depth understanding of the tensions needed to develop the multifaceted solutions required to begin dealing with the contradictions. However, through group collaboration with colleagues from different activity systems and being supported by the expansive learning process, participant understanding of the tensions, and the solutions developed to deal with the contradictions were much more sophisticated, and more directed at the root causes of the tensions, and at the contradictions. This highlights the importance of boundary crossing between the different activity systems involved in the expansive learning process for deepening the scope and depth of staff understanding, as confirmed by the work of Launis, Virtanen and Ruotsala (2007) and Warmington et al. (2005). It is argued this will most likely result in a greater chance of successfully dealing with the factors hindering wetland management, than if they had attempted to either do this on their own, or collaboratively, but without the support of the expansive learning process. In fact Engeström (2007b, p.38) in his work on different forms of co-configuration states that, “It is
horizontal (original emphasis) and dialogical learning that creates knowledge and transforms the activity, by crossing boundaries and tying knots between activity systems”. The research with Mondi appears to be reflecting this same finding. Although Engeström’s concept of knot-tying has not been explicitly investigated in this research, there is evidence of such processes taking place. An example of this would be when foresters, CEFs and environmental specialists come together for a brief period of time to work on a common wetland or environmental issue, and then go their separate ways afterwards to focus on other aspects of their respective job descriptions where no common issue may exist. However, the expansive learning process had only just begun, and it was clear that it would only be through affecting the implementation plan that the true value of the process could potentially be revealed over the following two years, a process reported on in the next phases of the research (see chapters 7, 8 and 9).

6.3 Analytical statement #2: The expansive learning process began to strengthen democratisation of decision making

The process of presenting the emerging tensions and contradictions as mirror data during the first interventionist workshop has contributed towards strengthening the democratisation of decision making within the group. This allowed for increased participation by Black participants who were initially much quieter than their White colleagues. While this could be seen as perpetuating racial differentiation, I found it necessary to name people by race as the racial patterns of group dominance and exclusion were so obvious in the data. This is also particularly interesting in a South African context where historical forms of dominance continue, despite democratic intentions. Section 6.3.3 provides a fuller explanation of this line of thinking.

Black participants were predominantly very vocal during the interviews and came up with valuable insights, but relatively quiet during the workshops despite my conscious efforts as the facilitator to draw them into the conversations. In most situations this would have excluded their ideas from the discussions. However with guidance from the expansive learning cycle, and through the process of anonymously mirroring the tensions and possible solutions generated from the interviews back to all participants during the workshops, the ideas of Black participants were noticed and taken up in the discussions by the stronger voiced participants who were predominantly White. The
consequence was that the voices of Black participants were made visible and this allowed for their ongoing inclusion and participation.

This finding is very important, as everybody’s voice should be represented even if it does not emerge directly from them in a public situation. This clearly stands out when tracing the development of the tensions and solutions for contradictions #4 and #1 within a temporal sequence as evidenced in section 6.3.1 below. Learning theory research\(^2\) does not seem to be reporting on these kinds of power relationships in the learning process. I therefore could not find any literature on researchers being guided by the expansive learning process that could corroborate this finding, so perhaps this is the first time this has been documented in this way. It may well be an unintended consequence of the expansive learning process, or it may be particular to the South African context with its dominance by White people, social oppression, and marginalisation or silencing. Interestingly, there are researchers such as Barbara Rogoff et al., who have found that that people may sit quietly in group discussions without actively contributing to the discussion, but who are actively listening with intent to act on what they have learnt (Rogoff, Paradise, Arauz, Correa-Chavez & Angelillo, 2003). This they found very prominent in indigenous American communities, which may also be applicable to African communities, although it is not possible to extrapolate across continents in this way. The research of Rogoff et al. indicates that observation can be a crucial aspect of participation. This is important as it is very easy to dismiss the quietness of the Black participants as a lack of interest and will to learn. However, Rogoff et al. have clearly shown that people can learn by actively observing and listening in to those who may be more knowledgeable (at least in some ways, but maybe not others). As the research with Mondi has shown, this needs to be kept in mind when working in South African contexts, where the culture of Black participants could mean stricter rules of engagement between younger and older or more experienced staff members, and where different ways of viewing the same issue may predominate. However, this could well have been exacerbated by South Africa’s history of oppression which has cultivated the dominant White voice (Ndletyana, 2003).

\(^2\) The scope of literature searched covered learning theory research in the socio-cultural learning tradition, not in the behaviourist tradition.
6.3.1 Tracing the contributions of Black participants to contradiction #4

This contradiction is between why the CEFs, foresters and environmental specialists work in silos on their own jobs and wetland issues, and Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach (see sections 5.3.5a, b and c). During the interviews (section 5.3.5a), the majority of the tensions raised around CEFs, foresters and environmental specialists working in silos with little interaction between them, were noted by Black participants who were noticeably vocal and outspoken on the matter (RIP3&4; NIP3; 4,5,6,7&9; VIP2,3,8&5; ZIP5; PIP3&6). All these participants were CEFs, with one being a forester. The tensions that they raised were very important, and highlighted how they rarely worked with other job descriptions, and sometimes rather went to the provincial Department of Agriculture for information on wetlands and cattle grazing, instead of using Mondi’s environmental specialists. These tensions were amongst the main contributions that resulted in the surfacing of this contradiction. However, when all those interviewed got together in workshop #1 as a group to collaboratively explore the causes of contradiction #4, many of these important Black voices either became silent or much less vocal (section 5.3.5.b). Only three Black participants (VS3P6; ZS3P7; PS3P7) raised any comments. However, the quieter voices of Black participants were still made known through the presentation of the mirror data. Although the majority of the discussion was dominated by their more vocal White colleagues, they picked up on the tensions raised by Black participants which had been reflected in the mirror data. The White participants obviously thought that contradiction #4 and its associated tensions were important, since, despite the lack of participation of Black staff in these discussions, contradiction #4 was still prioritised (section 5.4) as one of the two main contradictions that participants chose to work on out of the twelve identified.

Again this trend continued when further deepening an understanding of contradiction #4 during workshop #2 (section 5.3.5.c) in preparation for developing the action plan, with Black participants remaining silent except one forester (PS11P2) who contributed towards the discussion. When tracing the development of possible solutions for contradiction #4, on how to strengthen teamwork and communications between foresters, CEFs and environmental specialists on common issues, the majority of the solutions proposed during the interviews (section 5.5.5.a) were made by Black participants (VIP2&4; RIP3&4; ZIP5; NIP11; OIP3&4; PIP2; StIIP5&6). Again, during workshop #1, the
majority of these important voices fell silent (section 5.5.5.b). However two Black participants (ZS3P7; PS3P11) did make two important contributions about the necessity of area managers ensuring staff did not work in silos, and that communication between the area managers and staff would be improved through regular meetings. Again, these solutions raised during the interviews and in workshop #1 by the quieter Black participants were seen by their more vocal White colleagues as being important, as many of them were picked up on in the resulting discussions and integrated into the action and implementation plans (sections 5.6 and 5.7).

6.3.2 Tracing the contributions of Black participants to contradiction #1

In much the same way, a similar pattern can be seen when analysing the emergence of contradiction #1. This contradiction existed between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning. During the interviews (section 5.3.1.a) four Black participants were very honest and outspoken in recognising that they had a weak understanding of wetland and environmental issues (NIP4&9; RIP3; ZIP6; PIP7), and that there were insufficient learning spaces to strengthen their existing knowledge (ZIP8; PIP6). Again, many of these comments gave weight towards the emergence of contradiction #1, without which the contradiction may not have been considered that important. However, when the group collaboratively explored the causes of this same contradiction in workshop #1 (section 5.3.1.b) only two Black participants contributed two comments to the discussion. The rest remained quiet. The White participants clearly also thought this contradiction and its associated tensions were important, as through the mirror data they picked up on these issues during the discussions and went on to later prioritise it at workshop #1 as being one of the two most important contradictions out of twelve. Again during workshop #2, when making a last attempt to further deepen an understanding of the contradiction and its causes, the voices of Black participants were hardly raised (section 5.3.1.c). Only one Black forester (PS8P4; PS8P6) contributed to the discussions.

After analysing the development of solutions in the interviews for contradiction #1 (section 5.5.1.a), Black participants were quite vocal. They suggested many useful ideas of developing toolkits of wetland information they could use with communities to raise awareness, and running workshops and field days together with staff from other job descriptions, strengthening their understanding of
key wetland issues and relationships between staff (RIP3&6; StP7; VIP3&6; NIP11; ZIP7; PIP9). Once more, during workshop #1, these voices remained quiet, with only one Black participant (NS2P6) adding to the discussions (Section 5.5.1.b). However, when looking at the action and implementation plans developed during workshop #2 (sections 5.6 and 5.7), the development of a toolbox of ideas and information and more workshops and field days were clearly present, highlighting how the ideas of the quiet Black participants have still been explicitly integrated into the final solutions developed.

### 6.3.3 An interesting finding for a South African context

Clearly, from the evidence provided above, during the interviews the Black participants were very vocal, forthright, and insightful. Important tensions were raised that shaped the emergence of the contradictions, especially for the two prioritised by the group. Likewise during the interviews the possible solutions they provided were also very insightful. However, these same important voices became much quieter during the group discussions of workshop #1 and #2. Despite this, through the interview data being mirrored back to all participants, their comments were picked up by the more vocal predominantly White participants and integrated into the discussions which ultimately helped shape the development of the action and implementation plans. Importantly, this occurred regardless of only three contributions from the quieter voices during more than three hours of discussions during the development of the thirteen point action plan (sections 5.6), which were made by two Black foresters (PS9P15; StS3P28; PS9P31); and only eight contributions (OS11P11; VS11P33; PS11P45; ZS11P46; RS11P28; PS11P31; ZS12P14; OS12P14) during more than two and a half hours of discussions during the development of the implementation plan (sections 5.7).

This is particularly interesting in a South African context where historical forms of dominance continue, despite democratic intentions. In the past the plantation forestry and conservation sectors were traditionally White dominated at management levels and, in many instances, the imbalance of power relations and the dominance of particular types of discourses still continues. The reason why the Black participants were so quiet in the workshops could well be due to an imbalance in power relations. If this is the case then the discourse is rather one of power relations than Black participants being quiet. The relational dynamics during the workshops did not reveal explicit power gradients, however it was most likely embedded in the long history of white
dominance in South Africa. This would make it difficult to identify, even though it was likely to influence discussions. A generative mechanism of the ‘silent voices’ would therefore be the histories of power arising from South Africa’s past, which would include the historical power relations between Black and White that arose from the colonial and apartheid eras. However, it would also include the disadvantaged poor quality of the black education system, giving rise to unequal deliberative powers and confidence of individuals, inhibiting the possibility of a deliberative democracy (Young, 1996; Sanders, 1997). Therefore these generative mechanisms go back into the society in which Mondi is based and the reasons for the ‘silent voices’ can now be explained in three ways. Firstly, the history of race and apartheid in South Africa. Secondly, the historical power relations between Black and White. Thirdly, the aspects of black South African culture, which for example may discourage younger members from openly disagreeing with older people of a higher social rank/status/power level. These could therefore be plausible reasons or causes for the silent voices although it is not possible to ascertain to what extent each is responsible.

The limits of this research restrict a discourse analysis of the discussions to evidence this; however this could assist in explaining the continued dominance of White colleagues during workshop discussions. What is important though is that this particular form of expansive social learning appears to have supported democratisation of the decision making process, because every person’s views were presented through the mirror data process which enabled them to be discussed. This may not have occurred if everybody had only sat around a table and presented their views. This finding supports the call of Tonic Maruatona (2006) whose research explored different ways in which Africa could employ the principle of lifelong learning to address its multiple challenges. He sums up the importance of deliberative decision making in Africa by contending that:

Lifelong learning in Africa can only be effective if African communities are encouraged to make concerted efforts to embrace principles such as deliberative democracy, multiculturalism, decentralization of decision-making and helping to redirect the agenda of civil society as a way to use lifelong learning to enhance public participation in Africa. (2006, p.547)

It is therefore important that different ways of strengthening the democracy of participation are identified, understood and used to enhance active participation in learning and practice.
Analytical statement #3: Improving wetland management depends on the critical relationship between wetland management practices, expansive social learning processes, and organisational development

Most of the original twelve contradictions and associated tensions identified from the interviews were of a structural and institutional nature (section 5.3). Ten out of the twelve were recognised as being external quaternary contradictions (section 5.3 and table 5.1). Of these, eight were quaternary contradictions that occurred between the interacting activity systems of the foresters, CEFs and environmental specialists, and the institutional setting of Mondi. And two were quaternary contradictions identified as occurring between the different activity systems. Workshop participants then reframed the original twelve contradictions and prioritised two they saw as the most important (section 5.3 and table 5.2). Both were quaternary contradictions that occurred between the interacting activity systems and the institutional setting of Mondi. So many of the contradictions are between the activity systems and the institutional setting, including the two prioritised contradictions concerning staff working in silos and there being no formal learning structure. This indicates a critical relationship between wetland management practices, social learning processes, and organisational development. It means that the development of wetland and environmental management knowledge required by Mondi staff is closely related, not only to the workplace situation, but also to the institutional structures and management capabilities (see also chapters 7-9).

Expansive social learning processes strengthen participant understanding, but only if the institutional space is provided

Section 6.2 highlighted how participant understanding had increased longitudinally from the interviews through both interventionist workshops. As mentioned, the interventionist workshops made a significant contribution towards this through providing the safe space for dialogic discussions between participants. The expansive learning process not only mobilised the prior understanding of participants, but the dialogic interaction between participants also provided the scaffolding for all to build on and expand their own ideas, as well as to co-construct new practices. In this way the group collectively grew their own zone of proximal development, as Engeström (1987) explains and Virtanen, Ruotsala and Launis (2007) found in their research on airport ground handling crews in Finland. This required my support as the facilitator using mirror data and asking
questions to encourage further exploration of the contradictions and possible solutions. This is evident in many of the dialogic discussions held in both workshops, but is particularly clear in a discussion on an induction course to familiarise new staff with the operations of the company (section 5.7.1). At the beginning of the discussion, the training manager explained how all new staff would go on a three day induction course which had recently been developed, and was about to be approved by senior management. Clearly not happy that a three day course would provide a meaningful induction, the discussion to broaden its current form was initiated by the conservation manager and a forester. Through a dialogic process that allowed participants to understand their framing of the issue (as evidenced from section 5.7.1), they collectively began to deconstruct how the induction course was planned to take place, together with factors that would inhibit its success. Participants then collaboratively built on each other’s ideas to reconstruct an expanded and more meaningful three to four month long induction process that everyone agreed to. The training manager then undertook to seek approval from senior management for the new expanded process that she had agreed to. This deframing and reframing process echoed the core steps of transformative social learning highlighted by Wals and Heymann (2004), and is demonstrative of what Harold Glasser (2007) called active social learning together with co-learning being its highest form.

Further evidence of how participants deepened their understanding using the ideas of others, is provided in section 5.3.1c. This section describes how participants have built on each others comments and ideas, to deeper understand how the jobs of CEFs and foresters have changed to suit the business times. The discussion and debates from which the twelve points of the action plan surfaced as the conversations developed (as presented in section 5.6) and the multi dimensional implementation plan evolved (as presented in section 5.7) provide additional evidence of how staff have built on each others ideas to collectively develop more sophisticated solutions to deal with the tensions and contradictions. These solutions are far more sophisticated than those which participants provided during the interviews in the beginning of the research project as presented in section 5.5. In this way, expansive social learning processes served a critical role in supporting an expanding of participants’ understanding of the contradictions and possible ways of dealing with them, enabling the co-learning of participants to develop shared meaning and understanding for improved wetland management. However this will only happen if the organisational structures provide sufficient enabling space for these processes to develop. The management capabilities and
the institutional structures within Mondi are therefore both crucial to providing the enabling space for expansive social learning processes to occur.

6.4.2 The importance of organisational development in strengthening wetland management.

Importance of management capabilities for enabling and strengthening expansive social learning

Many of the tensions surfaced during the expansive learning process revealed how important senior and middle (area) management are for enabling or disabling sufficient safe spaces for informal learning to take place in, which is so important for encouraging the expansive social learning required to broaden and strengthen wetland management knowledge and practice. This is evidenced by participants feeling that field days, which in the old days used to be an important tool to strengthen forester learning, had reduced significantly in number and people rarely engaged in them. Part of the reason for this was given as management seeing field days as jolly outings, a waste of time, and not worth the money (section 5.3.1.b). Further evidence of this was provided by the concern from participants about the lack of space and leadership provided by management to collaborate across the silos which had reduced the opportunities for dialogic discussion between the foresters, CEFs and environmental specialists and associated social learning (Section 5.3.5.b). The silo effect was therefore strengthened between the three activity systems, as well as within them. This was further entrenched by a perceived lack of meaningful understanding of environmental issues by senior management, although the environmental commitment and sincerity was present but not meaningfully understood (Section 5.3.7.b). However, participants also thought that area managers were a crucial part of the solution, and without their involvement, the space for expansive social learning and improved wetland management would not occur. They therefore provided possible solutions for how areas managers could do this (sections 5.5.1.b; 5.5.5.b; 5.6.5).

Contributions of middle level management to expansive social learning process are key

Interestingly many of the comments contributing to the tensions and solutions discussed above were provided not only by the foresters, CEFs and environmental specialists, but also by all three middle level managers who took part in the expansive learning process. This highlights the importance of involving management in the expansive learning processes. The three middle level managers who participated in the expansive learning process were critical to the workshop, as they
provided the bigger picture that others could tap into, and they often came up with key ideas. For example, the tensions and associated solutions raised in the interviews by the training and environmental manager around not having an formalised learning structure, turned out to be important kernels of information. During the workshops the others were able to collaboratively pick up on these tensions and solutions once they had been made visible through the mirror data, and they became mainstreamed in the discussions that everybody learnt from and ultimately integrated into the implementation plan. This highlights the importance of not only social learning, but also having management present in the expansive learning process, to raise these strategic suggestions in the first place. This observation concurs with Ala-Laurinaho and Koli (2007) and Warmington et al. (2005) who also found the inclusion of managers in interventionist workshops broadened participant understanding of the contradictions, and enabled wider possibilities for solutions and action plan development. However, it must be said that management did tend to dominate the discussions, especially in workshop 2, and in developing the implementation plan, which may have silenced the voices of others and reduced the richness of diversity of potential conversations. This concern was not mentioned by the above mentioned researchers.

**Importance of senior management providing freedom and incentives to middle management**

However, in order to strengthen the capabilities of the rest of middle (or area) level management to understand, provide the space, and to participate in the expansive learning processes, it is crucial for senior managers to provide the area managers with the necessary freedom and incentives to develop their capabilities to strengthen informal learning and ignite the passion, hunger and enthusiasm for staff to be able to improve wetland and environmental management (sections 5.6.5; 5.6.6; 5.6.7). Therefore, a strong chain of enabling links exists between senior management, middle level management, and those staff working on the ground, if expansive social learning is to take place. If all the links in this enabling chain are not strongly connected to each other, it is highly unlikely that wetlands management would be improved by staff working on their own at the ground level. Workshop participants identified these tensions as a being critical in dealing with the two key contradictions of bridging silos and developing learning structures (section 5.3.7). Consequently participants developed three action points in the implementation plan that spoke directly towards solving the tensions (sections 5.7.8; 5.7.9; 5.7.10). These points included providing feedback to senior and area management on the expansive learning process that participants had been through, and gaining their support and commitment to implementing the plan; encouraging
senior managers to incentivise and create the spaces for area managers to be able to strengthen informal learning and collaboration across job descriptions and ignite the passion and enthusiasm required for improved wetland and environmental management; and more feedback sessions by management sharing relevant information to staff to improve personalised interaction. Although these solutions proposed through the implementation plan may not entirely deal with the contradictions identified, they can potentially provide a well informed start.

Clearly the capabilities of management to recognise and understand the importance of expansive social learning are critical to allowing and encouraging sufficient enabling space for these processes to develop in. However, strengthening management capabilities are not adequate alone. Formalising learning structures within the organisation are also critical for organisational development.

A narrow formal learning structure and the lack of an informal learning structure
Etienne Wenger believes that in a business, knowledge is managed by the practitioners who do the practical work on the ground, rather than by professional managers (Wenger, 2004). He also believes that the idea of a community of practice can provide the social fabric supporting knowledge management. Wenger convincingly argues that the role of managers is to enable practitioners to better manage knowledge by, for example, providing the support and space to do so, and the resources required. From the above sections, it is clear that Mondi managers are not providing sufficient support for knowledge management in the company, and the practitioners are calling for increased managerial support for this. This raises the question of how, and what structures Mondi uses to manage their knowledge. Mondi does have a formal learning structure but it is narrow in its orientation towards grooming a select group of staff for future management positions, or in providing staff with foundational courses developing personal growth skills or business skills (section 5.3.1.a). This formal structure does not cater for any staff learning on environmental issues. In addition, there is also currently no formal induction structure to support the passing on of institutional memory from exiting staff to new staff, but one is currently being developed. Despite this evidence of Mondi having a weak formalised knowledge management structure, there is an expectation of staff to improve environmental sustainability practices, as highlighted by contradiction #1 (section 5.3.1 a, b &c). This is further compounded by participants saying that management are not aware of the importance of informal learning (section 5.3.7).
Therefore without acknowledging and formalising an informal learning structure, and integrating it into a broader formalised learning structure, it will be very difficult for Mondi managers and staff to ensure that the space is provided for expansive social learning processes to develop. Unless this is done, it will be extremely difficult for Mondi to efficiently and effectively manage its knowledge and learn.

**The impact of organisational restructuring on wetland learning**

Over the past eight years, Mondi has been through extensive restructuring, necessary for the development of the company in the harsh global and local economic climate. However, the unintended consequences have also had a significant negative impact on staff, which would have contributed towards inhibiting staff learning (section 5.3.1.c). Some participants believed that during specific periods of the restructuring, the hunger and excitement had ebbed out of staff, and staff were not able to question matters. Compounding the issues, the implementation of stringent policies and financial systems had further reduced trust in staff to make the right decision. This contributed to a significant decrease in staff enthusiasm, morale, and trust, which impacted on staff willingness to learn. This view is supported by evidence provided by the training manager who highlighted that the restructuring most likely would have reduced the ability of staff to be open to acknowledging and strengthening their informal learning: the restructuring had unsettled staff and might have even increased their resistance to change (section 5.3.2.a). The ‘functionalisation’ that Mondi went through in 2010 to streamline operations by separating and compartmentalising the management of its core forestry operations, was seen to further entrench the silo effect without sufficient connections bridging the silos (section 5.3.5c). This would have further reduced the opportunities for staff learning between the different job descriptions, which is necessary for improved wetland management. It also highlights how significant organisational development issues such as the Mondi restructuring, can have a considerable impact on staff morale and enthusiasm, which in turn has the potential to negatively impact on expansive social learning processes, organisational learning, and ultimately wetland management.
6.4.3 The dependence of wetland management on the relationship between social learning and organisational development

Section 5.3.1 highlighted how the expansive learning process has supported Mondi staff to collaboratively identify tensions and contradictions that were inhibiting wetland management. It also supported staff to develop possible solutions to deal with the contradictions. However, this alone is most likely insufficient to result in improved wetland management over the long term, especially since most of the contradictions were quaternary contradictions occurring between the activity systems and the institutional setting of Mondi. The importance of organisational development has emerged as a key enabling factor as well. Management capabilities, institutional learning structures, and the impact of organisational restructuring as referred to in section 5.3.2 were all illuminated as being critical factors further enabling or disabling the expansive social learning processes necessary for improved wetland management. This correlates well with Nick Boreham and Colin Morgan’s socio-cultural analysis of organisational learning (2004). Their socio-cultural model identifies dialogue as the most important process through which organisations learn, and notes that the relational practices between staff form the social structure that integrates dialogue and organisational learning within the company structures. The three relational practices they identify as being critical are: providing the spaces for creating shared meaning; reconstituting power relationships between management and staff; and providing the cultural tools to mediate learning. This is exactly what the implementation plan that participants developed calls for (section 5.7). Participants have asked for managers to provide the space for dialogic discussion; they asked for senior management to request and incentivise area managers to motivate their staff to make the above points happen and measure this; they asked for feedback sessions by management to provide staff with information on broader company issues. This indicates a levelling of the power gradient between management and staff, as well as the recognition that the space needs to be provided to enable informal learning. Staff have developed a number of cultural tools to mediate their learning, such as field days, a toolbox of methods and materials to catalyse informal/social learning, an induction process for new and existing staff; and a variety of collaborative projects. Therefore the three relational practices that Boreham and Morgan have identified as being so important to organisational learning and development have also been recognised by the participants as being important. However, only when the implementation plan was realised over the following two years could it be seen if Mondi began to strengthen organisational learning and
development to improve its wetland practices (chapters 7-9). Anne Edwards (2005c, 2007) in her papers on relational agency in professional practice also highlights how expanded forms of professional practice call for an increased ability to work with other practitioners to be able draw upon distributed resources across different activity systems and professional boundaries. She argues that increased relational agency results in more efficient professional practice. As evident from the implementation plan, Mondi participants have developed a plan to support the strengthening of staff relational agency.

Wetland sustainability practices therefore cannot exist alone. They are dependent on processes such as expansive social learning to strengthen staff dialogue, learning, and improved relational practices and agency, to identify and find solutions to factors inhibiting wetland practice. They are also dependent on the development of the organisation to put in place the institutional structures enabling the social learning processes required for improved wetland management. The relationship between the wetland sustainability practices, expansive social learning processes, and organisational development is therefore critical to improved wetland management.

6.5 A reflection on the research findings of phase 1 and 2, relative to the research questions

In this section I present a short reflection of how the research findings are answering the research questions. Key informal adult learning processes and institutional factors that emerged from the research so far, are given as being important to supporting the initiation of social change for improved wetlands management in Mondi.

The research was orientated to support social learning between those Mondi staff who have a responsibility to manage wetlands, to identify factors inhibiting wetland management, better understand the root causes of them, and develop solutions to deal with these factors. In order to do this, the three main activity systems in Mondi that are key to influencing the management of wetlands were first described. Through the Change Laboratory method, and the first four steps of the expansive learning cycle (its methodological complement), Mondi staff were supported to develop a better understanding of some of the root causes inhibiting wetland learning and practice. This resulted in their surfacing 12 contradictions and numerous associated tensions, which
answered the first research question: What tensions and contradictions exist in wetland management in a plantation forestry company? Participants subsequently prioritised two of these contradictions and went on to deepen their understanding of them, and developed a list of 12 actions designed to deal with them. Participants then began to implement these actions. It was however, only after phase 3 and 4 of the research (chapters 7 and 8), that it was possible to tell how successful the implementation of the action plan and the expansive learning process has really been in dealing with the contradictions, and whether the second research question is answered: Can expansive social learning begin to address the tensions and contradictions that exist in wetland management in a plantation forestry company, for improved sustainability practices? However, the following reflections on the research up to the end of phase 2, provide an indication of the progress that was made in working towards answering the second research question.

Important aspects of phase 1 and 2 of the research in beginning to answer the second research question, were: a) to begin to better understand what learning processes were playing an important role in supporting participants to identify and deepen their understanding of the contradictions, and b) what institutional factors could support the initiation of social change for better wetland management in Mondi.

Through the findings of phase 1 and 2 of the research, a number of key learning processes have emerged as being important. The safe learning space created through the expansive learning process of interviews and interventionist workshops encouraged staff to freely discuss a variety of sensitive issues and deepen their understanding of them. The process of allowing participants to build on their prior knowledge that was mobilised during the interviews, generate collective knowledge and deeper understanding through interactions between participants in the first interventionist workshop, and blend this together to co-develop the more sophisticated and multi-dimensional solutions in the second workshop, began to strengthen staff reflexivity and agency. Dialogic discussions which took place in the safe learning space involving multidisciplinary staff from different job descriptions, provided a foundation on which the relational agency, longitudinal and horizontal co-learning of staff began to grow. Participants started to collectively develop their own zone of proximal development. The process of presenting the emerging tensions and contradictions as mirror data during the first interventionist workshop contributed towards strengthening the democratisation of decision making within the group, despite a perceived
imbalance in power relations between participants. This was particularly interesting in a South African context where historical forms of dominance continue, despite democratic intentions.

Institutionally, the inclusion of management in the expansive learning process provided participants with insight into the bigger strategic picture and generated key ideas that all participants could draw from. This included surfacing challenges with management which revealed how important senior and middle (area) management are for enabling or disabling sufficient spaces for informal learning to take place. The importance of acknowledging and formalising an informal learning structure, and the need to integrate it into a broader formalised learning structure so that it was recognised, was discovered as being important for creating spaces for expansive social learning processes to develop. Without this, it became apparent that it would be extremely difficult for Mondi to efficiently and effectively manage its wetland knowledge and improve wetland practice. The unintended consequences of the recent extensive company restructuring were recognised as having a significant negative impact on staff morale, which had contributed towards inhibiting staff learning. This all resulted in the finding that harmonisation of the relationship between wetland sustainability practices, expansive social learning processes, and organisational development was essential to improving wetland management.

The critical value of expansive social learning in surfacing the above mentioned learning processes and institutional factors for initiating and supporting social change for better wetland management, is quite clear. It therefore appears that that through this research the second research question, determining if expansive social learning can begin to address the tensions and contradictions, is beginning to be answered. However, it must be stressed that the process of strengthening the reflexivity and agency of Mondi staff to better manage Mondi’s wetlands needs to run through all seven steps of the expansive learning cycle, before this question can be satisfactorily answered.

6.6 Conclusion

The research completed to the end of phase 1 and 2, represents the early stages of expansive learning in Engeström’s approach to Developmental Work Research. The exploration of tensions and contradictions, and development of the action plan, has clearly helped Mondi staff to develop deeper insights in order to deal with a selection of the tensions and contradictions. The evidence
for this can be found in the progression of the participants understanding of the tensions and contradictions and the solutions participants proposed to deal with them. During the interviews at the start of the research process, the evidence provided in section 6.2.1 demonstrates a relatively shallow understanding by participants in the beginning. This understanding deepened as the expansive learning process progressed, during workshops #1 and #2. Sections 6.2.2 and 6.2.3 provide evidence of how the participant understanding has become deeper, broader, and more sophisticated (as defined in section 3.5.5), enabling participants to develop more sophisticated solutions to deal with the tensions and contradictions as evidenced in section 6.2.3. This new insight has provided greater clarity for participants to more substantively understand their own wetland and environmental practices, and the relationships on which these practices depend. At this stage, the expansive learning process was beginning to enable staff to understand and engage with the relationships between wetland and environmental practice and organisational structures and development. A number of key learning processes emerged as being important in supporting Mondi staff to begin to strengthen their reflexivity and agency required to identify and understand contradictions restraining improved wetland sustainability practices, develop solutions to them, and start to implement associated actions.

Three key insights have also emerged from the research thus far:

a) As the expansive learning process progressed, the scope and depth of participant understanding of the root causes of the tensions, and the contradictions, and associated solutions deepened and clarified. This is reflected in the refinement and sophistication of the language participants used to describe the root causes of the tensions, as well as in the development of the solutions. However, the intellectual richness lies in being able to explain in detail how that change has happened. Further probing of this apparently enhanced texture of developing understanding in expansive social learning will take place in phase 5 of the research (Chapter 8).

b) The process of presenting the emerging tensions and contradictions as mirror data during the first interventionist workshop has strengthened democratisation of decision making in the group. This may provide a new perspective on the notion of the ‘multi-voiced’ activity system that Engeström proposes (Engeström, 2001). As the research progressed, it was interesting to more fully understand its significance in the expansive learning process (chapter 7 and 8).
Many of the contradictions and associated tensions identified were of a structural and institutional nature, indicating a critical relationship between the wetland management practices, social learning processes, and organisational development. Therefore the development of wetland and environmental management knowledge required by Mondi staff is closely related, not only to the workplace situation, but also to the institutional structures and management capabilities. This relationship was further explored in phases 3-5 of the research that sought to understand if, and how, the expansive learning process could unfold to strengthen Mondi’s wetland sustainability practices, and the institutional structures necessary for this.

What has emerged from the research reported on in this phase, is that the knowledge about wetland systems that Mondi staff require to improve their wetland sustainability practices, appears to be deeply embedded in the workplace situation and the institutional setting in which the wetland systems are operating. Therefore the social learning processes, organisational development, and knowledge of wetland issues are seem critical to strengthening wetland management. Consequently the knowledge acquisition highlighted by the research thus far is very interesting, because it is about the need to generate wetland knowledge to improve wetland management, the workplace situation in which learning and practice takes place, and the institutional setting which governs how this takes place, and all three are not necessarily working in harmony to enable better practices. The following phases 3-5 of the research (chapters 7 and 8) will therefore complete answering the second research question, but will focus predominantly on the third research question looking at if, and how, expansive social learning can contribute to the organisational learning and development in how wetlands are managed in a plantation forestry context. The insights into the way in which expansive social learning is able to deepen understanding over time, and support/enable the democratisation of decision making in the context of organisational learning in support of sustainability practices will help answer this research question.
CHAPTER SEVEN:

Presentation of research data for phase 3 and 4 and change findings

7.1 Introduction

In this chapter I present the data generated during the phase 3 and 4 of the research, as evidence of the explicit and tacit personal changes that emerged from the research participants implementing the solutions they developed. Unlike in chapter 5 where the data from phases 1 and 2 was presented in a summarised form, the thick descriptions presented in this chapter consist of quoted conversations or thick description evidence of these changes. Although this might seem a tedious and excessively detailed way of presenting the evidence, it provides a unique and important insight into the nuances of the changes that took place, which would be lost if the evidence was summarised and paraphrased. For this reason, I took the liberty of presenting the data in this longer format. However, in certain instances where the evidence was interspersed in a conversation spreading over 3 or more pages, it was difficult to provide short quotes that neatly presented this evidence. Therefore in these cases, I have summarised the data in my own words and for transparency provided references to the specific places in the original transcriptions where the evidence can be found. The original transcriptions may be found in the appendices on the CD attached to this thesis.

The evidence of the changes presented in this chapter includes data that was generated from the five area wide progress review workshops and two management meetings (phase 3) described in section 4.6.3, which formed the fifth step of the expansive learning cycle. During this step the solutions modelled to deal with the contradictions (section 5.7) were implemented, and progress of their implementation was reported by participants in these workshops. Data is also presented from the reflexive interviews (phase 4) described in section 4.6.4, which formed the sixth step of the expansive learning cycle. This data represents the reflections of nine of the core research participants on the process of the expansive learning cycle and its outcomes. During the reflective
interviews, the new practices were consolidated, forming the seventh and last step of the expansive learning cycle.

As mentioned in sections 4.6.3 and 4.6.4, the data from the area wide progress review workshops and reflective interviews was analysed inductively: five different types of changes emerged from the participant progress report backs and discussions on implementing the solutions. The area wide progress review workshops were held eight months after the development of the implementation plan, and the reflective interviews were held one year and seven months after these workshops. The five types of changes identified were: 1) changes in structure, 2) changes in practice, 3) changes in approach, 4) changes in discourse, and 5) changes in knowledge, values, and thinking. Within each of these five types of change a number of examples are provided as evidence of this change in the sections below. This analysis begins to answer the first part of my third research question: Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?

7.2 Change in structure – induction system

The first type of change identified after participants implemented their solutions, was a change in learning structures within Mondi. The following two sections (7.2 and 7.3) provide evidence of this change through the development of an induction system to institutionalise new staff learning which included environmental learning, as well as the development of an environmental training matrix for all staff.

One of the initial contradictions that emerged from Phase 1 of the research was between the activity system of the operational staff and Mondi’s institutional structure, which emerged as: ‘Between the loss of experience and skills from staff leaving, and the lack of a structure and willingness to share wetland knowledge and skills of old timers with newcomers’ (section 5.3.3). When prioritising the contradictions, the research participants incorporated this contradiction into one of the two key contradictions (section 5.4): ‘Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan or structure and learning materials in place to strengthen staff learning.’ As a solution working towards dealing with this contradiction, participants then decided to expand the instrumentalist orientation of the
new four day induction programme that was about to be approved by executive management, to rather being an induction process lasting 3-4 months with the new staff member being responsible for driving it together with the area manager (section 5.7.1). The following evidence from the report back by participants demonstrates their success in bringing about this structural change, through redesigning the induction now being given to new Mondi staff members.

7.2.1 Development of induction structures and processes institutionalise staff environmental learning

During the area wide progress review workshops, the environmental manager and the training manager both explained the new induction process that had been developed for new staff, and which was being implemented (Environmental manager, CMsW3P11, CZW3P14&15; Training manager, KGW3P16 &17). The following two paragraphs record their explanation. Although management had recently developed an induction programme that was about to be launched, it was a short three-four day induction that did not include much on environmental issues (sections 5.6.1; 5.7.1). After implementing the induction project, the induction was lengthened to become a three month process that was more interactive, with the inclusion of an environmental module. The new three month long induction now consisted of three parts, with all issues that needed to be learnt about included in a master checklist; new employees were required to go through and sign off when each one was completed. Part 1 deals with what the company is about both locally and globally, human resource issues such as medical aid, pension fund, and general Mondi policies and procedures. Part 2 is about what the new employee needs to know from their line managers, such as their office, accommodation and transport arrangements, and applicable policies, procedures and regulations on vehicle use and office work. Part 3, which is most relevant to this research, is about specialist issues new employees need to know about such as environmental management, safety in silviculture, and harvesting operations. In highlighting the importance of this part of the induction, the training manager noted: “these are things that old employees take for granted, but can actually become an issue for a new individual if they haven’t been properly inducted” (Training manager, KGW3P16).

After a short one to two day formal induction at head office with the training manager during which part 1 and 2 would be carried out, the new employee was now responsible for inducting
themselves in part 3 of the induction. They had to do this by proactively going through the master checklist of people to meet, and issues to inform themselves about, that were particular to their geographical area. For example, a new forester would have to make an appointment with the environmental specialist from their area, to learn about environmental policies and procedures that revolve around the second party environmental audit of the Forestry Stewardship Council certification. They now also had to learn about environmental issues local to their area including: management of open areas; wetlands; the endangered species data base; waste management; environmental legislation; and the environmental forestry guidelines. Once this had been completed, the new employee would have a very good idea of where to find things and of the environmental standards. Once the environmental issues in the master checklist were completed, the environmental specialist would sign off that the new forester had been through these issues. The new employees have three months to complete learning about all the issues (environmental and forestry operations) on the checklist, with each issue being signed off by the appropriate person, before sending the checklist back to the training manager who loads it onto the company computer system signifying that their induction training has been completed.

A forestry area manager who had been part of the first two interventionist workshops described the process that the new employee had to follow when working their way through the checklist, to those participants in an area wide workshop that had not been part of phase 1 and 2 of the research, with interjections from the training manager:

So David [a fictitious new employee] has to make the effort, to make an appointment to see [environmental specialist ‘J’]. David’s got to sit with her and get her to explain what he’s supposed to do in terms of her job [i.e. environmental work] and then she [environmental specialist ‘J’] signs it [checklist] when she’s happy with it. So it’s not a spoon feeding thing. It’s not driven by me or [training manager ‘K’], it’s actually driven by David ... so it’s taken the responsibility and put the responsibility back on the employee and I think that he [new employee] listens to it a bit better, he takes it a bit more seriously. It’s not something where the environmental specialist stands up and talks, and he [new employee] falls asleep during the presentation. (Forestry area manager, MGW3P17)

He went on to explain how the new induction process helped new employees better understand their work context and responsibilities: “what is happening is that there’s a lot of people saying ‘well no one ever told me or you know I didn't know about this and that stuff’. So I think what this
new induction process is trying to do is eliminate that kind of thing” (Forestry area manager, MGW3P17).

As evidence of the induction process being implemented, a forester who was one of the few new staff who had recently completed the new induction process, verifies an overview of how he went about it in an interview with the research facilitator:

**Forester ‘Pb’:** I sat down through the starting phase of the induction with [the training manager], she went through her stuff, and then she gave me the induction check sheet. 
**MWP ‘D’:** That check sheet says that you need to go and see, for example [the environmental specialist] and find out from her what your environmental responsibilities are, is that right?
**Forester ‘Pb’:** Yes, not per se, but it said stuff that she had to induct me on. Say for instance she’s an environmental specialist. So I knew ok, fine, I have to find out who she is, and make an appointment to see [the environmental specialist]. She’s working in the same office, so I went to see her, and she gave me a time and date and everything when I can come. 
**MWP ‘D’:** How long did you spend with [the environmental specialist]?
**Forester ‘Pb’:** A day. A day with [the environmental specialist], I spend a day with the safety guys, I spend a day with the IT guys, and then some operational stuff through the line manager and all that. 
**MWP ‘D’:** So overall, how long did it all take to complete seeing everybody on the checklist? 
**Forester ‘P’:** Three months, yes. 

Further evidence from new employees, that have completed or were currently going through the new induction process, on the impact the induction has had on them personally, will be provided in sections 7.8 on change in approaches.

An important point highlighted by the training manager, was that a key difference about this new induction process compared to previous shorter versions of induction used, was that the employee had now become responsible for running with the new induction process, not management. As she went on to say: “the whole ethos or philosophy of it is that the individual drives their own induction. They can ask themselves ‘what don’t I know, and where, what do I need to know to be fully inducted?’” (Training manager, KGW3P16). She later emphasised how important this was to Mondi’s aim of wanting the staff to drive their own learning and career development:

I also think that’s the kind of ethos we wanting in our employees, to drive their own careers. Viv [Director of Forestry] is very strong on that. You know, the whole learning organisation concept. And that’s not driven by me, that’s driven by those individuals. So it’s a nice track forward to actually lay that foundation”. (Training manager, KGW3P18)
It is this type of commitment from senior management that increases the chance of the induction process succeeding in the long term, which can support cultural and institutional change for environmental management, because of the collaborative/interactive design of the induction process. In light of this, the training manager explained that the induction process was supported by all management: “the input is not just from me, it’s from Viv [Director of Forestry] to the four merry men [her four senior executive managers] and the managers that report to them. So it’s been quite a widespread thing, and that’s good because you really got buy-in and collaboration before you actually launch anything like this, which is fantastic” (Training manager, KGW3P18).

Both the environmental manager and the training manager acknowledged that the new induction process would still need to be improved, as it was implemented. The training manager suggested this should take place through regular collaborative iterative reflections: “induction is an ongoing process and I am certainly open to ideas to improve the system as we go along because that’s what it’s about. It’s a continual improvement of the process, so it’s nice to have feedback from you [workshop participants]” (Training manager, KGW3P21). However, most importantly the institutional space had been created for new employees to find their feet, as the environmental manager concluded at the end of the Zululand workshop: “there’s always places to improve, but I think that space has been made available for that interaction [of new employees] around finding out what, and where things are” (Environmental manager, CZW3P15).

As an indicator of how successful the new induction process became, during a reflective interview held as part of phase 4 of the research, an environmental specialist explained that the new induction process had improved the environmental understanding of new staff:

Ok, well the induction was actually implemented. There is actually a really good induction process going now, so that anybody new coming in [to Mondi] has a much better understanding about environmental issues and where everything is, and that kind of thing. So I feel a lot has changed ... yes, because they [new employees] sat with me or [environmental specialist ‘J’], and then we go through the list of what environmental issues they need to know and where to find what, and what they must be aware of. So on the induction side it worked very well, and it also opened up [their understanding of environmental issues], because they’ve now sat with us [environmental staff] they know we there for this and that, they therefore interact with us more. (Enviro, LRIP3&4)
The validity of the environmental specialist comment was triangulated and corroborated by the views of two new staff, who had recently attended the induction process (section 7.8: Forester, TnPrW3P25; Forester, PblGW3P1). Through the work of the participants, the two interventionist workshops were therefore responsible for development of: 1) the longer term of the induction; 2) the process of how the induction takes place, using the master check sheet and new staff being responsible for their own induction; 3) inclusion of environmental aspects in part 3 of the induction.

7.3 Change in structure – environmental training matrix

In this section evidence is provided of the development of the environmental training matrix for Mondi staff and forestry contractors, the start of its implementation, and the planned inclusion of environmental components into the existing staff career development plans. The development of the environmental training module for forestry contractors was completed in 2012, and is currently being run both within Mondi and other forestry companies in the industry (M. Hiestermann, personal communication, August 17, 2012). This together with the development of the training matrix indicates a start of institutionalising environmental learning in Mondi for staff and contractors, and therefore a start in the changing of institutional learning structures. The environmental training components for Mondi staff are currently being developed for future implementation, after this research project has finished. These changes have emerged from the solutions implemented to deal the contradiction #1 and its associated tensions that emerged from staff during phase 1 and 2 of the research, which highlighted the lack of wetland and environmental training being available in Mondi (section 5.3.1).

Environmental training matrix for Mondi staff

The environmental manager explained (Environmental manager, CMsW3P15&16; CZW3P15&16; CPrW3P27&28) that Mondi had a training matrix that stipulated what training of forestry operational issues the contractors needed to undergo, but it had no environmental learning included nor had it been expanded to include Mondi staff. However, during implementation of this project, he said that the environmental staff took the existing contractors’ training matrix and added the different job descriptions of all forestry operations staff to it, such as area manager, forester, risk manager, technical specialist etc. Depending on the requirements for each job description, staff would now need to undergo environmental training at one of three different
levels on a variety of subjects such as environmental awareness, legislation, the environmental forestry guidelines, wetland delineation, and Mondi best practice guidelines. The training matrix that was developed has been included as appendix 16. The environmental manager described the three different levels of training as: 1) basic environmental awareness, 2) more formal structured non-accredited courses, and 3) accredited courses. He said that the environmental staff were in the process of allocating what level of environmental training was needed on these different subjects for the different job descriptions. As an example of basic environmental awareness, he mentioned that this would include what takes place during the induction process of new staff. As an example of a short day and a half structured non-accredited course that would be developed, he cited environmental law appreciation, which was to cover the basics of burning, water issues, threatened species, invasive alien plants etc, and a wetland delineation course. He emphasised that with this level of course “you don’t get a certificate, and you don’t get any credits, but it is a structured course” (Environmental manager, CPrW3P27). As an example of a structured accredited course, he used the pest control officer (PCO) alien invasive plant vegetation management course that silviculture foresters needed to go on, which was run by Saarsveld College:

So under responsible forestry, the silviculture forester, supervisor, area manager, nursery silviculture manager, those type of people have to have completed the vegetation management course, which is not the full PCO course, not the two weeks in Pretoria [that the PCOs have to go on], it’s a [shortened] three day course, and its an accredited course, and it’s all about calibrations, spraying herbicides, invasive alien plant control. (Environmental manager, CPrW3P27)

The environmental manager went on to say that there would also be refresher courses for those courses considered vitally important, which staff from certain job descriptions would have to go on every three years to refresh their knowledge. An example of this would be a refresher for the accredited vegetation management course, as well as the formal but non-accredited courses on Forestry Stewardship Certification environmental awareness, and the Qualifor guidelines.

**Linking promotion to training**

As a way of ensuring that staff undertook the above mentioned training, the environmental manager said that the more structured courses of the environmental training in this matrix would form part of staff career development plans (Environmental manager, CMsW3P15&16; Environmental manager, CZW3P15&16). So over time, staff will need to complete those relevant
environmental courses as stipulated in the training matrix, such as the wetland delineation, environmental law appreciation course and the pest control operators licence course etc. While the types of courses had not been finalised, nor had they been developed yet, the environmental manager highlighted that collaboration of all interested staff was required in developing them:

This list [of courses stated in the training matrix] is for reminding me they are in a vacuum, it’s not a given what’s in the environmental training matrix. That is our environmentalists input. We will still sit with silviculture specialists, silviculture foresters, we will still consult a range of operational people to say ‘well what do you think?’. Because what we [as environmental specialists] think is relevant, they [other Mondi staff, such as foresters and CEFs] might not think it’s relevant ... so that’s just a start of the process. (Environmental manager, CZW3P16)

However once the courses were developed, he was quite firm in saying that a forester would not be promoted from a junior forester to a senior forester unless they had completed these structured courses. Should this go ahead as planned, this could be considered as a strong indicator of institutional change.

**Environmental training for contractors**

The training manager explained that as part of a broader Mondi initiative, a forestry contractor training programme was being developed for both workers and supervisors contracted by Mondi. After discussions with the forestry industry about this programme, the industry requested the Mondi training manager to include an environmental module (Training manager, KGW3P19). This meant that the supervisor training programme, including the environmental training, would then be available not only to Mondi contractors, but to all forestry contractors in the forestry industry. Although the development of the environmental module was not a direct result of the implementation plan developed during the interventionist workshops, the discussions that the training manager had been involved in during the workshops and afterwards with Mondi staff and the MWP, most likely catalysed this. This conclusion was drawn, as prior to the expansive social learning process beginning, there was no formalised environmental training at all, both within Mondi as well as in the industry. The involvement of the training manager in the expansive learning process, and the emergence of the contradiction #1 on the lack of a learning structure, had made her aware of this gap. Therefore there is a great likelihood that if there had been no expansive learning process, the environmental module would not have been developed. As the training manager excitedly explained:
At the moment we are working on ... a new forestry supervisory development programme, and I have been tasked by the [forestry] industry, to put together the environmental [module] ... I have been speaking to the Mondi Wetlands Programme on the environmental module about taking those picture charts, with the WOW cards [Windows on our World: Wetlands, a wetland training material which would form the foundation of the environmental training module]. I really, really, like that. When I tabled WOW at the meeting with the rest of the industry, such as the growers, contractors and training providers, everyone ... said it was fantastic. (Training manager, KGW3P19)

The environmental training module was subsequently completed in 2012, and is currently being run both within Mondi and other forestry companies in the industry (M.Hiestermann, personal communication, August 17, 2012). The development and implementation of the environmental training module is a good indicator of not only the beginning of institutionalising environmental training in Mondi, but this could be the beginning of at least some level of institutional change at an industry level, catalysed by the expansive learning process. The progress made in integrating environmental learning into the Mondi staff and contractor training matrix, developing and implementing the environmental learning module for contractors, and the intended integration of the structured environmental courses into the staff career development plans, will potentially play an important role in institutionalising environmental training into Mondi.

7.4 Change in practice – reporting communication

The second type of change identified after participants implemented their solutions, was a change in how Mondi staff practised wetland and environmental management. Sections 7.4, 7.5, 7.6 and 7.7 provide evidence of this change through a change in reporting communication, a change in wetland planning practices, a change in wetland grazing practices, and a change in wetland burning practices.

The first of these, a change in reporting communication will be discussed in the two sub-sections below. The changes relate to solutions that were attempting to stimulate more collaborative interaction between foresters, CEFs, and environmental specialists, as a way of dealing with the contradiction and its associated tensions of staff working in silos (section 5.3.5), rather than working together as a team on common wetland issues with a more planned and integrated approach.
7.4.1 New environmental procedures and policies

In a project that aimed to change the way that new environmental procedures and policies are communicated by the environmental team to the forestry operations staff who need to know about them, the environmental manager explained that the communication of these procedures was now more of an interactive learning process. Before the expansive learning process began, these procedures and policies would have been emailed to staff to read, with virtually no personalised interaction or discussion between staff about the policies or procedures or their implementation (Environmental manager, CMsW3P16). This usually resulted in staff ignoring them.

As evidence of this change in practice, at the Piet Retief area progress review workshop, the environmental manager said to participants that his staff had recently been up to the Piet Retief office to discuss the new waste management procedures and the revised environmental impact procedures with staff at that office (Environmental manager, CPrW3P26). He went on to further explain to the Piet Retief workshop participants, the interactive process that his staff were now following to share these new Mondi environmental policies or procedures:

What we are trying to do is go through more of the interactive process than ‘guys here’s the new procedural policy for threatened and endangered species or something like that’... so we either make the effort and we join one of your [the participants’] meetings and steal an hour and half or whatever it might be, to discuss it and get the understanding and get your [the participants’] comments, because thereafter we might need to make some changes [after hearing your comments]. (Environmental manager, CPrW3P26)

The following example from the Greytown area progress review workshop, describes how an environmental specialist had also changed the way she communicated new policies and procedures to forestry staff to be more collaborative and interactive. She even invited comments from the Greytown staff on how to improve them, as well as providing an opportunity for staff to help further develop policies:

I’ve changed the way that I interact with most of the people in my area [Greytown] in terms of the communication way. It’s more of a presentation or a talk. I don’t normally just email you a directive on what they’ve done with the safety things or the vehicles to say well ‘this is now the safety directive for your labour trucks’. The policies that we’ve developed on waste,
impact assessment, alien plants; once we’ve developed the policy we give ourselves two months to come and workshop the policy with you and say this is now going to be the policy from now onwards, and it’s a discussion process. [We then ask the staff] ‘from your side do you prefer that?; do you notice that it’s changed?; do you have any suggestions so that we can improve the way that we bring the policies to you?; if you want to be involved in the development of the policy, please let me know.’ (Enviro, JGW3P28)

During the Mondi-Shanduka area progress review workshop, the environmental manager and another environmental specialist from that area, both pointed out to staff from this office that this same collaborative and interactive way of communicating new environmental procedures and policies, is currently being done for the new alien invasive plant guidelines, a revised impact assessment procedure and the waste management guidelines (Environmental manager, CMsW3P16; Enviro, DbMsW3P16&17).

The following discussion between the environmental manager and participants during the Zululand area progress review workshop, highlighted the positive reaction of forestry staff to the new interactive process of being introduced to new environmental policies and procedures, providing evidence of the initial success of this change in the Zululand area:

**Environmental manager ‘C’:** We rolled out a number of environmental procedures last year, any feedback on that process? There was one on waste management, if [environmental specialist ‘L’] has done her work, and one on [environmental] impact assessments, and there might have been another one. That process that was followed with you in sharing that information, any comments? Versus just telling you to go and do it. You remember back to those that were present?

**Forester ‘T’:** I think I took away a lot more or from it, than like you say just a three MB download [of the new environmental procedure] on my computer that you just delete [the download] ... [environmental specialist ‘L’] came out to Ntonjenene with the new waste procedure, and later on she came with the environmental impact assessment procedures, and got everyone together and went through the whole thing with us. Yes, it was a lot better than before. I think having that face to face contact to ask if there are any questions or little niggles, or problems to sort out. So we can ask the questions that need to be asked, and not just ignore the 3 MB email that’s on your computer.

**Research facilitator:** So you much preferred that way?

**Forester ‘T’:** Definitely.

**Research facilitator:** And in the past did you usually get a 3 MB email?

**Forester ‘T’:** Well it was just this email that you would half glance at, and then either yes file it somewhere and then . . .

**Forestry area manager ‘Lm’:** I actually like it, since it works.
Forester ‘Gk’: I think the workshop we had was good on that ... there are always questions that you need to ask them, and they [environmental specialists] can answer it, on email you don’t get the opportunity.

Forester ‘Pm’: Yes, I preferred it. I mean it was more, yes you get the information at the same time, and it was very much informative ...

Forester ‘Pv’: It was OK. You get the information at the same time. You get more understanding than just reading the email. If you get something you don’t understand, sometimes you tend to say, ‘ah, ok I’ll see her [environmental specialist, who sent the email] maybe later’ and [never get round to it] ... yes it was better than an email.

Forester ‘Ds’: It was more informative than reading on the email because of the way she [environmental specialist] structured it, in loud colours, you know browsed through the new procedures, and she gives you the most important points ... so it was more promising than reading the email, that you would say ‘OK I’ll read it later but you never get to it’.

7.4.2 Specialist report backs

In the same way that environmental staff became more interactive and collaborative in presenting the new policies and procedures to forestry operations staff, they have also done the same for changing the practice of sharing the results of the specialist environmental reports conducted by external consultants. Examples of these reports include specialist studies monitoring and evaluating the health of freshwater and grassland ecosystems, with recommendations for improving the management of these ecosystems. As for the communication of new environmental policies and procedures in section 7.4.1, in the past the reports were simply emailed to the foresters and other operational staff, which usually resulted in staff glancing at them and then filing or deleting the reports, as evidenced by a forester during the phase 1 interviews (Forester, SrIP2&3). The management recommendations were therefore often neglected. However, due to the changed practice, the staff are now involved in discussing the conclusions of the reports, and have opportunities to add their experiences to them. The operational staff have reacted positively to this changed practice, and are now are more likely to implement the recommendations of the reports since they now have a greater interest in them and have been a part of their development. During the eight month period of implementing the expansive learning projects, specialist consultants had completed ecosystem-monitoring studies in both the Zululand and Piet Retief areas, on monitoring the health of grassland and freshwater ecosystems. The changed practice of communicating these reports back to the forestry staff was undertaken in both these areas (ZW3P18; Environmental manager, CPrW3P25). The following discussion during the Zululand area progress review workshop, is an example of the evidence of this changed practice and the staff reaction to this change:
Environmental manager ‘C’: OK, just one other thing to touch up on the interaction in terms of specialists report backs, I am not too sure if you’ve had any SASS5, grassland monitoring [specialist environmental studies] ... have you had a session? [reporting back on these specialist studies]. What did you have?

Forester ‘T’: Gerhard [freshwater monitoring specialist] was up here, awesome ... SASS5, Yes.

Environmental specialist ‘L’: “And the burning [report] as well.

Forester ‘T’: And the dragonflies [report] as well.

Environmental manager ‘C’: So he’s [freshwater monitoring specialist] given you some feedback on what he found and what the implications are and things like that?.

Forester ‘T’: Yes, it worked very well.

Environmental manager ‘C’: What I am saying to you guys is you must make sure, if someone [a specialist consultant] comes to look at something on your farm you must get that interaction [from the consultant], and make sure that interaction happens. So get hold of [environmental specialist ‘L’] and say this guy was here looking at dragonflies or frogs or whatever, so please come, I want to know what the story is. We are getting those guys [specialists] to come back, even if it’s not the final results. So that you can discuss their findings, their recommendations. So that you guys can say ‘well look that’s not practical if we can’t do it that way’. So the guy [specialist] changes his recommendation in the report, so that it’s pragmatic and you guys can action it, if it needs to be actioned. (ZW3P18)

An important point is that the environmental manager has changed the practice of how the information from consultant environmental specialist reports is shared with operational staff, because he is now conscious that interaction and discussions are critical for meaningful learning to take place between staff if practices are to be changed. This learning has emerged from his involvement in the expansive learning process, as evidenced from section 7.14.3 when the manager explicitly highlighted how his thinking had changed since the research project, enabling him to interact differently with work colleagues. He said that he now tried to better understand the mindset of colleagues to be able to better work with them; have more patience when working with colleagues; and that the expansive learning enabled him to think carefully about how he should interact with work colleagues which he was now using to change his practice. This learning has encouraged him to also promote this interactive process for specialist reports that are NOT environmentally based. The following extract from the Piet Retief area progress review workshop evidences this:

In this instance I am talking of environmental specialist reports, but you must make use of any opportunities if there are other specialist reports, be it a PRA, for Participatory and Rural Appraisal, for one of the farms or something like that. You guys must make sure you get that direct interaction on the report and not just the report itself. (Environmental manager, CPrW3P25)
This indicates the environmental manager’s push for staff within the broader organisation to work more collaboratively and interactively with each other which is supporting Mondi to begin developing a culture of staff learning, and highlights the organisational learning trajectory that he is wanting Mondi to work towards.

### 7.5 Change in practice – developing plans together

The following two sections describe how research participants from the Mondi-Shanduka area have changed the way they plan and work together, since implementing their collaborative wetland project. This change has emerged from a collaborative wetland project that formed part of the implementation plan (section 5.7.7), aimed at bridging the silos and stimulating greater collaborative interaction between the three job descriptions.

#### 7.5.1 General planning

During the Mondi-Shanduka area wide progress review workshop, staff demonstrated how they were beginning to plan and work closer together (Forester, OMsW3P20&21; CEF, VMsW3P20&21, Enviro, DbMsW3P20&21). Previously this was not the case (Section 5.3.5a.), with the CEF from the Mondi-Shanduka area clearly stating in an interview during phase one of the research that it was rare that he worked with the forester and environmental specialist in the field on wetland issues, apart from informing the forester what he is doing and then reporting back at management meetings when he next saw the forester. He attributed this to poor communications between all three job descriptions (CEF, VIP2,3&8).

However, during the Mondi-Shanduka area wide progress review workshop there were many references to the word “we”, and an emphasis on working together and consulting each other, and long term plans to expand their work. The forester, environmental specialist, and CEF responsible for the project, highlighted how they had worked together to collectively develop objectives for the management of Calderwood wetland (MsW3P20&21). They had driven around the wetland together, and brainstormed ideas for what to do. Collectively they decided on four objectives: 1) management for the wetland ecosystem services; 2) developing a formal stewardship programme; 3) implementing better management practices; and 4) using Calderwood wetland as a model for
how they could work on other wetlands with similar problems. The collaborative development of objectives and their long term goal of expanding the work to other wetlands are good indicators of methodical planning, and intentionality for implementation. The following extract from the Mondi-Shanduka area progress review workshop describes this strong intentionality of what the staff plan to do collaboratively after planning and talking together:

So it’s [the wetland] a riverine system Acocks veld type 44, it has been abused and misused up to a point over the years with injudicious and ill timed burning, injudicious and ill timed grazing. But these are all things that we’ve been learning as we go along, and we certainly now going to put them into a project that Forester ‘O’ assisted by CEF ‘V’ and all of us, are going to ensure succeeds ... we might still need to go and tick off that box that we don’t need those things [large costly anti-erosion structures], and we won’t be wasting our time and effort and money on what we propose to do, but it’s not going to stop us from taking this thing [wetland management] forward. And every little thing that we do is going to aim towards improving the integrity and functionality of that wetland. So yes it is supremely important to us, for there are things that are wrong right now, that you can put right. And Forester ‘O’ is going to tell us [in the next presentation] how he is going to address some of these things. So we haven’t got a management plan that we are busy working through right now, but there is a lot of work that has gone into this that Forester ‘O’ can just run through quickly. (Enviro, DbMsW3P20)

7.5.2 Wetland rehabilitation planning

During the same Mondi-Shanduka area progress review workshop, the environmental specialist related the plans that the forester, CEF and he had begun to develop in order to rehabilitate Calderwood wetland. This collaboration represented a change in practice for how the three staff from the different job descriptions worked together on this project, as a way of dealing with the silo contradiction. Prior to the expansive learning process starting, they had rarely worked together as reported by the CEF during the phase 1 interviews. He said that he did not work at all with foresters, and doesn’t remember ever having had a conversation with a forester about wetlands before (CEF, RIP4). The environmental specialist now reported back that they had developed ideas of how they would like to rehabilitate the actively eroding drainage channels in the wetland in the future. These channels were drying out the wetland, impacting on the ecosystems integrity, and reducing the effectiveness of the ecosystem services the wetland was providing. These ideas included using earthen dam plugs or concrete structures to block the eroding channels, but first they needed to appoint an engineering specialist to do the detailed planning and costing for this (Enviro, DbMsW3P26&27). The environmental specialist said that although they already had
technical drawings of the structures needed to rehabilitate Calderwood wetland, they still required additional expertise to fine tune them, then they would be able to decide what they could do within the available budget they had. He also described their future plans to flesh out these ideas into more concrete implementation plans, with timeframes, accountabilities and responsibilities, and claimed that he would report the project progress back to everybody at this workshop after this had been done (Enviro, DbMsW3P29). The environmental specialist and forester explained how they planned to burn the whole wetland that year, in order to remove some of the wetland vegetation making it easier to implement the planned rehabilitation interventions at some of the eroded drainage channels (Enviro, DbMsW3P22; forester, OMsW3P22). These channels were drying the wetland out, and needed to be blocked to restore the hydrological regime. In South Africa fire is used as an important wetland management tool, and if done appropriately, does minimal damage to the wetland, and can improve its condition, especially if the vegetation becomes moribund (Kotze, 2004). In addition, they intended to develop a burning programme for the wetland, in collaboration with wetland specialists, which included splitting the wetland in two and burning half the wetland every other year. During 2012, the detail of the rehabilitation plans were subsequently developed by engineers, and as a precursor to implementation of the rehabilitation plans (D. Walters, personal communication, April 24, 2012).

It is interesting to note the explicit intentions of the Mondi-Shanduka staff to take what they had learnt from this project to future additional wetland rehabilitation projects (CEF, VMsW3P29; Forester, OMsW3P29; Enviro, DbMsW3P29). The CEF said that they wanted to finish this project and then move onto the next wetland project, but they had all agreed that they must first learn more from this one before moving onto the next rehabilitation project. The forester agreed that they needed to complete the current project until everybody was satisfied. While the environmental specialist stressed this Calderwood wetland project was not a once off, and that they had another seven wetlands that they wanted to set up rehabilitation projects in afterwards. Interestingly, it appears that the time that the Mondi-Shanduka staff took to collaboratively plan their project and grow personal relations between themselves, has enabled them to build a solid relational base to collaboratively develop short and long term plans to manage the wetland, and develop ideas for what actions in the future by expanding their practice to working in other wetlands. They have been able to achieve all this by collaborating together, and on their own without direct support from myself as the interventionist researcher.
7.6 Change in practice – cattle grazing

The following three sections provide evidence of the changes that the research participants have brought about in how cattle grazing by neighbouring communities takes place, on wetlands in three of Mondi’s areas, since implementing their collaborative wetland projects. These changes have come about as a result of implementing the solutions (section 5.7) developed to bridge the silos between the three job descriptions. This was a significant change in practice from what was recorded as an important tension in the phase 1 interviews, when cattle grazing was seen to be one of the most significant threats to the health of Mondi’s wetlands (section 5.3.6a).

7.6.1 Mondi-Shanduka Area

The evidence provided for the Mondi-Shanduka area, was interspersed in a conversation spreading over three pages, making it difficult to provide short quotes that neatly present this evidence. Therefore I have therefore summarised the evidence in my own words and for transparency provided references (CEF, VMsW3P23,24&25; Forester, OMsW3P23&24) to the specific places in the original transcriptions where the evidence can be found. The original transcriptions may be found in the appendices on the CD attached to this thesis. The staff from the Mondi-Shanduka area had managed to reach an agreement with the neighbouring tribal communal land users to change their cattle grazing practices when their cattle were using the Mondi owned wetlands and adjacent grassland buffer areas for grazing. They found that the two interventionist workshops during phase 2 of the research had strengthened collaborative thinking and practice between themselves, supporting this change (CEF, VMsW3P23,24&25; Forester, OMsW3P23&24). The CEF said that he had been working with the community on cattle grazing issues for a number of years, and relations with the community since the interventionist workshops have continued to be strengthened. This has resulted in Mondi having good control of the communities’ cattle grazing in Calderwood wetland. Since the two interventionist workshops, agreement has been obtained from Mr Dombela, one of the main cattle owners, for his cattle to graze the eastern side of the wetlands in winter, and the western side in summer in line with better wetland management practices. The forester added that they have also issued the community with an anti-tick poison to spray the cattle, ensuring that only environmentally responsible chemicals (Forestry Stewardship Certification
approved) are used on Mondi property. The CEF went on to explain that the interventionist workshops had helped the forester, environmental specialist and himself to clarify that what they had been doing in the past on cattle grazing was correct, and helped strengthened their current practice.

7.6.2 Zululand Area

As reported on below, a CEF, environmental specialist, and forester from the Zululand area chose a new project site together after they could not work on the original project selected for the implementation plan from Phase 2 of the research, indicating a level of agency the staff have begun to develop. After selecting the Langepan wetland project, the staff collaboratively worked with the neighbouring tribal community members to develop a grazing and burning action plan, in an effort to improve the management of Langepan wetland. Although the action plan only indicates an intent to change the grazing and burning practice, the collaborative working together of the forester, CEF and environmental specialist together with the community members, indicates a change in forestry management practice.

The CEF and environmental specialist from the Zululand area jointly reported (CEF, ZZW3P20&21; Enviro, LZW3P21&22) that the collaborative wetland project decided on at the second interventionist workshop was supposed to be held at Babanago, but the land claim process for the surrounding land had not been completed. This meant that the project had to be cancelled. They then decided to develop a new project at Langepan wetland. Langepan was chosen since the Forestry Stewardship Council had given Mondi a directive (a correction action report) that they had to rectify. This directive was for the negative impact cattle grazing and inappropriate burning were having on the wetland, and a very rare plant species (Kniphofia leucocephala) found nowhere else in the world but at Langepan wetland. The CEF, Forester, and environmental specialist had a meeting with the tribal community members whose cattle grazed the wetland, and the tribal council. In an effort to share the discussions more broadly, both the provincial conservation agency and Department of Environment and Agriculture were also invited to the meeting which was facilitated by the CEF. The aim of the meeting was to collaboratively work with the community to develop a plan on how to change and improve the grazing and burning practice of the wetland by those members of the community who owned cattle. During the meeting the community stated...
that they liked the wetland for grazing, and that the condition of the wetland was deteriorating perhaps due to the plantation trees drying it up. Conversely, Mondi believed that the community’s cattle were causing the deterioration through overgrazing. The CEF reported that “so then somewhere, somehow, we need a tool to sit together and see how we can work on that, and then these are some of the points [on the data projector screen] that transpired from the meeting, whereby you find that there should be some [future] workshop for these stock owners to see the environment as a whole” (CEF, ZZW3P20). The CEF and environmental specialist went on to highlight (ZZW3P20&21) that a future workshop to discuss the stewardship of the wetland was the first action point arising from the meeting. They said that at present the community concentrated their cattle at Langepan which resulted in high grazing pressure. A second action point to arise was that the CEF, forester and environmental specialist would sit down with the community members and identify additional wetland grazing areas on Mondi land where the cattle can also graze, which were a walkable distance from community homes. This would reduce the grazing pressure on Langepan. A third action point that emerged was that the forester would implement an improved burning plan for the surrounding wetland areas to reduce the fern (alien plant) infestations and increase their grazing palatability, to further reduce the pressure on Langepan. The fourth action point to surface, was that the results of these actions and specialist investigations into the condition of Langepan would be reported back to the community at a future meeting.

The community were highly receptive to Mondi’s change in practice of how its staff collaborated with them to deal with the grazing and burning issues of Langepan wetland. This is evidenced by the following conversation between the CEF and environmental specialist, who highlighted that the community really appreciated learning more about the wetland from the Mondi staff, and were willing to change their cattle grazing practices:

CEF ‘Z’: They didn’t know the existence of the flower [a rare Kniphofia plant species found naturally nowhere else in the world]. Then [after they found this out in the meeting], they even went to the extent to say that if you can manage carefully this, we [community members] can end up sometimes planting new plants ... sometimes if you can replant it there, then you can make this area like a conservation area. We [community members] can plant other mutis [traditional medicine plants] that were there in the past, but have been taken away ... what I am trying to say, is to emphasise that they [community members] were just appreciative of that. They [community members] bought the idea [of replanting new plants] and of working together with us [Mondi].
Environmental specialist ‘L’: When I asked them ‘look we can find you other areas to graze [to prevent the cattle from damaging the rare *Kniphofia* plant species], and to change some [grazing] patterns, were they interested in doing that?’, and they were more than willing. Let’s now provide the additional grazing for them. (ZW3P24)

7.6.3 Piet Retief area

The CEF in the Piet Retief area reported back to the Piet Retief progress review workshop that the way that the foresters, CEFs, and environmental specialist did their planning of projects had begun to change compared to what happened in the past (CEF, NPrW3P20). In the past the CEFs would plan, develop and implement projects predominantly on their own, with little support from the foresters, but with some help from the environmental specialists. Talking about cattle grazing specifically, the CEF said in an interview during phase 1 of the research, that no foresters or environmental specialists had ever attended cattle committee workshops (CEF, NIP5). However this had begun to change through working collaboratively on their grazing project. Although this project was not initiated by the second interventionist workshop, it was chosen to be included in the implementation plan to begin dealing with the contradictions, as an existing project that could be strengthened through the expansive learning process. It certainly appears to have contributed towards strengthening the CEFs’ resolve to collaborate more with the foresters on the grazing project, in an attempt to begin bridging the silos between the two different job descriptions. The language used in describing the progress of the project provides evidence of increased collaboration in planning and beginning to implement the grazing project with the foresters. The CEF responsible for leading the cattle project described its progress:

It’s true that’s been silos and we are now starting to slightly break away from those silos. Like [forester ‘Nr’] and [CEF ‘Em’] have said that in the past year and a half they have seen the change, a slight change in that. So in this area we have two projects which we are working in collaboration with the foresters, the CEFs, and the environmental person ... one of them is a very old project, the cattle project which started in 2007, and after the Homeleigh [interventionist] workshops we thought let’s just, it’s not exactly a new project but let’s work on it, because the grazing has got a high impact on the wetlands, and the human involvement also has an impact on environmental management ... Last year we had a meeting with the area [manager] ... and few foresters. We attended that meeting where we sat down and reviewed the whole cattle project, and we came up with three objectives to handle the cattle project. One of them is around the damage that the cattle are doing [to the wetland]. But two of these objectives are really trying to address the issue of environmental management . (CEF, NPrW3P20)
After this meeting the CEF went on to explain that a specialist livestock management consultant came to do further environmental assessments with the help of the forester in charge of the area and its wetlands.

We went out and identified the wetlands, the grazing areas, and the whole study of the grasslands, of which we realised we had a lot of cattle [grazing the area] ... because of that, we as a Land team were working on drawing up a proposal to ... buy land for livestock owners ... the third object is to develop the understanding of the livestock owners and the herdsman. We realised that they lacked knowledge in terms of which areas they should graze their cattle on, only to find that you will find them grazing in the wetlands, and grazing on young trees. There isn’t a proper [management] structure for cattle livestock owners and their herdsmen ... so we going to bring in the element of environmental education within the cattle and livestock owners forum, so there would be a lot of training, capacity building. For us this year we planning to have a lot of training through the Department of Agriculture ... so livestock owners and their herdsmen will undergo intensive training of which part of that training includes the environmental issues. (CEF, NPrW3P20)

A forester provided further evidence of the increased collaboration between himself and the CEF in planning the grazing project, and the change in their practice of working together on community based wetland issues, and how it was beginning to strengthen their relationship. During the workshop, when I asked the broader group if the way CEFs and foresters worked together had changed over the past year, a forester replied:

Yes, actually I would say there is a change compared with the way it was in the beginning. For instance at the end of last year, when myself and [CEF ‘Em’] went into the community to talk about how the cattle graze the wetlands, to plan on the areas where we will burn, and areas for grazing. So that also has got a positive impact on our relationship. (Forester, NrPrW3P22)

7.7 Change in practice – burning of wetlands

Initially the burning of wetlands was recorded as an important tension in the phase 1 interviews (sections 5.3.4a and 5.3.6a). This section illustrates an interesting sequence of change in burning practices that have taken place since then. It shows how during the Zululand area progress review workshop, staff from phase 1 and 2 of the research, interactively discussed options for burning Canewoods wetland together with the broader group of staff from the areas office who were not involved in the initial research phases. These discussions between forestry and environmental staff provided the fertile ground for catalysing a separate workshop for staff to discuss wetland burning guidelines for all of the Mondi areas. The outcome of this additional workshop resulted in a change
in how foresters burnt wetlands in the Zululand, Piet Retief and Greytown areas. Although this
initial discussion on burning during the progress review workshop was not part of the reporting
back of a particular project staff undertook in the implementation plan developed during phase 2 to
deal with the two contradictions, it emerged out of the enabling space the report back workshop
provided.

7.7.1 The burning dilemma in the Zululand area

The burning of wetlands is a significant wetland management problem in all geographical areas of
Mondi’s forestry operation, as highlighted by the Mondi State of Wetlands Health Report
completed by the MWP in 2011 (Walters, Kotze & Job, 2011). For example, in the Zululand area,
judicious burning of wetlands is required to prevent the encroachment of woody vegetation (trees)
and maintain the original sedge and grass dominated wetland. Historically, little burning of
wetlands has taken place because of the climatic conditions. It is a high rainfall area, and the
vegetation is always green and damp making burning very difficult. However, when it is very dry
during drought years and the wetland can burn, there is a high risk of the peat catching alight
underground. This is very difficult to manage and often these fires burn uncontrollably for months
on end posing a risk to the plantations, as well as destroying the wetlands. Although decreasing
wetland health due to lack of burning had been discussed by foresters and environmental
specialists in the past, no action had been taken. The following discussion describes the dilemma
that the staff have in whether to burn the wetlands, and if they do, when they should.

Forestry area manager ‘I’: How do you deal with peat and burning [of wetlands] ... if you
think there is a threat of a peat fire, do we just continue burning it? Do we just burn it and
just see what happens, because if the wetland is busy being altered because of the grassland,
the peat is probably going to [burn]?
MWP ‘Dw’: Absolutely and it can actually become a major fire hazard, so it could sit there and
smoulder for ages.
Forestry area manager ‘I’: ... if it’s a controlled fire [started by foresters], we could probably
control it [burning of peat] to a certain degree. In an uncontrolled [wild] fire, you can’t control
it. So, I’m talking about a controlled fire, I’m talking about management decisions, where to
burn in this Canewood [wetland] area, but we know there is peat.
MWP ‘Dw’: I would strongly advocate having those coolish fires, preferably if there is some
moisture in that peat, but bearing in mind that it is these really high and dry peat systems
which are completely isolated [by the plantations] and completely dry that do burn.
Forestry area manager ‘I’: It’s easier to control it under controlled conditions than we use at
the moment.
Environmental Specialist ‘L’: But I was going to say, if there is peat you control it in a controlled situation by possibly using a fire truck and watering that patch and then ... It sounds stupid but it will work.
MWP ‘Dw’: If it is still a viable habitat [due to its isolation by the surrounding plantations], I would then ask you guys to have extreme care in burning the peat bed, which are still functioning and viable wetlands (ZW3P1-5).

The discussion then turned to whether to burn a wetland called Canewood which originally was originally dominated by grasses and sedges, but had now been invaded by woody vegetation such as ferns and trees changing the functionality of the wetland. Note how the forestry area manager stressed that the wetland cannot be burnt.

Forestry area manager ‘I’: Take the Canewood wetland example, it’s no longer a wet-grassland. There are trees and ferns, this bracken fern is almost like a weed.
Environmental specialist ‘L’: You need to burn it.
Forestry area manager ‘I’: But you can’t burn it [because it is too green and won’t burn].
Environmental specialist ‘L’: No, no,
Forestry area manager ‘I’: You can’t.
Forester ‘?’: ... if we can delineate it [the wetland] more, maybe we can get some of the water table right [reducing plantation trees too close to the wetland increases water flowing into it], because there’s nothing else we can do. We can’t burn, we can’t do anything ...
Forestry area manager ‘I’: [the health of] Canewoods wetland is going backwards. It has increased in size [due to the encroachment of woody vegetation], the plantation area surrounding it has been reduced due to wetland delineation ... and on top of that we’ve reduced the alien infestation. But now with time the vegetation is not changing back to wet-grassland. At present the grasses are disappearing and it is becoming more woody. The wetland is changing.

From the discussion, it then became apparent that the staff also did not know what conservation objectives they wanted to manage the wetland for, and who should decide this:

Forester ‘Gk’ or ‘Ts’: Well I am also concerned in the area where I work, with a problem of when to burn. It’s always either too dry, or too wet. For the last ten years it was too dry, and we had a few lightning fires where the wetland burnt, and it did go down [to the underground peat which began to burn]. And now it’s wet. Now it’s probably too wet [so the woody vegetation won’t easily burn].
Environmental specialist ‘L’: It depends on what your management objective is? ...
Forester ‘I’: ... and also to know what we are managing it for. Are we managing it to be a wet-grassland, or to be a [forest] ...
Forestry area manager ‘I’: That must be clear from the beginning, and everyone’s understanding.
Environmental specialist: You guys must make a decision on it.

277
Forester ‘T’: I don’t know if it should be a wet-grassland or if it should be a thicket [dominated by small woody shrubs] or if it should be a forest. (ZW3P1-5)

7.7.2 Working collaboratively to find a wetland burning solution

In an effort to find a solution, the forestry area manager explained to staff, that burning decisions must be guided by a collaborative decision making process with agreement from the environmental specialist and the forester (Forestry area manager, IZW3P8-9). However, a forester complained that since he does not know what desired state to manage the wetland for, he needs be told what to do by the environmental specialist. The forestry area manager and environmental specialist strongly disagreed, saying that the management vision for the wetland should be collaboratively discussed and agreed to by the relevant parties, and not the unilateral decision of one person. The following conversation clearly highlights the forestry area manager’s desire for their practice of decision making to be more collaborative:

Forester: We need to know from the conservation people, or whoever it is, the clear instruction that this wetland should be a forest, or should be a wet-grassland, or whatever. And we can then go and spray chemicals in there [to reduce the tree numbers and encourage the grasses to grow] if we cannot burn, to do what needs to be done, to get it there [at the desired management state] without being ... in trouble [for doing the wrong thing] ...we don’t know really what to do [how to manage the wetland].

Forestry area manager ‘I’: But it’s not the conservation expert’s role, it’s a consultative process, so we must sit down with say [environmental specialist “L”] for example, and we must discuss it, negotiate it. We may have different views, but your view [as a forester] is important, and [environmental specialist ‘L’] can maybe go get some expert advice on a specific area, for example.

Environmental specialist ‘L’: But [forestry area manager ‘I’] is right. Canewood [wetland] is a perfect example, it doesn't come up good [in the state of wetland health] report, but it needs to be better managed. So we need to sit down with [MWP wetland specialist ‘Dw’] possibly and decide how to do this. Like we debate with each other on a field day, to decide if these fingers [pieces of wetland] will be forests, if these will be cleared [of trees], this is how we going to do it ... some of these wetland areas where we usually have a particular problem, you would have to highlight that. You need to tell me and then we’ll work it out.

Forester: We do need that tie-in and that cross-communication to get to that decision, for a person to know what they managing for at the end of the day. (ZW3P8-9)

Further on in the workshop, the environmental manager stressed the importance of the need for actions arising from this workshop. These discussions then led to the environmental manager proposing to this broader group of Zululand operational staff, an additional workshop to
collaboratively strengthen the draft burning guidelines which supported decision making to deal with the burning dilemmas. These guidelines had previously been developed by the environmental staff and external specialists, but not discussed with the forestry staff, nor had they been implemented. The suggestion of a burning workshop indicates the collaborative and interactive processes the environmental manager is promoting to co-develop new burning practices with operational staff:

In terms of actions coming out of this [workshop] because it’s key ... what I wrote down as key was around burning and the making of prescriptions for burning, things you raised on the objectives, but particularly burning, and we know this is an issue. A lot of work has been done through one of the consultants and the University of KwaZulu-Natal, and stuff like that, and we have got a set of guidelines and criteria for burning [of wetlands] in forestry, OK, conservation burning. But they are in draft form, and we haven't put it through a workshop session with the forestry guys. We asked for comment at one stage right in the beginning, but got no reply. I am saying maybe that ... maybe six weeks from now we need to see if we can have a workshop on that, if you are keen. I mean to me that would be a nice action coming out of this, because that will then definitely give you, not just you, everyone, a better idea for what you should be doing [when burning wetlands]. (Environmental manager, CZW3P20)

The environmental staff and external wetland specialists then went on to run the workshop on burning, a couple of months later, of their own accord (C. Burchmore, personal communication, June 20, 2011). In addition, they made the decision to include foresters and CEFs from not only the Zululand area, but from all the geographically spread operational areas in Mondi. At this workshop the draft burning guidelines, that the environmental manager mentions above, were discussed and amended, and the foresters agreed to implement them in some high priority wetlands across Mondi landholdings (D. Walters, personal communication, April 24, 2012).

7.7.3 Evidence of changed burning practices

During phase 4 of the research, in which reflective interviews (section 4.6.4) were held as the last step of the expansive learning cycle, it became clear that after the burning workshop, the foresters had changed their burning practices at Canewoods wetland in the Zululand area (which in the beginning the forestry area manager stressed could not be burnt, section 7.7.1), as well as at wetlands near Iswepe in the Piet Retief area, and two wetlands in the Greytown area.

Canewoods wetland and wetlands in the Piet Retief area
The environmental specialist described how the foresters were now beginning to change how they burnt Canewoods wetland in the Zululand area, as well as other wetlands in the Piet Retief area:

The foresters are really trying to burn at better times of the year, getting better types of burns, and doing the feared ‘spring burn’ [the driest time of the year, when the peat is most likely to catch alight] ... yes, even in Canewood [wetland]. When we travelled around and did the 2PA's [environmental audits], like in the Amsterdam and Iswepe areas, well Iswepe specifically, there are certain wetlands where they used to burn the whole wetland. Now they now at least burn firebreaks to try and protect portions of it, so it cannot be burnt later [by wildfires]. Which is not something that they used to do. Previously they would just burn the whole wetland. So I think just by having changing our engagement in the way we work with the foresters and CEFs, they have a better understanding of what we trying to do, and I think that action has resulted in better burning practices ... it’s not new information to them, they know this, its just changing their attitudes towards it and how to approach it. (Enviro, LRIP5&6)

The environmental specialist went on to point out that now the foresters were starting to focus their management on a few key wetlands (as opposed to all wetlands in their area), and working more collaboratively with the environmental specialists, wetland management was definitely beginning to improve.

I think the fact that we said OK, we don't expect you to manage every single wetland, but we've picked the most important ones and said let’s start with those. And if you get it right, great. If you don't get it right, it’s not the end of the world but let’s try again next year to do it better. And a lot [of foresters] have started to focus on these key wetlands. They all got burning plans. They now show us what wetlands they want to burn for spring, what will be burnt in winter, what will be burn annually, what will be bi-annually. And even tri-annually in some cases. And it was not like that before ... yes, and I think this has happened, because I had discussions with them about it ... but it’s also something we pushed for, because we had the [burning] workshop and then when we did the 2PAs [environmental audits] we started real discussions with the guys as well. A lot of the information they already had, its just that they formalised it a bit better by discussing it with us, and they tried a bit harder, where before they didn't do so much ... no it’s a massive achievement, I think if you just take that I think it [expansive learning process] has worked. (Enviro, LRIP5&6)

This change in wetland burning practice in the Piet Retief area was supported by the environmental manager during his reflective interview, when he was asked if wetland management had changed since the expansive learning process had started. He replied excitedly that it definitely had:

Absolutely, absolutely ... if I take our two areas up in Iswepe and Piet Retief, and just from a burning practice point of view, they now set aside just over 10% of their wetland/grassland
areas to not burn. Previously they would have burnt everything ... this [the expansive learning process and the burning workshop] has expanded, it’s opened the mind, it’s let people listen, it’s let people drive things differently, and I claim it as an indicator of progress. (Enviro manager, CRIP5)

Lions Glen and Lake Merthley wetlands

The practice of how foresters burnt their wetlands had also changed at Lions Glen and Lake Merthley wetlands in the Greytown area. When an environmental specialist was asked, during her reflective interview, if wetland management had improved since the expansive learning process had begun, she highlighted two wetlands where burning practices had changed. Both were significant changes, as previously it had been extremely hard to change wetland burning practices in Mondi and burn firebreaks around wetlands, as opposed to burning the entire wetland as a firebreak. She explained that:

Lions Glen up there in the Iswepe area, it’s the first time in many years that it wasn’t burnt as a winter burn [not good ecologically]. The forester burnt a [fire] break around it to protect it ... but that forester did it on his own initiative. He thought ‘oh well he doesn’t need to burn there now, so he doesn’t have to burn it’. Now I’ve picked this up on the [environmental] audit, and I said to the forester ‘Paul you didn’t burn it!’ He said ‘Yes I know, I thought I could do a [fire] break instead’. Hallelujah! (Enviro, JRIP4-5)

When the environmental specialist was asked if this change in wetland burning practice had emerged from the burning workshop that the expansive learning process had catalysed she confirmed that this was the case. She also believed that this change had been brought about due to her changing the approach of how she worked with the forester. Importantly, she suspected that there were many other cases where burning practices had also changed, but that she had not heard about them yet, and would probably only find out about them later:

Yes, a lot of it did [emerge from the burning workshop], and [forester ‘Pv’] ... he’s the Amsterdam guy and [forester ‘Pv’], is old school, does things his way. But if he sees the sense of something then he will take it through, and it’s the way that we’ve communicated with him that has changed and made the difference to him. And I tell you, we won’t even know all the burning changes that have happened [on all Mondi landholdings], and we will only pick them up in two or three years time because they [foresters] are not going to phone us and say ‘hey I didn’t burn this wetland’. (Enviro, JRIP4-5)
The environmental specialist then went on to share another example of where burning practices had been changed by a forester who, although did not participate in the phase 2 interventionist workshops, had attended the burning workshop:

At Lake Merthley wetland, we've managed to improve wetland burning, by working with [forester 'Ds']. He's had to change the way he burns the wetland ... basically now the whole wetland area is not burnt at one period. Previously he used to burn the whole grassland and wetland every year. For the last ten years the whole wetland has been burnt annually. Everything! ... Yes, so now I have sat with him and we've worked out what needs to be burnt, because it's a very high risk fire area [firebreaks are required to protect the plantations from wildfires]. The plantations are pine trees. So from the burning point of view, pine is very high risk [pine trees burn well] and the town was just below the plantation, so he has a fire protection issue there ... we had to find a compromise between burning for the ecological needs, and protection burning for the pine trees [and the town]. It's quite narrow fingers of wetland, and last year he burnt breaks around these wetland fingers, so that he didn't burn the wetland fingers themselves. This year he burnt the wetland fingers but didn't burn the main wetland portion. (Enviro, JRIP4-5)

These narratives describing how foresters are beginning to change the practice of how they burn their wetlands, all describe changes that have emerged from the expansive learning process and the enabling environment it has provided for social learning and collaborative decision making. Without this process, the changes would most likely not have happened.

7.8 Change in approach – confident and independent new staff

The third type of change identified after participants implemented their solutions, was a change in how Mondi staff approached wetland and environmental management. Sections 7.8 and 7.9 provide evidence of this change through changes being identified in the newfound confidence and independence of new employees in Mondi, as well as a change in how staff interacted and made collaborative decisions. The first of these, a change in the level of confidence and independence of new staff will be discussed below.

The development and implementation of the new induction process, as a solution developed in the implementation plan (section 5.7.1), provided an enabling company environment for new staff to quickly settle into their new jobs and gain a deeper understanding of their contextual surroundings; strengthen their capacity to act independently within the new company empowering them to work with others; and strengthen their relational agency. As the training manager explained in a reflexive
interview (the last step of the expansive learning process), she thought that the induction process had changed how new staff viewed the company, and provided them with a network of colleagues to tap into when required:

Yes, I think its changed the mindset of how people view their involvement in this new company that they've joined ... I think it's a good way to get them to know about the environmental specialist, and about the financial people that they need to deal with. So its really linking up all those networks that they going to need to do their job effectively [later on]. (Training manager, KSEMS2P2)

All those who had been through the induction process to date were young professionals, and the induction has strengthened the development of their understanding of what it is to be a professional. This has supported a changed approach in how new employees began to understand their new jobs and encouraged a more collaborative way of working with their new colleagues, which is an approach that new employees in the past did not have access to. Therefore, the induction process has changed the way that new employees approach their jobs when beginning with the company, enabling them to settle into their new environment as soon as possible, gain a deeper understanding of what is expected of them and who to approach when they need advice or support. This new approach is not only new to the employees, but most importantly it is a new approach that Mondi has taken to support new staff to develop the confidence and independence enabling them to settle into their jobs as soon as possible. Some examples are provided in the following paragraphs as evidence of these findings, through the descriptions provided by participants during phase 3 of the research.

During the Greytown area progress review workshop, one of the first foresters to complete the induction process gave his feedback on how helpful the induction was to him, after attending previous inductions at three companies he had worked for in the past:

I went through their [AngloGold Ashanti, another company] induction, went to KLF [another company], then I went to Sappi [another company], where I went through their induction. And then I came here [Mondi], and it was like wow ...I found it very, very, helpful to actually sit there [at the Mondi induction] and to go through each and everything, so that everything could be explained to me, and I should know what is actually expected of me as a forester. It helps a lot when a guy who just came from somewhere else, to actually know exactly what is expected of you, and you will tend to understand the whole picture, the whole structure. Then you know whom must you talk to if you have a certain problem and all that. So you get
to interact with those people before you can actually start working with them. I think from my side it’s excellent. (Forester, PbGW3P18)

The forester went onto highlight how he felt more empowered to work with other employees in the company:

I don’t wait for someone to come to me to tell me what to do. I can start, already I have the culture of actually standing up and going to do things myself, it helps a lot …it’s a powerful tool [the new induction process], it’s brilliant! (Forester, PbGW3P18)

Another forester who had recently also completed the new induction process, gave his feedback at the Piet Retief area progress review workshop. He felt that the induction process had empowered him to develop the capabilities to be independent in the new organisation, and find the appropriate people who could help him find answers when he required support, increasing his relational agency (Forester, TnPrW3P25). He also realised the importance of working together to learn together, indicating his raised consciousness of the importance of social learning interactions. The forester later expanded on how the new induction process had benefitted him:

It was like having a clear view, with a chance for the environmental specialist to say exactly what they are dealing with if I do things that concern them. I now know where I can find a way, exactly where can I find them, and where I can find the information relating to environment. And also the same applies to the control systems. If I have got a problem, how do I deal with such problems. Whereas now when I am a new employee, if I'm not even given a clue where to go to, I could present a problem and mess up. So from my side I would say it [the new induction process] has been beneficial. Yes. (Forester, TnPrW3P25)

The forester from Greytown had similar views, and felt that the induction really helped him to develop relations with other employees and begin to understand the culture of the company. The following quote represents clear evidence of the new employee strengthening his relational agency:

It's very important even if you have got experience, and then you go and work for another company, and when you get there you don't know the culture of the company. So by going through induction immediately you start to pick up some of the things, like the way they actually formalise everything. I had to go see Jacqui [environmental specialist]. Now I can see Jacqui, I can talk to Jacqui, and I can understand the environmental issues. And I know from then on, this is how Jacqui was, so whenever I am dealing with Jacqui, I know exactly how I
must actually approach Jacqui, and that I know her passions and everything, so it helps a lot. (Forester, PbIGW3P1)

When another forester at the Piet Retief area progress review workshop was asked if he liked the way the new induction process supported new staff to be in charge and responsible for their own induction, he also confirmed what the new ‘learning by doing together’ approach of the induction had done for him:

Yes, I'd say yes, and it also encourages me to find information. It gets me involved, because if it’s only their talk, I will not have that interest if they to come to me. But for me to go and get involved with them, I also learn deeply, because I am also involved. (Forester, NrPrW3P25)

A forester from the Greytown workshop gave a similar answer when he was asked the same question:

It gave me a bit of time to learn because as they are inducting me I am actually learning as well, and I am getting a feel of things. Like this is how things are run and all that, rather than not being inducted or maybe getting a sort of induction that does not actually cover the whole thing, and you try to find your way around, it's not good that. (PbIGW3P1)

Both these sentiments were corroborated by a forester at the Paulpietersberg area progress review workshop who was currently going through the induction process. He highlighted that to learn meaningfully, you cannot be spoon fed, but need to interact and learn by working with others, as well as be independent, proactive and know who to go to when support is needed: (Forester, CdPpW3P7&8):

Well basically what I feel [of the induction], is that you feel part of a team, you know more or less how the company operates, and then it’s your responsibility to find out which person is responsible for what, and then you can get to know the person better and speak to them. Basically, that’s what I’ve done now already with Fort Hares and micro forest [management systems]. I've spoken to the people and it’s in your hands to learn ... if you going to get spoon fed, you not going to learn. It’s more hands on, you have to physically do it yourself, or if someone gives it to you and says ‘yes well this is how you do it’ you not going to go back and learn, you not going to know what to do ... Yes, you know who your support groups are, who you can talk to, if you've got problems. (Forester, CdPpW3P7&8)

The forester then went on to provide an example of this.
You know who you need to talk to. Otherwise in future they can say ‘OK this person is responsible for this’ and you don’t know who they are. Then two weeks later when you need to find something out, you don’t know who to go and talk to, or where to find that information from. Then if you don’t know how to do it yourself, you don’t know who you can talk to. (Forester, CdPpW3P7&8)

These are important observations by someone who is going through the induction, and they are critical attributes that support the development of relational agency, which is an important component for enabling social learning within an organisational context, and the associated organisational development. The following quote from a forester in the Greytown area is more explicit evidence of the induction process strengthening the relational agency of new staff, which is beginning to bring about a change in the approach of how these new staff work and interact with other colleagues in Mondi. He clearly explains how the induction process had strengthened his agency to work independently, but in collaboration with other staff:

It helped me to be able to get my way around, and be able to know exactly whom must I talk to, concerning issues I have in the working environment, so it was quite interesting ... in a way it helped me, because now I know who I am working with, and whenever I have a problem, who I must address that problem with, or who can I can call. It helps a lot ... since I had spoken to them before [the staff he had met through the induction process], it's easy for me to go to them and say 'hey I have a problem like this, can you please solve it', or 'how do I solve it', or 'there's something that I saw there and can you please come and see it'. All those things ... it helped me a lot to break down barriers. (Forester, PbIGW3P2).

As a verification of the change in new staff rapidly developing their confidence and independence with support from the induction process, an environmental specialist from the Zululand area commented in her reflexive interview, that she believed that the CEFs who have been on the new induction process were more willing to interact with her:

CEF s have also been inducted in some areas because they were new, and I think those are the people that are actually interacting better [with me] ... yes, the CEF from Tigerskloof [forestry estate], is new, and I’m having much more interaction with her. She is asking for a lot more help and assistance [on environmental issues], and keeps on asking ‘what do I do here? Can you help me with this? Do I need authorisation from that?’ (Enviro, LRIP7).

The evidence shown in this section clearly highlights the scaffolding that the new induction process has provided to support new foresters and CEFs to rapidly settle into their jobs, and encourage the development of their confidence and independence. This has clearly empowered these staff to
proactively develop the relational agency they require for navigating their way around the obstacles in a new job. These abilities will in turn have the potential to provide greater opportunities for wetland and environmental knowledge to be shared by more the experienced staff in Mondi, contributing to increased possibilities of improved wetland and broader environmental management.

7.9 Change in approach – staff interaction and decision making more collaborative

The expansive learning process together with implementing the solutions designed to deal with the contradictions, has catalysed a change in how some of the environmental specialists, CEFs and foresters involved in the research interact and approach the way they do their work, not only on wetlands, but also for broader environmental issues. Their interaction has become more collaborative, personal, empathic of the other, and orientated to learning from each other. This is in stark contrast to what was recorded quite explicitly during the phase 1 interviews, when the lack of staff interaction and collaborative decision making were stated as key tensions (section 5.3.5). Although this change towards a more collaborative approach may not always result in a change in practice in the short term, it indicates that a change of practice may well emerge from this changed approach in the future. In fact a change in approach in how staff work together may well be a prerequisite for a change in practice to occur at a later stage. The following discussions that emerged from the reflective interviews during phase 4 of the research (section 4.6.4) with staff from different professional job descriptions, provides clear evidence for how some staff have changed their approach of working more collaboratively with each other since implementing the different solutions to deal with the contradiction on silos. This evidence does not mean to imply that all staff in Mondi have changed their approach when working on wetland and environmental issues, as only nine staff were involved in the reflective interviews, but it highlights that the changes have been initiated. Unfortunately due to space limitations, not all the evidence could be included, however, I have included a selection in the descriptions below, to provide an insight into the changes that are beginning to emerge.

7.9.1 Evidence from environmental specialists

An environmental specialist from the Greytown area explained how the expansive learning process had supported her to change her approach of how she now works with CEFs and foresters:

287
I think about things a bit differently now, and approach things differently ... so it’s [the expansive learning process] crystallised in my mind what’s happening and also changed the way I maybe interact with people. It’s now more of a face to face situation. I realise that sending them [foresters and CEFs] an email or requesting something is not necessarily going to get the best out of that person. Now I’ll either phone them, or if I really, really want a response I will personally interact with that person so that I can get what I need out of them. If I really want a response I will not send them a general email and expect them to respond, because I know based on all our discussions in the [interventionist] workshops that that’s not going to elicit the best response from people. Yes, so first thing I would say that’s been the biggest change, is the way I’ve dealt with people. (Enviro, JRIP1)

Another environmental specialist, from the Zululand area, explained how she had also changed her approach of working with foresters and CEFs, to being more collaborative and dialogic in orientation, rather than telling them what to do as she used to:

I have tried instead of just telling the forester what to do, to rather sit down and discuss it, and work out and get their perspective, not just say ‘here’s the plan, this is how it will be, and now this is what we are going to do’. We will now have more discussions and I’ll get more input from them. Well that’s what I am trying to do. It doesn't always work like that, and sometimes its faster to just tell them what to do ... but then the outcome of that is it might be fixed [by what I want], and when I leave and am not around, it may not be a part of what they do. Which it [most likely] will not be, and I have realised that. So yes, I think it’s changing my approach of how I need to deal with the foresters and the CEFs. I think I'm not quite there yet, at all. I need to work more on that on how I deal with the foresters and how I approach things with them and not use that top down approach, but rather do the sharing. So I think working on that from my part, from my personal perspective, is to get a better process going on how I will approach certain subjects and topics and management opportunities with the forester and the CEFs. (Enviro, LRIP1&2)

Using an example of this changed approach of working, the environmental specialist described how the environmental staff had changed their approach when handing over specialist reports to foresters to being more dialogic and interactive. She also explained how well the foresters had responded to this new approach, feeling more inclusive of the specialist research, because they were interacting with the specialists, learning and getting positive feedback about their management practices. This resulted in the foresters feeling that they were part of the research:

I think from our side, the way we [environmental specialists] communicate with the foresters, or anybody, has changed. We don’t just give plans over, we don’t give results over, we now have a presentation and we have a discussion. We get the consultant to come in and if necessary to present what they found. So I think the foresters are included a lot more in all these monitoring and research [projects], and what we do. So I think communicating in that
fashion rather instead of me sending the report out and telling them the recommendations, is a much better way of doing it. (Enviro, LRIP4)

The environmental specialist then went on to explain how well this changed way of communicating with foresters had worked.

That has changed the way we interact with them and I feel that it has worked really well, because they are also learning and getting positive feedback from the specialist consultants. It’s nice for them [foresters] to hear from a consultant that ‘you know it’s [the wetland] actually well managed’. Or ‘there’s a bit of problem there, and it’s a little bit of improvement that is needed here and there. So I think overall for the foresters it was also a good thing, because they are seeing the results of their management. So I think overall the [expansive learning] process was fine and it focused us on … how we approach how we do it, and in changing that … you know it’s not just telling [the foresters what to do], it’s let’s discuss it, let’s go look, let’s go see … Where beforehand [our procedure was], you go, this is the results, this is the recommendations, go burn the bloody wetland and be done with it. Now it’s rather why, how, and for what reason, let’s just go do it [together]. Now we will have a discussion and they feel that they are part of the solution, and they understand that. It’s just it takes so much longer this way. (Enviro, LRIP4)

The environmental specialist was confident that the changed dialogic approach of communicating with foresters would persist after the expansive learning process had been completed, because they could see the benefits of this changed approach:

So the way we communicate with foresters will stay, we will keep on with the presentations and workshops, so yes I think parts of it will still continue in future, cos we found a big gap for environment in the rest of the company was communication, and how we communicate with people. We have found the best way is having workshops and presentations, and not just sending something out. And that will stay. That’s now how we do it, and it won’t change. So yes, I think a lot of it we will continue with, and now that seeing what came out of the wetland burning workshop, maybe that’s the way to go for certain topics where we want to create change. Instead of pushing it from all sorts of directions to rather have a collaborative discussion. (Enviro, LRIP6)

7.9.2 Evidence from foresters

After the Zululand area progress review workshop was completed, I interviewed a forester for deeper understanding of the positive feelings he expressed during the workshop about the more collaborative approach the environmental specialists had taken when sharing the specialist consultant reports with operations staff, as described in section 7.4.2 His reply revealed how the forester and environmental specialist were working more proactively and cooperatively together,
and how the forester wanted to broaden this approach to include not only the silviculture foresters who grow the trees, but also the harvesting foresters as well as the road contractors. The following conversation highlights this:

Forester ‘T’: The reporting back on specialist report backs that’s being implemented such as doing SASS5 [a specialist freshwater health assessment tool], has definitely improved a lot in that way [the collaborative approach]. Like when the consultant specialist came and spoke to us about SASS5. It was myself, two of the foresters where SASS5 was done in their areas ... this [new inclusive process] is great, but now we want the harvesting guys [harvesting foresters] and roads experts [contractors who maintain forestry roads] to also be part of the discussions, and [environmental specialist ‘L’] is quite keen on pushing that as well.

Research facilitator: So has that been quite a significant change in how she [environmental specialist ‘L’] works with you?
Forester ‘T’: Yes, I think so.
Research facilitator: And with others [environmental specialists and CEFs]?
Forester ‘T’: Historically, it’s been very much a reactive working relationship, and now it’s becoming more proactive and more cooperative.
Research facilitator: How long do you think it’s been like that for?
Forester ‘T’: I think it had a lot to do with when we closed off last year [after interventionist workshop #2].

When the same forester was asked if the other foresters were appreciative of the changed approach of discussing the reports face to face with them, he replied that he thought they felt empowered by the opportunity to enter into dialogic discussion with the environmental consultant specialist report writer, as they could now give their opinions:

It’s not that you need a platform to defend yourself, but if you are told that ‘sorry you doing something wrong’ on a report, you get to look at the person who made that report right in the eye, and say ‘OK I’ve done that so this is my reasoning behind it, this is why the river looks like that’. It gives you the opportunity to defend and question the actions or the comments in the report. It also allows that you are not just the person that’s been kicked in the ribs the whole time. You've got an opportunity to say and to speak your mind, and also hear why this consultant is coming to look at the insects in my river ...it sort of gives you a background to what it is all about and I think that also empowers the guys [other foresters] and gives them some food for thought. (Forester, TIZW3P1&2)

The forester really believed in this new collaborative approach of sharing the information in the environmental specialist reports. He strongly expressed his feeling that he is finally being listened to in the organisation, and desperately wants this approach to continue, indicating just how much he believed in this changed approach. When I asked the forester if this interactive feedback by consultant specialists would continue, he replied:

290
I hope so I really, really, do hope so, and if I’ve got anything to do with it, I am definitely going to push for it, you know. You know, we have been pushing for it to be like this for the past ten years. Now something is finally happening. It’s giving them the say, when I say ‘them’ I mean myself too, you know you are not just a number. So if you say something, someone’s actually taking note of what you saying. It might take two years for you to be told ‘listen no’ but it’s not just being ignored. Someone is hearing your little voice in the wilderness, and specially in a corporate the size of Mondi. (Forester, TIZW3P2)

An interesting observation was made by an environmental specialist, who explained that she had seen the way that a forester she works with, who had been a participant of the expansive learning process, had changed the way he worked with colleagues. Although this change is probably not only due to the expansive learning process, it certainly would have played an important role in the emergence of this change:

I think [Forester ‘St’] has probably opened up ... but in my opinion over the last two years, and I suppose its probably from the [interventionist] workshops. I don’t know. But he’s a different person! He is different from the way he deals with me, it’s different the way he deals with [Forestry Area Manager ‘M’], how he is within a group of people, and a part of that could be because he was promoted as well. He has got a more senior position, a more difficult area, a lot to sort out, and he's just blossomed ... he's probably one of the strongest foresters at the moment in Greytown, compared to maybe two three years ago. Five years ago he was a bad forester, not a bad forester, but one of those people you would think ‘I wish he would try much harder’. Then he improved with a bit of guidance and in the last year or so, he’s possibly now the best forester in Greytown. I would be interested if [Forester ‘St’] perceives that as well. If he feels like he's changed at all. Because looking at it from an outsider perspective, I would say that he has ...he’s still very introverted but if you ask him directly he will respond. Whereas previously he would have been a bit unconfident and he did not want to give his opinion. So he’s more confident in himself. (Enviro, JRIP1-2)

From this evidence, it appears that some foresters, have begun to change how they work with colleagues from different professional job descriptions, to being more collaborative in their approach. However, the following evidence indicates that the job description silos, have not been completely bridged. When a forestry area manager was asked if staff interaction and collaboration across job description silos had changed, he replied that there certainly had been a significant change in how staff worked together, but he thought the silos had not been broken due to the different departments of Land and Forestry still working towards two different goals:

There's a big difference [in staff collaboration] and it has improved. From my sphere of [silviculture forestry] operations that's definitely changed. Most definitely it has improved.
But I don’t think it’s quite improved to the point, you know let me put it this way. I think there’s a good working relationship, and there’s a good understanding, and there’s good cooperation. But I think there is one set of staff [Land Department] operating on one distinct set of key performance areas, and another set of staff [Forestry Operations Department] operating on another really distinct set of key performance areas. So there might be tolerance and a good working relationship, but if you chasing a completely different goal then you not going to achieve what we need to. We need to almost be achieving the same goal. (Forestry area manager, MRIP5)

7.9.3 Evidence from CEFs

During a reflexive interview (phase 4 of the research) with a CEF from the Zululand Area, he described in detail how he was now working much more collaboratively with the environmental specialist and the forester, using examples to highlight this new collaboration. This was interesting to hear as in the past, this same CEF had said that this had not been the case, especially with the environmental specialist (CEF, ZIP5). The CEF clearly sees the collaborative project, that was part of the implementation plan to deal with the contradiction of staff working in silos, as being the catalyst behind this changed approach of working together with the environmental specialist and forester. Although the extract below is a long one, and difficult to read, it so richly and expressively describes the change:

So now in most cases, before we start to implement any project we call her as environmentalist to see what we will do and to decide if it is affecting the environment ... we are working more together, more closely, than we were before. Previously what was happening, was if we were doing our project, I’d not bother to call the environmentalist so that she could check for us whether the project is environmentally acceptable. We would just give permission to the community to plant a the vegetable garden [agricultural field], or we would just build a crèche, or whatever the project may be. But now before we can do all that we have got to call the environmentalist to come and see whether, we are going to damage any environmental aspect with that project ... I think it’s because of the [expansive learning interventionist] workshops that we have this new way of working. In addition I think that those projects [solutions from expansive learning cycle] which we identified to work on, also help us a lot ... I think especially in our case, on the project that have been working on at Langepan wetland ... now that we have been working there together with [environmental specialist ‘L’] especially with the programme [expansive learning cycle], that highlighted to us that whatever we do we need to consider environment .... I think it changed us because it proved to us through the [expansive learning] workshops, that we were working in silos, which was identified as the culprit inhibiting us from working too closely with the environmentalist and the CEFs. Starting from then, we tried to close that gap between the silos ... now we are also working very well with the foresters. The project that we were working together on at Langepan wetland, helped change this. Now all three legs are working together [an African metaphor of balancing a three legged stool, which cannot balance only
on two legs], meaning the CEF, the environmentalist and foresters in charge ... I think it was through working closely together, identifying a project that involved all of us, that helped to change our attitudes towards each other ... those projects were like a bond to us. They [the projects] were pulling us together, because the CEF has got to work closely with the environmental specialist, as well as the forester ... they [the projects] are the ones that made us to realise how important we are to each other, for implementing each and every project. (CEF, ZRIP2-5)

A similar sentiment emerged from a reflexive interview with another CEF who came from the Piet Retief area, when she expressed that the staff were beginning to work more collaboratively together. The CEF explained how the expansive learning process had helped begin to break down the silos between CEFs and foresters. As an example, she described how working together on her change orientated livestock grazing project that formed part of the implementation plan to deal with the silo contradiction, as well as being part of the interventionist workshops, had changed the way CEFs and foresters reported to each other on common work issues. This had resulted in their approach of working together becoming more interactive and collaborative than in the past:

If you remember one of the things which came out from those first [phase 1] interviews, was that we realised that we've been working in silos. Individually, each department was doing its own thing not knowing what the other is doing. So after all these [expansive learning] workshops and especially the projects [expansive learning solutions] we said we would try and work on the project as a joint or as a whole team. I would say one thing that has come out for me strongly, is the breaking of those silos. I will make an example with the livestock project, which was a major problem. After discussing it as a group, Forestry, Land and the whole team, we started reporting to each other. Every month the foresters send us their reports and say ‘look these are the damages that we've experienced especially with our young trees [cattle eating them]’ and then we take it from there. We go to the communities, discuss it with them, and come back and report back to the foresters on these things. So I won't say we there yet, but that a really good start has been made ... I am not sure whether it would have happened without those [expansive learning] workshops. But I will say that the workshops really did speed up the start of that process ... because after those workshops we then came back and discussed those issues in their [forester] Area meetings ... with the environmental staff the relationship is good, however, there is that gap that we don't have somebody dedicated for this area. But the support from them, it's good ... now whenever we implement projects we discuss them with the whole team [CEFs foresters and environmental specialists]. (CEF, NRIP1&3)

The CEF then went on to describe how staff were beginning to collaboratively make decisions, and how this has strengthened the relations between each other and resulted in improved practices. As an example, she explained how the foresters now involved the CEFs and communities in deciding
where to burn plantation firebreaks, taking into consideration the grazing needs of the community. This allowed for more collaborative burning decision making, and the development of stronger relationships between them all:

Let’s take the issue of the livestock management. Earlier this year they [foresters] were about to burn firebreaks [with many wetlands included as firebreaks]. They then told us: ‘guys inform your community livestock owners, let’s meet with them [to discuss the burning]’. We organised meetings where the foresters attended, and agreed with the village people where it was best to burn. The community would say ‘no don’t burn there as our cattle are grazing, but you can burn there’. So the communities appreciated the interaction ... although you'll find that foresters don’t attend every meeting we having. They just go with a specific thing that they need to discuss, or maybe if the particular village has requested that you bring the forester ... to us CEFs it’s a great improvement, in terms of the relationships [between foresters, CEFs and communities] ... it’s a great improvement because it even affected other issues that you would like to discuss with the community because now the community have got the feeling that ‘Mondi will listen to us’. If they have that sense, then it’s easy to work with them. (CEF, NRIP4&5)

7.10 Change in discourse – consciousness of understanding learning processes

The fourth type of change identified after participants implemented their solutions, was an emergence of four different, but related, discourses that could be identified in the conversations of the participants. Previously these discourses would have either not been present, or been very weak. Sections 7.10, 7.11, 7.12, and 7.13 provide evidence of this change, through an emerging discourse highlighting a changed participant understanding of learning processes; a discourse that was more collaborative and interactive; a new discourse of how learning is structured; and a new discourse of agentive talk\(^3\) for future actions and practices. The first of these four changed discourses, a change in participant consciousness of understanding learning processes will be discussed in the section below.

As the expansive learning cycle progressed, staff became more conscious of what meaningful learning processes were, and which processes were important for scaffolding a change in wetland and broader environmental practice to take place. This introduced a new discourse about learning processes, which had been very weak before, as evidenced at the beginning of the research process (sections 5.3.1 and 5.5.1). For example in a reflective interview with an environmental specialist at

---

\(^3\) Agentive talk is speech that conveys an intention to act in a specific way, when participants of a process such as the interventionist workshops commit to doing something (Sannino, 2008; Mukute, 2010).
the end of the research process, she stated she did not realise at the start of the research, that informal social learning was so important to strengthen her learning (JRIP1). However, as the research participants began to deepen their understanding of what meaningful learning might consist of, this began to permeate into their discourse when discussing environmental learning and change in practices.

This discourse infuses the language that the research participants are beginning to use when discussing learning issues. There are many examples evident of this, which can be found in the quotes used earlier in this chapter to evidence changes in practices and approaches. For example in section 7.4.1, the environmental manager and the environmental specialist both described to workshop participants how they had changed the practice of how they communicated new environmental policies and procedures to the forestry operations staff. They described how the communication of these procedures was now more of an interactive learning process, than previously when the new procedures and policies would have simply been emailed to staff (Environmental manager, CPrW3P26; CMsW3P16; Enviro, JGW3P28). In these descriptions they used language that was evidence of their understanding the importance of interactive social learning processes. Another example can be found in section 7.4.2 on specialist reportbacks (ZW3P18), as well as section 7.7 describing how the change in burning practices came about with staff explaining to each other the importance of collaborative learning and decision making in complex burning situations. In section 7.8 new Mondi employees who had gone through the new induction process, these staff clearly highlighted that the interactive and collaborative social learning processes with older staff had helped them to understand their work context that much better strengthening their independence and confidence. In section 7.9.1, more evidence is provided when staff further explain how they have changed their approach of working with other staff to become more collaborative, empathic of others, and orientated to learning from each other.

However, following are some new additional examples of evidence supporting this finding, that emerged from the area wide progress review workshops (phase 3 of the research), when participants were discussing the toolbox of environmental learning materials that had recently been developed as one of the projects of the implementation plan dealing with the contradictions. During the Mondi-Shanduka area workshop an environmental specialist highlighted the importance of learning processes when using the education resources in the toolbox (Enviro, DbMsW3P12&13).
He explained that CEFs and foresters have to work out where the information from the toolbox resources will end up, as they are only the facilitators of the learning with communities and contractors. However he also mentioned that the learning will be for themselves as well. He stressed that it’s important to understand how the communities and contractors can best learn from these resources and use the information. Therefore facilitators should not present the information to them, but rather use the resources to support learning as the interest and need arises for a particular operational issue.

In another example that emerged during the Greytown area workshop, the training manager speaks of using education materials in a more interactive and collaborative way, indicating her consciousness of quality situated learning processes. Although being a training manager she would have had a broader idea of learning than most of the other participants, the quotes below do indicate how she explicitly recognises and wants learning resources and processes used in Mondi that are of higher quality, more contextually relevant, and more interactive. This orientation to learning in Mondi appears to be different to how training, such as the previous induction process, has been run in Mondi. This change in approach could well influence how the training manager wants more learning to take place in Mondi in the future. The training manager described how she had visited WESSA (an environmental NGO skilled in environmental education) to see what environmental materials it had already developed that may be suitable for a quick reference library for each Mondi area. After some discussions with WESSA it was agreed that a small workshop was needed in each Mondi area so that the staff could determine themselves which materials were relevant to issues in their area. The training manager spoke of using the materials in an interactive and collaborative way, conscious of these important learning processes. This she thought was important because often:

> You get a box like that [of resource materials] you put it down, and nobody ever refers to it. So I would think if it’s more interactive and more integrated where the whole team comes together and says ‘what do we need, how do we need it, and how do we use it?’, and the environmental practitioner [‘Js’] actually makes the materials come alive, then I feel it can add value. (Training manager, KGW3P19)

Later on in the discussion about a wetland education material called Windows on our World: Wetlands (WOW) the training manager became more excited about its usefulness and applicability for introducing environmental concepts into the supervisors’ training programme. She emphasised:
I really like this concept [the learning processes and content of WOW]. It’s very different from the other learning aids and tools that are in use in the rest of that supervisor development programme. So I think this will fit in well ...but starting with the supervisor development programme, I certainly think that you can look at furthering it in other areas. I would obviously chat to [environmental manager ‘C’] and you guys [workshop participants] to make sure we then investigate other areas of environmental training with contractors that has to take place ... and it’s [WOW] good on day to day issues like waste management, littering, and it’s just endless. If you go through each of those individual cards [information cards of WOW that stimulate discussions] it’s really quite mind blowing. And like [MWP] said you can stretch it from illiterate people or school kids, or taking it round to graduates and extended learning. You can really have quite an extensive [environmental education] programme based on those charts [WOW]. It is fantastic. (Training manager, KGW3P20&21)

A forester agreed with what the training manager had said, and revealed how he was beginning to understand the importance of the learning processes of WOW, especially to himself understanding wetland issues: “from my side I think this is actually a very useful tool, because the idea is that you actually grasp the concept and understand it first so that you can actually use it to your advantage to help the other people. So I think it’s a very useful tool” (Forester, StGW3P20). The training manager further realised its potential as a quality environmental education tool that had broad applicability to Mondi and the plantation forestry industry, but only when its use was facilitated appropriately. This was highlighted by her saying:

Although this isn’t specific to forestry ... when you go home, and you are looking at your wetlands or your river resources, all of those are actually concepts that you can take either to the home or to the workplace. So you can take this little picture and actually relate it back to a forestry environment for a supervisor ... if your facilitator’s good, you can actually facilitate this really well with environmental issues. (Training manager, KGW3P19)

In this last example that emerged from the Zululand area progress review workshop, the following conversation between the forestry area manager, environmental manager and a CEF, captures their recognition of the importance of WOW as a quality environmental education resource that formed part of the newly developed toolbox of learning materials. The forestry area manager, and the CEF especially, recognise that the interactive approach that is required to use WOW, is far more useful for learning than simply reading a book with information. Due to the recognition of the importance of this new interactive approach, they agreed to have a training session on how to use this interactive wetland and catchment management learning material:
Forestry area manager ‘Lm’: ... but I think for foresters, well I’m thinking for myself ... I think it [WOW, the education resource] will be useful. You know, reading a document is different from looking at something that is portrayed [as WOW does]. I prefer something that is portrayed rather than reading ... so I think it will be useful.

Environmental manager ‘C’: Can we [forestry area manager ‘Lm’] take you up, to give us an hour with your team so we can play that game [WOW] and see where they want to take it from there? So that you have an understanding of what’s all those windows [in WOW] are about.

Forestry area manager ‘Lm’: Yes for sure, because you know what it does ... I think you can take it up with us, but what does the team say?

CEF ‘Z’: I think doing it together will improve the way of learning, because just taking a book I don't think it will work. But if we can sit together and work on that [WOW], then maybe you can take a book [afterwards] and go and just refer to what has been said. (ZW3P19)

7.11 Change in discourse – more collaborative and interactive

What was apparent in the conversations of CEFs, foresters and environmental specialists during the series of area wide progress review workshops (phase 3), is that the discourse emerging was more collaborative, interactive, and inclusive of each other. Staff were beginning to learn from each other, and working more together, giving rise to a new language of learning and communication that is more process based. This is different to what emerged from the data generated during phase 1 and 2 of the research, where the communication, learning, and interaction between the CEFs, foresters, and environmental specialists was inhibited by their silo approach to work, as identified by contradiction #2 (section 5.3.5). This change in discourse, is evident in many of the quotes used in the previous sections of this chapter, most notably in section 7.3, documenting the changes in developing the training matrix and the contractor training programme; section 7.4, which documented the changed practice of environmental specialists communicating new environmental procedures and policies, and new consultant environmental specialist reports to the forestry operations staff; sections 7.5, 7.6 and 7.7, which documented changes in practices in the collaborative wetland projects and the burning of wetlands; and section 7.9 on changes in the way staff approached their jobs increasing their interaction and collaborative decision making. For this reason, the evidence will not be repeated, and only references to the appropriate sections has been provided. However, in addition to this, there are two new examples of this change in discourse.
The first is one that I felt important to include as it came from the Zululand forestry area manager, who did not participate in the phase 1 and 2 workshops. However, the exposure he had during the phase 3 progress review workshop to the discussions of tensions, contradictions, project solutions, and hearing staff voice their opinions about them, was sufficient to strengthen his resolve for staff to work more closely together across job description silos. During a reflective interview with him after the workshop, he strongly expressed the need for his operational staff to work and learn together on collaborative wetland projects, clearly stating why he thought it so important:

There are definitely synergies there. For example the CEF has got contacts with the community that the forester might not have. And the CEF won't have control over what happens on the plantation like the forester has got. And the environmental person has got probably a little bit more knowledge about wetlands and what is required. So you need to bring all the three together ...it's a team effort. Like [CEF ‘Z’] said, only after they'd run the [collaborative] project and after he had been involved with the [interventionist] workshops, he suddenly realised that ‘hey you can't have cattle in this Langegan Vlei at certain times of the year because they are going to damage the plants [the highly endangered plant species]’. He didn't know that [previously]... and so that was quite interesting. So what I might take for granted, someone else won't take or they won't even know, or vice versa. So it's all about putting everyone on the same page. (Forestry area manager, IIZW3P2)

In the second example, the Greytown forestry area manager, who participated in all phases of the research, explained that the expansive learning process has made staff acutely aware of the silo issue, and they consciously discuss it amongst themselves, indicating the new discourse that had emerged during the research period. However, he also states a concern that the silos have not entirely been dealt with, and more work has to be done before this happens:

What it has done [the expansive learning process], is it made us acutely aware of the situation. Where before it was a subconscious thing that we knew there were silos, but we didn't really even realise it. Now we have known about it for the past two and half years, or the past year and half [of the expansive learning process]. In fact before the Forestry Stewardship Council audit I was chatting to some of the operational guys about the environmental people saying we still need to just break these [the silos]. So we are talking about it, we know there is a problem, but we haven't been able to find the energy to actually break through it because it is going to take energy and effort. But it has improved, it has certainly improved. But it is still disappointing for us that we haven't yet made that leap [to entirely deal with the silo contradiction]. (Forestry area manager, MRIP2)

Later on in the reflective interview, when the forestry area manager was asked if the way he worked with colleagues across job descriptions had changed, he claimed it had, and that all his staff
were highly conscious of the need to work more together, but they hadn’t quite got there. This indicates the strength of the changed discourse on working collaboratively and interactively together, but points out that more was required for a broader change in practice, to occur:

Yes definitely. That's improved and there's a conscious realisation that we need to work on breaking it [silos] down and we need to incorporate everybody. And there is a conscious realisation. It is just the physical action in that line that we haven't managed to break. (Forestry area manager, MRIP2)

7.12 Change in discourse – how learning is structured

Not only was there a change in discourse amongst participants of how staff worked more collaboratively and interactively, but there was also a change in the discourse on how the learning needed to be structured. The language used by participants, indicated a need to change environmental training and learning so that it was structured, took a long term view, and was institutionalised within Mondi. This was different to what emerged from the data generated during phase 1 and 2 of the research, when environmental learning was unstructured, occurred on an ad hoc basis when the need arose, and was limited to isolated short term courses (section 5.3.1). This change in discourse is evidenced in the discussions in section 7.2 on the development of the new induction process, in how the learning was structured during the induction, as well as it being expanded from four days to three months, and being formally institutionalised within Mondi. It is also evidenced in the discussions in section 7.3 that aimed to integrate environmental learning within a formal staff training matrix, career development plans, and the contractor training programme, which were all structured, long term, and institutionalised interventions.

Staff have also begun to realise the importance of informal learning as a way of strengthening environmental learning in Mondi, in addition to the formal learning that is structured and institutionalised into Mondi. The change in discourse is evident in the language of the discussions in section 7.4, which documented the changed practice of environmental specialists communicating new environmental procedures and policies, and new consultant environmental specialist reports to the forestry operations staff. It is also evident in the staff discussion recorded in sections 7.5, 7.6 and 7.7, which documented changes in practices in the collaborative wetland projects and the burning of wetlands.
In addition to the change in discourse in these previously documented sections, it is also evident in the language that two forestry area managers and the environmental manager used when reporting back on fieldtrips they had arranged to strengthen staff learning. These fieldtrips formed part of the implementation plan solutions to deal with the contradiction #2, on the lack of a learning structure in Mondi. Two new examples of this changed discourse follow. The first is evidenced by the following report back at the Greytown area progress review workshop. The Greytown and Richmond forestry area managers both gave feedback on their progress in creating the spaces for informal learning for their staff through having two fieldtrips between the Mondi-Shanduka area and the Greytown area offices, and another one between the Richmond area and Piet Retief area offices. Previously there had been few fieldtrips within the area offices, and none occurring between the area offices in recent times. These fieldtrips resulted in staff that were more enthused, excited, and interested in environmental learning than they had been previously. The discussions highlight how the area managers are beginning to value these informal learning interventions, and aim to continue with the fieldtrips as a form of informal learning between the different area offices.

The first forestry area manager provided feedback on the progress he had made on creating the spaces for informal learning for his staff, through being involved in two exchange fieldtrips between the Mondi-Shanduka area and the Greytown area offices. The change in discourse is quite explicit:

**Forestry area manager ‘M’:** ... in terms of creating a [learning] space, I think we've sort of crossed the crest of the hill, I think. At the beginning of last year there was almost no interaction, and there was no innovation happening. [Forestry area manager ‘Gs’] you went on a field trip last year, and now there's been a lot more, what’s the word for it, encouragement and a lot more space, and there’s a lot more excitement starting to happen in the business, we would like to think ... yes, we had a big field day towards the end of last year, where it must have been in November, where they [Mondi-Shanduka area office] came out to us, and now we [Greytown area office] reciprocating and we are now going out them. So there’s this sort of backwards and forwards-ing that is starting ... the one [field trip] at Shanduka was very successful. It’s also got a lot to do with realigning priorities, and aligning the way we do things with each other. They are also owned by Mondi and they are just across the hill. And yes, in terms of Shanduka it was quite successful. In terms of us [Greytown area], it was very useful and very interesting. I think we can get our value on Friday, when we go across to them again. (Forestry area manager, MGW3P29&30)

Further in the conversation, the second forestry area manager highlighted his understanding of the importance of informal learning spaces created by the inter-area fieldtrip between the Richmond
area and the Piet Retief area offices. He realises that the fieldtrip helped his staff to learn how to do their jobs better:

**Forestry area manager ‘Gs’**: We felt like [forestry area manager ‘M’] said. We’d been in Richmond for some time and we needed to learn how other staff were doing their jobs [in other areas]. So the silviculture foresters and contractors for the Richmond area went to Central area [same as Piet Retief area] for two days. On the first day we were at Piet Retief seeing how they do their work and their operations. Then the second day we spent at Paulpriet and then drove back to Richmond.

**MWP ‘D’**: And what were your feelings from that field trip? Did you find it useful?

**Forestry area manager ‘Gs’**: It was because we were not going there as auditors. We were there to learn. So the guys were open for everything, the good and the bad. We saw almost everything and we were also encouraged by the open areas [not planted with plantation trees]. They were quite clean [of alien plants] compared to us, so we learnt a lot. Also they doing a portable mechanised harvesting project, so we also learnt something from that ...yes we learnt a lot, that was very open [to discussion]. Now they are saying [staff from Piet Retief], that they might come to us this year to also learn [on a reciprocal fieldtrip].

**MWP ‘D’**: Did you enjoy it?

**Forestry area manager ‘Gs’**: Absolutely.

**MWP ‘D’**: Did it put some excitement into you all?

**Forestry area manager ‘Gs’**: Yes it was a mutual excitement because I've got two areas, New Hanover and Green Hill. Those two groups normally don't meet unless it’s for a [management] meeting. So it was important that we came together, and that we were interacting with each other. (GW3P30)

It is important to note that the Mondi-Shanduka-Greytown fieldtrips were instigated by the area manager who participated in phase 1 and 2 of the research, as part of the implementation plan aimed at dealing with the contradiction #1, on the lack of learning structures and learning materials. However, the Richmond-Piet Retief fieldtrip was organised and run by the Richmond area manager who was not part of phase 1 and 2. It is interesting to hear that this appears to have been a catalytic effect of the expansive learning process, in which a forester, who had been part of Phase 1 and 2 of the research, had encouraged the Richmond forestry area manager to run the fieldtrip due to its value for the informal learning of staff. The following evidence from the Greytown forestry area manager reveals this:

...but the thing is, I think to a certain extent that [the Piet Retief fieldtrip] was also driven by forester ‘Sr’ [who was at the interventionist workshops during phase 1 and 2, and very interested in promoting cross region fieldtrips]. So it was forester ‘Sr’ influence as well. So [forestry area manager ‘Gs] obviously drove that, but I think forester ‘Sr’ was pushing quite hard. He’s not here [forester ‘Sr’] but I think he would have said that. (Forestry area manager, MGW3P30)
The second example of staff beginning to realise the importance of informal learning as a way of structuring environmental learning for forestry operational staff, is highlighted by the environmental manager strongly promoting fieldtrips to other area offices as an interactive way of learning, having commercial and environmental benefits. Despite a resistance to the field trips by a forestry area manager due to the cost of running them, the environmental manager persisted, and even offered to source funding to support the costs of running these fieldtrips:

Environmental manager ‘C’: It is up to you, there is nothing inhibiting you from organising a trip to go and look at operations with anyone else [in another forestry area]. If you need to do it through me, I am quite happy to assist and make it an ‘Environmental Thursday’, but there is nothing stopping you.

Forestry area manager ‘Gf’: I really need to ask a question. Can [training manager ‘K’] help us out, as we have got no budget for that? If we go away and sleep over, the budget comes off something else that we really need. Has [training manager ‘K’] got some budget for an area? We’ll host a field day and then we’ll go away for a few nights [on a reciprocal field trip to another area] ...but can [training manager ‘K’] at least, support the cost thing?

Forestry area manager ‘Rf’: We just don’t have a penny.

Environmental manager ‘C’: I doubt it, but I will take it up with her. I’ll take it up with management, let me put it that way.

Forestry area manager ‘Gf’: It will be nice. I mean if we could have this two times a year, and a budget to go away and visit other areas.

Environmental manager ‘C’: It should not be a constraint, in my opinion, there’s too much value commercially, not even from the environmental sense, that you obtain. (PrW3P28&29)

From the evidence provided in this section, it becomes apparent that the changed discourse emerging from the language of staff is that they are beginning to see the importance of structuring staff learning in different, more sophisticated, and diversified ways, than they had previously done. These learning interventions range from the formal to the informal, and from short term to long term interventions.

7.13 Change in discourse – agentive talk for future actions and changed practices

During the phase 1 interviews, many of the tensions revealed a sense of frustration by the foresters, environmental specialists and CEFs about what was inhibiting improved wetland management in Mondi (section 5.3). They offered a collection of problems and tensions, with some simple solutions (section 5.5) to overcome them, but the participants lacked any intent to follow through with the solutions on their own. However, since the expansive learning process started, the discourse has changed, from merely offering simple solutions to developing more sophisticated
solutions (section 6.2) and most importantly, with an intent to act on them. This intention to act on ideas and plans, has been termed agentive talk, in which the language used conveys an intention to act in a specific way, even though the action has not yet taken place (Sannino, 2008).

This first shift in discourse emerged during phase 2 of the research, when participants collaboratively developed their own solutions to deal with the two main contradictions, but this time their discussions were infused with the added intention to act on them (sections 5.6; 5.7; 5.8). They ensured that each participant was included in a project, each project had a team leader whose responsibility was to lead on implementation, and they agreed to meet within six months to review project implementation progress, providing evidence of this intention to act on their solutions (section 5.7). In most instances this agentive talk was transformed into the implementation of projects, whose progress was documented earlier in this chapter during the phase 3 area wide progress review workshops. In other instances also documented earlier in this chapter, where staff had not been able to fully implement their project, they reiterated their intention to carry it out, reinforcing the discourse on intended agency, such as in section 7.5. However, during the reporting back on project progress at these workshops, new additional agentive talk emerged about what future actions and changed practices the staff wanted to undertake after phase 3 of the research. In some cases, the agentive talk built on the previous actions and practices the staff had already undertaken; in others, new innovative alternative ideas were developed which they wanted to try out. This change from phase 1 to after phase 3, indicates the growing discourse of intended agency as the expansive learning cycle progresses, which appears to be increasingly transformed into changed actions and practices. Interestingly, many of the actions arising from this new agentive talk that emerged during the progress review workshops, have since been achieved. However it is important to note that although these actions have been completed after the expansive social learning interventions of phases 1 to 3, there is a good probability that the process contributed to them. Some examples follow of this new agentive talk arising out of the phase 3 area wide progress review workshops.
7.13.1 Future actions arising from the Mondi-Shanduka area progress review workshop

**Integration of environmental training into staff career development plans:** The environmental manager said that he intended to make sure that environmental training was integrated into the formal staff career development plans, and for staff to have completed this training as a prerequisite for promotion (section 7.3). He stressed that even though this did not currently happen, the inclusion of environmental training in the staff environmental training matrix (section 7.3) is the first step towards this, that was not there before (Environmental manager, CMsW3P18).

7.13.2 Future actions arising from the Greytown area progress review workshop

**Developing an environmental module in the supervisor contractor training programme:** In summing up the way forward after the Greytown area progress review workshop, the training manager explained that she was going develop an environmental module in the supervisor contractor training programme (as already reported on in section 7.3). This was later developed during 2012 after the five area wide progress review workshops were held in February 2011 (section 7.3).

**Intention to discuss burning and erosion effects of forestry practices at next inter-area fieldtrip:** An area manager said he would make sure that the burning and erosion effects of the current forestry practices would be discussed at the next inter-area fieldtrip he organises. This occurred after the MWP explained that a key issue arising from a recently completed State of Mondi Wetlands Health Report was that one of the Greytown wetlands had significant sediment washing into it. The soil came from a large area that had recently been clear felled of timber leaving the soil with no protection, and was exacerbated by a poorly maintained road system (MWP, DwGW3P14). On reflection, the forestry area manager responsible for the area then said that perhaps this was an issue that they could discuss at the next inter-area fieldtrip being organised on the effects of commercial burning on erosion and other issues. He mentioned that it may be possible to change their practices and only clear-fell smaller timber compartments, resulting in less erosion, but that
this might have economic implications. However it was definitely an issue he would like to raise for discussion at the next fieldtrip (Forestry area manager, MGW3P15).

### 7.13.3 Future actions arising from the Zululand area progress review workshop

Three workshops on wetland learning and management planned to take place in the future: At the end of the Zululand area progress review workshop, the environmental manager summarised the three action points that participants had come up with during the workshop. These were conducting a workshop with CEFs on how to use the wetland education resource call; a workshop to decide on wetland burning sustainability practices in Mondi (section 7.7.2); and a workshop to discuss and find solutions to the burning and grazing of Langepan wetland:

To summarise the action items that I've noted which we need to carry on with: one would be the WOW wetland awareness poster and [better understanding] how that works, and do a little session with the guys [on how it works]. The other key one is burning ... how we are going to apply burning in the different situations on the coast,. We need to come in and provide you guys with assistance, tools, and thoughts, and say ‘OK here are the management prescriptions that we've come up with together’, so that is key. And then the third one being generally about Langepan wetland. It is a stewardship site, where burning applies, but there is the whole project around Langepan [community grazing issues]. So that to me is how this is going forward, and I think those actions should lead into growing more. (Environmental manager, CZW3P26)

Of these three planned actions, two of them were later completed, but not as part of the expansive learning process. They were completed after the last expansive learning intervention and as a direct result. Three workshops were subsequently run for all the CEFs in all five area offices, on how to use the WOW wetland education material (M. Hiestermann, personal communication, August 17, 2012). The environmental staff and external wetland specialists went on to run the workshop on burning in March 2011, of their own accord (section 7.7.2).

### 7.13.4 Future actions arising from the Piet Retief area progress review workshop

Three actions emerged during the Piet Retief area progress review workshop: At the end of the Piet Retief workshop the environmental manager summarised the following actions that had arisen
during the workshop, which he pledged to follow up with participants (Environmental manager, CPrW3P7&31). The first action revolved around having a workshop with the staff to discuss the recently developed guidelines for burning wetlands in forestry areas, that was mentioned in sections 7.7.2 and 7.13.3. The second action was to expand the recently completed state of the wetland report to include the assessment of more wetlands in the Piet Retief/Iswepe area that are most likely in good condition. This would allow managers to prioritise for which wetlands they needed to improve their management practices and allocate resources. This action was completed during 2012 (D. Walters, personal communication, April 24, 2012), also not as part of the expansive learning process but as a direct result of it. The third action was for the environmental manager to speak to management about funding inter–area field days, and overnight accommodation. It is not known whether this action was completed.

7.13.5 Future actions arising from the Paulpietersberg area progress review workshop

Three actions emerged during the Paulpietersberg area progress review workshop: The environmental manager summed up three actions arising out of the discussions at the Paulpietersberg workshop as: developing a management plan for Lenjane and Misty Valley wetlands; expanding the Mondi State of Wetlands assessment to new wetlands in the Paulpietersberg area; and an environmental specialist attending future area office management meetings:

Just in summing up some of the actions I noted ... a management plan for Lenjane. There is a management plan which I have available, which was the original one. But on top of that, I think one of the things we need to look at is what’s happening at [wetlands] in the Misty Valley area. Especially in terms of that erosion area [above one of the wetland in Misty Valley area], and whether we know how to manage it or whether need some specialist [to help us] ... another action point is to expand the state of the wetland assessment [report] to cover across both areas [Lenjane and Misty Valley areas]. It won’t be at the same level of detail [as the previous state of wetlands assessment report] because we will be targeting to identify those wetlands that haven’t been ploughed or disturbed ... and then the other action was around increasing the presence of an environmental specialist at your management meetings once a month. (Environmental manager, CPpW3P21)
Of these three planned actions, only the last one has been achieved to date, but the others may still be completed (C. Burchmore, personal communication, March 18, 2012).

What becomes clear from these examples of planned actions that emerged from the five progress review workshops, is that there is a definite strengthening of the discourse on intended agency occurring between Mondi staff at these workshops, compared to the discussions held at the beginning of the expansive learning process. The discourse on intended agency has therefore strengthened from phase 1, to phase 2, and onto phase 3. Most encouragingly, all of the planned actions that emerged during the progress review workshops, were catalysed by the Mondi staff of their own accord, without my intervention, and many have subsequently been implemented by the staff. This indicates the strength of the discourse on intended agency in phase 3, in that much of the talk was transformed into actions, without requiring the direct support of the expansive learning workshops.

### 7.14 Change in knowledge, values, and thinking

The fifth type of change to be identified was the change in knowledge, values and thinking. This was revealed when broadly analysing the language participants used when they provided feedback during the area wide progress review workshops and the reflective interviews. These changes were categorised as: a) changes in the knowledge participants had generated on the technical understanding of wetlands and their management, as well as the new knowledge required to communicate more interactively and collaboratively with each other when managing wetlands; b) changes in how the research participants valued their diverse roles in wetland management practices, and how important collaboration with each other was if wetland management is to improve; and lastly c) changes in participants’ thinking about how they learnt, how they interacted and worked with colleagues, and how they practised wetland management. The first of these, a change in knowledge will be discussed in the sub-section section below.

#### 7.14.1 Changes in knowledge

A definite change can be seen in the new knowledge that the participants had generated during the expansive learning process, which has enabled them to change their practice and how they
approach their work. This can be seen as the new technical knowledge they learnt about wetlands and their management, the evidence of which can be found in the sections reporting on collaborative wetland projects (section 7.5 & 7.6) and burning of wetlands (section 7.7). The changes in knowledge can also be seen as learning new ways of how to communicate more interactively and collaboratively with colleagues who work in different professions and job descriptions (section 7.4), as well as the changes in new staff learning to become more independent through the new induction process (section 7.8). All this evidence emerged during the phase 3 area wide progress review workshops, and will not be repeated due to it having been recorded in these previous sections.

During the phase 4 reflective interviews, the change in wetland technical knowledge was particularly explicit for the CEFs who had expressed the greatest need to learn more about the technicalities of wetlands and their management in phase 1 and 2 of the research (sections 5.3.1 & 5.3.4). Following are some examples that highlight this.

The first example emerged from a discussion when I asked a CEF from the Mondi-Shanduka area which part of the expansive learning process he had found most interesting. He replied that since the expansive learning process began he had learnt more about wetlands and could now identify wetland problems, causes, and how to fix them:

It was an eye opener to realise that we as MSN [Mondi-Shanduka] had some problems in our wetlands that needed to be sorted out [previously they thought their wetlands were well managed]. So we identified what was causing the problems, and we also identified what needed to be done to fix these problems, such as the resources that would be needed ... on my side I did my best to make the community realise that their [agriculture] practices were not good for wetlands, or even to identify their practices that were degrading the wetlands. Yes I'd say that I learnt a lot from this [expansive learning] engagement, or coming together [with other Mondi staff]. I am sure that the learning which I got from those [interventionist workshops] I did pass to the neighbouring communities ... [I am now able to] identify things that are wrong or done wrongly to the wetland, and also to differentiate between a healthy wetland and also a sick or the badly managed wetland. (CEF, VRIP1&4)

Another CEF, but from the Zululand area, also believed that his understanding of wetlands and their management had improved during the expansive learning process. He had begun to develop a basic understanding of wetland hydrology: if the hydrological flow of the wetland was altered by
unsustainable agricultural practices, then the wetland would dry out and die. This example is described in his own words:

I think what really happened, is it [expansive learning process] added to my understanding and information about the importance of wetlands, as well as for the management of wetlands ... at Mandlazini they [the community] wanted a vegetable garden, but on a wetland. Why on a wetland? The reason was because the water it’s already there [good for gardening], but they forget that if they make a vegetable garden on that wetland, the wetland is going to vanish. It will cause them to dig furrows to drain water out of the wetland, because otherwise the vegetables will not grow there [because it is too wet], and the wetland will vanish [dry out and be destroyed]. So I work with them to show them this is not allowed, is not a good thing to do [for the wetland]. (CEF, ZRIP1)

Some of this new wetland knowledge the CEF would have learnt from working closer together with the environmental specialist. However some would also have been gained from learning how to use the wetland education resource Windows on our World: Wetlands (WOW), during the training workshops in which the CEFs learned how to use the resource (section 7.13.3). The CEF has not only learnt more about wetlands himself, but also now uses this newfound wetland knowledge, together with WOW, to support community members to also learn more about wetlands. Previously, CEFs were not in a position to work with the community members on wetland issues, because they said they did not have sufficient knowledge about wetlands, nor wetland education resources (section 5.3.1). During the initial interview with this particular CEF in phase 1, he mentioned that there weren’t enough education materials that could support the wetlands learning for himself as well as the communities (CEF, RIP4). When he was asked during the reflexive interview, if that had changed, he replied that he was now extensively using WOW in his work with communities:

Windows of the World [wetlands] ... yes, that’s a great education resource, yes. That’s what I have been using for quite some time, especially when I am trying to show some people [the communities about wetlands]. Yes ... those materials added a lot. Yes quite a lot ... that chart [a poster - part of the resource] has got some different examples showing people what can be wrong with wetlands [poor practices] and why that particular wetland is degraded. There are also [examples of poor practice on the poster] are up there. For example where there are some plantations next to the wetland that extend right down into the water, showing it is degraded. So that helps me a lot. (CEF, ZRIP1&2)
As additional evidence of how the CEFs’ wetland knowledge had changed, during a reflective interview with a CEF manager in the Piet Retief area, she highlighted how she had noticed how one of her CEFs had improved his understanding about wetlands compared to what he previously knew:

I’ve noticed that especially when we were being audited a few weeks ago, the [external forestry stewardship] auditor took the Iswepe CEF with, we went to one of the villages. Some of the issues they discussed related to wetlands. Was it in Zoar [wetland] or was it in Driepan [wetland] ... but yes you could see [from the discussion] he understands now what’s happening [with wetlands]. (CEF, NRIP4)

The last example is from a forester in the Greytown area, who explained how his learning related to improving wetland practice had improved:

Sometimes we have to burn a [plantation forestry] compartment ... we must therefore know that whatever impact that we are doing there, and whatever action that we are doing there, will have an impact on [the environment] in the long run. For example, if there's going to be erosion from these areas, it’s a conservation priority to make sure that the soil doesn’t get washed into the floodplain and into the wetland. This forms a part of my bigger [picture of] knowledge that I have learned .... it is important to realise that for every action there's an opposite reaction to that ... and that impact is going to be negative. We need to think about what is it that you want, and what can we do about it? And even if the action is going to be positive, what it is that positive reaction, and what can we do to enhance the positive thing? (Forester, StRIP2&3)

The forester went on to explain how the interventionist workshops had supported him to develop this knowledge.

The Homeleigh [phase 1 and 2 interventionist] workshops played a very big role in terms of the support I had ... in the past we only looked at what we were doing ourselves, and we didn’t learn about what the other people were doing on the other side of the fence ... so there’s a whole lot of learning that I've been through, or maybe some kind of light that I didn't have when I was going to the [interventionist] workshops. But that after the workshops I personally grew, and realised how I could improve my own learning, and how I could improve they way I am practising things. So there was a lot of good things I got out of that ... yes I have actually learnt to learn better, and I have also learnt to actually make sure that the skill making is not really about looking at one thing, you have to look at all the things holistically and see the result after that, and monitor the results. So there's a lot of things that we have come up with from the [interventionist] workshops. (Forester, StRIP2&3)
7.14.2 Changes in values

As the expansive learning cycle has progressed, a change has emerged in how the research participants valued their diverse roles in wetland management practices, and how important collaboration with each other was, if wetland management is to improve. The CEFs and foresters and environmental specialists now place a higher value on the involvement of each other in their wetland work, whereas during the phase 1 interviews, this value in most cases had not been realised. This became quite apparent during the phase 3 progress review report backs, when participants discussed the new ways they had developed for communicating environmental policies/procedures and specialist reports; how they had worked together on collaborative projects; how they now made collective decisions on burning and wetland management practices; and how the interaction and decision making between staff had become more collaborative. To reduce repetition, the evidence for this change in valuing each other’s roles can be found in the sections 7.4, 7.5, 7.6, 7.7 and 7.9 of this chapter.

Additional new evidence for this change, also emerged during the phase 4 reflective interviews. On deeper reflection, an environmental specialist found that she had learnt to understand the perspectives of others first, and fit into them, rather than presupposing what she thought their perspectives were and acting on those assumptions. She therefore had learnt to value the views of her colleagues, rather than forcing her own views on them:

I think it was interesting to see from the forester and CEF’s perspective what I thought they need from you and what they actually need from you. It is very different from what I expected to hear ... it was interesting to see the perspectives from everybody, and then see how I should fit my responsibility into that. I think I have a very different idea of what and how I fit into that, and how I should engage with the forester and the CEF. In the past I think I didn’t allow for a lot of learning. It was more telling [people what to do], which is not helpful. Clearly, yes. (Enviro, LRIP1)

Later in the interview she went on to add that she believed that foresters and CEFs better understand her environmental role, and therefore place a higher value on her involvement, which has resulted in increased collaboration:

I think they [foresters and CEFs] are a little bit more open to approaching me and discussing certain things. They now actually make me aware of everything. Before they saw the environment as ‘you know we will rather say no [to an request on an environmental issue], or
delay the situations’. Where now they are more open to ‘OK, well we [environmental specialists] are trying to work with them, we not trying to stop the [environmental impact] process’. I think they also understanding more of what we do, because I think previously they didn’t really understand what the Environmental Department does, where I as the environmental specialist am supposed to support them, and what do I physically get involved with. I don’t think they had a very clear understanding on where we fit into the picture ... judging by the fact that they are now coming to me and I’m not so much in the dark as I was before with what activities were happening on plantations, I’m assuming they are much more aware of where I fit in. (Enviro, LRIP4)

As the wetland and environmental knowledge of the participants began to grow, they began to better understand what wetlands were and their importance. This in turn enabled them to place higher value on wetlands and the environment in general. In the following example, a CEF explained how the expansive learning process had helped him to understand more about wetlands and change his attitude towards wetlands, allowing him to value them more:

It [the expansive learning process] has changed my attitude, and then I was to be able to also support a change in attitudes of some others, especially with the communities, so that they can respect or they can manage wetlands in a better way ... it has changed my attitude because now I can understand what the importance of wetlands is, especially to get water [the streamflow regulation ecosystem service function of wetlands]. Therefore if the wetland gets damaged, we will have a scarcity of water. (CEF, ZRIP4)

7.14.3 Changes in thinking

The changes in knowledge learnt by participants, as well as the changes in their values, both supported a change in how the participants thought about how they learnt, how they interacted and worked with colleagues, and how they practised wetland management. Evidence of this change in thinking can be found implicitly in the data presented in most sections of this chapter, but especially in section 7.3 documenting the changes in developing the training matrix and the contractor training programme; section 7.4, which documented the changed practice of environmental specialists communicating new environmental procedures and policies, and new consultant environmental specialist reports to the forestry operations staff; sections 7.5, 7.6 and 7.7, which documented changes in practices in the collaborative wetland projects and the burning of wetlands; section 7.8 on the development of confident and independent new staff; and section 7.9 on changes in the way staff approached their jobs increasing their interaction and collaborative decision making. For the sake of not repeating evidence that has already been presented, only
references to the appropriate sections have been provided. However, during the phase 4 reflective interviews, this change in thinking was expressed quite explicitly by some of the participants, as the following discussions highlight.

In the first example, although this is a long quote, a forester went on to explain graphically how the expansive learning workshops supported his change in thinking, about how he learns about wetlands, how he works with colleagues, and how he now realises that wetland management also fits into his job as a forester. He has been quite clear in describing this, compared to his prior thinking:

Yes, I am working differently at a personal level, because I've been on those [expansive learning] workshops and there was a lot of things that were discussed there, that I was not personally used to. It was new to me, but I am getting used to it now. I had a light that switched on in my mind, that this is the way forward, and this is what we should be doing every time when we have got a problem. Sometimes the solution can come from the other staff out there ... personally it has changed my way of thinking and my way of communicating with the other guys from the other side [Land and Environment Departments], or from the other silos. But ... communication it is not a one-way thing, and if you do the other [person] will not respond. But from my side we are trying very hard, and we are communicating a lot with the guys on the other side to make sure that we break the silos. We make sure that there is some kind of proper communication, so that we can all talk one language and discuss things and maybe work as a team with a common goal. (Forester, StRIP2&3)

The forester then went on to point out that he now realised that wetland management required a multi-disciplinary team approach, not one that can be done by a forester alone.

Initially I wasn't aware that wetlands forms part of the bigger picture and it needed team work, not an individual approach [to manage them]. My previous understanding was that it was an environmental issue for the environmental people to manage. And I am only on the forest side, I am only growing trees. But that workshop has actually made me to think outside of the box, that I am not only managing trees, I'm only also managing environmental aspects ... it has changed my way of thinking and my way of doing things, so I can see from the outside not looking only at what I was actually doing such as planting trees. You can also plant trees but not at the expense of the environment. (Forester, StRIP2&3)

In another reflective interview, an environmental specialist also spoke about how she now thought differently about how she learns, since the expansive learning process began, and she now realises the importance of strengthening informal learning for developing her capacity:
I think about things a bit differently now and approach things differently. The other day I was thinking about one of the very first meetings we had ... and one thing you said was about how we learn once we’ve left university. How we learnt from each other, and a lot of that is in chatting, talking, meeting different people, going to conferences and you just learn. That struck a chord with me. I immediately thought yes, after university we’d been to a few [formal] courses and the wetland delineation and all of that, but a lot of what I have picked up has mostly come from listening to and interacting with other people more experienced than me. ... and I realised that that's basically where a lot of where my learning has come from. (Enviro, JRIP1)

In a third example, a forestry area manager said the expansive learning process has resulted in staff continually thinking about changing their practices, and it gave staff the motivation and momentum to implement the change orientated projects as well as increase their wetland knowledge:

I think what happened after we started the process [expansive learning process], is that everything we implemented has always been in our minds. It has always been there as something we felt we needed to do, and felt that we wanted to do in one way or another. Through the process, and soon after the process, I think it was quite motivational for a lot of us. A lot of us implemented what we discussed during the process, and I think it gave a little bit of momentum. It gave us a bit of a push, and we picked up some momentum ... in terms of the toolbox and in terms of knowledge about wetlands and field days, I think there has been an incremental improvement. Huge improvements. (Forestry area manager, MRIP1)

Later on in the reflective interview, the same forestry area manager highlighted the change that had occurred in the Training Department’s attitude and thinking towards staff development, as well as the reaction to this by staff:

I've also noticed from our training department's behaviour, and from an operational behaviour, that there's been a mind shift in the attitude toward staff development. There's been a definite [change], there's a lot of things that have happened. There's a training committee that's been established, [training manager ‘K’] has become a lot more structured and a lot better in her approach, and there's a lot more interaction and support from staff. So that's had a massive [impact], yes. (Forestry area manager, MRIP4)

Another explicit change in thinking was expressed by the environmental manager, who described how the expansive leaning process had broadened his perspective enabling him to better understand the mindset of others, and how best to use this to be able to work better with them:

It’s definitely given me a broader perspective on how we go about working on issues. In that it’s not just from a technical perspective but getting to the same level as other people. It’s made me realise more and more that everyone has a different mind set. They have different
terms of reference in their minds ... so this really opened my mind to realise that everyone sees things differently. You need to think through how you interact with those people, to be on the same level, so that you talk the same language. So I think that’s been a big eye opener. (Enviro manager, CRIP1)

The environmental manager went on to emphasise the importance of having patience when working with colleagues: It’s not about ticking boxes to say the work has been done, but meaningful change needs to take place.

The other thing I have also realised is you have to have patience, as all this takes time and it’s difficult because everyone’s chasing different things constantly. So the emphasis of coming back to follow up on something, see how’s it going, that is I think a challenge that many of us still have not got to grips with ... what it’s done for me, is it’s made me realise that you can’t implement a wetland management strategy or whatever, and tick that box saying we’ve done that. Because technically you’ve done it, but it hasn’t changed people’s mind sets and behaviour. (Enviro manager, CRIP1)

Further in the reflective interview, when the environmental manager was asked if he interacted differently with people since the expansive learning process had started, he replied that it had definitely enabled him to think carefully about how he should interact with work colleagues, which he was now using to change his practice:

No absolutely, I think if I look at ... ourselves and people that were part of this [expansive learning] process, what I find is you actually allow more time when you interact with people. And I find myself almost doing a stop and check before I wrap up a discussion or an interaction with someone. And it’s important that you remind yourself to just think about, ‘do they actually realise or understand what this has been about?’ (Enviro manager, CRIP1)

7.15 Summary of the organisational and professional learning changes that have taken place during the expansive social learning process

As stated in section 3.5.5, expansive social learning would be recognised in this study by six criteria. Table 7.1 lists these criteria and describes the key changes that took place, demonstrating the expansive social learning that had occurred during the research project. The table summarises the progression of learning against the criteria by what was evident at the end of the study compared to what was evident at the start of the study. Due to the extensive scale of the data sets and evidence presented in chapters 5, 6 and 7, it has not been possible to reproduce detailed examples of the changes that emerged, hence only the broader key changes are included here, with details
thereof referenced across these chapters, all of which are emergent from the original data sets as explained earlier. It is important to note that improved ‘understanding’ was qualified in section 3.5.5, as a deeper understanding, a broader understanding, an expanded understanding, and an increased sophistication of understandings the issues participants were dealing with.

Table 7.1 Summary of the organisational and professional learning changes that have taken place during the expansive social learning process

<table>
<thead>
<tr>
<th>Learning criteria (section 3.5.5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Participants are able to deeply interrogate the sense, meaning and their understanding of the context in which they work, and through this questioning begin to co-construct a broader context collectively with the other participants (Engeström, 2001).</td>
</tr>
<tr>
<td>2. Participants are able to develop an understanding of the historically changing character of the work done in their organisation. (Virkkunen and Kuuttti; Daniels, et al., 2007).</td>
</tr>
<tr>
<td>3. Participants develop a broader orientation, perception and understanding of the activity than that which was initially conceptualised, and additional possibilities are developed that had previously not been thought about (Engestrom, 2001).</td>
</tr>
<tr>
<td>4. Participants are able to develop new knowledge and create new collective work practices (Daniels, et al., 2007), including practices of thinking and discourse (Engeström and Kerosuo, 2007).</td>
</tr>
<tr>
<td>5. Participants are able to co-construct new professional practices that cross traditional professional ‘tribal’ boundaries (Warmington, et al., 2007).</td>
</tr>
<tr>
<td>6. Participants are able to collectively look at problems in new ways, and developing new tools to work with these problems, empowering the subjects to transform the activity system and collectively expand the object of the activity (Daniels, 2008).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changes at end of research (with supporting evidence referenced)</th>
<th>Status quo at beginning of research (with supporting evidence referenced)</th>
<th>Learning criteria satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants improved knowledge and understanding of technical aspects of wetlands and their management (7.14.1).</td>
<td>Participants, particularly CEF’s, had little understanding of the technicalities of wetlands and their management (sections 5.3.1 &amp; 5.3.4).</td>
<td>3, 4</td>
</tr>
<tr>
<td>Participants placed a higher value on the diverse roles of the different professional disciplines required for wetland management, and the importance of their collaboration (sections 5.3.1c &amp; 7.14.2).</td>
<td>Participants across the different professional disciplines (foresters, CEF’s and environmental specialists) did not value each others roles in wetland management (section 5.3.5).</td>
<td>1, 2, 3</td>
</tr>
</tbody>
</table>

317
<table>
<thead>
<tr>
<th>Change in discourse</th>
<th>Description</th>
<th>Relevant Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant thoughts</td>
<td>Participants changed the way they thought about: how they learnt about wetlands; how they worked and interacted with colleagues; how they understood their colleagues; and how they realised wetland management was important to their specific job descriptions (sections 5.3.1c &amp; 7.14.3).</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Intended agency</td>
<td>A change in discourse on intended agency was identified, signalled by an increased intent to implement more sophisticated solutions developed collaboratively by the participants (section 7.13).</td>
<td>4, 5, 6</td>
</tr>
<tr>
<td>Converse</td>
<td>A changed discourse in participant conversations on how wetland and environmental learning now took place, becoming more structured, longer term, and beginning to be institutionalised in Mondi (section 7.12).</td>
<td>4</td>
</tr>
<tr>
<td>Discourse</td>
<td>A changed discourse in conversations that was more collaborative, interactive and inclusive of each professional discipline (section 7.11).</td>
<td>4, 5</td>
</tr>
<tr>
<td>Meaningful learning</td>
<td>A changed discourse in conversations of what meaningful learning processes were, and which processes were important for scaffolding a change in wetland and broader environmental practices (section 7.10).</td>
<td>4, 5</td>
</tr>
<tr>
<td>Interaction</td>
<td>Participant interaction between professional disciplines became more collaborative, personal, empathic of the other, and orientated to learning from each other (sections 7.8 &amp; 7.9).</td>
<td>4, 5, 6</td>
</tr>
<tr>
<td>Practice</td>
<td>Change in practice of how participants discuss/plan/implement wetland burning with staff across professional disciplines (section 7.7).</td>
<td>4, 5, 6</td>
</tr>
<tr>
<td>Wetland management</td>
<td>A strong discourse of weak environmental learning that was unstructured, occurred on an ad hoc basis when the need arose, and was limited to isolated short term courses (section 5.3.1).</td>
<td>4</td>
</tr>
<tr>
<td>Learning</td>
<td>The discourse of learning was devoid of any understanding of learning processes, and narrowly confined to the problems of staff lacking wetland knowledge, information not being in a usable form, and staff not having the time to learn (section 5.3.1a, b).</td>
<td>4, 5</td>
</tr>
<tr>
<td>Staff interaction</td>
<td>Weak staff interaction and collaborative decision making between professional disciplines on wetland and environmental management (sections 5.3.3 &amp; 5.3.5).</td>
<td>4, 5, 6</td>
</tr>
<tr>
<td>Wetland burning</td>
<td>The poorly managed burning of wetlands was seen to be a key issue of wetland health due to foresters making unilateral decisions (sections 5.3.4a &amp; 5.3.6a).</td>
<td>4, 5, 6</td>
</tr>
</tbody>
</table>
Change in the practice of how the cattle of neighbouring communities graze wetlands on Mondi landholdings (section 7.6).

Cattle grazing was identified as one of the most significant threats to the health of Mondi’s wetlands (section 5.3.6a).

Change in the practice of developing wetland plans together across professional disciplines (section 7.5).

Staff across the different professional disciplines rarely planned and worked together on wetland management issues (section 3.5.3a).

Change in the practice of communicating new environmental procedures and policies, and specialist report backs (section 7.4).

Staff work in silos of their professional disciplines, inhibiting collaborative and integrative communications on wetland management (section 5.3.5).

Development of environmental training matrix listing training options begins to institutionalise staff environmental learning, and contractor environmental training developed and implemented (section 7.3).

No formally recognised informal and formal learning plan or structure and learning materials in place to strengthen environmental learning in Mondi (section 5.3.1).

Development of innovative induction structure and processes begins to institutionalise environmental learning for new staff (section 7.2).

No induction process for new staff existed resulting in a loss of institutional and environmental knowledge through a lack of handover from old timers (section 5.3.3).

7.16 The transition from tacit catalytic changes to explicit actual changes

In this chapter, clear evidence has been provided demonstrating the five different types of changes that have emerged from the phase 3 and 4 data: 1) changes in structure, 2) changes in practice, 3) changes in approach, 4) changes in discourse, and 5) changes in knowledge, values, and thinking. What is notable, is that these five types of changes range on a visibility scale, from the changes in structure and practice being quite explicit on the one hand, to the changes in discourse, knowledge, values and thinking being quite tacit on the other hand. The changes in approach settle in the middle of the visibility scale between being explicit and tacit.

This is an important finding, as most often the explicit changes tend to be noticed and recorded, since they are actual changes that have taken place and are easy to measure and see. However those changes that are tacit, are often ignored or go unnoticed. However it is these tacit changes that take place internally within the minds of people and in the relations amongst them, that are
crucial for developing their agency. Tacit changes therefore are emerging changes that appear to be a prerequisite for enabling the explicit changes. In this research, the changes in structures and practice did not take place in isolation of these other tacit changes; they took place as a result of the changes in knowledge, values, thinking, discourse, and approach in how the staff worked.
Figure 7.1  Five types of changes on a visibility scale, ranging from those being tacit and catalytic to those being explicit and actual

**KNOWLEDGE, VALUES & THINKING CHANGE**
- Knowledge
- Values
- Thinking

**APPROACH CHANGE**
- Confident and independent new staff
- Staff interaction and decision making more collaborative

**STRUCTURE CHANGE**
- Induction system
- Environmental training matrix

**DISCOURSE CHANGE**
- Consciousness of understanding learning processes
- More collaborative and interactive
- How learning is structured
- Agentive talk for future actions and changed practice

**TACIT/CATALYTIC CHANGES**

**EXPLICIT/ACTUAL CHANGES**

**PRACTICE CHANGE**
- Reporting communication
- Developing plans together
- Cattle grazing
- Wetland burning
Importantly, tacit changes also have the potential to catalyse further changed practices and structures in the future. They can therefore be termed catalytic changes, as they have the potential for catalysing future change. Environmental education is characteristically a catalytic activity, since it develops the agency of people to act on environmental issues, with most of these actions only taking place in the future. As this newfound agency is acted upon, these tacit changes have the potential to bring about change in the way people practise in the future. Therefore tacit changes are very important indicators for determining the potential changes that might happen in the future. This means that success of the expansive learning process in dealing with the contradictions, cannot only be judged by the more explicit changes that have been documented such as changes in structures and practices, but also by the potential future change that the tacit changes may catalyse. These may ultimately be of greater consequence than the initial explicit changes that took place, although the explicit changes may also go on to catalyse additional future changes themselves. Lotz-Sisitka and Hlengwa (2011) also found that the notion of catalytic change and potential future actions was important when monitoring the effectiveness of environmental education training programmes, when they linked catalytic change to how the evidence of current change would most probably be expanded in the future. This they highlight “is useful for ongoing monitoring; and for understanding the longer term impact and change that is associated with education and training interventions” (p.17).

7.17 Has expansive learning been able to deal with the contradictions?

7.17.1 Progress in dealing with the contradictions

Important progress has been made during the expansive learning process to deal with the two prioritised contradictions. This has especially been the case with contradiction #1, on the need to strengthen staff environmental learning through developing informal and formal learning structures, plans, and learning materials. This chapter has provided rich evidence of this, and during the reflective interviews of phase 4 of the research, quite a few of the participants explicitly noted this. For example, an environmental specialist explained that progress on overcoming the contradiction on learning structures had been good: “it has worked for the learning organisation thing. I think Mondi’s come a long way, and [training manager ‘K’] has been instrumental with that
and [enviro manager ‘C’] and the way we do things, the way we discuss things with people” (Enviro, JRIP3). In another example, a forestry area manager thought that one of the biggest changes the expansive learning process had catalysed, was the development of one of the best induction programmes in the industry:

Even though the induction programme was highlighted as a problem and we all knew it in the back of our minds before you started this [expansive learning] process, the induction programme has made a massive [change]. It’s one of the biggest leaps we’ve made. I think what you did, and the people that you involved in the [expansive learning] process that you had, it was a catalyst for them to jump over the wall to get to that next level. And I think we’ve currently got an induction programme that I can’t see any other company rivalling. It is really practical. (Forestry area manager, MRIP4)

Important progress has also been made on contradiction #2, increasing the permeability between the CEF, forester, and environmental specialist professional silos, as supported by the evidence in this chapter. However, evidence from the reflective interviews clearly shows that a lot more work needs to be done before staff are working in an integrated way. For example, both the environmental specialists believed more work needed to be done to bridge the silos, despite progress that had been made (Enviro specialist, JRIP3&7; Enviro specialist, LRIP2). A forester explained that staff were beginning to work across job description boundaries, but that the silos were still present due to lack of a common goal to work towards because recent company restructuring had ensured that staff from the different departments reported to different managers without a common goal between them:

So far we [foresters, CEFs, and environmental specialists] have been working together on some other cases like the cattle, and other things like the fire awareness. I think that works very well for us, and it’s also another step forward. But as I said it is an ongoing thing ... we still need to work towards a common goal because there is still a lot of things to do ... but I think we heading towards the right direction ... the fact that we have been restructured in that we are not reporting to one person, like the area manager ... but rather to the Land, the Forestry, and the Environment [Departments] and not reporting to one person from area level. That’s what the challenges is from what I can see. (Forester, StRIP1)

In another reflective interview, a forestry area manager also highlighted that the silos between the different professions had not yet been bridged. He explained that a recently completed international Forestry Stewardship Council (FSC) environmental audit had also identified silos
between the Land Department (CEFs) and the Operations Department (foresters) as a barrier to improving sustainability practice:

The FSC audit has highlighted it glaringly, this whole silo issue. Unfortunately we [through the expansive learning process] haven't broken that yet. And what the FSC have actually picked up on if you read their recent report, is that ... there's this silo that exists between our social function and our environmental function and the operational function. There is no antagonism but they've just been operating past each other. And unfortunately, the [expansive learning] process didn't really break that. It highlighted it, and we've consciously had it in our mind that we need to do something about it, but it hasn't broken it. (Forestry area manager, MRIP1)

7.17.2 Why the silos are such a hard nut to crack

Participants provided many reasons for why they thought the silos had not been sufficiently bridged, or become sufficiently permeable by the end of this study's particular expansive learning cycle (see section 4.2.2 explaining that a large expansive learning cycle with significant social change, is made up of many smaller ones). During the reflective interviews a CEF identified that although they had made a good start, they lacked the leadership on the ground at the CEF, forester, environmental specialist level, to be able to maintain and grow the momentum that had been started through the expansive learning processes (CEF, VRIP1-2; VRIP3-4). A forestry area manager highlighted five additional reasons that inhibited change in overcoming the silos: another recent restructuring (mid 2012) that Mondi went through; the differing cultures and personalities of the individual staff; the lack of available time; the different responsibilities of the land, forestry, and environment departments; and different reporting lines of these departments right up to senior management (Forestry area manager, MRIP1&2). Interestingly, the environmental manager named differing personalities as being a key factor, but also emphasised that forestry area managers still provided insufficient space for dialogue.

I think there are those that are willing to change ... it’s just that that change and how you make that change, takes effort and time. For some people it will happen quickly and for other people you are constantly having to work at it. I don’t know. I think we as managers possibly don’t allow enough space, and encourage enough space to allow that change to happen ... and then the encouragement and everything that it goes along with that, to share the relevant information and interact around certain things. (Enviro manager, CRIP2)

He then went on to include an example of managers not providing the space for change to happen.
How much time do the CEFs get in an area management meeting? How much time, how much encouragement do they get in that meeting? There’s an opportunity to put the things they dealing with on the table to the foresters to cross this barrier thing ... how much of that space and that interaction is there in a formal setting? I am not convinced this is managed appropriately. (Enviro manager, CRIP2)

During the environmental specialist’s reflective interview, she also stated that for the expansive learning process to be effective it needs to involve more influential people such as management, not only the staff who work on the ground, who can create the enabling institutional environment to begin to change things. When discussing why the silos in the Piet Retief Area persisted after the expansive learning process, she explained:

... so I think that’s been part of the problem. There were people involved with the [expansive learning] workshops, but they weren’t influential enough in terms of taking it further ... And I think hindsight is the perfect science. The problem now is that you have got people on the ground who have a good understanding, but they not the ones that are going to make the change. The managers are the ones that can actually alter things and change things, and create the environment. (Enviro, JRIP3)

The involvement of additional forestry area managers in dealing with the silo contradiction is therefore emerging as a crucial factor if this contradiction is to be dealt with sufficiently in the future. This needs to be done so that equilibrium can be maintained where silos provide the structure and order to Mondi’s operations, but they are permeable enough to allow staff to work collaboratively and interactively across their boundaries.

The inclusion of more managers was a factor that I thought carefully about when deciding which participants to invite to be part of the expansive learning process, especially during phases 1 and 2 of the research. At the time the main concern was to prevent a domination of the interventionist workshops by area or more senior management, and rather have a safe environment where operations staff felt they could speak openly and freely. I thought that too many managers might be more outspoken, creating an uneven power balance, disturbing this safe environment. For this reason only one area manager, the training manager, and the environmental manager were included during these two initial phases of the research. As it turned out, only the forestry area manager ended up being dominant in some instances. This did not appear to restrain operations staff from talking, and his involvement provided a broader more strategic view that stimulated deeper discussions. However, it became apparent from his involvement that any additional forestry
area managers could well tip the power balance, impacting on the safe space that was so critical for enabling the dialogue. Therefore having additional managers involved in phase 1 and 2 of the research was a double-edged sword. Include too many, and the safe space for staff dialogue may be reduced; include too few, and the changes that are initiated may not permeate to the key decision makers and be truly institutionalised. This does not mean that managers should be involved; rather it highlights that this is an important factor to be taken into consideration when facilitating interventionist workshops.

7.17.3 Has more progress been made than participants are aware of?
Even though some of the research participants voiced quite strong opinions that the silos had not been dealt with sufficiently, and their impact continues to inhibit improved wetland management, this research has indicated that substantial improvements have been made through the five different types of changes. While acknowledging that the task of bridging silos is very difficult in most organisations, this anomaly could be explained by participants predominantly focusing on the explicit changes that have occurred. They have placed less emphasis, importance, or perhaps not even realised, the impact that the tacit changes are having at present, and more importantly, the potential impact of these changes in the future. Consequently, the reason why these participants are saying the silos are so strong is correct, when judging progress by the evidence of the explicit and actual changes in bridging the silos. However, when one examines the tacit indicators which indicate changes in thinking, values, knowledge, discourse, and approaches, then one can see that change in dealing with the silos is indeed happening, but on a subtle (and perhaps a more powerful) scale that most are not able to see, which also signify the potential changes that these tacit changes may catalyse in the future. As stated earlier in section 7.16, when these potential future changes are realised, far more significant changes could happen over a longer time period, than those explicit changes that have been brought about during the relatively short time period of the expansive learning process, as documented to date.

7.17.4 A need to continue the expansive learning process?
Despite the changes discussed in the sections above, additional time and sustained effort is required to bed down those changes achieved in contradiction #1 on staff learning, to determine if
the changes achieved can be sustained and even expanded further. More importantly, it is clear that additional time is also required with greater support from management, to be able to better deal with contradiction #2, bridging the silos to a level where collaboration between them is maximised and self sustained when working on wetland and environmental management.

Even though the expansive learning process so far has identified the silo contradiction, made good progress with staff to understand its causes, and begun to develop staff agency to begin bridging the silos, it appears that another expansive learning cycle is required to continue and grow what has been catalysed. This is reasonable to expect as the silo contradiction is a significantly difficult one, and it has now become apparent that it has been unrealistic to sufficiently deal with it in one expansive learning cycle. New effort needs to be focused on understanding what additional or new contradictions and discontinuities are preventing the bridging of silos, and new solutions developed to deal with this. This is a view echoed by the forestry area manager, who clearly calls for the expansive learning cycle to continue, with a reflection on what previous actions need to be improved and how this can be done:

I think the process has been a good process. I think a big mistake that a lot of us make, is that now we have run this process, and we have identified what we need to do, we have finished. But that doesn't mean that we've done it. Now we need to continue doing it and the things that we have let drop we need to pick up ... let's just revisit that and see, if we could have done this better and that better, we could then relook at this and reinforce that. (Forestry area manager, MRIP5-6)

The forestry area manager went on to mention the important role that management needs to play in bridging the silos.

I think that could be quite a driving point with senior management, with us saying that we have highlighted the silo issue, but we don't think for various reasons that we have been able to really bridge the silos as well as we should have. So maybe we need to go back and reflect on what we looked at, what we did agree to, and maybe pick up some things that we have let fall by the wayside ... I think senior management needs to play a very big role. They need to identify and accept that we still have these silos. I think they need to use various management techniques to deal with them, one of which is making different managers responsible for the performance targets of other silos. So make the operational people [foresters] responsible for the social situation, and make Land [department] or social people responsible for some of the operational requirements. I think that will break the silos, that will break the situation quite quickly. (Forestry area manager, MRIP5-6)
This PhD research project could be seen as one of the smaller expansive learning cycles, which has ended with additional mundane discontinuities. These discontinuities, as documented in sections 7.17.1 and 7.17.2, now need to be bridged by management to enable the beginning of the next smaller cycle, to ensure the continuity of the expansive learning process and catalysing change as part of the larger expansive learning cycle. This will further the organisational learning and development of Mondi in a progressive never ending cycle of continuous improvement and change, and endless smaller cycles of expansive learning where the end of one cycle becomes the beginning of the next. As explained in section 2.2.4, this also correlates with how Arjen Wals describes sustainability as being a never ending cycle of continuous improvement (Wals, 2007a). Therefore additional work, with management playing an important bridging role between the recently completed and new smaller expansive learning cycles, is required to sustain and grow the
organisational learning and organisational development that has been catalysed so far, if the larger and more significant change in the organisation is to continue.

7.18 Conclusion
With the support provided by the expansive learning cycle, the projects developed in the implementation plan during step three have made significant progress in dealing with the contradictions that were inhibiting improved wetland management. They have catalysed five different types of changes, ranging from the tacit changes in knowledge, values, thinking, discourse, and approach in how the staff worked, to the explicit changes in structures and practice that emerged from them. Since the tacit changes also have the potential to catalyse further changed practices and structures in the future, they were termed catalytic changes. These five types of change have made significant contributions towards strengthening how wetland and environmental learning and practice takes place within and between individuals, collective staff groups, and the structures of the organisation. This has made a significant contribution towards strengthening organisational learning as explained in sections 2.5.4 and 2.5.5, as well as initiating a community of practice as outlined in section 2.6.1. However, further work was identified as still being needed through additional expansive learning cycles, before it could be said that the contradictions have been thoroughly dealt with. The role of management in bridging the mundane discontinuities between this expansive learning cycle and the next expansive learning cycle, was identified as being crucial.

Importantly, through the horizontal learning stimulated by the interactive boundary crossing (section 3.5.3) between the three job description silos, the object of each activity system is in the process of being transformed. Chapter 6 and chapter 7 have both highlighted how the three activity systems have moved from working on their individual wetland objects (section 5.2) that were rarely reflected upon and simply worked on by the subjects of each of the three activity systems, to being a object that is much more collectively worked on by the three interacting activity systems. The object has therefore become collectively meaningful to the foresters, CEFs and environmental specialists. New tools, rules, and a stronger community of practice and division of labour, are emerging from the interacting and changing activity systems, as indicated by the five types of changes. The research participants now look at problems in new ways, and have developed new
tools to work with these problems, which has empowered the subjects to transform the activity system and expand the object of the activity. This evidence of the transformation of the activity systems, highlights the progress the three interacting activity systems are making in moving towards the emergence of a new wetland management object that is co-constructed and reconceptualised. Engeström (2001) suggests that expansive transformation is possible when the object and the motive of the activity are reconceptualised by the people of the activity system, so that a broader orientation to the activity is perceived than that which was initially conceptualised, and additional possibilities are developed previously not considered. Engeström and Kersosuo (2007) goes onto explain that “in expansive learning, the outcomes are expanded objects and new collective work practices, including practices of thinking and discourse” (p.339). These are exactly the types of changes that this research has recorded, including the additional changes in structures, approaches, and knowledge and values. It is therefore clear from the evidence in this chapter that expansive learning has occurred. However, at present only partial reconceptualisation of the object has taken place. Total reconceptualisation of the object will most likely only be achieved in the next expansive learning cycle, when the silo contradiction has been sufficiently dealt with.

From the evidence provided in this chapter it can be concluded that the expansive learning process has supported the development of the structures and staff within Mondi for improved wetland management. This has occurred through strengthening organisational learning in Mondi, improving the wetland and environmental practice of staff, expanding the ways they interact and collaboratively work together and make decisions, and developing the organisational structures and processes to support organisational development. There is strong evidence of improving social relations between staff, reducing the power differentials, and creating stronger relationships which previously were separate. Even though contradiction #2 on silos has not been totally dealt with, together with contradiction #2 on staff learning, it has been generative in stimulating and catalysing organisational learning and development for improved wetland management. This reveals that the expansive learning process has be able to support the change required to answer the first part of my third research question: Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this?
CHAPTER EIGHT:

The emergence of organisational changes and corporate agency

8.1 Introduction
The previous chapter established that organisational learning in Mondi had been strengthened, improving wetland and environmental practices of staff, through expanding the ways they interacted and collaboratively worked together and make decisions, and developing organisational structures and processes to begin supporting organisational development. However, the last part of the third research question remains – how exactly did this change in organisational learning and development emerge and precisely what role did the expansive learning process play in it? By using abductive analysis and Margaret Archer’s morphogenetic framework, as outlined in section 4.3, it is possible to deeper understand the details of how these changes emerged. This has been done through analysing the interplay between the social structures, cultural systems, and Mondi staff, and understanding how the organisational changes and corporate agency emerged from this interplay. The findings from this fifth phase of the research are important as a way to proactively structure informal adult environmental learning in the future, increasing the possibilities of social change for improved environmental practices.

8.2 Morphogenesis of structure, culture and agency
Archer describes the morphogenesis/stasis of social structures, cultural systems and the agency of people as occurring in three phases from T1-T4 (section 4.3). The interplay between the properties and powers of the social structures, cultural systems and agents, provides insight into how this change occurs. Section 3.8.2 provides a theoretical account of this, together with an understanding of how to distinguish between structural, cultural and agential properties and their associated disabling or enabling powers that emerge through this interplay. The morphogenetic framework will be used as a theoretical lens to understand how the changes evidenced in chapter 7 emerged, during the three phases of structural and cultural conditioning (T1), socio-cultural interaction (T2-
T3), and the elaboration or reproduction of structure, culture and agency (T4). In section 4.3, I have described how Archer uses the concept of analytical dualism to separate the three morphogenetic cycles of structure, culture and agency for analytically understanding and explaining the individual morphogenesis of each. However, these three cycles do not occur in isolation of one another, and it is the interaction, interplay, and relations between the three that bring about the emergence of social change. Therefore these three cycles need to be brought together again to explain how social change emerges from their interaction. For clarity of understanding and explaining how this interplay and integration of the three morphogenetic cycles of structure, culture and agency occurs to bring about social change, I have explained the three cycles in the sections below as combined in the same T1-T4 phases, but still analytically separating them to explain the relationality.

8.3 Structural and cultural conditioning (T1)

As introduced in section 3.7.2 on critical realism and section 3.8 on realist social theory, as well as section 4.3 on Archer’s morphogenetic framework, a variety of generative or causal mechanisms operating at the level of the Real give rise to the structural emergent properties (SEPs) and cultural emergent properties (CEPs) of Mondi that exist at the period of T1. These SEPs and CEPs have provided the organisational context that have shaped the situation the agents, or Mondi staff, find themselves in and conditioned their actions and agency (section 3.8).

8.3.1 Generative mechanisms giving rise to structural and cultural emergent properties in Mondi

In order to understand more deeply what generative mechanisms are giving rise to the structural and cultural emergent properties in Mondi, it is important to work retroductively with what I have already done, through the contextual profile of Mondi (chapter 1) together with my existing knowledge about Mondi in its historical and cultural environment, and my knowledge of the world. As described in section 4.6, retroduction is a mode of inference in which events at the level of the Empirical and the Actual may be explained by postulating and identifying causal mechanisms at the level of the Real, which are capable of producing them. In other words, retroduction allows one to think backwards to determine the most plausible explanation for given effects. This is recognised as a key epistemological process by critical realists. Therefore, if the effects of these causal
mechanisms are the deep seated structural contradictions, which manifest themselves as structural emergent properties at the level of the Real and Actual, it is important to ask retroductively what kinds of generative mechanisms and structural conditions have created these contradictions.

When trying to understand the underlying reasons for the two main contradictions identified, it is important to ask what the generative mechanisms are that have led to increased functionalisation of jobs within Mondi, and the lack of a learning structure in Mondi. Analysing this retroductively, the generative mechanisms that emerge as indirectly effecting Mondi are the wider political economies and historical issues that are situated more broadly in society, such as globalisation, capitalism, neo-liberal economics, the economic crisis, major social changes or big power shifts as with the transition from apartheid to a more democratic form of governance, and climate change. Focusing more on generative mechanisms that directly influence Mondi’s operations, these would include: the decreasing value of the South African currency which increased the cost of imported machinery such as the massive paper machines Mondi uses to develop its products, and decreased export profits; rapidly rising energy costs as well as its reduced availability on the national grid; increasing national scarcity of water against the large water usage by plantation forests and use by Mondi’s pulp mills; decreasing global and South African pulp prices; changes in trade flow with the market being flooded by cheaper Asian paper and packaging imports decreasing Mondi’s market share; the legacy of apartheid that continues to have a tacit but significant impact today on the relations and power imbalances between Black and White staff in Mondi; over fifty percent of Mondi’s landholdings being under legitimate land claims from Black South Africans and the need to transfer ownership of the land while maintaining plantation production rates and maintaining security of wood fibre for Mondi’s mills; and Mondi’s South African operations being considered not as profitable as the rest of the Mondi Group, due to factors such as the large contractor labour force of Mondi South Africa, and Mondi’s largest new main paper machine taking over two years to begin producing paper efficiently and of the right quality, exerting huge financial pressures on the company’s South African operations.

The generative mechanisms, amongst others, have been significant drivers of institutional change in Mondi. They have created the sustained economic pressures leading to Mondi needing to increase business efficiency and cost effectiveness at the expense of, amongst other things, collaborative learning and environmental practice within the organisation. These generative
mechanisms caused a number of SEPs and CEPs to develop within the organisation, which have provided the context that has shaped the situation Mondi staff find themselves in, and conditioned their actions and agency.

8.3.2 Structural emergent properties and powers conditioning Mondi staff at T1

Functionalisation of company and silos
The increased drive to improve business efficiency was the catalyst for the restructuring that has been happening in Mondi since 1999 (section 1.8.2). This resulted in the one of the most important SEPs of Mondi being the functionalisation of its plantation forestry workforce, into departments with well defined boundaries and little room for permeability between them. These Departments included the Forestry Operations Department (including foresters), Land Department (including CEFs), and Support Department (including environmental specialists). Previously, although the departments existed in name, their boundaries were less strictly defined and more permeable, with all staff working together across departmental boundaries, and reporting to one regional office. This functionalisation meant that staff now had separate departmental reporting lines leading independently right up to the Director of Forestry. There were no reporting lines between, or integrating the different departments such as environmental specialists or CEFs reporting to the forestry area manager. When Mondi staff (or agents as Archer, 1995, calls them) came into contact with this SEP, it had the effect of inhibiting staff working across the different departments and disciplinary boundaries, to collaboratively work on responsibilities that were common to staff from the different departments. This included wetland management, which required a multi-disciplinary and multi-departmental approach. In this way, the SEP took on the power of focusing staff to work predominantly within their functionalised departmental silos, with little permeability between them, inhibiting possibilities of collaborative practice across the silos. It was from the effect of this SEP, that contradiction #2 emerged: between CEFs, foresters and environmental specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach
No institutional structure for environmental learning or new employee induction

The drivers, or generative mechanisms, that created the sustained economic pressures Mondi was experiencing, would also have curtailed any training and education within the organisation that was not directly related to increasing short term cost effectiveness, as being superfluous to the business. This would have resulted in the SEP of Mondi having no institutionally recognised learning structure supporting formal environmental training of staff, and few informal environmental learning spaces. When staff came into contact with this SEP, it took on the power of inhibiting staff environmental learning and therefore constraining wetland management practices. This resulted in the emergence of contradiction #1: between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning.

The same economic imperative would have led to a SEP of Mondi having no formal induction structure to support new staff to settle into the company and get to know the context of their new surroundings. When new Mondi employees came into contact with this SEP, it would have been effected as a power that inhibited the ability of new staff to quickly develop their independence and a network of colleagues who could support the development of their understanding of the specifics in the new geographical area of their workplace context. This included environmental issues, and therefore implementation of wetland and environmental practices and policies.

Mondi policies

The generative mechanisms and resulting economic imperative mentioned above, would also have given rise to a number of Mondi policies that would have created the context in which staff made their decisions. For example, the Mondi policy stipulating how firebreaks and wetlands needed to be burnt in order to protect the plantations from unplanned fires. When the staff came into contact with this SEP it would have exercised its power of controlling the way foresters burnt wetlands, for the primary economic purpose of protecting the trees as a key business strategic resource, rather than from a wetland health and ecosystems services perspective.
8.3.3 Cultural emergent properties and powers conditioning Mondi staff at T1

Differing professional cultures

Further shaping the institutional context that staff found themselves in, were a number of CEPs within Mondi. For example, each departmental silo had certain CEPs that were generated by the different professional disciplines of each silo, with each having its distinctive professional cultures as associated with the natural sciences (environmental specialists), social sciences (CEFs), and the agricultural businessmen (foresters). In a review undertaken connecting culture and learning in organisations, Bishop, Felstead, Fuller, Jewson, Lee, and Unwin (2006) highlight how like structures, organisational cultures and subcultures can enable or constrain learning in the workplace. They base their interpretation of culture on that derived from the well-known models of Hofstede and Schein. This interpretation has an inner core of culture being made up of tacit values or assumptions that are unchallenged and assumed, which then emerge as explicit beliefs and norms, that in turn manifest themselves as visible cultural practices and artefacts. Bishop et al. (2006) warn that the subcultures within an organisation such as those generated by different branches or professions within the organisation, may be even stronger than that of the broader organisation therefore advocating the use of the term ‘cultures in organisations’ rather than ‘organisational cultures’. The tensions recorded in phase 1 of the research (section 5.3.5) clearly highlight the activated powers of these cultural properties. In this way the CEPs of the three different professional cultures (values, beliefs, ideologies, knowledge, and cultural practices) would have had the power to affect how staff from the different professional disciplines worked together on issues of joint responsibility, such as wetland management. The powers of the CEPs would have inhibited staff crossing disciplinary and cultural boundaries, and therefore constrained meaningful interaction and collaboration of staff between the different disciplines.

Apartheid and racial power imbalances

Other influential CEPs would have been those generated by the long lasting effects of the practices and artefacts of apartheid that strategically separated Black and White people in South Africa. This separation emerged from the beliefs of the White government at the time of its superiority over Black people, which emerged from grossly inaccurate values and assumptions. As Archer highlights, a key characteristic of some SEPs and CEPs is that they can be relatively long lasting and enduring.
(Archer, 1995). The properties of apartheid are only one example of this with the histories of power, or CEPs, continuing to be felt nearly 20 years after the election of a democratic government in South Africa. The CEPs of apartheid can continue to be felt at times, through its ability to tacitly inhibit relations between Black and White unknowingly, often creating a subtle power imbalance between Black and White people. At Mondi, this would have manifested itself as unequal participation around the table in a multicultural work environment, as evident by the Black ‘silent voices’ discussed in Section 6.3. The long lasting CEPs of apartheid would therefore have emerged as powers, influencing the context of some Mondi staff. This would have created tacit, but present, uneven power imbalances inhibiting equal participation, the understanding of different cultural values, beliefs, and ideologies, and constraining their agency to work together at times. These CEPs appear to have enhanced the silo effect between the CEFs in the Land Department who are all Black and the foresters from the Operations Department who are a combination of White and Black. This is evidenced in a reflective interview with a Black CEF, who was quite explicit in saying that racial tensions inhibited teamwork across the forester and CEF silos, but that the developing relations were slowly improving and changing this (CEF, NIPrW3P2). She went on to highlight how she believed these power imbalances could be traced back to the lasting effects from the history of apartheid (CEF, NIPrW3P3&4).

**Discourses of business efficiency**

The same generative mechanisms, that created the sustained economic pressures Mondi was experiencing, and the resulting SEPs mentioned above, would also have given rise to a strong discourse of business efficiency and cost effectiveness. When the foresters, CEFs and environmental specialists interacted with this CEP, its activated powers would have constrained adequate environmental learning from taking place due to its perceived low economic value. It would have inhibited dialogic communication between staff to rather being transmissive, short, sharp and time saving. Collaboration on wetland and environmental management practices would have been minimised, due the perceived low economic value of the environment. This is evidenced by the lack of environmental training practices and poor wetland knowledge; relatively weak wetland management practices of the foresters and CEFs; as well as the non-interactive and impersonal ways of communicating between staff as highlighted by the tensions recorded in section 5.3. The same CEPs would also have inhibited the area level management from recognising the importance and value of environmental learning and interactive collaboration between the
different job descriptions, to improving wetland and environmental practice. These powers therefore have inhibited management from providing the leadership to enable this, further strengthening the conditioning of the CEFs, foresters, and environmental specialists in their practices.

There are sure to be additional structural and cultural emergent properties and powers, that have been responsible for providing the conditioning context inhibiting the agency of Mondi staff to better manage wetlands. However, these were the key SEPs and CEPs identified in this research as having the greatest conditioning impact, which I consider sufficient to develop an understanding of the conditioning context at T1.

8.3.4 Primary and corporate agents at T1

At T1, there are two types of agents, or Mondi staff, that exist. Firstly, there are those staff who are going about their daily work and their work practices are being conditioned by the SEPs and CEPs mentioned above (sections 8.3.1; 8.3.2; 8.3.3). These staff are the primary agents, as Archer would call them, who are exercising their primary agency of doing the primary work they are required to do, such as growing trees, or managing relations with neighbouring communities. The foresters and CEFs are representative of the primary agents. The second type of agent is what Archer calls the corporate agent, who realise that the work is not being done as well as it should be, and attempt to change practices, despite also being conditioned by the SEPs and CEPs mentioned in section 8.3. The corporate agents therefore have an interest in changing the status quo, which in this case is of environmental and wetland management, compared to the primary agents who do not. The environmental manager and his staff of environmental specialists represented the corporate agents in this research. These agents, realising the need to change and improve environmental and wetland management practices in Mondi, became corporate agents, by using their existing powers of reflexivity to attempt to bring about a change in wetland and environmental management in the past. They could also be termed environmental ‘agents of change’. However despite using a number of different strategies and approaches in the past, they continued to struggle in bringing about the desired environmental and wetland management changes (sections 1.7 and 1.8). This was due to the inhibiting powers of the structural and cultural context (or the dominant powers of the SEPs and CEPs), which constrained the personal powers of the corporate agents to bring about
the change. The period of T1, represents the context that led to this research being initiated, when previous attempts by the Mondi environmental management staff and the MWP to integrate wetland management into plantation forestry operations had limited success, and nobody knew the reasons for this (section 1.8).

8.4 Socio-cultural and group interaction (T2-T3)

8.4.1 An overview of what happened during T2-T3

T2-T3 represents the period of socio-cultural interaction, which was a disruptive process where the conditioning SEPs and CEPs of the Mondi institution interacted with the primary and corporate agents (the Mondi research participants). This interaction between the participants and the inhibiting SEPs and CEPs, catalysed the emergence of the participant PEPs. However, not all SEPs and CEPs were inhibiting. Certain CEPs such as the culture of the workplace, enabled the research participants to exercise their PEPs. For example the corporate agents’ property of leadership and their ability to turn it into a form of leadership power, enabling the corporate agents (e.g. environmental manager) to lead the primary agents (e.g. CEFs and foresters) and collaboratively act back on the structures to change them. Therefore the critical point is that the emergence of the SEPs and CEPs of Mondi and the PEPs of the participants was relational, and dependent on the interaction between them. Using the example of leadership again, some workplaces are more conducive to exercising the PEP of leadership whereas others may be more constraining. In the case of this research, the CEP of an enabling culture of the workplace allowed corporate agents to be willing and open minded, enabling them to exercise their PEP of leadership power.

However, it is important to note that not all PEPs emerged from the T2-T3 period of socio-cultural interaction. The participants do come into the morphogenetic process with some PEPs they already have, because people come into the morphogenetic process with some sort of agency and ability, since they are not ‘empty vessels’ beforehand; for example, the PEPs that the corporate agents already possess at T1. However as explained above, not all PEPs are able to exercise their powers. In this sense a PEP can remain dormant and not emerge as power, until an enabling SEP or CEP allows it to. In the same way, the properties of SEPs and CEPs cannot be exercised as powers, until they come into contact with the PEPs of agents. This further highlights the importance of the
relationships and the interplay between the parts and the people for enabling the powers of SEPs, CEPs and PEPs to be activated.

It was during this socio-cultural interaction period of T2-T3, that group interaction between the research group of foresters, CEFs, and managers (primary agents) and environmental staff (corporate agents) took place in and through the expansive social learning process. During this group interaction, and well as a result of it, there was a further emergence and strengthening of PEPs of some of the primary agents. Therefore, in some instances, the PEPs of the corporate agents were generative of the PEPs of the primary agents. Through this emergence of properties and powers, some of the foresters, CEFs, and managers (primary agents) developed an interest in changing environmental and wetland management practices, and the powers and properties required to change the status quo. In the process, these individuals were therefore transformed into corporate agents themselves, while some of their forester and CEF colleagues remained as primary agents. In this way the number of corporate agents increased, which increased the possibilities for the changes of the conditioning SEPs and CEPs that occurred.

The expansive learning cycle therefore provided the platform to catalyse the sociocultural interaction between the Mondi staff and the SEPs and CEPs of the Mondi institution, as well as the group interaction between the primary agents and corporate agents. The interventionist workshops and expansive social learning processes, provided the means through which the Mondi participants were supported to discover and begin to understand the SEPs and CEPs of the Mondi institution, that were conditioning them and inhibiting improved wetland and environmental management practices. The Mondi participants then began to develop and implement solutions to deal with those SEPs and CEPs they felt they could do something about. Their agency was strengthened during the process, with some primary agents being transformed into corporate agents at the same time. Together with certain enabling CEPs and the growing agency of the staff, transformation began to take place of the social structures and cultural systems they chose to work on.

The expansive learning process was therefore able to strengthen existing reflexivity of the Mondi staff, and direct it towards bringing about new emerging PEPs that enabled the staff to interact with and shape the social structures and cultural systems, resulting in stronger staff agency. Therefore, while the agents began to change the parts, they themselves were also changed in the
process, resulting in what Archer calls the double morphogenesis: “agency leads to structural and cultural elaboration, but is itself elaborated in the process” (2000, p.258).

Consequently it was through this interaction, which was made possible through the expansive learning cycle, that the structures, cultures, and agents, all morphed and changed through the process of emergence, which was catalysed by the socio-cultural-agent interaction. This resulted in the elaboration and morphogenesis evidenced by the changes documented in chapter 7.

8.4.2 Participant realisation of the SEPs and CEPs constraining practice

The process of change that has been described in the section above is now explained in more detail, through specific examples. During T2 when the research participants came together through the two interventionist workshops of Phase 2, and were presented with the mirror data generated during the interviews of Phase 1, they discovered many of the SEPs and CEPs mentioned in T1 (section 8.2.1) that were conditioning the context in which the staff learnt and practised their work and made certain decisions. Most of these SEPs and CEPs were made visible through the dialogic interactions between participants that I facilitated around deeper understanding of the tensions and contradictions as recorded in section 5.3. In addition, further CEPs emerged from the conversations during these interventionist workshops. For example, the participants realised that in the company there was a culture of using electronic modes of communication as the most cost effective and efficient way of communicating to all staff within the business. While participants realised the necessity of email communications, they also saw this CEP as having the power of inhibiting personal interaction between staff on operational issues. This power further reduced collaborative learning and working opportunities between staff, reducing the hunger and excitement to learn, and reducing the diversity of solutions and possibilities of better ways of working (section 5.7.12). In another example, a new four-day traditional induction course was being developed for imminent final approval by senior management. However, participants felt that it would do little more than inform people about company policies, including environmental and wetland policies, and it made little connection between the policies, workplace context and practice. Participants therefore saw this CEP as having the power to inhibit the ability of new staff to understand and implement area specifics of their workplace context and practices of wetland and other Mondi policies (Enviro, JS2P2; Training manager, KS8P14 & KS11P5). The interventionist
workshops of Phase 2 of the research therefore supported the research participants to make visible
and understand the different SEPs and CEPs and their powers that were affecting the ability of the
participants to improve their work practices.

8.4.3 Discovery of new enabling CEPs

During the interventionist workshops (phase 2) and the area wide progress review workshops
(phase 3), a new enabling CEP emerged and became visible to the participants, even though it
might have been present but invisible before. This CEP was the culture of the workplace allowing
management to be willing and open minded and enabling the managers to exercise their leadership
power (PEP). The enabling of this power allowed the leadership to provide a safe dialogic space for
participants to discuss whatever they felt important to improving wetland and environmental
learning and practice, and being able to listen to their suggestions earnestly. For example, during
the area wide progress review workshop in Zululand, the forestry area manager willingly opened up
a safe dialogic space to discuss wetland burning management practices, which was a highly
contentious subject (section 7.7). The power of the enabling workplace CEP allowed the manager to
exercise his leadership PEP to do this, resulting in a broad discussion amongst operations staff on
how to improve practice by burning a peat wetland called Canewoods, which the manager
previously believed could not be burnt. This catalysed a workshop to decide on best burning
practice across Mondi landholdings, which ultimately resulted in changed wetland burning
practices. However, without this enabling CEP, this chain reaction of events would not have
happened. Another example of this CEP of management’s willingness to be open minded and listen
to staff suggestions for improving practice, was provided by the training manager. This occurred
when she listened to participant criticisms of her proposed four-day induction programme about to
be approved by senior management, and considered their alternative suggestions for changing it
into a three month induction process (section 5.7.1). A third example was the CEP of the company
senior management wanting the staff to drive their own careers (KGWP18), and take on the
responsibility for doing this, which provided the power enabling the change of the induction
programme.
8.4.4 Emergence of the staff PEPs

A number of PEPs of the research participants emerged during: a) the process of the participants collaboratively making visible and deeper understanding those T1 SEPs and CEPs mentioned in section 8.4.2 that were constraining their wetland and environmental learning and practice; and b) while they were developing and implementing the solutions to deal with these SEPs and CEPs through the key contradictions they had prioritised. Critically, the opportunity for the PEPs of participants to emerge was catalysed by the enabling CEPs mentioned in section 8.4.3. Therefore without these enabling CEPs, the PEPs simply would not have been able to emerge. As the PEPs emerged, they in turn activated the participants’ powers to further understand the SEPs and CEPs, and to collaboratively develop and implement the solutions that resulted in morphogenesis at T4. In this way the research participants became more empowered to identify and act back on the conditioning SEPs and CEPs of T1.

A number of the PEPs follow that emerged from the interaction between a) the research participant group and the SEPs and CEPs, as well as b) the corporate and the primary agents within the group. The collaborative interaction between the corporate agents (environmental staff), who came into the expansive learning process with existing PEPs, and the primary agents (foresters, CEFs and managers) further catalysed the emergence of the PEPs of the primary agents.

The PEPs identified below, are not meant to be a comprehensive list of every PEP that I could identify from the research, but rather the key ones that became visible to me through analysing the data. A more detailed list of PEPs of the participants that emerged during this socio-cultural interaction of T2-T3, is included as appendix 17, together with indexed references highlighting the location of each PEP in the data. It was from this more detailed list of PEPs that the generic ones below have been drawn up.

Process related PEPs

- Ability of staff to actively participate in multidisciplinary groups and recognise the benefits of crossing disciplinary boundaries.
• Ability of staff to recognise the power of collaborative thinking, understand social learning processes, and the importance of informal interactive learning spaces to develop their professional learning and collaborative practices.

• Ability of staff to collectively critically reflect, dialogically discuss, and evaluate key points and implications of the current structural and cultural context of the institution (SEP and CEPs) constraining or enabling their learning and practice.

• Ability of staff to identify and critically understand organisational expectations and organisational culture.

• Ability of staff to develop professional relationships between other staff that they might not know, enhancing collaborative learning and practice.

• Ability of staff to be independent, proactive, and responsible for their environmental and wetland obligations, but also able to know who to go to for support when required, and being able to work in a team with a collaborative approach.

• Ability of staff to value the collaborative involvement in each other’s work.

• Ability of staff to listen empathically, make comments without animosity, and receive comments from others without being offended.

• Ability of staff to individually reflect, recognise and empathically understand important viewpoints and comments from others, and then collaboratively come to a deeper understanding and build on each other’s ideas.

**Ideas and practice related PEPs**

• Ability of staff to collaboratively develop innovative plans and ideas for changed environmental practice and learning with the agentive intention to act, as a precursor to action.

• Ability of staff to disagree then reach consensus to collaboratively prioritise which ideas to implement first, when the accumulation of staff ideas grows out of proportion to their ability to implement them.

• Ability of staff to implement agreed actions, and try new approaches and practices.

• Ability of staff to work together to develop new alternative projects when previous projects fail.

• Ability of staff to change practices when more appropriate ideas and practices are proposed.

• Ability of staff to critically reflect as individuals and comment on their own past practices as well as new approaches and practices developed.
Management related PEPs

- Ability of managers to understand and encourage collaborative decision making.
- Ability of managers to listen empathically to staff ideas, catalyse dialogic deconstructive discussions on these ideas, willingness to change their original thinking, and incorporate collaboratively developed ideas into solutions that managers and staff implement.
- Ability of managers to think how to institutionalise environmental learning over the long term within the organisation.
- Ability of middle level managers to lead the expansive learning process, and to work with senior managers to integrate ideas and implement solutions developed by operational staff.

The emergence of these PEPs of the research participants is what empowered the staff to bring about the changes that occurred at T4.

8.5 Structural cultural and agential elaboration and reproduction (T4)

As a result of the interactions and relationships that occurred between the SEPs, CEPs, and PEPs during T2-T3, structural and cultural elaboration emerged. In the process, the agency of staff was strengthened through the emergence of the PEPs, and the expanding of corporate agency. These structural, cultural, and agential changes are described as the fifteen examples listed in the five different types of changes in chapter 7. These included changes in knowledge, values and thinking; discourse; approach; practice; and structures. While these changes are significant, not all the SEPs and CEPs originally identified as tensions and contradictions were elaborated. For example, the silo contradiction was found to be significantly resilient, and although important changes were documented signifying the change that had been catalysed, the silos have not yet been adequately bridged. Therefore a certain extent of reproduction of the silos has taken place at T4. However, as explained in section 7.17 this will require additional effort and expansive social learning cycles for further elaboration to take place.

The T2-T3 interactions between the agents and the SEPs and CEPs, as well as between the corporate agents (environmental staff) and primary agents (foresters, CEFs and managers) led to some of the primary agents transforming into corporate agents. These staff were the training manager, forestry area manager, and a few of the CEFs and foresters. During the expansive social
learning process they showed the greatest interest and were most proactive in working with the environmental staff to bring about the changes recorded in chapter 7, and the emergence of PEPs listed in section 8.4 was greater for them than other primary agents. The number of corporate agents were therefore elaborated at T4. Some of these staff may in future transform from corporate agents into social actors (section 4.3.3), but at the time the study was concluded it appears that this had not yet occurred. This may happen in the next morphogenetic future cycle. The remaining staff continued as primary agents, and showed less visible interest in attempting to bring about any change to the SEPs and CEPs, which also was referred to in four of the reflective interviews with corporate agents (Enviro manager, CRIP2&3; Forestry area manager, MRIP1&2; Enviro, LRIP2; Enviro JRIP2). The ability of these primary agents to bring about meaningful changes in wetland and environmental management is therefore reduced. However, since the tacit changes recorded were catalytic and potential (section 7.16, these primary agents may well transform into corporate agents in the future. As Archer (1995) reminds us, the structural, cultural, and agential elaborations and semi reproductions that have taken place during this cycle of morphogenesis, will subsequently become the new SEPs and CEPs that will condition the Mondi staff in the T1 phase of the next morphogenetic cycle. This will set the scene for additional changes and reproductions to occur in the future.

8.6 The morphogenesis of organisational learning and development

What clearly emerges from this analysis, is that without the T2-T3 social interaction of the research participants with the T1 SEPs and CEPs, it is unlikely that the PEPs of the participants would have emerged, and come into relationships with these SEPs and CEPs, resulting in the changes at T4. The structural, cultural and personal emergent properties and powers are therefore tightly interrelated, dependent on each other, and most importantly they allow the generative change to occur through their interaction. They are therefore evidence of how the change or elaboration has occurred. Figure 8.1 below pictorially describes this morphogenetic process, in a processoral and emergent way, resulting in the changes in wetland and environmental learning and practice as discussed in chapter 7.
Figure 8.1  The morphogenesis of organisational learning and development for changed wetland and environmental management

SEPS & CEPs
SEPs: Functionalisation of company and silos; no institutional structure for environmental learning or new employee induction; Mondi policies (section 8.3.2)

CEPs: Differing professional cultures; apartheid and racial power imbalances; discourses of business efficiency (section 8.3.3)

GENERATIVE MECHANISMS
Indirect: globalisation, capitalisation; neo-liberal economics; global economic crisis; climate change. Direct: Rand currency fall; pulp price fall; energy costs increase & availability decreases; water scarcity; apartheid legacy; land claims increase; Mondi-SA operations cost centre (section 8.3.1)

Primary agents: Foresters and CEFs
Corporate agents: Environmental staff (section 8.3.4)

DEVELOPMENT OF AGENCY
PEPs emerging from interaction between agents/CEPs/CEPs:
Process PEPs: e.g. ability of participants to cross disciplinary boundaries; think and work collaboratively; critically reflect; have dialogical discussions; self and collective evaluation; listen and understand empathically; develop professional relations; be independent, proactive and responsible; understand social learning processes and value informal interactive learning spaces.

Ideas and practice PEPs: e.g. ability of participants to collectively develop plans, engage in agentive talk and try new approaches; disagree and reach consensus; overcome barriers; change practice; critically reflect on own practices.

Management PEPs: e.g. ability of managers to support collaborative decision making; listen empathically; catalyse dialogic deconstructive discussions; change their thinking; develop and institutionalise long term plans; lead learning processes. (section 8.4.4)

GENERATIVE MECHANISMS
Indirect: globalisation, capitalisation; neo-liberal economics; global economic crisis; climate change. Direct: Rand currency fall; pulp price fall; energy costs increase & availability decreases; water scarcity; apartheid legacy; land claims increase; Mondi-SA operations cost centre (section 8.3.1)

More corporate agents (chapter 7)
Figure 8.1 demonstrates how the expansive social learning process was the starting point for proactively catalysing change, through providing a learning space to catalyse the T2-T3 interaction. During this interaction the research participants were facilitated to identify the T1 SEPs and CEPs, through the tensions and contradictions, which were conditioning the context in which they were working and practising. In the process of this interaction the PEPs of participants began to emerge and the SEPs, CEPs, and PEPs began to interact and shape one another. Through this interaction, the personal emergent powers of participants were activated, enabling participants to deeper understand the inhibiting SEPs and CEPs, and the development and implementation of solutions resulting in the five different types of changes at T4. The diagram is representative not only of how the changes in wetland and environmental learning and practice took place, but also of the environmental learning process that led to these changes.

Expansive social learning has therefore strengthened organisational learning and development by enhancing participant reflexivity through deeper understanding of the inhibiting social structures and cultural systems that emerged as tensions and contradictions, and catalysing their change. Prior to the expansive social learning process participant reflexivity was limited, because the participants were situated in the structures that were controlling them, and they were not doing anything about changing them. This change in reflexivity and agency occurred, through the emergence of participant PEPs, during T2-T3 socio-cultural-agential interaction. Reflecting on Engeström’s (1987; 2010) point that contradictions are deep seated structural tensions of cultural and historical origin (section 3.5.2), this morphogenetic analysis has deepened earlier work in the CHAT and expansive learning field on understanding how social interaction with the contradictions has the potential to bring about social change.

The explicit changes (in structure and practice) as well as the more tacit changes (in approach to working with colleagues, discourse, values, knowledge, and thinking) that are now in place, have the broader potential to assist Mondi to better engage with a wide range of wetland and environmental issues and improve its sustainability practices. They have the potential because even though the structures may have changed, and the research participants may be feeling more empowered to bring about changes with their newfound powers of reflexivity, this does not necessarily mean that all the changes are going to happen immediately. Some have happened, but
the more significant changes are most likely to happen in the future, perhaps two to five years from now.

8.6.1 Expansive social learning provides the platform to catalyse morphogenesis

A critical finding to emerge from this research, is that expansive social learning creates the space and associated tools for environmental learning necessary for mobilisation and change processes, which begin to deal with the inhibiting social structures and cultural systems. It does this through providing the interventionist workshop methodology as the starting point for the T2-T3 socio-cultural-agential interaction. The interventionist workshops catalysed engagement of the participants with the SEPs and CEPs through the contradictions, development and implementation of collaborative projects, as well as the progress review workshops and reflexive interviews. Crucially, it was the deliberative engagement of participants with the tensions and contradictions that catalysed the emergence of the participant PEPs, and strengthening of participant reflexivity. Expansive learning therefore created an interventionist platform and methodological means with which to catalyse the socio-cultural and structural interaction. This provided the momentum for reflexivity of the research participants to emerge, and bring about morphogenetic change of the structural and cultural conditions identified as inhibiting wetland learning and practice in Mondi. At the same time the participants experienced a change in themselves, through a change in knowledge, thinking, values, discourse, and the way they approached their work. Double morphogenesis was therefore achieved. Without the expansive social learning processes, this would not have happened. Expansive social learning is therefore a space for seeding or catalysing organisational development, organisational learning, and organisational change processes through enhancing agent reflexivity. The emergent properties and powers consolidate an understanding of how the seeding and emerging changes are taking place within this expansive learning space. However the CEP properties of Mondi senior management being willing to provide the space, and being supportive of dialogical forums such as the expansive learning process, key middle level management being open minded to collaboratively solving problems and being interested in learning, played a crucial role in enabling the expansive social learning process and morphogenesis to take place. Although these CEP properties may have been there before the expansive social learning process, the expansive learning allowed these properties to be ‘activated’ and emerge as powers.
It would seem that organisational learning and development requires an understanding of the SEPs, CEPs and PEPs that are necessary for morphogenesis and organisational change to occur. It is also about recognising that these changes involve a range of changes along a continuum, from being tacit to more explicit, which can be enabled and supported by the expansive social learning process. It is the expansive social learning process which has provided the platform to seed the critical changes the research has identified: changes in knowledge, values, and thinking; changes in discourses; changes in approaches; changes in practice; and changes in structures. A significant problem of modernity is that insufficient spaces are created for social learning to take place in, and the result is that the voice of the dominant rules. However, the expansive learning cycle provides an opportunity where safe dialogic spaces can be realised, and power imbalances identified, clarified and understood, with new knowledge created and new practices developed and implemented in an effort to redress the balance of power.

8.6.2 Proactively working with the sociology potential of morphogenesis to bring about future change

Figure 8.1, which shows how the CEPs, SEPs and PEPs are interacting to bring about the different types of change, is the environmental learning process. It can therefore be said that proactive steps can be taken to structure learning in open and reflexive ways using expansive social learning processes as shown in this study, to encourage the emergence of properties and powers such as these which can support the emergence of morphogenesis. It also means that the emergence of properties and powers such as these can also be monitored to determine how the change is progressing. Organisational learning and development in relation to wetland and environmental management, is therefore a morphogenetic process that can be catalysed and proactively strengthened through expansive social learning. In this way the expansive social learning can be used as an environmental education ‘space’ to proactively work with the sociology potential of morphogenesis to bring about future change, rather than only looking at existing practice and using morphogenesis to retrospectively understand how change has happened in the past. Figure 8.2 below, highlights how the seven steps of the expansive learning process, as implemented in this research, may be used to proactively work with the morphogenetic process to support this change.
This overlay of the expansive learning process with the morphogenetic process demonstrates how environmental education researchers can proactively work with the sociology potential of morphogenesis to potentially enable and bring about changes in environmental learning and practice.

**Morphogenetic framework**

- Structural conditioning
  - T1

- Socio-cultural interaction
  - T2, T3

- Structural elaboration
  - Structural reproduction
  - T4

**Expansive learning process**

- INTERVIEWS & CONTEXTUAL PROFILE
  - Step 1: questioning

- WORKSHOPS #1 & 2, PROJECTS & WORKSHOPS #3
  - Step 2: analysis
  - Step 3: modelling new solutions
  - Step 4: examining & testing new models
  - Step 5: implementing new models

- WORKSHOPS #3 & REFLECTIVE INTERVIEWS
  - Step 6: reflecting on the process & results
  - Step 7: consolidation & generalising

**Figure 8.2** An overlay of the expansive learning process, as implemented in this research, with the morphogenetic process

Environmental educators can therefore engage expansive social learning as a platform to scaffold and support environmental learning processes that potentially catalyse and strengthen reflexivity for bringing about change. This requires embracing a deliberative democratic approach to supporting the reflexivity and change capacity of agents. In this way environmental educators can proactively work with the social processes of learning as potential mobilisers of morphogenesis. Therefore, environmental education and learning is not only an activity that people use to inform each other; it can also be an activity to bring about changes that are deliberatively engaged in reflexive processes of change, which can be supported through learning processes such as
expansive social learning. However, it is important to recognise that expansive social learning is not a methodology for social engineering. Rather, we need to recognise the importance of deliberative reflexivity, or the open-ended nature of learning and change, ‘worked out’ in the context of the work place. This is a different approach to how Archer uses the morphogenetic framework. She uses it to describe how change has happened over a period of time in the past by looking at existing practice. She does not work on how the social processes of learning can be proactively used as mobilisers of potential morphogenesis. However, this research project has revealed morphogenesis that has occurred as a result of a carefully structured and planned developmental work research intervention, designed to possibly bring about change using the expansive learning methodology as a platform. This research showed that change was ‘seeded’ through such a process. Crucial, however, was the open-ended nature of the process. It was not possible to predict if or how the learning would lead to specific changes at the start of the expansive learning process.

8.7 Conclusion

This chapter has provided evidence and reasoning for how the changes in organisational learning and development for improved wetland and environmental sustainability practices evidenced in chapter 7, occurred in Mondi. It has carefully described how the interplay and relationships between the SEPs, CEPs, and PEPs were key to explaining how these changes emerged as a morphogenetic process. The chapter has further explained the role of expansive social learning, in bringing about these changes, through providing an interventionist platform on which the socio-cultural and group interaction of the morphogenetic process can take place. In this way, the last ‘how’ part of the third and final research question has now been answered: Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this? Most importantly, through this research, the thesis has shown that expansive social learning can provide an open process environmental education methodology and platform to proactively work with the sociology potential of morphogenesis to potentially enable and bring about current and future changes in environmental learning and practice.
CHAPTER NINE:

Conclusions, reflections and recommendations for further research

9.1 Introduction
The chapter begins with a short overview of the PhD research project. This is followed by the nine conclusions to emerge from the research, which are summarised from different parts of the thesis, and brought together. Eight reflections on the research journey are shared, highlighting some of the strengths and weaknesses of the research. The chapter ends with four recommendations for future research.

9.2 A summary of the research
The research set out to identify the factors that were inhibiting wetland management in Mondi, by answering the first research question: What tensions and contradictions exist in wetland management in a plantation forestry company? Through the expansive social learning processes that supported the research, twelve contradictions were identified as inhibiting wetland management. Participants then prioritised two key contradictions to work on, collaboratively worked to understand the root causes of them, and developed and implemented solutions to deal with these contradictions in an effort to improve wetland practice. Five different types of changes in structure, practice, approach, discourse, knowledge values and thinking emerged from the research through participants implementing their solutions. This answered the second research question: Can expansive learning begin to address the tensions and contradictions that exist in wetland management in a plantation forestry company, for improved sustainability practices? It also began to answer the third and most important research question: Can expansive social learning strengthen organisational learning and development, enabling Mondi to improve its wetland sustainability practices, and if so how does it do this? This question was important, since the research was attempting whether a description could be provided that uncovers the realities of how change occurred, if indeed it did occur. It was through answering the last part of this question
that the core contribution of this study was revealed as: expansive social learning can provide an open process environmental education methodology and platform to proactively work with the sociology potential of morphogenesis to potentially enable and bring about current and future changes in environmental learning and practice.

9.3 Conclusions that emerged from the research

A number of conclusions came out of the research that will be briefly summarised below. These conclusions are not new, but this section will summarise and bring them together from the findings of the previous chapters.

9.3.1 Sophistication of participant understanding of the inhibiting structural and cultural context increased as the expansive learning cycle progressed

As the expansive learning cycle progressed from step one to step seven, the research participants developed a deeper and more clear understanding of the tensions and contradictions that were conditioning and inhibiting their wetland learning and practice (section 6.2). This progression in sophistication of understanding also increased as participants developed more sophisticated solutions to deal with the tensions and contradictions. This sophistication of understanding emerged from the way the expansive learning process allowed for participants to build on their prior knowledge, which was mobilised during the interviews of phase 1 of the research, and enrich this knowledge with the collective knowledge gained through the dialogic interaction between participants. This interaction led to horizontal learning (section 3.5.3) taking place between professionals from different activity systems, during the workshops of phase 2 of the research. The dialogic interaction between participants also provided the scaffolding for participants to build on and expand their own ideas, as well as co-constructing new solutions. In this way the group collectively grew their own zone of proximal development. From this deeper and broader understanding, gained through the horizontal learning, and the implementation of the collaborative wetland projects, the shared object of wetland management of the three activity systems of the foresters, CEFs and the environmental specialists, was expanded. This highlighted the importance of crossing the boundaries between the different activity systems involved in the expansive learning process for deepening the sophistication of staff understanding (section 3.5.3).
9.3.2 The expansive learning process began to strengthen democratisation of decision making

The process of anonymously presenting the emerging tensions and contradictions as mirror data during the first interventionist workshop contributed towards strengthening the democratisation of decision making within the group (section 6.3). This allowed for the ideas of quieter Black participants to be noticed and taken up in the discussions by the stronger voiced participants who were predominantly White. The consequence was that the voices of Black participants were made visible and allowed for their inclusion and participation. This finding is very important as everybody’s voice should be represented irrespective of race, level of education or gender, even if it does not emerge through them in a public situation. It is also a finding that needs to be kept in mind when working in the multi-cultural context that makes up South Africa, where imbalances in power relations continue to exist. The concept of using mirror data as an expansive learning process, can therefore begin to proactively landscape a deliberative democratic approach (section 2.4.4) to growing the reflexivity and change capacity of research participants.

9.3.3 Improving wetland management depends on the critical relationship between wetland management practices, expansive social learning processes, and organisational development

With so many of the contradictions identified by the research being between the activity systems and the institutional setting, this indicates a critical relationship between wetland management practices, expansive social learning processes, and organisational development (section 6.4). It means that the development of wetland and environmental management knowledge required by Mondi staff is closely related, not only to the workplace situation, but also to the institutional structures and management capabilities. Wetland sustainability practices therefore cannot exist alone. They are dependent on processes such as expansive social learning to strengthen staff dialogue, learning, and improved relational practices and agency, to identify and find solutions to factors inhibiting wetland practice. They are also dependent on the development of the organisation to put in place the institutional structures enabling the social learning processes required for improved wetland management.
9.3.4 Management is important for enabling or disabling safe spaces for informal learning

Senior and middle (area) management are important for enabling or disabling safe spaces for informal learning, which are important for encouraging the expansive social learning required to broaden and strengthen wetland management knowledge and practices (sections 6.4.2 & 7.16.2). The three middle level managers who participated in the expansive learning process were critical to the interventionist workshop process, as they provided the bigger picture that others could tap into, and they often came up with key ideas. This highlighted the importance of having management present in the expansive social learning process, to raise strategic ideas and suggestions. Therefore a strong chain of enabling links needs to either exist, or be created, between senior management, middle level management, and those staff working on the ground, if social learning is to be expansive. If all the links in this enabling chain are not strongly connected to each other, it is highly unlikely that staff working on their own at the ground level would have improved wetlands management. Clearly the capabilities of management to recognise and understand the importance of expansive social learning are also critical in allowing and encouraging sufficient enabling space for these processes to develop. However, strengthening management capabilities are not adequate alone. Formalising learning structures within the organisation is also critical for organisational development.

9.3.5 Five types of changes emerged from the research ranging from tacit catalytic changes to explicit actual changes

Five types of changes emerged from the research (chapter 7): 1) changes in structure, 2) changes in practice, 3) changes in approach, 4) changes in discourse, and 5) changes in knowledge, values, and thinking. These changes ranged on a visibility scale, from being explicit to tacit (section 7.16). This is an important finding, as most often it is only the explicit changes that tend to be noticed and recorded, since they are actual changes that have taken place and are easy to measure and see. However those changes that are tacit are often ignored or go largely unnoticed. Tacit changes are emerging changes that appear to be a prerequisite for enabling the explicit changes to take place. Tacit changes also have the potential to catalyse further changed practices and structures in the future, as indicated in section 7.10. They can therefore be termed catalytic changes, as they have the potential for catalysing future change in the way people practise in the future. In this way, tacit changes can be seen as important indicators for determining the potential changes that might
happen in the future, which is important for monitoring the long-term impact of environmental education interventions.

9.3.6 The shared object of the three activity systems of foresters, CEFs and environmental specialists expanded

The shared object of the forester, CEF and environmental specialist activity systems is in the process of being transformed and reconceptualised (chapter 7). The activity systems have moved from working on their individual wetland objects that were rarely reflected upon and simply worked on by the subjects of each of the three activity systems, to being an object that is much more collectively worked on by the three interacting activity systems. The shared object has therefore become collectively meaningful to the foresters, CEFs and environmental specialists. At present the object is currently evolving to become one that is co-constructed by the interacting activity systems, and working towards becoming a new reconceptualised object. However, this reconceptualisation of the object has not been completed. New tools, rules, and a stronger community of practice and division of labour, are emerging from the interacting and changing activity systems, as indicated by the five types of change. The research participants now look at problems in new ways, and have developed new tools to work with these problems, which has empowered the subjects to transform their activity systems and expand the shared object of the activity. This evidence of the transformation of the activity systems, highlights the progress the three interacting activity systems are making in moving towards the emergence of a new co-constructed wetland management object that is co-constructed and reconceptualised. This indicates that expansive learning has taken place.

9.3.7 Additional expansive learning cycle required to consolidate and grow existing changes

Even though the expansive learning process has supported the research participants to deal with the two key contradictions, another expansive learning cycle is required to continue and grow what has been catalysed (section 7.17.4). Additional time and sustained effort is required to bed down those changes achieved in dealing with two key contradictions. This concurs with Engeström, Kerosuo and Kajamaa (2007) who explain expansive learning as taking place in a number of smaller short term expansive learning cycles, each consisting of new innovative learning and working
practices, which occur one after the other. This PhD research project should therefore be seen as one of the smaller expansive learning cycles, which now needs to be bridged by management to enable the beginning of the next smaller cycle, to ensure the continuity of the expansive learning process and catalysing additional change as part of the larger expansive learning cycle.

9.3.8 Expansive learning has been able to strengthen organisational learning and development

As summarised in table 7.1 (section 7.15), expansive social learning has supported organisational learning and development for improved wetland management by 1) strengthening the scope, depth, and sophistication of participant understanding (section 6.2); 2) expanding the ways staff interact and collaboratively work together (chapter 7); 3) democratising decision making, involving all participants, including the quiet Black voices (section 6.3); 4) improving social relations between staff, reducing the power differentials, and creating stronger relationships which previously were separate (chapter 7); 5) enhancing participant reflexivity through deeper understanding of the structures, and changing them to support improved wetland and environmental practice of staff, and developing the organisational structures and processes to strengthen organisational learning and development (chapter 7); and 6) using the contradictions identified as generative mechanisms to stimulate and catalyse organisational learning and development for changed wetland and environmental management (chapters 6 and 7).

9.3.9 Expansive social learning provides a platform to catalyse the morphogenesis of organisational learning and development

When analysing the changes in organisational learning and development in relation to wetland and environmental management, the analysis illuminated a morphogenetic process (Archer, 1995). Expansive learning provided an interventionist platform and methodological means with which to catalyse socio-cultural-agential interaction (section 8.6.1). During this interaction, the personal emergent properties and powers of participants were activated and came into relationships with the structural and cultural emergent properties and powers, as they began to interact and shape one another, from which the changes emerged. It was concluded that expansive social learning can therefore provide a space for seeding or catalysing organisational development, organisational learning, and organisational change processes through enhancing agent reflexivity.
9.3.10 Future change may be brought about by proactively working with the sociology potential of morphogenesis

Expansive social learning can provide an environmental education ‘space’ to proactively work with the sociology potential of morphogenesis to potentially enable and bring about current and future change, rather than only looking at existing practice and using morphogenesis to retrospectively understand how change has happened in the past, as Archer (1995) has done (section 8.6.2). Environmental educators can therefore engage with expansive social learning as a platform to scaffold and support open-ended environmental learning processes that are deliberative and potentially catalytic, to strengthen reflexivity for change. They can proactively landscape a deliberative democratic approach to growing the reflexivity and change capacity of agents. In this way environmental educators can proactively work with the social processes of learning as mobilisers of morphogenesis.

9.4 A reflective review of the research process

Having come to the end of this research, and looking back on the research journey I have travelled over the past five years, here are eight reflections that I thought were important to share.

9.4.1 Managing the risk of basing research on what participants say

The research revolved around data generated from seventeen participant interviews, two interventionist workshops, five area wide progress review workshops with field trips after three of the workshops to see wetlands being worked on, one Mondi senior management meeting, one seminar for managers, and nine reflexive interviews. I also relied on my tacit knowledge of Mondi gained through working in the field closely with the company over the past 17 years. However, the risk of this is that my research conclusions are based on what participants say about something, rather than empirical evidence of what I personally saw happening in the workplace, outside of the limited time I spent in the field with staff during the research. However, I did realise this risk, and in mitigation of it I was able to triangulate and cross check the evidence coming in from the seventeen participants from the five different areas (section 4.7). The findings are therefore based on this triangulation of evidence, which I believe reduces the possibilities of the conclusions of the research being different to the realities of what is happening on the ground. The deliberative and
participatory nature of the discussions required during the interventionist workshops would also have ensured inter-subjective objectivity. Additionally, during the five area wide reflective interviews, the research participants had to report back to their peers and colleagues on progress they had made in implementing the solutions they had developed as projects. This form of peer review would have also increased the validity of the evidence. Lastly, during the area wide progress review workshops, management meeting, and management seminar, I cross checked and verified the tensions and contradictions with a far broader group of more than 80 Mondi staff than the core seventeen research participants. However, after saying this, it would still have been preferable to spend more time with staff in the field while they were carrying out their work, in order to gain a more in-depth understanding of key issues arising from the research. This would have provided greater clarity on, for instance, the power dynamics between forestry area managers, the foresters, CEFs, and environmental specialists, or between the three departments of Land, Forestry Operations and Support Services, or even between Mondi staff and the neighbouring communities using wetland natural resources.

9.4.2 Deepening the contextual picture of Mondi

As part of chapter one, I developed a contextual picture of Mondi in relation to wetland management. This contextual picture was largely developed from the understanding of Mondi that I had generated over the past 17 years of working with Mondi on wetland and plantation forestry issues. In reflection, had I had more time, this contextual picture could have been strengthened to include a broader and deeper understanding of Mondi, and especially the structures and staff within it beyond wetland and environmental management, and into, for example, business management and development and culture of the organisation, using document and discourse analysis. This would have provided a richer contextual framework to locate my study. It would have supported a broader and deeper analysis of the data, as well as strengthened my understanding of the generative mechanisms that gave rise to the inhibiting contradictions, social structures and cultural systems within Mondi and the broader business context within which Mondi sits. I do feel, however, at the end of the PhD research project that the contextual picture I developed did not compromise the rigour of my research.
9.4.3 Reflexivity as the interventionist researcher

Since the research that I did is directly related to my work interests, I was continually balancing possible tensions that existed between being a researcher who is trying to retain a respectful distance from the research for fear of having too great an influence on its outcomes, with my work interests of conducting interventionist research to deeper understand and support social change for improved wetland management. I found this difficult. Especially coming from a natural science background which can have a positivist orientation, where research needs to be done in a way that minimises any form of bias, with preferably no bias at all. Of course I had my subjective views. I wanted to see a change in how Mondi could improve their management of wetlands, and understand how this happened to inform my future environmental education actions as a wetland conservationist. After all environmental education is about change orientated learning, which strives towards supporting a change in environmental practices for the betterment of humanity.

Therefore as the facilitator of interventionist based research, I had the dual role of participant–observer in the research. This meant that my interpretation of the data was therefore open to my own values and subjective opinions. Coming to terms with subjectivity in research is important for the ‘interventionist’ researcher. I was guided by the interventionist role that Mukute (2010) and Wals, van der Hoeven and Blanken (2009) discuss in their studies on expansive learning and social learning respectively. With this guidance, as an interventionist researcher I focused on creating a ‘safe space’ where participants felt at ease and were encouraged to raise sensitive and difficult issues or tensions in the presence of others without fear of recrimination; inspiring and encouraging the research participants to probe, discover and understand more deeply the underlying barriers that were inhibiting wetland management; clarifying the ideas that participants raised so that all understood what was being discussed; proposing ways forward during apparent ‘deadlocks’ in discussions so that participants reached an agreement they could ‘live with’; and reminding participants that they needed to commit to implementing the solutions they had developed to deal with the contradictions.

In hindsight, I feel that I could have been more careful and explicit in how I positioned myself as a researcher, to find a balance between the understanding required by the research of how the social change for improved wetland management was taking place, and the need to bring about social change required by my work interests. However, I also found that being conscious of the need to
balance this axis of tension enabled my self-reflexivity to achieve this balance as the research progressed. So it was perhaps not something that I could have thought about in depth and planned for in preparation for the research. It was a journey of self-reflexivity that had to happen at the same time as the research progressed. I did find, however, that using an academically rigorous theoretical framework, such as the expansive learning interventionist research methodology and the expansive learning cycle with its associated interventionist research tools as a tried and tested research method, provided me with good reason and research subjectivity ‘peace of mind’ for being a participant-observer with its associated tensions. In addition, applying the criteria for validating the trustworthiness of the research described in section 4.7, helped to considerably strengthen the rigour of the research. Therefore I feel that I was able to maintain the rigour of the research, despite being a participant-observer. It seemed important to share these reflections, as it was a difficult balance.

9.4.4 The usefulness of the research to society

As I come to the end of this research project, I can now reflect on its usefulness to Mondi, and more broadly the wetland community of practice in South Africa, as well as the environmental education community. At the beginning of the research, I was adamant that my research would not stand on a bookshelf, gather dust, and be of little use to the practice of wetland conservation. If it did, there would be little purpose to the PhD study. I embarked on this study, on an academic journey to find answers. Answers to questions about what was inhibiting improved wetland practice in Mondi, and how change could potentially be catalysed to deal with these obstacles. I knew that these questions did not only apply to Mondi, but to many other work contexts, such as working with other large corporates in the plantation forestry industry, and our partners in the sugar industry. After reflecting on the findings of the research, I see that this research has achieved three things: 1) It has catalysed organisational learning and development changes in Mondi, which has begun to improve wetland sustainability practices on its 311 645 ha of landholdings. 2) It has empowered me to understand more about how adults learn informally; the influence of social structures and cultural systems that provide the context shaping how we learn, make decisions and act; what social change is about; and how expansive social learning processes can enable change. 3) Most importantly, the catalytic potential of this new knowledge gained from the research, means that the new knowledge can be used to further the wetland conservation and environmental education efforts beyond the
life of this research project. It can do this through improving the effectiveness of the future efforts of Mondi’s wetland and environmental work, as well as those of the broader wetland and environmental education communities of practice, to be more successful in supporting morphogenetic change for improved wetland and environmental sustainability practices. As a scholastic piece of work, it has contributed to the environmental education research field by enhancing an understanding of how change orientated learning can take place. This has been achieved through demonstrating how expansive social learning can be used as an interventionist platform and methodological means to create the environmental education ‘space’ to proactively work with the sociology potential of morphogenesis to bring about future changes in environmental practice. It has demonstrated that when used appropriately, this learning space has the potential to seed or catalyse organisational development, organisational learning, and organisational change processes through enhancing participant reflexivity. This research project has therefore not only been beneficial to me as a researcher, but also to broader society.

9.4.5 A reflection on the usefulness of the theoretical framework used for the research

When reflecting back on the theoretical framework I used to guide the research, it has undoubtedly provided me with a strong framework to engage with my research questions. The combination of CHAT, expansive learning, realist social theory and original critical realism complemented each other well. The weaknesses of the one were supported by the strengths of another. For example, the use of basic critical realism provided ontological depth to the research that CHAT could not, helping to deepen and situate the constructivist processes mobilised through CHAT. This gave the research and CHAT a stronger ontological foundation on which to build. Where CHAT tools could not explain in detail how the change in practice occurred, realist social theory and the morphogenetic framework provided useful analytic tools. CHAT was extremely useful for supporting the research participants and myself to understand the structural, cultural and historical context in which the Mondi staff were learning and practising wetland management. CHAT was vital for highlighting the tensions and contradictions that were generative in catalysing the morphogenetic interaction of the Mondi staff with the social structures and cultural systems inhibiting wetland learning and practice. Expansive social learning and the expansive learning cycle, were important for providing the interventionist platform on which CHAT, realist social theory, and
critical realism could be put into research based practice. In this way, the theoretical and philosophical framework of the research supported me to navigate my research journey.

However, there is one significant gap which I feel the research has not entirely been able to deal with, and the theoretical framework as I understood it, provided little guidance. This was the power imbalances that emerged during the research. For example, a finding from this research touched on sensitive ethical issues, such as the power relations between the quieter Black voices, and the more vocal predominantly White voices; or the subtle but evident power imbalances between the different departments of the foresters, CEFs and environmental specialists; or those power imbalances between managers and staff of the Mondi, especially those identified in the Piet Retief area which took on subtle and unconscious racial undertones. Although key expansive social learning tools were used to successfully encourage democratic deliberations, such as the use of mirror data (section 6.3), I still felt that the research framework was inadequate for investigating or dealing with these power imbalances. This was an area that with hindsight and additional time, I could have investigated further. I would like to have seen if what I perceive to be a gap in the theoretical framework is indeed a theoretical gap requiring additional supporting theory, or if I misinterpreted the existing framework. I believe that this needs to be probed further, and opens up opportunities for further research.

9.4.6 The dilemma of supporting research participants during implementation of solutions or not

In looking back at what I could have done better during the research, I am curious to know if I should have provided additional support to the research participants while they implemented their solutions developed to deal with the contradictions. The time between the second interventionist workshop when participants developed their solutions, and when they had to report back to the area wide workshops on their progress of their implementation of the projects, was eight months. During this period, as the researcher I purposely did not contact them, wanting not to influence their ability to implement their projects. I wanted to let the expansive social learning process run its course, to see if change could be catalysed with minimal intervention from myself, apart from conducting the research and facilitating data generating workshops. As it turned out, many changes emerged from the implementation of these projects, as evidenced by the five different types of
change. However, I still wonder if additional support from myself to key individual participants identified as corporate agents, could have catalysed additional progress, that may have resulted in further dealing with the contradictions, even totally solving them in some instances. This extra support could simply have included monthly telephone calls enquiring about progress, as a gentle reminder to ensure that these projects remained a priority. The ensuing discussions might have allowed the participants to identify further tensions and contradictions to deal with as they arose, as opposed to revealing them at the progress review workshops 18 months later. At the end of the research, I am still not sure if leaving the participants to implement their projects with no support from myself was the best approach as an interventionist researcher, or if I should have intervened and provided some kind of support. I raise this point for future expansive social learning researchers to consider, as I still do not have a satisfactory answer myself.

9.4.7 Using the theoretical framework to strengthen research rigour but not being a slave to it

During the research journey, I tried to understand the theoretical framework fully. I did this to obviously strengthen the rigour of my research, build on what others had done before me, and maximise the guidance I could obtain from theory especially during times where I was unsure of the way ahead. However a reflection that I thought important to share, is that while using the theory to support my research, I also tried to not be a slave to the theory. In this way I was able to work with the theory, without letting it narrowly confine my approach to the research to what others before me had done. I raise this as a significant point, since it is very easy to become a slave to theory, especially when one comes from a natural science background as I do, where implementing theory as a recipe for research is all too frequent. I therefore found I had to consciously ‘loosen’ my thinking, with constant support from my supervisor, to work with the theory while not letting it dictate every step I took in the research. As an example, during the expansive learning process, Engeström (1987) and Daniels (2008) are quite explicit about using the triangular model of the activity system with research participants to enable them to deeper understand their activity system as it was in the past, is in the present, and could be the future. In the beginning of my research I found CHAT, the concept of mediation, as well as understanding the ‘object’ of an activity system quite difficult to grasp. Without belittling the participants, but after working for 20 years with plantation forestry staff who spend all their time in the field, cannot stand office work, don’t have much time for education activities, including sitting in workshops, and some of whom do not
have a good grasp of English, I made the assumption that their tolerance for trying to understand complex theory such as CHAT would be fairly low. I therefore made a decision to rather not use the activity system triangles and the three periods of time as a tool the participants could work with, but rather used key questions structured around generating the required data to achieve the same results. In addition, I did not explain what CHAT was, and only broadly and briefly what expansive learning was, limiting it to the expansive learning cycle and the basic tenets of expansive learning. During the research process, I often wondered if this was appropriate, or if I should have supported the participants to develop a better understanding of the theory used in the research, especially in order to understand their different interacting activity systems and their working towards a co-constructed object. However, on reflection I believe that this was the most appropriate decision, for the type of research participants I was working with, and is a reflection worth sharing with others who may want to use a similar theoretical framework in their research.

9.4.8 Including additional management in the expansive learning process

In the team of research participants I included three middle level managers, the environmental manager, the training manager and a forestry area manager. At the beginning of the research I was hesitant to include any managers, in case the voices of the foresters, CEFs and environmental staff were silenced by uneven power balances between management and field staff. Ultimately, I selected three, and hoped that the uneven power balances would not be too inhibiting on the other participants. As it turned out, subtle power imbalances did emerge with one of the managers, but they did not overpower the process, and sufficient safe space was created to minimise the effect on participants. The positive impact of the broader strategic management views, ideas, and ability of the managers to catalyse change of institutional structures through their position in the company, far outweighed any side effect of the subtle power dynamics. This confirmed the importance of including the managers in the research. However, I suspect that if additional forestry areas managers and CEF managers had been included, the process would have enabled wider and more far-reaching changes. Consequently, if I did the research again, I would probably have selected an additional two to four managers to increase the probability of managers being able to deal with the mundane discontinuities that occur between the ending of one expansive learning cycle, such as this research process, and the beginning of the next. As Engeström, Kerosuo and Kajamaa (2007) point out (section 7.17.4), if these mundane discontinuities are not overcome, the
smaller expansive learning cycles may not lead to catalysing the bigger cycle that is able to support change on a far greater scale. My research has pointed towards middle level managers in Mondi as critical in furthering organisational learning and development, but I did not focus the research explicitly on this. Therefore with hindsight, I feel a gap exists in my research, on balancing the need to include management in the research process in order to bring broader views and solutions to the group participants, while at the same time ensuring a balance in power relations to reduce inhibiting the deliberations of the rest of the participants. Overcoming this gap might well have encouraged the development of Archer’s social actors (Archer, 1995), which did not emerge from my research, furthering the morphogenetic process.

9.5 Recommendations for further research

From the above section on reflections on the research, as well as additional ideas, four recommendations arise for further research.

9.5.1 Investigating how expansive social learning may better understand and deal with power imbalances between participants:

As stated in section 9.4.5 I believe that the theories of CHAT and expansive learning were unable to adequately identify and deal with power imbalances that arose during the expansive learning cycle, despite strengthening the democratisation of decision making. I therefore found this to be a weakness in these theories, which needs to be investigated further and better understood. If additional theory is required to strengthen this gap, then which theory can provide it? Can power imbalances such as the ones revealed by this research be overcome, or can they only be managed? What interventionist and facilitation tools may be used to minimise these power imbalances? Is it critical to deal with these power imbalances if the expansive social learning process is to successfully support morphogenesis? A deeper understanding of these type of questions could have assisted me in understanding the continued subtle dominance of White colleagues during many of the workshop discussions, and how best to deal with this as an interventionist researcher. Although this is a sensitive cultural issue, I suspect that its prevalence is far more widespread in organisational contexts within South Africa, due to the country’s oppressive history. It is therefore
an important barrier, that should be investigated if democratic and dialogic deliberations are to take place between research participants during an expansive social learning process.

9.5.2 Testing the research findings in another organisational context:
This research has established that expansive social learning can provide a platform to scaffold and support open-ended environmental learning processes that are deliberative and potentially catalytic, to strengthen reflexivity for environmental change, using Margaret Archer’s morphogenetic framework to support this change (table 7.1, section 7.15). However since this is a case study, it will be important to take this finding forward in further research and see if a similar approach can be used in another type of organisation, such as a government department, using another natural resource management ecosystem type. This will be important for testing the conclusions emerging from this research in another context, determining its broader applicability to environmental education and supporting social change for improved natural resource management sustainability practices. Table 7.1 may be used as a framework for clarifying learning and understandings in expansive learning research work, which I think this is a very useful addition to the literature that can be more widely tested and used by other researchers working in other work contexts.

9.5.3 Testing the research findings at a larger catchment scale across the boundaries of multiple stakeholders:
On a broader scale, the management of freshwater ecosystems, such as wetlands and rivers, needs to take place at a catchment or watershed scale, rather than on an individual landowner scale. Landowners tend to only view the impacts that affect themselves, on their properties. However, upstream impacts on freshwater ecosystems at the top of the catchment have a negative impact on downstream stakeholders. Therefore it is important for all stakeholders in a catchment, or a large part of a catchment, to have a systems understanding of the need to manage freshwater ecosystems at the catchment scale. This will require working with key stakeholders in the catchment across different land use sectors to develop a shared understanding of the social, economic, and ecological value of freshwater ecosystems, a shared risk of the ecological degradation of these freshwater ecosystems, and shared action to strengthen the resilience of
freshwater ecosystems. There are research projects working in relatively small sections of a catchment with a single land use sector (Pollard, Sefatsa, & Makhabela, 2012). However, nowhere in South Africa is this currently happening across land use sectors, at scale, probably because it is extremely difficult to do with such a variety of stakeholders with multiple values, beliefs and ideologies about natural resource management. This would include rural commercial and subsistence farmers, urban businesses and local municipalities. I believe that the lack of a shared approach by all key stakeholders is a key overarching reason for the continued degradation of our freshwater ecosystems at a catchment scale. A potential research project that takes these PhD findings, and tests them at a larger scale across different land use sectors, rather than working with only one key stakeholder such as Mondi, is required to make a significant positive impact on freshwater ecosystem conservation. This research project could use the shared learning methodology of expansive social learning using a proactive morphogenetic approach, to determine if this methodology can be scaled up to work across the boundaries of multiple individual stakeholders, across commodity sectors at a catchment or sub-catchment level, to catalyse change in the management and use of freshwater ecosystems.

9.5.4 Investigating if including additional managers and greater support during solution implementation strengthens expansive social learning:

As identified in the reflections above, in sections 9.3.6 and 9.3.8, I feel that this research was not able to determine if additional support provided to the research participants while implementing their solution based projects, would have strengthened the environmental conservation outcomes. I am also not sure if the inclusion of additional middle level managers in the expansive learning process would have made a significant difference to these outcomes as well. I suspect that this is the case, but it would be important to test. For example, if additional managers are important, is it possible to say how many should be included before they become too dominant and inhibit conversations? How few is too few when a point is reached when insufficient management strategic thinking inhibits the expansive learning processes, and the potential of participants to institutionalise solutions? However, I do see both points as being important for future research to understand, if the expansive social learning process is to be used as a methodology to support the morphogenetic change required to deal with the complex environmental issues that modern society faces.
9.6 Conclusion

At the beginning of the research, I was hoping to collaboratively work with Mondi staff to better understand what was inhibiting the improved management of wetlands on Mondi Landholdings. I was hoping to catalyse a positive change in how the staff learnt and practised wetland management. I was hoping that I could understand how that change took place, so I could adapt and use this new knowledge in our wetland conservation work with other wetland owners and managers beyond the plantation forestry context, and into other land uses. I was hoping that my research would be able to benefit other researchers and practitioners in the environmental education and conservation fields of practice. At the end of this research, I feel that many of these hopes have been realised, and that the research has contributed towards a deeper understanding, with practical outcomes, for how organisational learning and development for improved wetland practice can be catalysed and supported and identified.
REFERENCES


Brandi, U., & Elkjaer, B. (2011). Organisational learning viewed from a social learning perspective. In M. Easterby-Smith & M. Lyles (Eds.), Handbook of organisational learning and knowledge management (pp. 23-41 ). Chichester: John Wiley and Sons.


Elkjaer, B. (1999). In search of social learning theory. In M. Easterby-Smith, J. Burgoyne, & L. Araujo (Eds.), *Organizational learning and the learning organization* (pp.75-91). London: Sage.


Janse van Rensburg, E. (2001b). (They say size doesn’t matter… criteria for judging the validity of knowledge claims in research). Research methods short course lecture notes, Rhodes University, Education Department, Grahamstown.


Lotz-Sisitka, H., Mukute, M., & Belay, M. (2012). The ‘social’ and ‘learning’ in social research: Avoiding ontological collapse with antecedent literatures as starting points for research. In H. Lotz-Sisitka (Ed.), (Re) Views on social learning literature: A monograph for social learning researchers in natural resources management and environmental education (pp.56-88). Grahamstown/Howick: Environmental Learning Research Centre, Rhodes University/EEASA/SADC REEP.


APPENDICES

Appendix 1: Questions guiding interviews with foresters on how they were learning and practices wetland management

Questions that formed the framework guiding conversations that explored how Mondi foresters were learning and practising wetland management, based on the different elements of the CHAT activity system.

Aim of interview: To explore how you are learning and practising wetland management

How are you practising wetland management?

1. Tell me about your history with wetlands and their management? (historicity)
2. What are the main aspects of wetland management that you work on? (object)
3. Does this compete with your tree growing responsibilities? (T&C)
4. Who do you work with on these wetland practices? (community)
5. How do you work with them? (division of labour)
6. Are you dependent on them for successful wetland management? (division of labour)
7. Have you experimented with the different aspects of wetland management? (tools)
8. Which rules/policies are encouraging/constraining wetland management? (rules)
9. What challenges/difficulties/tensions (institutional/mgt) have you experienced when practicing wetland management? (T&C)
10. What are the weakest links in managing wetlands? (T&C)
11. How could wetland management be strengthened? (solutions)

What is your motivation for practicing wetland management?

1. How did your interest in wetland practice begin? (motivation)
2. What motivated you to incorporate wetland management into your work? (motivation)
3. What do you aim to achieve with your wetland work? (outcome)
How are you learning wetland management?

1. How do you learn about wetland management? (tools)
2. What wetland training have you had? (tools)
3. Do you learn about wetland practices from colleagues? (tools & community)
4. What learning material have you used to strengthen your knowledge? (tools)
5. How do you pass on wetland knowledge to new staff or others? (community)
6. What challenges/difficulties/tensions have you experienced in learning about wetlands? (T&C)
7. What can be done to strengthen your wetland learning? (solutions)
Appendix 2: Example interview with a Social Development Facilitator on how they are learning and practicing wetland management

Interview with a Community Engagement Facilitator with the index name of ‘VI’. Interviewed on 2 March 2010

Length: 32 minutes

Note: the margins of this transcription and the small font size have been kept to the original transcription specifications that I analysed, to ensure the indexed page numbers mentioned in Chapter 4 remained the same.

David Lindley: VI the first question I’d like to ask is just get a bit of an understanding about your history of working with communities on wetland issues, could you tell me a little bit about that?

VI: Yes, my history about working with neighbouring communities, neighbouring our Mondi newsprint estates is that I do engage them on different issues, and every meeting that I attend, I do bring up the point of people looking after the land resources, their resources. If I say their resources I am talking about those you find in the rural areas not on the company property. At the same time I also talk about the resources that people can use within Mondi-Shanduka property with the aim of helping local communities.

David Lindley: So you talking about the resources on their land and also on Mondi-Shanduka land?

VI: Yes, and I think it has been working very well. In most cases you’ll find that live stock from community, they come in numbers to Mondi property because I would say our property is well looked after compared to their rural community land. That’s why you find more of their livestock wondering around within Mondi Shanduka property and at the end you find that it will be overgrazing, there will be trampling of wetland, and there will be also cattle that could easily cause accident in our road because you find that vehicles moving up and down unaware of stray animals.
Ok, so basically roads and grazing by community cattle, those are the main wetland issues that you’ve been involved in. And that’s wetland issues on Mondi-Shanduka land but also on their own land.

Another important issue is that you find that structures within rural communities they differ in a manner that you can’t say ‘I know about this community, I know about their structure’ I can use the same approach with the next community because each and every community is unique. Why is it unique, because they’ve got different things, cultures, and customs at different areas. They’ve got different people leading their areas, if you are the outsider you need to ensure that they recognise you at the same time building trust. Otherwise, they will never listen to you. If they don’t respect you they’ll never use whatever you saying to them, any advice. But at the same breath I think patience and also little bit of spending time with local community they will turn to listen to you and also try to follow you, but it all come with patience and perseverance.

So you have to develop the trust of the community?

Yes, yes, yes.

And you have to change your approach of working with one community to another, to another?

Yes, yes, yes, there is no recipe for all. And another interesting point about rural communities is that you find that some leadership more want more than others, they welcome any new ideas but at the same time they will never implement your idea. They will take it with open heart, open hand, they will listen to you, they will praise whatever you saying to them, and then after that nobody will take up the your idea, try to implement it on the ground, which is very disturbing when you think about it. Another thing ..........

How do you overcome that?

To do that?
How can you work with the communities to help them to start something, to manage their wetlands better for instance, or to use those wetlands on Mondi land better?

The best approach that I have used so far is that you set up a date, go out yourself there, invite the people well in advance to come and see because you going to make practical examples; and things that can help them, if you put aside the time to go out and do something, do it yourself and the people will follow you. The next thing that you need to do is to make the people realise that they need to commit themselves, and at the same time before the end of the day or workshop you need to encourage the ownership. They must take the ownership. Once they’ve taken the ownership you must come back and praise the people, and tell them what is good, what is bad, where they can improve, at the same time they must involve the youngsters, the local youth. Not only must the adult that must work there, even the local youth be involved because they are the future generation of that area.

So somehow we need to involve the youth as well?

Yes definitely.

When you go work with communities on wetland issues, in the manner that you just described, do you work together with anybody else in Mondi?

Ah, no, no, no, but what I normally do is to inform the local forester there that ‘look I’m around I will be doing a, b, c, d, and then after that you will report back when you see the forester or during management meetings.

So the forester, and for instance the environment specialist, do they ever come out into the field with you when you working with the community on a wetland related issue, be it grazing or agriculture?

No they don’t.
Would you like them do you think it would help or not?

I think especially the local forester it would be of great help, because he is always there, he can always ask the people round, ‘how are you doing with your wetland, this is what I’m doing with my wetland’. There must be a transparency; in talking about transparency I’m saying that because it will be good for forester to share ideas with local people. At the same time he must ask the local rural people about their progress to their own working on wetland, because that will encourage the local people, that the company is doing this on their property why can’t we do the same.

So you saying there needs to be more of a trust built between the forester and the rural community?

That’s correct yes.

And you saying that by working with you on these issues the forester could develop that trust with the communities, because you are developing a trust?

Yes.

But what about environmental specialist, do they need to be involved in any way and develop a trust with the community?

I think they need to be involved, but not as much as local forester, they need to be involved as well because those people are specialist, they should, if they come they will point out things that we overlook by everyone who is there, because they are not specialist but they have got a will of working on wetlands, but with the environmentalist I think that will make a huge improvement in terms of working on wetland.
Do..... so you would like to improve the way, and the amount of time that you spend working with the forester and with the environmental specialist, and the community together on wetland issues as one team?

Yes, I think that would be a good thing. I’m not saying the forester must always be there, but they will be days when he or she is being wanted, or asked, to come along and he must make sure that he or she avail themselves.

In your experience has that happened too little in the past, or is it the right amount?

In my experience that has been very, very rare, very rare.

That the environmental specialist and the forester have come out and met with the community on wetland issues?

Ah, yes, yes.

To work on these particular issues?

Yes, in my experience that has been very very rare.

Why?

I think that was, or it comes back to the point of lack of communication, that is between community affairs officer and local foresters and environmental people.

How do you think we can strengthen that?

I think that can be strengthened by, especially by the environment people through organizing events, workshops, or refresher courses that will involve local forester, and also we can invite the leaders of rural communities to come along and learn.
To all learn together?

Yes, that will improve the communication gap and to my knowledge the situation will be better. These events will also open other things, open the discussion, socialise with the people, the rapport will be build. But to me I think the workshop, the refresher course, or the workshops talking about wetlands, we must invite rural community leaders, local forester, the person that is working as a link between the company and the community (SDF). That to me, will make a huge difference.

Do you think that then this is one of the greatest weaknesses in wetland management or environmental management is that this is not happening?

No, I think with no benefit of the doubt, that is to me a huge gap that we got at the moment. Firstly no proper communication. Secondly people are lacking knowledge about these things. They can hear.

Which people?

Rural community people. Rural areas most of the time are ignorant, but if we got the opportunity to engage them I think we must do that, because that will make a huge difference in terms of skilling the people of how to handle wetlands, and also educating people on how to behave themselves around wetlands.

But what you are suggesting is that everybody learns together, not we go there and teach the community?

That’s correct, yes.

That the foresters, the environmental staff, the SDF’s or CEFs and DFs all get together to learn together about the wetland, is that what you are suggesting?

Yes yes that is what I am suggesting.
How or what..... Let me jump the gun. What other weaknesses do you think there are apart from what you describe that are or difficulties that are inhibiting the management of Mondi’s wetlands, not just by the communities but by Mondi staff? Or within the company are there certain rules and policies that are inhibiting better wetland management. Is there a lack of resources, what barriers do you think there are apart form the one you describe which is preventing Mondi from managing its wetlands better, and I think specifically from a your community angle?

I think with the resources that the company have got, they doing good to me they are doing excellent job. But I think with the additional of staff members, I think the company could even do better. We still have that opportunity of doing better, because for instance at a current people or staff that are managing and supposed to managing the environment, I think they too thin on the ground.

So their resources are too few, but the will is there from the company side!

Yes, yes, the will from the company is there, because they’ve got policies they talk about these things.

So what policies are enabling resource use, wetland resource use by the communities on Mondi land?

Repeat please.

What policies do you refer to are encouraging the use of wetland resources by communities?

The first one is that we allow the livestock from community to come graze within the company property, but at the same time we not there for the whole day to manage for how the cattle are grazing on wetland, but if we have people who are there the whole day, they will be able to identify these problem in the earlier stage, compared to the local forester because the local forester is the farmer, he’s the forester, he’s supposed to look after safety of the area, safety of the people, safety of whatever, and then he’s also supposed to look at the production, he needs to look
at infrastructure include even the wetland as well, but for one person to do all that I think it is little bit too much, but what I’m saying here if the company can consider maybe to identify people who will assist on the environmental issues the focus would be on the wetland as well.

Do you think that if Mondi can’t employ more people that the forester’s job of looking after this land needs to be divided up, the labour needs to be divided? So that for instance if he’s going to manage his wetlands better, he needs to make sure they grazed properly, therefore he needs to work with you on the grazing issue so that they can divide the labour a little, and say VI will you help on the wetland grazing issue, and maybe we need to use more information to see whether this wetland is overgrazed, therefore let me bring in an environmental specialist to see if that that wetland is overgrazed. So you dividing the labour up, do you think that’s important?

To my understanding I think that is very important, it is important to involve people that are relevant.

Does it happen at the moment?

No no its not happening.

So there’s not that division of labour?

No.

It’s almost all up to the forester, because they got so much they don’t do everything as they would like?

No, yes, you can expect so much to a person, but looking at the amount of work, I think one can really look at the whole set up.

Just to move on from practices onto learning, how do you currently learn to understand how the communities are using wetlands resources? And whether its sustainable or not?
I think I’ve learnt enough because currently I’m involved with 32 communities.

32, that’s a lot.

Yes it is, I would say 80% out of that 32, all their wetlands are being overgrazed. If not been drained but....

......and those are wetlands on Mondi land?

No on their own land, not on Mondi land. But the thing is I think we can still do more, but we need to involve firstly the leaders, and then after that we involve the parents, the parenthood and lastly the youth. I believe very much on the youth, because as I rightly said before they are the future generation of this country, we need to involve those people more than anything else.

But you said that the wetlands are overgrazed and drained. How do you know that they are unhealthy, the wetlands, how do you learn that?

If you see that the wetland, looking at the structure of the wetland, you could see that the wetland was full of water before, was waterlogged, but lately because of the trampling from the livestock and also the drainage that had been done purposely, you could see that the water was drained and the wetland is no longer alive.

So you learning from your observations?

Yes, yes.

Do you ever learn from the foresters or the environmental specialists about wetlands. about how the community could graze them, how to improve their management?

Not really, with the exception of using my knowledge, because I was previously a forester and then um .....
Is that your background, so you were a silviculture forester or harvester?

Both, I was harvesting and then silviculture, and then after that I moved to community affairs.

So you using your past experience?

Yes.

Drawing from that?

Yes, yes.

Do you think it would be important to learn from the environmental specialists as well more about wetland issues, or, and them from you about community issues?

I would say I very much value the knowledge of the environmentalist, but the thing is, we cannot ignore the knowledge that is out there to the rural communities. Those people have got a wealthy knowledge but we need to, maybe to capitalise on that knowledge, and maybe to more define it to the new technologies.

So how do you learn about the community knowledge?

Is by asking questions. You ask open question, not closed question, because if you ask close question they will turn to sit back and not giving you enough information that you are looking for.

Do they learn from you as well?

Yes they do, they do because I share the knowledge that I’ve got with rural communities.

So is most of the knowledge sharing through discussions or do you use education materials to help you?
I use, I think I use both, sharing the knowledge and also maybe to do a visual education.

Do you have any wetland learning materials to use at all, to help the community understand how they can utilise the wetland resources better?

Yes, ummmmmm, not really but I’ve got a little bit of information about it which I was using 2 years ago.

And that information is – do you remember?

Pamphlets.

Do you see it important to have wetland training materials or do you think it’s more important to learn from discussions with the community?

I think I’ll use both, because I’ll use material and also discussion, because if a person is old he’s learning more with visual aids rather than sharing information knowledge.

So then do you think it’s, there is a need to develop more learning materials to be able to work with communities on environmental issues?

Yes, but we first have to identify who will roll out those materials.

Right.

Because if you don’t identify those people, that means you can work so much and at the end of the day no one is using the material.

Is it material that you would use or not?

Yes, definitely I would definitely use that.
So you say the CEFs would be the people to use those materials with the communities, or do you think there would be somebody else?

No, I would say the CEF can facilitate, then make sure that the material has been used properly to people.

And you need more appropriate materials to do that?

That’s correct yes, and I also think the photos or visuals need to be visible for older people.

What photos?

Anything that is there, that the people need to look at for wetland or environmental awareness.

Because of their eyesight?

Their eyesight is a problem, and also they are old, they learn more by looking at things.

Are most of the community members that you work with older people or are they youth?

They are mixed.

And are they very receptive to learning from you as well once you develop the trust?

That’s correct yes, that’s correct. And that is another important thing, that you can’t send a new person to deliver a message to people with the aim of changing people’s attitude. You need a person who has been working with the community for some times, a person that they respect, because they will listen to that person, but if they don’t respect that person they will never listen.

So someone like you is very important because you have been around for a long time, and you can’t just have new people coming in all the time and changing?
Yes, yes.

Is that a problem? Do you find that, I’m speaking generally outside Mondi-Shanduka, do you find that in the Land Department although its relatively new, people come and go quickly or they…..?

I find it, I wouldn’t want to pinpoint, but I find that’s why they having so many problems, is because they chop and change which is not good for the exercise.

Is that mainly within the Land Department, or do you think in the foresters and the environmental side?

I think in the Land Department.

And that’s outside Mondi-Shanduka.

Yes, yes, is outside.

Do you think the issue you describing to me earlier on about the need for foresters to work together more with you and the communities and the environmental guys altogether, to learn together, is that something you just describing from Mondi-Shanduka or in your experience would that apply for other areas in Mondi where you’ve worked?

I think it will apply everywhere, because I’ve got knowledge about the other companies as well, they doing almost the same thing. There is no major difference in between. They doing almost the same things.

Yes, I can imagine that, I think from my discussions that is what I am coming up with as well.

Yes, sure.
The last question I would like to ask you, is what do you think are the most important challenges or difficulties that you facing in learning more about wetland resource use together with the communities?

I think the first challenge that comes up to my mind is that, as I said before, lack of knowledge about wetland resources, because they lack knowledge they can’t talk about wetlands.

So they don’t have the language?

Yes, they don’t have the language about wetlands. As I am engaging them, I can talk about wetlands, I can tell them that I can, warn them, I can identify gaps and things that will happen in future about wetland, but with the knowledge that I am sharing with them I’ve got no guarantee that they will use it, because there is no follow-up, they have got no goal to work towards about wetland. They might have information, especially the youngsters that are still at school because I think wetlands is one of the things they learn about at school, but with the information they come with from their different schools, I don’t think they sharing enough with their parents.

Do you think that applies also for broader environmental management or just wetland management?

I’d say wetland management.

So they understand more about the broader aspects of environmental management?

Yeah, sure, sure. And another thing that you mentioned which is very interesting about saying in future we might be talking more about water shortage in our country, you might find that; that kind of information they don’t have, they only know that the stream is running, for how long nobody’s talking to them about that, that reverts back to wetlands functions.

So its connecting the wetland functions to the water......
they seeing that is running.....

they access their potable water from?

Yes, yes, yes, sure, sure.

Is there anything else that you wish to add on the learning about wetland resource use in the communities or the practicing of wetland resource in communities? Any other barriers, or any other potential solutions, or any other problems other than that which you’ve spoken about?

I would say, I don't know maybe I’m jumping the gun here, but I would say if we were to look at the wetland as such, I would say firstly doing things together with our local communities; the next thing is to involve schools, but whose gonna do that that needs to be identified as well, to be put down on the paper to say, because it ends up in the middle hanging. We need to involve the local schools.

So it’s an important issue to involve them but how do you involve them and who does that work to involve them?

Yes, yes, yes. I’d would say those are the things that are very important to me, and also to share the knowledge because people should know about these things, once they know about these things they will make a difference, I’m sure of that.

End.
## Appendix 3: Contextual descriptions of the three main wetland management activity systems of Mondi

Data analysed from 17 interviews held from 25 February – 4 March 2010

<table>
<thead>
<tr>
<th>Object</th>
<th>Foresters (OI, StI, SrI, Gl, WI, PI)</th>
<th>Environmental specialists (DbI, Ji, Li, Ti)</th>
<th>Community Engagement Facilitators (CEFs) (VI, RI, NI, ZI)</th>
<th>Managers (MI, CI, KI)</th>
</tr>
</thead>
</table>
| **Implementing the management & use (regulation) of wetland resources.** | Advising foresters & CEFs on sustainability practices strengthening wetland management. Provides specialist advice to foresters & CEFs on:  
- Alien plants in wetlands/riparian/delineated areas (DbI, Ji, Li, Ti).  
- Roads in catchment & river/wetland crossing (DbI, Ji, Li).  
- Wetland rehabilitation (DbI).  
- Endangered species.  
- Wetland delineation (DbI, Ji, Li).  
- Burning & mowing of firebreaks in wetlands & grasslands (DbI, Ji, Li, Ti).  
- Cattle grazing/trampling of wetlands & carrying capacity of wetlands (DbI, Ji, Li, Ti).  
- Erosion control in catchment (Ti). | Facilitating community use of wetland resources.  
- Wetland resource use by community of cattle grazing, sedges for weaving, medicinal plants, cultivation in wetlands, & resource use mapping (RI, VI, NI, ZI).  
- Interface between Mondi & community on all issues (NI).  
- Environmental awareness (NI). | Strengthening staff capacity to advise, facilitate & implement wetland sustainability practices.  
- Wetland management (MI, CI).  
- Natural resource use by communities (CI).  
- Balance between resource use and ecosystem integrity (CI).  
- Preparing staff to collectively discuss issues & decide on equitable & sustainable solutions (KI).  
- Foundational development towards sustainability of Mondi business (KI). |
| **Grazing** of community cattle but hard to manage (StI, Gl, WI, PI). |  |  |  |
| **Cultivation of wetlands** for food gardens (Pi). |  |  |  |
| **Protecting biodiversity**, especially to cranes where the cattle graze (OI). |  |  |  |
| **Burning** of wetlands for firebreaks, and managing community fires for grazing, & for wetland health (Oi, StI, Gl, WI, PI). |  |  |  |
| **Alien plant** control in wetland and delineated areas (StI, SrI, Gl, WI). |  |  |  |
| **Wetlands delineation** & extracting timber & eroding professionally planted in buffer zone (StI, Gl, PI). |  |  |  |
| **Stream crossings & drainage of roads** in catchment a big problem (SrI, Gl). |  |  |  |
| **Assessing condition** of wetland (Wi). |  |  |  |
| **Developing wetland rehabilitation plans** (Wi). |  |  |  |
| **Healthy wetlands providing ecosystem services.** | Well managed wetlands & open areas. | Well managed wetlands & learning together to better manage wetlands. | Well managed wetlands & open areas (Ti).  
- Mondi & community working & learning together to better manage wetlands.  
- Mondi & community working & |  |
| **Healthy wetlands** providing ecosystem services & open spaces free of aliens (OI). |  |  |  |
| **Wetlands are in best possible state in** |  |  |  |
|  |  |  |  |

Outcome

- Healthy wetlands providing ecosystem services.  
- Healthy wetlands providing ecosystem services & open spaces free of aliens (OI).  
- Wetlands are in best possible state in | Well managed wetlands & open areas.  
- Well managed wetlands & open areas (Ti).  
- Mondi & community working & learning together to better manage wetlands.  
- Mondi & community working & | As an adaptable organisation, Mondi manages its wetlands to continuing providing |
<table>
<thead>
<tr>
<th>Tools</th>
<th>The tools foresters are using to mediate their wetland sustainability practices include interaction with their Mondi colleagues and external specialists, past experiences, guidelines &amp; reports, experimenting, &amp; occasional workshops.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Learning from colleagues in forestry industry, at Cedara (tertiary education), and KZN Wildlife (OI, PI).</td>
</tr>
<tr>
<td></td>
<td>Enviro specialist &amp; outside specialists who provides advice (StI, Srl, Gi, WI).</td>
</tr>
<tr>
<td></td>
<td>Teaching the community when issuing grazing permits (OI).</td>
</tr>
<tr>
<td></td>
<td>From past experiences (Srl, Gi).</td>
</tr>
<tr>
<td></td>
<td>Plenty of money to clear alien plants (OI).</td>
</tr>
<tr>
<td></td>
<td>Burning management plan (Stl).</td>
</tr>
<tr>
<td></td>
<td>Learning materials from the enviro specialist (StI).</td>
</tr>
<tr>
<td></td>
<td>Learning from library, newspapers &amp; pamphlets (PI).</td>
</tr>
<tr>
<td></td>
<td>Workshops on wetland delineation (Srl, Gi).</td>
</tr>
<tr>
<td></td>
<td>Monitoring reports, but not often go the time to read them (Srl).</td>
</tr>
<tr>
<td></td>
<td>Developing good relations with communities allows for successful mosaic burnings at Zoar wetland (Gi).</td>
</tr>
<tr>
<td></td>
<td>Guidelines &amp; general literature on wetland ecology services for all to see.</td>
</tr>
<tr>
<td></td>
<td>Ecosystem services that people can see &amp; value (MI).</td>
</tr>
<tr>
<td></td>
<td>Mondi developing into a learning organisation (KI).</td>
</tr>
<tr>
<td></td>
<td>The tools enviro specialists are using to mediate their work with foresters &amp; CEFs on wetland sustainability practices include their past experiences, audits, management guidelines, infrequent courses and informal social learning.</td>
</tr>
<tr>
<td></td>
<td>Past experience from developing Gilboa burning regime, working at St Lucia for 12 years, reacting to inappropriate forestry practices, infield, through trial &amp; error (DbI, LI).</td>
</tr>
<tr>
<td></td>
<td>Audits (LI).</td>
</tr>
<tr>
<td></td>
<td>Guidelines &amp; management plans developed when enviro team more active in past (DbI).</td>
</tr>
<tr>
<td></td>
<td>KZN wetland forum when it was active (DbI).</td>
</tr>
<tr>
<td></td>
<td>Interaction with other staff &amp; consultants in field e.g. CEFs, foresters, MWP, delineation consultants (Bdl, Ji, Li, Ti).</td>
</tr>
<tr>
<td></td>
<td>Knowing who to ask for help (JI).</td>
</tr>
<tr>
<td></td>
<td>A few courses on wetland basics &amp; delineation (JI).</td>
</tr>
<tr>
<td></td>
<td>Scientific papers while studying MSc (LI).</td>
</tr>
<tr>
<td></td>
<td>The tools CEFs are using to mediate wetland resources use by communities include their past experiences, informal social learning with communities, colleagues &amp; external specialists.</td>
</tr>
<tr>
<td></td>
<td>Past experience &amp; observation enables monitoring of wetland health (VI).</td>
</tr>
<tr>
<td></td>
<td>Pamphlets, magazines &amp; booklets from DWAF &amp; Mondi (RI).</td>
</tr>
<tr>
<td></td>
<td>Discussion with community &amp; using visual aids eg pamphlets (VI).</td>
</tr>
<tr>
<td></td>
<td>Cattle grazing committees, but not that effective (RI).</td>
</tr>
<tr>
<td></td>
<td>Workshops &amp; meetings on cattle management support learning of community (NI).</td>
</tr>
<tr>
<td></td>
<td>Learning from enviro specialist &amp; especially when resource mapping (RI).</td>
</tr>
<tr>
<td></td>
<td>Learning from wetlands specialists like MWP (ZI).</td>
</tr>
<tr>
<td></td>
<td>Wetland videos when working with the community (ZI).</td>
</tr>
<tr>
<td></td>
<td>Learnt a bit about cattle management from foresters &amp;</td>
</tr>
<tr>
<td></td>
<td>Enviro specialists learn through informal interaction with foresters, govt officials, external specialists, forums, meetings &amp; workshops (CI, KI).</td>
</tr>
<tr>
<td></td>
<td>Basic management tools (KI).</td>
</tr>
<tr>
<td></td>
<td>Courses on emotional intelligence, fire fighting, business management (KI).</td>
</tr>
<tr>
<td></td>
<td>Induction programme - in prep (KI).</td>
</tr>
<tr>
<td>Rules</td>
<td>Mondi policies &amp; procedures, community relations, trust &amp; beliefs govern how foresters manage &amp; use the wetland resources.</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>Grazing permits</strong> provided to the community (Ol).</td>
</tr>
<tr>
<td></td>
<td>Where <strong>cattle can graze</strong> according to where there are <strong>cranes</strong> (Ol).</td>
</tr>
<tr>
<td></td>
<td>Foresters used to <strong>compound cattle</strong> if problems but stopped a 1½ years ago when Land Dept began (Wi).</td>
</tr>
<tr>
<td></td>
<td><strong>Burning management plan</strong> guides where to burn and how often (StI).</td>
</tr>
<tr>
<td></td>
<td>Biannual burning &amp; cattle herding rules at Zoar wetland work well &amp; community abide by it (Gi).</td>
</tr>
<tr>
<td></td>
<td>Rules to ensure <strong>rotation burning</strong>, but don’t always work so well (Wi).</td>
</tr>
<tr>
<td></td>
<td>Forester is responsible for the whole farm (StI).</td>
</tr>
<tr>
<td></td>
<td><strong>Community herdsman</strong> control grazing (StI).</td>
</tr>
<tr>
<td></td>
<td><strong>Community belief</strong> that if wetlands are not burnt, rains will not come (Wi).</td>
</tr>
<tr>
<td></td>
<td>If foresters want to work with the community they must <strong>work through CEF</strong> or get blocked (Pi).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mondi policy &amp; procedures, legislation &amp; global certification, community will &amp; trust in staff, govern the use and management of wetlands.</th>
<th><strong>Awareness days</strong> with foresters (Li).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mondi &amp; national <strong>firebreak</strong> burning rules (DbI).</td>
<td><strong>Internet</strong> (Li, Ti).</td>
</tr>
<tr>
<td><strong>Grazing</strong> contracts/permits controlling whose cattle from community, not where to graze &amp; how many cattle (DbI, Ji).</td>
<td><strong>Community</strong> (Ni).</td>
</tr>
<tr>
<td><strong>Mondi wetland policy</strong> governing wetland management (DbI).</td>
<td>Learns about wetland resource use by reading, websites, scientific papers &amp; his thesis (Vi).</td>
</tr>
<tr>
<td><strong>EIA</strong> legislation (Ji).</td>
<td>The cultural approach of working with communities is essential to developing trust &amp; transparency for implementing Mondi’s wetland resource use policies &amp; procedures.</td>
</tr>
<tr>
<td>Reality of ‘community rules’ &amp; Mondi have little control (Ji).</td>
<td>Each community has a unique structure, culture &amp; customs so approaches to each community differs (Vi).</td>
</tr>
<tr>
<td><strong>Trust</strong> governs ability to do work with foresters &amp; CEFs (Ji).</td>
<td>Work with community on practical issues that will help them (Vi).</td>
</tr>
<tr>
<td>Compliance with Forestry Stewardship Council – e.g. the threat of losing certification due to poor alien plant control (Li).</td>
<td>Important to get the <strong>approach to communities</strong> right: invite well in advance, encourage ownership &amp; commitment, provide them with good &amp; bad feedback on how to improve, praise them (Vi).</td>
</tr>
<tr>
<td><strong>Permits</strong> for use of Mondi’s natural</td>
<td>Must have <strong>community trust</strong> or they will not work with you – takes time. (Vi).</td>
</tr>
<tr>
<td>Foresters take responsibility for their land &amp; are guided by Mondi’s policies, procedures, standards, &amp; external watchdog bodies.</td>
<td><strong>Trust &amp; transparency between community &amp; foresters</strong> must be developed by working together (Vi).</td>
</tr>
<tr>
<td>Forester takes responsibility for everything on his land (Mi).</td>
<td><strong>Mondi gives you the freedom</strong> to do what you want – no barriers (Mi).</td>
</tr>
<tr>
<td>Foresters must be proactive in requesting advice, or they won’t get it (Mi).</td>
<td>Requirements of Mondi policies, procedures &amp; standards (Ci).</td>
</tr>
<tr>
<td>Mondi gives you the freedom to do what you want – no barriers (Mi).</td>
<td>Watchdog role played by FSC, WWF, MWP encourages Mondi compliance (Ci).</td>
</tr>
</tbody>
</table>
- Stops cultivation in wetlands, but provides alternative cultivation areas in recently cut plantations (PI).

- Community on cut wetland sedges mid winter otherwise superstitions says summer thunderstorms (RI).

- Mondi environmental policy governs issuing of resource use permits (RI, VI).

- Used to be cattle committees & strategy that controlled grazing, but now defunct (NI).

Community

<table>
<thead>
<tr>
<th>Foresters work with CEFs, communities, enviro specialists, conservation contractors &amp; specialist consultants on wetland sustainability practices.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEFs on grazing &amp; burning (OI, Stl, GI, WI, PI).</td>
</tr>
<tr>
<td>Communities on grazing &amp; burning, &amp; cultivation issues (OI, Stl, GI, WI, PI).</td>
</tr>
<tr>
<td>Enviros for wetland &amp; enviro advice (OI, JI Stl, GI, WI, PI).</td>
</tr>
<tr>
<td>Contractors for alien plant clearing (OI, Stl).</td>
</tr>
<tr>
<td>Dedicated conservation teams being set up (GI).</td>
</tr>
<tr>
<td>Note: Srl has no COP (Srl)</td>
</tr>
<tr>
<td>Consultant for developing rehabilitation plans (WI).</td>
</tr>
</tbody>
</table>

Enviro specialists work with foresters, CEFs, conservation contractors, communities & the Dept of Agriculture on wetland sustainability practices.

- Foresters on silviculture & roads (DbI, Ji, Li, Ti). |
- CEFs on grazing (DbI, Ji, Li, Ti). |
- Contractors for burning (DbI). |
- Dedicated conservation teams for alien clearing, roads culvert clearing (Li). |
- Community on grazing (DbI, Ji, Li). |
- Dept of Agriculture for cattle herd system (DbI). |

CEF work with communities, consultants, foresters & enviro specialists on wetland resource use.

- Community using natural resources (VI, RI, NI, ZI). |
- Should be enviro & forester but not (VI). |
- Forester deciding on where community can cut reeds (ZI). |
- Enviro on resource mapping & quantity of use (RI, ZI). |
- Other CEFs from other areas to share experiences on field days (ZI). |
- Zakhe consultants advising on community cattle project & probably delivering education package (NI). |
- Proposed: Enviro, forester, MWP & Dept of Agriculture for new cattle project (NI). |

Division of Labour

<table>
<thead>
<tr>
<th>Forester depends on CEFs to develop relations with communities &amp; collaboratively manage wetland resource use by communities; contractors for clearing alien plants &amp; burning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractors to burn firebreaks, clear aliens, &amp; herd cattle; CEFs to work with the community on burning &amp;</td>
</tr>
<tr>
<td>Enviro provides enviro advice to foresters &amp; CEFs; CEF leads interaction with community on</td>
</tr>
<tr>
<td><strong>firebreaks; and enviro specialists for conservation advice.</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>• CEF works on community relations, grazing permits, and arranges forester to speak on issues e.g. cattle trampling trees, burning &amp; firewood issues (OI, StI, GI, PI).</td>
</tr>
<tr>
<td>• Contractors for clearing alien plants (OI, StI).</td>
</tr>
<tr>
<td>• Dedicated conservation team on alien clearing and burning firebreaks (GI).</td>
</tr>
<tr>
<td>• Enviro for conservation advice on e.g. alien plant clearing, and to train the conservation teams (StI, GI, WI, PI).</td>
</tr>
<tr>
<td>• Consultant to develop rehabilitation plans (WI).</td>
</tr>
<tr>
<td>• Note: Srl has no division of labour (Srl).</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

408
**Appendix 4: Analytical memo of tensions from interviews and workshop #1**

**Table A: Summary of analytical memo of tensions from interviews (25 February – 4 March 2010) & workshop #1 (19-20 April 2010) for prioritised contradictions** = those bullets not used in Chapter 5

<table>
<thead>
<tr>
<th>Prioritised contradictions 1 (with 2, 3 &amp; 10 integrated) &amp; 4 (with 6 &amp; 12 integrated).</th>
<th>Tensions from interviews</th>
<th>Tensions from workshop #1</th>
<th>Which tried to understand why the interview tensions occurred?</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning.</td>
<td>1. CEFs have thin understanding of wetlands &amp; community natural resource use, and do not know how to tackle these issues: CEF 5, enviro 3, manager 1.</td>
<td></td>
<td>WHY IS STAFF &amp; COMMUNITY LEARNING ON WETLAND/ENVIRONMENTAL SUSTAINABILITY PRACTICES WEAK?</td>
</tr>
<tr>
<td></td>
<td>2. Information not in usable form and no time to learn: manager 1, enviro 1, CEF 1.</td>
<td>1. No induction/handing over to new staff: Enviro 1, manager 1.</td>
<td>2. Weak understanding by staff of each other’s fields in forestry, social &amp; enviro issues &amp; no structure to strengthen it: Manager 3, forester 1, CEF 1, enviro 1.</td>
</tr>
<tr>
<td></td>
<td>3. Community lack access to knowledge on natural resource use: CEF 3, enviro 1.</td>
<td>3. Lost hunger &amp; excitement to learn &amp; teach – visits &amp; field days: Manager 5, enviro 3, forester 2.</td>
<td>3. Weak communication between staff: Manager 3, forester 2, enviro 1.</td>
</tr>
<tr>
<td></td>
<td>4. Narrow understanding of importance of broader environmental picture to Mondi: Manager 3, enviro 2, forester 1.</td>
<td></td>
<td>4. Weak communication between staff: Manager 3, forester 2, enviro 1.</td>
</tr>
<tr>
<td></td>
<td>5. No formalised learning plan/structure in place to strengthen informal learning: manager 8, forester 3, enviro 2, CEF 1.</td>
<td></td>
<td>WHY DO SOME STAFF RECOGNISE THE IMPORTANCE OF INFORMAL LEARNING AND OTHERS NOT?</td>
</tr>
<tr>
<td>14. Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their attitudes/culture/individual complexity and resistance to change differs.</td>
<td>6. Resistance to change and learning: manager 3.</td>
<td>5. Staff change is difficult due to past turbulent restructuring: Manager 1.</td>
<td></td>
</tr>
</tbody>
</table>
### WHY IS INSTITUTIONAL KNOWLEDGE LOST WHEN STAFF LEAVE?

1. Continuity of community relationships not recognised when staff leave: Enviro 1, CEF 1, forester 1.
2. Weak handover process to new staff: Enviro 2, forester 1, and all participants.

### WHY DO WE NOT KNOW WHAT WE ARE MANAGING FOR?

1. Insufficient information & decisions being made for wetland management: Manager 2 Enviro 1.

### WHY DO WE WORK IN SILOS?

1. Weak staff collaboration across job descriptions on common issues: Forester 6, CEF 2, enviro 2, manager 2.
2. Little ‘space’ & leadership provided by management for staff to collaborate across silos: Manager 7, forester 3, enviro 1 (but issue raised by enviro).

### WHY DOES MONDI HAVE LITTLE CONTROL OVER THE USE OF ITS NATURAL RESOURCES?

1. Weak collaboration with communities on natural resource use: Forester 4, enviro 1, CEF 1, MWP 1.

### WHY DO SENIOR STAFF NOT MEANINGFULLY UNDERSTAND ENVIRONMENTAL SUSTAINABILITY ISSUES?

1. Lack of meaningful environmental understanding by senior staff: Enviro 3, manager 3, forester 1.
2. Commitment present, but staff not supporting senior mgmt to strengthen environmental understanding: Manager 2.
Table B: Detailed Analytical memo of tensions with supporting evidence of individual tensions.

<table>
<thead>
<tr>
<th>Prioritised contradictions 1 (with 2, 3 &amp; 10 integrated) &amp; 4 (with 6 &amp; 12 integrated)</th>
<th>Tensions from interviews</th>
<th>Tensions from Workshop #1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning.</td>
<td>These resulted in the contradiction.</td>
<td>1. No induction/handing over to new staff: enviro 1, manager 1.</td>
</tr>
<tr>
<td>1. Generally staff lack wetland management knowledge, and information is not in usable form and no time to learn: manager 2, enviro 2, CEF 1.</td>
<td></td>
<td>• Lack of an induction/handing over process for new staff and new policies (Enviro, Manager, JS2P2; KS2P3).</td>
</tr>
<tr>
<td>• Staff lacking knowledge of how to manage wetlands better, and therefore not knowing any better (Manager, CIP7; Enviro, DbIP7).</td>
<td></td>
<td>2. Weak understanding by staff of each other’s fields in forestry, social &amp; enviro issues (Enviro) &amp; no structure to strengthen it: Manager 3, forester 1, CEF 1, enviro 1.</td>
</tr>
<tr>
<td>• Staff lacking wetland knowledge, and although has plenty of information available, has not had the time to learn more (Enviro, TIP9; CEF, RIP6).</td>
<td></td>
<td>• Weak understanding of wetland basics - you don’t need to be a wetland expert, but need to understand wetland basics to not cause harm in your job (Enviro, Manager, JS2P2; MS2P3).</td>
</tr>
<tr>
<td>• There is plenty of wetland information and knowledge available, but format not usable for foresters (Manager, MIP5).</td>
<td></td>
<td>• CEFs not trained in broad forestry &amp; environmental issues, yet they have to know about it to deal appropriately with community/claimant owner issues. Mondi has not realised that CEFs will be the foresters of the future (Forester, GS2P5; CEF, NS2P5).</td>
</tr>
<tr>
<td>2. CEFs have a thin understanding of wetlands &amp; community natural resource use, and do not know how to tackle these issues: CEF 5, enviro 2.</td>
<td></td>
<td>• Foresters need to learn more of the CEFs’ skills (Manager, KS2P6).</td>
</tr>
<tr>
<td>• CEFs lack an understanding of wetlands/enviro issues, and they do not have the learning materials to support their work with communities (Enviro, LIP5).</td>
<td></td>
<td>• No structure in place to strengthen informal learning – goes to the core of one of Mondi’s problems (Manager, MS2P3).</td>
</tr>
<tr>
<td>• CEF does not have the wetland knowledge of natural resource use so avoids answering difficult questions the community ask about wetlands (CEF, RIP3).</td>
<td></td>
<td>3. Lost hunger &amp; excitement to learn &amp; teach – visits &amp; field days: Manager 5, enviro 3, forester 2.</td>
</tr>
<tr>
<td>• CEF is out of depth on community grazing issues, and does not know how to tackle the issue (Enviro, JIP2).</td>
<td></td>
<td>• Lost the hunger &amp; excitement to learn &amp; to teach (Manager, MS2P3&amp;4).</td>
</tr>
<tr>
<td>• One of the biggest challenges is that CEFs and DFs know little about wetland and cattle management and they need to learn this from the Department of Agriculture (CEF, NIP3,4&amp;9).</td>
<td></td>
<td>• In old days foresters used to visit each other plantations.</td>
</tr>
<tr>
<td>• CEF knows little about sustainably harvesting wetland resources, which is important as new harvesters need to be taught how to do this (CEF, ZIP6).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
functions etc. This information is not accessible to him (Forester, PIP7).

- *Foresters are supported by an environmental support structure, but only if proactive and ask for advice* – often they do not (Manager, MIP2).
- Staff have **no ecosystem management** learning or teaching how to deal with it (Manager, MIP5).
- *Mondi has lost wetland orientated partnerships* with external partners, such as Working for Wetlands, SANBI, Working for Water, DEAT, wetland community of practice, KZN Wetland Forum etc (Enviro, DbIP5).
- **Little broad opinions** on wetland and environmental management outside of existing specialist consultants used (Enviro, LIP7).
- If staff with different jobs work more together they can see how their work fits into the bigger Mondi picture, and how they can contribute more to it (Manager, KIP8).

4. **No formalised learning plan/structure in place to strengthen informal learning:**
   - manager 8, forester 3, enviro 2, CEF 1.
   - **No formalised learning plan/structure** in place to support forester, community engagement facilitator (CEF), enviro specialist if not in talent group or go on foundational courses – basic management, basic negotiating, emotional intelligence, fire training, short business mgt courses (Manager, KIP2).
   - **Insufficient field trips/learning spaces to share** practical wetland knowledge between forester, CEF, and enviro specialists, complicated by time limits (everybody has too much to do) and geographic space across Mondi business units (Manager, CIP8&9; CEF, ZIP8; Forester, PIP6; Enviro, LIP8; Forester, SrlIP7&9; Enviro, DbIP7&8). Field days are really important for learning, but some foresters may be **afraid to share mistakes on field days** for fear of “stones being thrown at them” (Forester, SrlIP9).
   - **Staff need to be more aware of how they are learning** which would make them more open to change, especially when working with staff with different jobs and skills (Manager, KIP8).
   - Learning is **not top of the list** on Mondi minds, and we need to change this (Manager, CIP10).
   - Nobody in the past took training seriously – **no budget, no recognition**, but now changing with senior management very supportive (Manager, KIP1).
   - **Virtually no learning materials** of sufficient quality on wetlands (Manager, KIP3; Manager, CIP10).
   - **No learning structure to channel** the use of existing wetland materials through, e.g. WOW (Manager, CIP10).

   - to learn their innovations, but this doesn’t happen so much now – its virtually died out (Manager, enviro, forester, MS2P3; DbS2P3; SrS2P4).
   - **You almost have to beg people to come to field days** now (Forester, manager, SrS2P4; CS2P4)
   - Management can see **field trips as jolly outings**, as waste of time and not worth the money (Enviro, DbS2P3).
   - There are **large demands on foresters’ time** who have so many other things to do (Enviro, JS2P5).
   - People **don’t have the time** to go on field days anymore (Manager, CS2P4).
   - Field staff are **not proactive in requesting field days** – “all push and no pull” (Manager, CS2P5).

4. **Weak personal interaction between staff:**
   - Manager 3, forester 2, enviro 1.
   - **We don’t talk to each other as much** about important things like how we are managing our wetlands – just about stupid things like how we can fix our computers (Manager, MS2P3).
   - There’s **no cross pollination** between staff (Forester, GS2P3).
   - Staff may feel uncomfortable asking professionals from other job descriptions in other BU’s for how they are doing things in their area (i.e. Greytown CEF asking Zululand enviro specialist) (Manager, MS2P7).
   - **Staff do not know each other** as they should know each other (Enviro, TS2P7).
   - Sad to say, but managers **do not get out to their staff** and spend enough time with them in their jobs. Managers simply do not have the time. (Manager, MS2P7).

   People so into doing their own work that they **forget to help one another** (Forester, StS2P6).
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their attitudes/culture/individual complexity and resistance to change differs.</td>
<td>6. Resistance to change and learning: manager 3.</td>
<td>5. Staff change is difficult due to past turbulent restructuring: Manager 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Between the loss of experience and skills from staff leaving, and the lack of a structure/willingness to share wetland knowledge and skills of old timers with newcomers.</td>
<td>7. Loss of institutional knowledge &amp; relations: Manager 2, forester 1, CEF 1.</td>
<td>6. Continuity of community relationships not recognised when staff leave: Enviro 1, CEF 1, forester 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. No induction programme available for newcomers to ensure a smooth handover: Manager 2.</td>
<td>8. No induction programme available for newcomers, but developing a once off one with no longer term support (Manager, KIP3&amp;4).</td>
<td>7. Weak handover process to new staff (Enviro): Enviro 2, forester 1, and all participants.</td>
</tr>
<tr>
<td></td>
<td>A buddy system will not work, as not all older staff will want to take somebody under their wing, and geographic space a problem (Manager, KIP3&amp;4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
management practices and not knowing exactly what desired state the wetland is being managed for.

indigenous woody vegetation encroachment = forested wetlands not herbaceous wetlands which uses more water and was the historic wetland type. Best to manage for wetland type or water security? Therefore what is the desired state to be managed for? (Enviro, LIP5).
- Enviro specialists and foresters need to be advised by specialists experts like the MWP, what specifically needs to be done to manage a wetland for a specific state and purpose (Enviro, LIP9).
- When managing for wetlands and open areas foresters do not know what desired state they are managing for, and if their current actions are improving wetland health or not (Forester, WIP12; Manager, MIP4&5; Forester, Pip7).
- Forester is sure that the wetland is overgrazed, but no evidence to prove it (Forester, Pip5).
- We know where the wetlands are, but we lack basic wetland health and ecosystem functions, therefore it is hard for people to value them (Manager, MIP3).
- Staff are not learning how to deal with ecosystem management (Manager, MIP5).

4. Between CEFs, foresters and enviro specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and the Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach.

1. Many staff work in silos, with few ad hoc interactions between them: CEF 7, forester 2, manager 2, enviro 1.
- Enviro specialists says that the silviculture & harvesting foresters work in silos (Enviro, DbIP4).
- CEF does not work at all with foresters, and doesn’t ever remember having had a conversation with a forester about wetlands (CEF, RIP4).
- Environmental specialist says mostly ad hoc interactions between the enviro specialists and the CEFs (Manager, CIP1).
- CEFs go to DEAT for specialist advice rather than to the Mondi enviro specialist (Manager, CIP1).
- For CEFs and DFs to learn about wetland and cattle management they need to learn from the Department of Agriculture (CEF, NIP3,4&9).
- Mondi’s restructuring & compartmentalising of community issues for the Land Division to deal with has resulted in foresters absolving themselves of this responsibility and concentrate on just growing trees. This resulted in the foresters pulling away from being involved in community based cattle projects, whereas before the restructuring foresters were very involved. The restructuring has therefore reinforced people working in silos, compounded by poor communication between job descriptions (CEF, NIP6&7).
- No foresters/enviro specialists attended cattle committee workshops, but a recent review has identified this weakness (CEF, NIP5).

1. Weak staff collaboration across job descriptions on common issues: Forester 6, CEF 2, enviro 2, manager 2.
- Staff work together only when there’s a problem (Forester, enviro, manager, PS3P7; DbS3P11; MS3P14).
- Staff too focused on their annual target to the exclusion of involving others (CEF x2, VS3P6; ZS3P7).
- Communication is not the only problem, but lack of working together on common issues (Forester x2, SrS3P8; GS3P10).
- CEFs don’t really proactively engage the foresters in their work (Forester, SrS3P8).
- Foresters do not understand what the CEFs do and who decides what they do (Forester, SrS3P8).
- The gap is not just between the CEFs and the rest of us, but also the foresters and the enviro specialists (Forester, manager, SrS3P11; MS3P11).
- We need to change our mindset about how we communicate with each other (Enviro, JS3P11).

2. Little ‘space’ & leadership provided by management for staff to collaborate across silos: Manager 7, forester 3,
Initially when the Land Dept started, the foresters let them deal with all the community issues since they are the social dept, not the foresters. But then with time realised that CEFs did not have all the answers, so forester began to attend community meetings as well. This must continue! (Forester, PIP3).

CEF says that he is working well with the forester, but is concerned that he is not working well enough with the enviro specialist and wants to improve this when managing wetland resource use by the community (CEF, ZIP5).

CEF realises that he needs to work more with the enviro specialist, but does not despite acknowledging a lack of knowledge on wetland resource use (CEF, RIP3).

CEF doesn’t learn much about wetlands from forester or enviro specialist (CEF, VIP5).

Forester has river and grassland health monitoring report but done nothing because no time or capacity to go through it. The enviro specialist needs to lead him through the report and tell him what to do, but does not (Forester, SrIP2&3).

2. Foresters, CEFs & enviro specialists, rarely collaborate as a team on common issues: forester 4 CEF 4, enviro 4.

CEF works independently with silviculture foresters and conservation forester, so they do not all sit down together to discuss common issues (Enviro, TIP9).

Forster, CEF, enviro and wetland specialists never sat at the same table to discuss specific wetland issues (Forester, Pip6).

Rarely does CEF work with forester/enviro specialist/ community in the field on wetland issues, apart from informing the forester what he is doing and then reporting back at management meetings when he next sees the forester. CEF attributes this to poor communications between all 3 (CEF, VIP2,3&8).

Forester thinks that in the past the CEF and enviro specialist worked on their own to resolve community based natural resource use issues, and did not work as a team with the community (Forester, OIP4).

In the past the cattle & wetland management issues seen as two separate issues worked on by the CEFs (for cattle) and foresters and enviro specialists (for wetlands). There was no integrated plan and any single person taking the lead (Forester, WIP10).

Differences of opinion of wetland issues: forester says grazing & cultivation NB but enviro specialist says not (Forester, Pip6).

3. Narrow understanding of importance of broader environmental picture to Mondi (similar to points in contradiction 1): Manager 2, CEF 1.

If staff with different jobs work more together they can see how their work fits into the bigger Mondi picture, and how they can contribute more to it (Manager, KIP8).

Many staff work in silos, because they cannot grasp the concept that everything links

Area managers and CEFs, foresters, enviro specialist do not meet regularly as a team to discuss common issues (Enviro, JS3P11), the ‘space’ is not provided (Manager x2, CS3P14; MS3P14) and even at a higher level this doesn’t happen – LandCo, Opco etc (manager, MS3P14).

Silos get tied up too high, especially now with the restructuring (Forester x2, GS3P9; SrS3P10).

Mondi has become too bureaucratic, which has reinforced the silos (Manager, MS3P12).

Maybe this contradiction is the result of other weaknesses or gaps (Manager, CS3P12).

Managers just manage, double checking, triple checking due to corporate governance & lack of trust, & managers do not have enough time to provide leadership to lead staff (Manager, MS3P13).

Managers are not given ‘the space’ to get their staff together (Manager, MS3P14).

Silos are strengthened because environment is not part of operations, and it gets pushed to the back by some area managers (Forester, GS3P14).
6. Between how Mondi want to manage its wetlands, and how external influences like local communities want to use and manage the wetland resources.

4. Mondi has little control over natural resource use: Forester 8, enviro 3, CEF 2, manager 1.
   - Mondi want communities to use natural resources, but it has no control over those who use it (Enviro, JIP4).
   - No control over cultivation which has increased dramatically in a wetland in the Midlands where almost half of it is cultivated (CEF, RIP 3).
   - Mondi allow the community to graze their cattle on it wetlands, but do not have the capacity to manage and control this and forester does not have the time (CEF, VIP4).
   - Burning and grazing are biggest threats to wetlands and are community related (Forester, WIP3; Forester, GIP4&9).
   - Environmental management recommendations are contradictory to what happens on the ground – if you recommend that foresters burn wetlands every two years, they say that they cannot do because of the community burning them for cattle grazing. If you recommend less cattle graze the wetlands, they also say they cannot control cattle number because of community resistance to it (Manager, CIP7; Forester, WIP3; Forester, GIP4; Enviro, JIP3; Forester, OIP3; Enviro, DbIP2&3). Although in some areas block burning does succeed (Forester, GIP5).

5. Mondi and community talking past each other: Forester 3, CEF 2, enviro 2.
   - Past meetings with all cattle owners and their cattle committees with all agreeing what could be burnt or not, but still all open areas were burnt annually by community members (Forester, GIP6).
   - Working with small groups of 30-50 community members on burning issues works well, but above that and the blame gets shifted with no community members accepting responsibility (Forester, WIP10).
   - One of the reasons for not being able to succeed on community issues is that Mondi has been talking to individuals in the community and not the community as a whole (Forester, OIP4).
   - CEFs, foresters and environmental specialists have all been ineffective in the past with managing community grazing issues, because reducing cattle numbers and a one herd system causes conflict with the community due to differences in cultural thinking (Enviro, JIP3&4).
   - Community get scared off when Mondi try to formalise relations to develop solutions, as they see Mondi as trying to forbid their use of natural resources, especially the older

3. Weak collaboration with communities on natural resource use: Forester 4, enviro 1, CEF 1, MWP 1.
   - More difficult to control resource use by communities who live on Mondi land and consider it their own (Piet Retief), as opposed to neighbouring communities (Richmond) (CEF, NS4P6).
   - There has never been control of grazing by communities in Piet Retief area (Forester, GS4P6).
   - In Iswepe 20 years ago there was control – each musi was allowed 7 cattle (Forester, SrS4P6), and then somewhere in between it got lost. Getting control back again is crazy (Forester, GS4P6).
   - The problem is so big, that nobody knows where to start - big political, emotional and human rights issues (Enviro, JS4P6).
   - Different value systems and visions for resource use by community (large herds of cattle grazing, wealth, huts & food gardens) and Mondi (no cattle, game, grass & nature conservation) (Manager, MS4P6&10).
   - Mondi has got itself into this position by trying to appease communities grazing on its land to protect its trees and so people less likely to contest their rights to ownership/rights to use the resources (MWP, Forester, DwS4P10; GS4P10).
people (CEF, RIP5).

- The community are **not sticking to their permit** grazing conditions (Enviro, DbIP2).
- Mondi issues permits to control resource use, but it is **not always practical to get a permit, and trouble without it** when the use is urgent e.g. when Muti is needed. (CEF, RIP5).

6. **Community lack access to knowledge on natural resource use: CEF 3, enviro 1.**
- No learning resource materials in Zulu. The community want to learn, and this **inhibits community's access** to wetland knowledge which is why they inappropriately use the resources (CEF, ZIP6).
- The community lack knowledge about wetlands and do **not have the language** to talk about them and their use (CEF, VIP3&8).
- The community have a **wealth of indigenous knowledge** to share with Mondi too, and Mondi has not capitalised on this (CEF, VIP5).
- Mondi staff have **little understanding of the community culture** so that staff can meaningfully engage with them and the community do not feel threatened (Enviro, JIP7).

7. **Insufficient collaborative learning and working together on natural resource issues: CEF 5, enviro 2, forester 1.**
- The community have a **wealth of indigenous knowledge to share** with Mondi too, and Mondi has not capitalised on this (CEF, VIP5).
- There are **differences in perceptions of natural resource use** between the community and Mondi. Mondi are not against cattle grazing, but want to secure sufficient grazing for the future (Enviro, JIP5).
- The **community do not have the knowledge & language** lack to talk about sustainable wetland use, which widen the gap between Mondi and the communities (CEF, VIP3).
- **How do you tell communities that this is sustainable and this is not** - the Mondi environmental policy calls for sustainable use of natural resources, but just what is sustainable? (CEF, RIP6).
- The inability to resolve burning and grazing issues with communities is not about a lack of Mondi’s knowledge or will, but **staff not knowing how to deal with this HUGE community issue** (Enviro, JIP3).
- *Community feel that Mondi plantation trees are reducing community water* (CEF, RIP6).
- *Often information is not passed on to the contractors* from management meetings, and many of the contractors are members of local communities who use Mondi’s natural resources (CEF, NIP8&9).
<table>
<thead>
<tr>
<th>12. Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it.</th>
<th>8. Questioning senior management environmental sincerity: Manager 3, enviro 1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- A disconnect between community grazing policy makers and reality on the ground, resulting in people developing and driving policies but they do not understand the practical implications - hence the Piet Retief cattle project collapsing (Forester, GIP8&amp;9).</td>
<td>- There is a feeling that top management need to recommit to a total green policy (Enviro, DbS6P9).</td>
</tr>
<tr>
<td>- The senior management commitment for enviro management is there but the sincerity is not (because of FSC?) (Manager, MIP6).</td>
<td>- Senior management are committed and the sincerity is there but they do not meaningfully understand the environmental issues &amp; the consequences of what being totally committed means (Manager, M6P10&amp;15).</td>
</tr>
<tr>
<td>- There is a feeling that senior management do not understand what environmental management entails on the ground, which provides less motivation for field staff to do it better. The lack of a performance management system for senior managers to measure environmental performance further entrenches this belief (Manager, MIP7; Enviro, DbIP9).</td>
<td>- Environmental management is seen as alien plant clearing and spending money (Manager, M6P10).</td>
</tr>
<tr>
<td>4. Commitment is there, but staff not supporting senior management to strengthen their environmental understanding: Manager 2.</td>
<td>- Lack of senior staff recognition for good environmental management (Manager, M6P11).</td>
</tr>
<tr>
<td>- Top management have a massive green commitment (e.g. sitting on international committees demonstrating that Mondi has to perform at that level) but there is a disconnect in how it filters down to staff (Manager, CS6P10).</td>
<td>- Senior management only react to environmental issues when there is an environmental crisis like a CAR from FSC – e.g. alien plant issue that only was reacted to when FSC issues a CAR despite previous staff warnings (Enviro, JS6P11).</td>
</tr>
<tr>
<td>- Senior management see environmental excellence as 'no major FSC CARS' (Enviro, JS6P14).</td>
<td>- Senior management see conservation as the ‘black sheep’ behind operations first, then safety, then operations, then safety, then conservation (Forester, GS6P14).</td>
</tr>
<tr>
<td>- Conservation is still seen as the ‘black sheep’ behind operations first, then safety, then operations, then safety, then conservation (Forester, GS6P14).</td>
<td>5. Weak meaningful environmental understanding by senior staff: Enviro 3, manager 3, forester 1.</td>
</tr>
<tr>
<td>- There is the feeling that top management need to recommit to a total green policy (Enviro, DbS6P9).</td>
<td>- There is the feeling that top management need to recommit to a total green policy (Enviro, DbS6P9).</td>
</tr>
<tr>
<td>- Senior management are committed and the sincerity is there but they do not meaningfully understand the environmental issues &amp; the consequences of what being totally committed means (Manager, M6P10&amp;15).</td>
<td>- There is the feeling that top management need to recommit to a total green policy (Enviro, DbS6P9).</td>
</tr>
<tr>
<td>- Environmental management is seen as alien plant clearing and spending money (Manager, M6P10).</td>
<td>- There is the feeling that top management need to recommit to a total green policy (Enviro, DbS6P9).</td>
</tr>
<tr>
<td>- Lack of senior staff recognition for good environmental management (Manager, M6P11).</td>
<td>- Senior management only react to environmental issues when there is an environmental crisis like a CAR from FSC – e.g. alien plant issue that only was reacted to when FSC issues a CAR despite previous staff warnings (Enviro, JS6P11).</td>
</tr>
<tr>
<td>- Senior management see environmental excellence as 'no major FSC CARS' (Enviro, JS6P14).</td>
<td>- Senior management see conservation as the ‘black sheep’ behind operations first, then safety, then operations, then safety, then conservation (Forester, GS6P14).</td>
</tr>
<tr>
<td>- Conservation is still seen as the ‘black sheep’ behind operations first, then safety, then operations, then safety, then conservation (Forester, GS6P14).</td>
<td>4. Commitment is there, but staff not supporting senior management to strengthen their environmental understanding: Manager 2.</td>
</tr>
<tr>
<td>- Top management have a massive green commitment (e.g. sitting on international committees demonstrating that Mondi has to perform at that level) but there is a disconnect in how it filters down to staff (Manager, CS6P10).</td>
<td>- Top management have a massive green commitment (e.g. sitting on international committees demonstrating that Mondi has to perform at that level) but there is a disconnect in how it filters down to staff (Manager, CS6P10).</td>
</tr>
<tr>
<td>Senior management do not have the environmental understanding because those below them (us!) are not meaningfully supporting them to gain this</td>
<td></td>
</tr>
</tbody>
</table>
New issue discussed at the beginning of the workshop #1:

- **Why concentrate on wetlands** and not other ecosystems such as grasslands and broader environmental management? (Manager, MS2P1)
- What is coming out of the data is that the tensions go far beyond wetlands and into broader environmental management. So we are already expanding beyond wetlands. We are just using wetlands as a vehicle to probe broader issues. (MWP, DIS2P1)

Contradictions NOT prioritised: Analytical memo of tensions with supporting evidence of individual tensions

<table>
<thead>
<tr>
<th>Contradictions NOT prioritised</th>
<th>Tensions from interviews</th>
<th>Tensions from workshop #1</th>
</tr>
</thead>
</table>
| 5. Between stringent existing performance monitoring systems of e.g. silviculture, safety and alien clearing activities, and the lack of any wetland performance monitoring system. | 1. **No wetland Performance Monitoring System:** Enviro 3, manager 2, forester 2.  
   - Mondi staff do not get measured on wetland performance (e.g. hectares delineated and rehabilitated), but they measure silviculture operations and very closely for alien clearing. FSC not personalised enough (Manager, CIP6).  
   - **No formal wetland monitoring & evaluation system** to make sure certain things happen, and resulting consequences if no action occurs (Forester, WIP8).  
   - Wetland and environmental management lag behind because there are **no dedicated people to concentrate on it**, and the forester does not have the time to do this and concentrates on growing trees. In addition, **nobody is pushing the foresters** to say that they are falling behind (Forester, GPI2).  
   - **Wetland management must be ‘ingrained’ into operations**, by developing a staff performance management system for measuring performance against KPI’s on wetland and open area management, as for safety and alien clearing work. This gap results in foresters not taking wetland management seriously (Manager, MIP2&3; Enviro, DbIP8).  
   - Foresters do **not take wetlands/open areas seriously because they are not rated** on key wetland/open space performance areas (Enviro, DbIP8).  
   - **Poor implementation of wetland/enviro policy** at all times not just during FSC inspection. Policies just sit on the walls (Enviro, DbIP 3&5). |  
   - No tensions because contradiction not discussed. |
| 7. Between the demand for enviro specialist support, and the lack of staff to supply it. | 1. **Lack of environmental capacity to meet the demand:** Enviro 2, CEF 2, forester 1, manager 1.  
   - Having **no enviro specialist in the area** will make it difficult to include them in collaborative discussions on community based cattle and burning issues (CEF, NIP6).  
   - Forester feels that he gets **minimal support from the enviro specialist**, but he would like more than the 5-6 visits a year that he current gets. When asking for more time, it has become a standing joke (Forester, SrIP3,4&5). |  
   - No tensions because contradiction not discussed. |
- **Lack of enviro capacity to service BU Central** area, as well as the environmental specialists existing area (Enviro, JIP8).
- **Enviro staff are too thin on the ground** (CEF, VIP4).
- Due to capacity constraints, enviro specialists have to **work with foresters/CEFs at a strategic level, not a one-on-one operational level**, which is where the real support is needed. Without this one-on-one support foresters will not have the environmental expertise to do it on their own, and it is **unlikely foresters have the motivation to learn it** (Enviro, JIP8).
- Enviro specialist’s strategy relies on bringing in external expertise because they do not have the time or the specific expertise to do it themselves, but will this work and do they do not have the **money to pay for external experts** (Manager, CIP4).

8. Between having dedicated operationally aligned conservation staff to solely take responsibility for wetland and environmental management, and integrating this responsibility into the silviculture foresters current workload

1. **Tension of whether silviculture forester or cons ‘forester’ best to manage open areas: Enviro 5, forester 3, manager 1**.
   - A new position was appointed in Zululand - a specialist conservation forester taking responsibility for managing all the open areas and wetlands across the land of 3 silviculture foresters (Enviro, TIP1).
   - Some management do not support the idea of a conservation forester, as they think the silviculture forester (or farm manager) should have ownership of their land, and do the conservation work themselves (Enviro, TIP1).
   - Some enviro and silviculture staff are pushing for dedicated conservation team/forester but **some people are against it** (Forester, GIP4).
   - Management believes that silviculture foresters need to work on and be responsible for wetland/enviro issues on their own, but that the ‘reinforced structure’ and awareness support base is not present to support this. i.e we need to ingrain the concept of wetland management into operations, by measuring staff performance on wetland management as for safety and alien clearing work (Manager, MIP3).
   - Enviro specialists say that there is a lack of dedicated contractors to do conservation of alien plant control, road impact rehabilitation, river crossings wetland delineation, rehabilitation and roads (Enviro, DbIP4&5).
   - **Enviro management is not an operational issue so is not taken seriously**, unlike growing trees and the work of the land Division (Enviro, DbIP8).
   - **Central BU has less resources than any other area** (double forester hectares, less admin staff, no enviro specialists etc) compounded by extreme fire seasons & complex grazing and fire related social issues = less time for wetland and enviro management. Definite growing season = worker number fluctuations which complicate alien plant control. Therefore foresters cannot do their conservation work they are required to do with available resources (Forester, GIP2&3).

- No tensions because contradiction not discussed.
• **Why is a conservation forester not replicated** in other areas if it works really well, so? (Enviro, LIP9).

• Misalignment between the senior managers environmental strategy is & human resources to implement it on the ground and manage wetlands better. Foresters have all the resources to grow trees, but insufficient resources (not just money but most importantly human resources) to do the conservation work because conservation is seen as a support not an operational function (Forester, GIP11,12&15).

2. **Generally foresters do not have the time or interest to manage wetlands/open spaces:**
   - Enviro 7, forester 4, manager 1.
   - Nobody has overall responsibility and pride for individual estates and the general orientation now is that silviculture foresters just grow trees, and don’t bother much about wetlands and open spaces (Enviro, DbIP4).
   - Forester says: Little wetland work because foresters lack the interest, ownership, and custodianship for managing wetlands because there is too much silviculture work to do, and no dedicated enviro person to drive wetland work (Forester, WIP6&7).
   - Wetland and environmental management lag behind because there are no dedicated people to concentrate on it, and the forester does not have the time to do this and concentrate on growing trees. In addition, nobody is pushing the foresters to say that they are falling behind (Forester, GIP2).
   - There is a tension between a forester’s 1st focus to grow trees & 2nd or 3rd focus to manage wetlands/open areas and (Manager, MIP4).
   - A forester concerned about community grazing only when trees are eaten by cattle (Piet Retief R6 million damage), than when the open areas are overgrazed (Enviro, JIP3&4).
   - Silviculture foresters manage grasslands & wetlands as one, due to lack of time and interest (Enviro, TIP4).
   - To most foresters: wetland management = burning & controlling alien plants as no detailed veld management plan, such as for alien plant control to encourage more meaningful wetland management (Enviro, LIP1).
   - In some areas the silviculture forester manages dedicated conservation teams to hack alien plants. What often happens is that this is done only in winter when there is minimal silviculture work to be done, or when e.g. the roads budget is exceeded and space becomes available to do this work in summer. i.e. alien control budget gets spent, but it is it sporadic and often done on an ad hoc basis, which is not conducive to effective alien plant infestation management (Enviro, TIP4; Enviro, DbIP8).
   - Lack of effective weed control is one of the biggest problems in wetlands (Forester, WIP4&7).
   - There is a trend in Mondi to start projects with brilliant plans, then just fizzle out (Forester,
<table>
<thead>
<tr>
<th>3. Conservation work requires different contractor expertise &amp; is long term: Forester 4, enviro 1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- There is a high turnover rate and absenteeism of workers who control aliens in open spaces. Since it takes a lot of effort to train them, this reduces efficiency of alien control (Forester, SIP4).</td>
</tr>
<tr>
<td>- Safety rules inhibit hiring people fast and doing the alien control, as all new teams have to first be inducted, PPE, and solitary work policies which prevents quickly hiring people to do the work when required in the right season (Forester, GIP7).</td>
</tr>
<tr>
<td>- A mind change is required by silviculture contractors controlling aliens, as they are used to working in the plantations where they know all the alien species, do not have to search for alien plants, and therefore work fast. Whereas when working in open areas, they have to learn new species, and thoroughly search for every plant in order to effectively control the spread. Conservation work takes time, needs dedicated staff, and is not ad hoc (Forester, GIP3&amp;12).</td>
</tr>
<tr>
<td>- Contractors clearing alien infestations tend to concentrate on the clearing commercial plantation, not open areas, unless the forester picks up on this and reprimands them (Forester, OIP5).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. Between the conservation practices that Mondi has to implement, and practices of neighbouring farmers who do as they like.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poor neighbours environmental practice: Forester 2.</td>
</tr>
<tr>
<td>- A forester’s enthusiasm is killed when he has to do certain environmental practices like delineation, but the next door neighbour does not. We need to all do the same thing to have a real positive impact for the environment (Forester, PIP8).</td>
</tr>
<tr>
<td>- Mondi needs to take a more holistic approach to environmental management, and get neighbours to do the same. It is no good Mondi doing its bit, and the neighbours doing nothing on their side (Forester, SrlP10).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. Between Mondi managing the land sustainably now, and how the new landowners will manage it in the future.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Future wetland’s security with new landowners: Forester 1.</td>
</tr>
<tr>
<td>- There are many land claims on Mondi property, what is going to happen to those wetlands which Mondi has rehabilitated? How will Mondi ensure that open spaces are managed appropriately? Has Mondi thought about this? (Forester, GIP13).</td>
</tr>
</tbody>
</table>

|  | No tensions because contradiction not discussed. |
Appendix 5: List of contradictions

Primary contradictions occur within the elements of the activity system; secondary contradictions between two or more elements of the same activity system; tertiary contradictions occur between the reconceptualised new version of an activity system and remnants of its older version; and external quaternary contradictions occur between multiple interacting activity systems.

### ALL CONTRADICTIONS as first identified from interviews hindering wetland/open area sustainability practices.

15. Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure & learning materials in place to strengthen staff learning. Quaternary (activity systems-institutional structure).

16. Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their attitudes/culture/individual complexity and resistance to change differs. Primary (individuals-individuals).

17. Between the loss of experience and skills from staff leaving, and the lack of a structure/willingness to share wetland knowledge and skills of old timers with newcomers. Primary and quaternary (activity systems – institutional structure).

18. Between CEFs, foresters and enviro specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and the Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach. Quaternary (activity systems-institutional structure).

19. Between stringent existing performance monitoring systems of e.g. silviculture, safety and alien clearing activities, and the lack of any wetland performance monitoring system. Quaternary (activity systems-institutional structure).

20. Between how Mondi want to manage its wetlands, and how external influences like local communities wants to use and manage the wetland resources. Quaternary (activity systems-institutional structure).

21. Between the demand for enviro specialist support, and the lack of staff to supply it.
22. Between having dedicated operationally aligned conservation staff to solely take responsibility for wetland and environmental management, and integrating this responsibility into the silviculture foresters’ current workload. Quaternary (activity systems-institutional structure).

23. Between the conservation practices that Mondi has to implement, and practices of neighbouring farmers who do as they like. Quaternary (activity systems-activity system).

24. Between implementing general wetland management practices and not knowing exactly what desired state the wetland is being managed for. Quaternary (activity systems-activity system).

25. Between Mondi managing the land sustainably now, and how the new landowners will manage it in the future. Quaternary (activity systems-institutional structure).

26. Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it. Quaternary (activity systems-institutional structure).

PRIORITISED CONTRADICTIONS as reframed at the end of workshop #1

3. Priority: Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure & learning materials in place to strengthen staff learning (the workshop felt strongly that this applied externally to the communities as well).

- #2 now integrated into #1: Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their differences in attitudes/culture/individual complexity and resistance to change.

- #3 now integrated into #1: Between the loss of experience and skills from staff leaving, and the lack of a structure/willingness to share wetland knowledge and skills of old timers with newcomers.

- #10 now integrated into #1: Between implementing general wetland management practices, and not knowing exactly what desired state the wetland is being managed for.

4. Priority: Between CEFs, foresters and enviro specialists working in silos (with some ad
hoc interactions) on their own jobs and wetland issues, and the Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach (internal & external silos - the workshop felt strongly that the community were a silo as well)

- #6 now integrated into #2: Between how Mondi want to manage its wetlands, and how external influences like local communities wants to use and manage the wetland resources (it was felt that the workshop needed to deal with Mondi’s relationship with the community under #2, rather than all the community natural resource issues).

- #12 now integrated into #2: Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it.

CONTRADICTIONS NOT PRIORITISED, and therefore left out of the workshop process.

5. Not prioritised: Between stringent existing Performance Monitoring Systems for eg silviculture, safety and alien clearing activities, and the lack of any wetland PMS.

6. Lower priority: Between the demand for enviro specialist support, and the lack of staff to supply it.

7. Lower priority: Between having dedicated operationally aligned conservation staff to solely take responsibility for wetland/environmental management, and integrating this responsibility into the silviculture foresters workload.

8. Not a burning issue: Between the conservation practices that Mondi has to implement, and practices of neighbouring farmers who do as they like.

9. Could be solved as a by-product of #1: Between Mondi managing the land sustainably now, and how the new landowners will manage it in the future.
### Appendix 6: Analytical memo of solutions from interviews and workshop #1

#### Table A: Summary analytical memo of solutions from interviews (25 February – 4 March 2010) & workshop #1 (19-20 April 2010) for prioritised contradictions.

<table>
<thead>
<tr>
<th>Prioritised contradictions 1 (with 2, 3 &amp; 10 integrated) &amp; 4 (with 6 &amp; 12 integrated).</th>
<th>Solutions from interviews</th>
<th>Solutions from workshop #1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning.</td>
<td><strong>1.</strong> Workshops &amp; courses to improve communications, learn about wetlands, &amp; learn from/about/with each other: CEF 3, enviro 2, forester 1, manager 1.</td>
<td><strong>1.</strong> Improve wetland knowledge by running courses &amp; developing a tailormade session in induction: Manager 2.</td>
</tr>
<tr>
<td></td>
<td><strong>2.</strong> More field days to excite &amp; motivate staff &amp; managers, share experiences, strengthen collaborative learning, &amp; improve wetland management: manager 4, CEF 2, forester 2, enviro 2.</td>
<td><strong>2.</strong> Strengthen a broad understanding of each others jobs to improve collaboration and effectiveness: CEF 1, forester 1, manager 1.</td>
</tr>
<tr>
<td></td>
<td><strong>3.</strong> Develop a toolkit of learning materials to support foresters &amp; CEFs in their work with communities: CEF 1, enviro 1.</td>
<td><strong>3.</strong> Area managers to encourage staff field trips &amp; informal office visits to strengthen relationships/collaboration/ learning/job excitement &amp; integrate them into a formalised ‘informal learning structure’: Enviro 3, manager 3, MWP 3, forester 2.</td>
</tr>
<tr>
<td></td>
<td><strong>4.</strong> Formalise an ‘informal learning structure’ to provide the ‘space’ for strengthening staff collaboration, learning, &amp; solution development. Manager 7.</td>
<td></td>
</tr>
<tr>
<td><strong>2.</strong> Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their attitudes/culture/individual complexity and resistance to change differs.</td>
<td><strong>•</strong> No solution surfaced.</td>
<td><strong>4.</strong> Recognise &amp; strengthen everyday learning: Manager 1, forester 1.</td>
</tr>
<tr>
<td><strong>3.</strong> Between the loss of experience and skills from staff leaving, and the lack of a structure/willingness to share wetland knowledge and skills of old</td>
<td><strong>5.</strong> Support new staff learn the ropes with peer support using a buddy system may work if it is structured &amp; formalised</td>
<td><strong>5.</strong> Managers to strengthen hand over process to new staff: Manager 2, forester 1, enviro 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1.</td>
<td>Strengthen teamwork on common issues between forester, CEF &amp; enviro especially, but not only, on community work: CEF 7, forester 5, enviro 2.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>Improve communication between job descriptions and external communities of practice: CEF 1, enviro 1.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>Strengthen management style to empower staff by embracing collaboration, sharing ideas &amp; solution development: Manager 2, forester 1.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>Strengthen relations with communities by constantly learning &amp; working together on common issues: CEF 2, forester 1.</td>
<td>4.</td>
</tr>
<tr>
<td>6.</td>
<td>Develop strategies &amp; plans for communities to use natural resources sustainably: Enviro 2, forester 2.</td>
<td></td>
</tr>
</tbody>
</table>

| 4. | Between CEFs, foresters and enviro specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and the Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach. |   |
| 6. | Between how Mondi want to manage its wetlands, and how external influences like local communities wants to use and manage the wetland resources. |   |

| 10. | Between implementing general wetland management practices and not knowing exactly what desired state the wetland is being managed for. | 6. | Concentrate efforts on prioritised wetlands by developing management plans, training staff to implement actions & monitor wetland health to determine success of efforts: forester 3, manager 1, enviro 1. | 6. | Strengthen learning & decision making: Manager 1 |
| 12. | Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it. |   |   |   |   |

427
Table B: Detailed analytical memo of solutions with supporting evidence of individual solutions. 
* = those bullets not used in chapter 5.

<table>
<thead>
<tr>
<th>Prioritised contradictions 1 (with 2, 3 &amp; 10 integrated) &amp; 4 (with 6 &amp; 12 integrated)</th>
<th>Solutions from interviews</th>
<th>Solutions from workshop #1</th>
</tr>
</thead>
</table>
| 1. Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure and learning materials in place to strengthen staff learning. | 1. Workshops & courses to improve communications, learn about wetlands, & learn from/about/with each other: CEF 3, enviro 2, forester 1, manager 1.  
  - Communications between CEF, forester, enviro & community can be improved by enviro arranging workshops/refresher courses involving all to learn together, have open discussions & develop relationships (CEF, VIP3).  
  - Skill staff in how to deal with different people & how they learn (Enviro, JIP7).  
  - Wetland workshops to learn more about wetlands & understand how to convey sustainability to community (CEF, RIP3&6).  
  - Learn more about fire & wetlands, as burning wetlands has reduced alien infestation (Forester, SIP7).  
  - 2 day session between foresters & CEFs to learn more from each other/about each other & to work together (CEF, NIP11).  
  - Strengthen formal learning on specific issues that need to be understood e.g. legislation (Manager, CIP8).  
  - *Develop wetland management plan saying what is being managed for, & give training to foresters for implementation (Enviro, LIP5).  
  - *Work more with foresters on awareness/education (Enviro, LIP5). | 1. Improve wetland knowledge by running courses & developing a tailor made session in induction: Manager 2.  
  - Easy to solve training & knowledge issue – get MWP in to run courses/wetland induction (Manager, MS2P3).  
  - Can have a tailor made induction on wetlands (Manager, KS2P3). |
| 2. More field days to excite & motivate staff & managers, share experiences, strengthen collaborative learning, & improve wetland management: manager 4, CEF 2, forester 2, enviro 2.  
  - More field days to share experiences of good & successes & failures to encourage learning & confidence in doing the right thing (Forester, SIP7).  
  - *Using state of wetland report to encourage improved & measured wetland management (Manager, MIP3).  
  - *Improve wetland knowledge of senior management & foresters on wetlands & motivation of foresters (Manager, MIP4). | 2. Strengthen a broad understanding of each others jobs to improve collaboration and effectiveness: CEF 1, forester 1, manager 1.  
  - CEFs do not need to be enviro specialists or foresters, but CEFs need a broad understanding (Forester, CEF, Forester, GS2P6, NS2P6, SrS2P6).  
  - Foresters need more CEF skills. This will help break silos down (Manager, KS2P6). |
| 3. Area managers to encourage staff field trips & informal office visits to strengthen relationships/collaboration/learning/job excitement & integrate them into a formalised ‘informal learning structure’: Enviro 3, manager 3, MWP 3, forester 2.  
  - Field trips need to be formalised as part of Mondi’s informal learning structure (Enviro, forester, enviro, DbS2P4; SrS2P4; TS2P4).  
  - Don’t need to just have formal field days, but also staff need to informally pop across to people in other offices to see what they are up to in the field – on an ad hoc basis (Manager, MS2P4).  
  - Fieldtrips need to be flexible to accommodate the huge demand on foresters’ time (Enviro, JS2P5). |
• *Excite people about managing environment & seeing benefits of it (Manager, MiP4&6).
• **Senior management to visit field more** to inspect enviro management & encourage & motivate staff (Manager, MiP7).
• More field days to understand wetland identification, delineation for veggie gardens (CEF, Zip7).
• More field days to other CEF areas to learn from what they are doing (CEF, Zip7).
• Visit St Lucia to see what a well managed wetland looks like to inspire & motivate (Forester, Pip9).
• Increase awareness days from 1-2 to 4 per year to strengthen collaborative learning (Enviro, LIP7).
• Work more with foresters on awareness/education (Enviro, LIP5).

3. Develop a toolkit of learning materials to support foresters & CEFs in their work with communities: CEF 1, enviro 1.
• Develop more learning materials but first identify who will roll them out (CEF, VIP6).
• Develop education toolkit to support foresters & CEFs in their work with communities (Enviro, LIP6).

4. Formalise an ‘informal learning structure’ to provide the ‘space’ for strengthening staff collaboration, learning, & solution development.
Manager 7.
• Create & formalise a structure to enable more informal learning spaces on specific issues (e.g. alien clearing) where staff from different areas share experiences & learnings, & integrate into staff KP’s (Manager, CIP8).
• Create a learning structure for Land Dept to use education materials like WOW (Manager, CIP10).
• A buddy system may work if it is structured & formalised (Manager, KIP4).
• Initiate interest groups to strengthen informal learning & become a way of life, discussing issues informally, growing intellectually & finding solutions (Manager, KIP4&6).
• More change management orientated towards collaboration & sharing ideas, acknowledging vulnerability, problem identification & solution

• Area managers need to drive staff more to find out better ways of innovatively doing something (learning & teaching) because they are passionate about it (not forced) – a culture change is required to do this, if Mondi is to move to the next level of efficiency (Manager, forester, manager, MS2P5& P8&P9; CS2P9).
• *Informal learning is already happening, we just need to recognise informal knowledge management system, & strengthen it to solve problems at a ground level (MWP x2, DwS2P9; DIS2P9).
• *Need to formalise an informal learning structure to promote staff getting to know each across job descriptions, as well as other BU’s, to enable relationship building and more social learning (MWP, DIS2P7).
| 2. Between individuals who recognise the importance of strengthening informal learning, and those who do not because of their attitudes/culture/individual complexity and resistance to change differs. | 4. Recognise & strengthen everyday learning: Manager 1, forester 1.  
- Need to recognise that learning takes place every day, and look for opportunities to do so (Manager, KS2P8), and “steal with your eyes” (Forester, GS2P10). |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- No solution surfaced.</td>
<td></td>
</tr>
</tbody>
</table>
| 3. Between the loss of experience and skills from staff leaving, and the lack of a structure/willingness to share wetland knowledge and skills of old timers with newcomers. | 5. Managers to strengthen hand over process to new staff: Manager 2, forester 1, enviro 1.  
- It’s the responsibility of the managers to make sure that all important documents need to be saved in a specific computer file, enabling newcomer to access it (Manager, Enviro, forester, MS3P3; TS3P3; SrS3P3).  
- No new structure needed, just reinforce what exists and make sure it works (Manager, MS3P3). |
| - Support new staff learn the ropes with peer support using a buddy system may work if it is structured & formalised  
  - A buddy system may work to support new staff learn the ropes, if it is structured & formalised (Manager, KIP4). | |
| 5. Support new staff learn the ropes with peer support using a buddy system may work if it is structured & formalised  
- A buddy system may work to support new staff learn the ropes, if it is structured & formalised (Manager, KIP4). | |
| 6. Concentrate efforts on prioritised wetlands by developing management plans, training staff to implement actions & monitor wetland health to determine success of efforts: forester 3, manager 1, enviro 1.  
- Monitor wetland health of different burning practices (Forester, SIP7).  
- Identify a few wetlands in each area & monitor health to see if management actions making a difference (Forester, WIP12).  
- Prioritise which wetland to work on & concentrate on securing them (Forester, WIP12).  
- Concentrate on managing a few important wetlands (perhaps 10% of Mondi area) well rather than trying to do all mediocre, & involve the communities in those (Manager, CIP7). | 6. Strengthen learning & decision making: Manager 1  
- Learning and improving wetland knowledge and decision making is the key solution (Manager, MS6P6). |
| development (Manager, KIP6).  
- *Mondi’s change in structure has strengthened openness to new ideas* (Manager, KIP5).  
- *Supporting staff understanding of their contribution to the bigger picture* (Manager, KIP6). | |
1. **Strengthen teamwork on common issues between forester, CEF & enviro especially, but not only, on community work:** CEF 7, forester 5, enviro 2.
   - Forester needs to **work more as a team** with his local CEF with a **structured approach** to community education on burning & grazing not just the people they issue permits to (Forester, OIP3&4).
   - CEF needs to **work closer with his local forester** as one team on common issues (CEF, VIP2).
   - **Divide the labour** so that the forester does not bare all the responsibility (CEF, VIP4).
   - CEF would like to **work with Enviro (& forester) more** as they got wetland (or other) knowledge he needs to learn & share with communities (CEF, RIP3).
   - CEF, forester & enviro work as a team at community meetings, community can access all information at once (CEF, RIP4).
   - CEF, forester & enviro meet to **discuss an approach for how they can work together as a team** (CEF, RIP4).
   - Forester, CEF (spread message to community), enviro (plant id) all **working together as a team to educate the community** about alien plants (Forester, SIP5&6).
   - Enviro to proactively engage foresters in field to see how enviro management fairing & explain various reports to enable working & learning together (Forester, SIP4&6).
   - **2 day session between foresters & CEFs** to learn more from each other/about each other & to work together (CEF, NIP11).
   - CEF, Forester, Enviro, area manager must all **work together for cattle project to work** (Forester, WIP10).
   - **Work more with foresters** on awareness/education (Enviro, LIP5).
   - **Increase awareness days** from 1-2 to 4 per year to strengthen collaborative learning (Enviro, LIP8).
   - **Work closer with CEF on grazing issues** by having more meetings with Community, CEF & forester (Forester, PIP2).
   - **Work closer with Enviro on quantifying** community natural resource use

2. **Strengthen team collaboration between job descriptions with frequent communication:** CEF 1, enviro 1.
   - *CEFs need to involve the enviro specialists more* (CEF, VS3P6).
   - The organisation structure does not need to change, but we all need to **collaborate together as a team, with daily communication** (Enviro, JS3P11).

3. **Management to create the ‘spaces’ to strengthen communications between all, & improve collaboration across job descriptions:** Forester 3, Manager 2, CEF 1, enviro 1.
   - Area manager needs to **co-ordinate** to make sure staff do not work in silos (CEF, ZS3P7) and sit everybody down together to regularly do this (PS3P11) which could be ½ hour cup of coffee together once a week, not half day meeting once a month BUT we need to **change our mindset about how we communicate** with each other (Enviro, JS3P11).
   - **Silos need to be tied up at the area manager level** or even lower down at the forester, CEF and enviro specialist level (Forester x2, GS3P9 &10; SrS3P10).
   - *Michael knows more about what his staff and the Land guys are doing than his boss* because he is involved with them (Forester, SrS3P8) and he has created the ‘space’ for that interaction to happen. Area managers need to do this (Manager, CS3P14).
   - Leadership needs to **tell people to work together**, irrespective of any differences (Manager, MS3P13).

---

**Develop wetland management plan** saying what is being managed for, & give training to foresters for implementation (Enviro, LIP5).

---

4. Between CEFs, foresters and enviro specialists working in silos (with some ad hoc interactions) on their own jobs and wetland issues, and the Mondi’s bigger picture of producing sustainably grown timber by staff working together as a team on common wetland issues with a more planned and integrated approach.

---

1. Strengthen teamwork on common issues between forester, CEF & enviro especially, but not only, on community work: CEF 7, forester 5, enviro 2.
   - Forester needs to **work more as a team** with his local CEF with a **structured approach** to community education on burning & grazing not just the people they issue permits to (Forester, OIP3&4).
   - CEF needs to **work closer with his local forester** as one team on common issues (CEF, VIP2).
   - **Divide the labour** so that the forester does not bare all the responsibility (CEF, VIP4).
   - CEF would like to **work with Enviro (& forester) more** as they got wetland (or other) knowledge he needs to learn & share with communities (CEF, RIP3).
   - CEF, forester & enviro work as a team at community meetings, community can access all information at once (CEF, RIP4).
   - CEF, forester & enviro meet to **discuss an approach for how they can work together as a team** (CEF, RIP4).
   - Forester, CEF (spread message to community), enviro (plant id) all **working together as a team to educate the community** about alien plants (Forester, SIP5&6).
   - Enviro to proactively engage foresters in field to see how enviro management fairing & explain various reports to enable working & learning together (Forester, SIP4&6).
   - **2 day session between foresters & CEFs** to learn more from each other/about each other & to work together (CEF, NIP11).
   - CEF, Forester, Enviro, area manager must all **work together for cattle project to work** (Forester, WIP10).
   - **Work more with foresters** on awareness/education (Enviro, LIP5).
   - **Increase awareness days** from 1-2 to 4 per year to strengthen collaborative learning (Enviro, LIP8).
   - **Work closer with CEF on grazing issues** by having more meetings with Community, CEF & forester (Forester, PIP2).
   - **Work closer with Enviro on quantifying** community natural resource use

---

**Develop wetland management plan** saying what is being managed for, & give training to foresters for implementation (Enviro, LIP5).
relative to resources available (CEF, ZIP5).

2. **Improve communication between job descriptions and external communities of practice: CEF 1, enviro 1.**
   - Cross silos **by improving communication** between foresters & CEFs on community issues (CEF, NIP7&8).
   - **Interact more with wetland COP to broaden ideas** beyond consultants Mondi uses (Enviro, LIP7).

3. **Strengthen management style to empower staff by embracing collaboration, sharing ideas & solution development: Manager 2, forester 1.**
   - **Current** Greytown area management style, support & training has **empowered forester** to have the freedom to manage as he sees best which has resulted in more focus on conservation (Forester, SIP5).
   - More **change management** orientated towards collaboration & sharing ideas, acknowledging vulnerability, problem identification & solution development (Manager, KIP6).
   - Mondi’s **change in structure** has strengthened **openness to new ideas** (Manager, KIP5).

4. **Recognise solutions unique for different communities: Enviro 1, CEF 1.**
   - A mindset change is required. Maybe Mondi need to be educated by the **community**? (Manager, MS4P6).
   - Things won’t change until Mondi **find out what the community’s vision is** for natural resource use, and work with them to co-learn and collaboratively make decisions without going to them to say this is what Mondi’s vision is, you must adhere to that (Forester, Manager, forester, CEF x2, SrS4P7; MS4P7; StS4P7; NS4P7; VS4P9).
   - It’s all about **co-management rather than control** (MWP, DI5P10).

5. **Develop awareness & education programmes for/with communities & schools: CEF 4.**
   - **Work with local schools**, but first identify who will make it happen (CEF, VIP8).
   - An awareness programme with community to learn consequences of

6. **Between how Mondi want to manage its wetlands, and how external influences like local communities want to use and manage the wetland resources.**
<table>
<thead>
<tr>
<th>5.</th>
<th>Senior management strengthen their informal learning with staff to gain a better understanding of current environmental issues &amp; practice: Manager 2, Enviro 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Develop strategies &amp; plans for communities to use natural resources sustainably: Enviro 2, forester 2.</td>
</tr>
<tr>
<td>7.</td>
<td>Field trips to strengthen senior management environmental understanding &amp; for management to motivate staff: manager 2.</td>
</tr>
<tr>
<td>12.</td>
<td>Between senior staff talking the environmental talk, and meaningfully understanding the talk so that they can sincerely walk it.</td>
</tr>
<tr>
<td>8.</td>
<td>Senior management to visit field more to inspect enviro management &amp; encourage &amp; motivate staff (Manager, MIP7).</td>
</tr>
<tr>
<td>9.</td>
<td>If we can sort out the learning organisation, then this might automatically solve itself (Enviro, manager, enviro, JS6P13; MS6P13&amp;16; DbS6P13).</td>
</tr>
<tr>
<td>10.</td>
<td>There is no one common answer, solutions for each area and community are different (Enviro, CEF, JS4P6; VS4P9).</td>
</tr>
</tbody>
</table>
### Contradictions NOT prioritised: Analytical memo of solutions with supporting evidence of individual solutions

<table>
<thead>
<tr>
<th>Contradictions NOT prioritised</th>
<th>Solutions from interviews</th>
<th>No solutions from workshop #1</th>
</tr>
</thead>
</table>
| 5. **Between stringent existing performance monitoring systems** of e.g. silviculture, safety and alien clearing activities, and the lack of any wetland performance monitoring system. | **1. Performance measured against KPIs: Enviro 1, manager 1.**  
- Staff need to be rated on KPI’s (Enviro, DbIP8).  
- Senior staff to measure staff performance (KPI’s) of wetland management & reward good performance (Manager, MIP2). | **No solution because contradiction not discussed.** |
| 7. **Between the demand for enviro specialist support, and the lack of staff to supply it.** | **No solution surfaced.** | **No solution because contradiction not discussed.** |
| 8. **Between having dedicated operationally aligned conservation staff** to solely take responsibility for wetland and environmental management, and **integrating this responsibility into the silviculture foresters** current workload. | **1. Having dedicated conservation contractor teams/forester: forester 4, Enviro 3,**  
- **Dedicated conservation contractors** to do alien plant clearing, roads, delineation, wetland rehabilitation etc (Enviro, DbIP4; forester, OIP6).  
- **Operationalise enviro management** by having dedicated conservation teams (Enviro, DbIP9).  
- **Speak firmly to contractors to clear aliens** not only from operational areas, but also open spaces (Forester, OIP6).  
- **Dedicated conservation teams** clearing alien plants in open spaces so that forestry contactors not pulled away from forestry work (Forester, GIP3&4).  
- **Enviro specialists to be operationalised** not a support function (Forester, GIP15).  
- **Appoint a conservation forester** to look after all open areas (Enviro, TIP1). | **No solution because contradiction not discussed.** |
| 9. **Between the conservation practices that Mondi has to implement, and practices of neighbouring farmers who do as they like.** | **No solution surfaced.** | **No solution because contradiction not discussed.** |
| 11. **Between Mondi managing the land sustainably now, and how the new landowners will manage it in the future.** | **No solution surfaced.** | **No solution because contradiction not discussed.** |
Appendix 7a: Wetland Action Plan

Homeleigh, 19 May 2010.
Final copy at end of workshop

All projects aimed at stimulating organisational learning and development for improved wetland and environmental management.

Projects strengthening formal learning structures
1. Adapt existing 4 day induction programme for new employees to be more interactive, have high employee responsibility for completing, spread out over a 4 month period, contextually relevant to local area, and include an environmental module.
2. Develop a toolbox of environmental education materials with guidance on appropriate education processes for their optimum use.
3. Integrate new environmental courses and toolbox into existing training programme for contractors and staff.

Projects encouraging staff collaboration & relational agency
4. Foresters, community engagement facilitators and environmental specialists to collaboratively develop and implement a wetland project in each of the five geographical areas of Mondi.
5. Run 5 field days in each of five areas going through management recommendations arising from the recently completed Mondi State of Wetlands Health Report.
6. Run field days that integrate environmental and forestry operational issues within each of the five areas, as well as between them.

Projects stimulating staff dialogue
7. Ensure that consultants conducting specialist environmental reports meet with forestry operations staff to discuss report and hear staff feedback.
8. Ensure that any future Mondi environmental policies and procedures to be implemented are discussed with staff on an interactive and ‘face to face’ basis, and policies or procedure are not only sent out by email.

9. Meet with senior managers to encourage them to hold feedback sessions with staff providing appropriate information on any recent company business of interest.

Projects gaining senior management commitment to action plan

10. Report back to area and senior management on the workshop process and action plan and get commitment to its implementation.

11. Meet with senior managers to encourage them to create the space for area managers to motivate their staff to implement the action plan.
Appendix 7b: Analytical memo of main issues discussed during workshop # 2

(18-19 May 2010)

Aim of the workshop is to understand the 2 contradictions deeper, trying to identify history of causes, develop solutions & implementation plan (MWP, DIS8P1).

SESSION 8: DEEPER PROBING TENSIONS OF CONTRADICTION #1 (Between the expectation of staff to improve wetland sustainability practices, and no recognised informal and formal learning plan/structure & learning materials in place to strengthen staff learning).

Homework: Did staff think about the causes & solutions of the tensions & contradictions discussed at the last workshop?

Difficult to think on own & easier to think collaboratively in workshop: MWP 2, CEF 1, forester 1, enviro 1.

- I found it difficult to think on my own, as without conversations with other angles to open some loopholes you get stuck (CEF, ZS8P2).
- Without discussions like we had in the last workshop, it’s difficult to think, but at the back of your mind (Enviro, JS8P2).
- Difficult to think on own, but easier to think collaboratively which results in different ideas (MWP, DIS8P2).
- This highlights the silos we have between job descriptions and across areas, in that we are not discussing our work with colleagues enough – need to pop in for a cup of coffee to get to know each other better (Forester, SrS8P2).
- But how do we make sure this happen (MWP, DIS8P2).

1. Changing institutional structures & priorities have weakened staff learning & practice of wetland & environmental issues (causes of contradiction1).

CEFs & foresters jobs change to suit business times: Forester 6, Manager 4, Enviro 4.

- Time is a problem, as we are all so overloaded (Forester, PS8P4).
- How does an organization structure itself to become an informal learning institution? (Enviro, JS8P4).
- How do you create the environment to encourage informal learning? (Enviro, JS8P4).
- Forester’s jobs have changed to managing contractors = losing pride in their plantations & wetlands falling off (Enviro, DbS8P4).
- The above ‘ground’ issues are not important to Mondi anymore, otherwise we’d make the time, have the structure and foresters focused on these issues (Manager, MS8P9).
- You don’t do it, if no report is required (Enviro, TS8P5).
- Mondi’s focus has shifted to safety & financial management which you concentrate on, and everything else is being dragged behind (Forester, GS8P5; manager, MS8P5).
- Forestry profession has become less important (including enviro management), while management on safety, contractors, finances has become more important (Manager, MS8P6&11).
- But nature of Mondi’s business has changed to suite the times (Forester, SrS8P6).
- CEF no longer just to keep community happy, but CEF is now new forester (Forester, SrS8P6).
- Maybe we have lost focus of keeping CEFs up to speed with new skills required? (Forester, SrS8P6).
- Silviculture forester’s job description has little enviro management, but safety takes up almost 50% of the time. If add enviro, must take something else off (Forester, PS8P6).
- Need to shift importance of enviro issues up, so that foresters make the time for them (Manager, MS8P7).

Some customers realise FSC as important but staff not: Manager 7, forester 3.

- Good governance of enviro required by Waltons, Nedbank & Tongaat-Hulett which is important to Mondi business (Manager, MS8P7).
- Enviro therefore needs to go up the priority list (Manager, MS8P7).
- Young foresters just do not understand what FSC really means - it is merely a checklist (Forester, GS8P8).
- Mondi focus has changed to get that checklist in place & get audited, instead of asking ‘why am I doing this?’ (Forester, GS8P8).
- Mondi has become compliance driven with little understanding of why we do it (Manager, CS8P8).
• Mondi went for FSC to gain a marketing advantage & customers see FSC as NB, but staff only see FSC as a burden (Manager, MS8P9).
• Customers also use carbon footprints of companies to guide their buying (Manager, CS8P9).
• Customers are not taking FSC at face value, they are asking other questions: carbon footprint, wetlands, water usage (Manager, MS8P9).
• FSC is no longer a market advantage, but merely gets you into the ‘game’ (Manager, CS8P9&10).
• Maybe the people on the ground have lost their focus, not the company? (Forester, GS8P10).

Structural changes snuffed out staff enthusiasm & trust: Enviro 2, manager 1.

• You are not encouraged to ask why and question issues, and the financial system and stringent policies have resulted in no trust in staff to make the right decision (Enviro, JS9P10).
• Hunger and excitement have been beaten out of everyone over the last 5-10 years (Enviro, JS8P11).
• Otto era absolutely pummelled the hunger and excitement out of us all; it was devastating to the whole organisation (Manager, KS8P12).
• The discussion turned towards developing solutions rather than probing the causes of the second prioritised contradiction #2 on silos, so it was decided to not probe the contradiction #2 further, but to work on solutions.

DEVELOPING THE 13 POINT ACTION PLAN ON STRENGTHENING LEARNING & PRACTICE IN MONDI Grey highlights refer each point of the action plan. * = those bullets not used in chapter 4.

1. A toolbox of processes can strengthen learning & stimulate hunger & excitement: fieldtrips, staff development plans, induction, tertiary education, environmental prioritisation, and community involvement.

• Hunger & excitement can be stimulated by putting fieldtrips & other interventions on staff career development plans, which get evaluated twice a year (Manager, KS8P12).
• *Process of updating development plans impersonal & not effective (Forester, SrS8 P13).
• *New staff have no idea of the career development plan or who to speak to about it (TS8P14).
• It won’t solve everything, but can be used as a tool, & is our personal responsibility to implement (Manager, CS8P13; Manager, KS8P14).
• Line managers need to take responsibility for developing staff career development plans, with support from training manager (Manager, KS8P14).
• Generic & more specific local 1) induction (Manager 12, Forester 5, CEF 3, enviro 2) plays a huge role, especially for new staff (Forester, GS8P14).
• But important to get the order of priorities right for induction, not enviro last (Manager, MS8P14).
• 3 day induction course about to start on Mondi with a generic part that HR specialists will do, and afterwards a local induction of the area office that line managers and e.g. enviro & forestry specialists will do (Manager, KS8P15).
• Generic induction should take 1 day, and the rest locally in the field which will take more than 2 days (Manager, CS8P16; forester, GS8P15).
• *We need to make sure that students learn about wetland management at Saarsveld, before they come to Mondi (Enviro, Dbs8P17).
• *Saarsveld have asked for comments on forestry diploma, and Kerry sent request to all line managers (Manager, KS8P17).
• *Communications, informal networks & training are happening (finance & safety), but not in the right areas (environment), it needs re-prioritising (Manager, MS8P19).
• *It’s all about prioritisation: perform badly on audit = groot kak; perform badly on safety = groot kak; stuff up your wetland = nobody knows about it (Manager, MS8P20).
• *Any staff learning must involve the communities as well, not just Mondi staff (CEF, RS8P21).
• *But Mondi need to first get its house in order before involving communities (Enviro, LS8P21).
• *Cannot separate communities from Mondi because they are using our water, grazing on our land, our firewood, our ncema – they depend on us, and we on them (CEF, VS8P21).
• *But once our house is clean, we have no space for an external party to come in (CEF, RS8P22).
• *We need to involve the contractors as well, as they and their employees are also the community (Forester, OS8P23).
• *We need to write enviro issues into contracts of contractors, as safety and financial aspects are (Forester, St58P23; manager, MS8P23).
• *If Mondi’s priorities were right, it would filter down to contracts & communities (Manager, MS8P24).
### SESSION 9: CONTINUED.

#### 2. Restructuring in Mondi has contributed to wetland decline, but we can adapt by encouraging field based informal learning

- **Underlying cause of wetland decline - Mondi been through huge change & staff turnover**, and the company now is very different to 3-6 years ago (Manager, MS9P2).
- **Wetland decline also dues to ‘contractorisation’ of delineation** externalising responsibility & we need to link foresters & contractors better (Enviro, DbS9P5).
- **Need to do more MWP walk your wetlands**, as in the old days it excited staff & things stopped when it tapered off (Manager, MS9P2; Forester, GSP3&4; manager, KS9P2; enviro, DbS9P3).
- Mondi need to **proactively use the MWP as a tool** to help it, rather than MWP pushing all the time (Enviro, JS9P3. DbS9P4).
- **Staff reacted really well to Damian’s 2) State of Wetland Report talk & need to take foresters out** (Manager 4, enviro 4, forester 2) to show them recommendations (Enviro, JS9P3).
- **MWP cannot keep walking our wetlands with Mondi like old days**, they have other work outside Mondi (Manager, CS9P4).
- **Mondi need a third party review of its wetland work to confirm or not the track we are on**, like when MWP helped with McMurray issue (Forester, SrS9P6).

#### 3. Management need to use field days as an informal learning tool to motivate & excite staff to learn, work better, & cross silos.

- **We need to have successful stories in each area around e.g. wetland 3) field days** (Manager 3, forester 2, enviro 1, MWP 1) crane projects, focussing on motivational and positive things to excite staff (Manager, MS9P7).
- But as said in 1st workshop, it’s **hard to get staff to come on field days** – you have to beg them (MWP, DIS9P8).
- **Need to plan field days ahead** so people can fit them in (Forester, PS9P8).
- Need to **get area managers involved** (Manager, MS9P8).
- Need to have an **environmental calendar to assist planning of informal learning sessions** such as field days (Manager, CS9P9).
- It’s **difficult to find a day that suits** everybody, no matter how much notice you give them (Enviro, JS9P9&11).
- It’s important to make field days small, local & personal, otherwise staff just sit & watch (Forester, SrS9P9).
- Perhaps have local wetland **4) projects that staff collaboratively work on** (MWP 1, manager 1, forester 1) & have field days around them (MWP, DIS9P11).
- This could be a **good way to break silos but need to involve all stakeholders** too (manager, KS9P12).
- *Need to have field days that cross to other areas* as well (Forester, StS9P12).
- **5) Area managers need to push field days** (manager 4); it doesn’t have to be facilitated by external support functions (Manager, CS9P13).
- It is written into the **area managers KPI’s to do cross area fieldtrips**, so they have the mandate, but we just need to create the excitement (Manager, MS9P14).
- It is also up to the **support services to make the area managers excited**, to make field days happen, and tell them of exciting things happening in other areas, on not just conservation but broader issues (Manager, CS9P14).
- *We need to grab hold of opportunities when key people are in the areas to give a talk or something* (Manager, MS9P14).
- **6) Senior managers must motivate** (manager 1, forester 1) (demand) area managers to organise field days to get their staff excited to want to come to work in the morning (Manager, MS9P15; forester, GSP15).
- If we need to make informal learning serious in Mondi then we need to **7) introduce areas managers to informal learning** (manager 7, enviro 1) & what it can do for them through a workshop (Enviro, JS9P17).
- **Field days are a tool management can use** to help them management their areas better (Manager, MS3P17).
- The **culture of motivating staff is lacking** (Manager, MS9P18).
- **Management need to lead and motivate** staff, and not just manage & demand checks (Manager,
• Senior management committed through KPI’s & mandate given, but area management & support services not making it happen, so we are responsible (Manager, CS9P20; Manager, MS9P21).

• We need to remind senior management that some area managers are not exciting their staff & creating the passion about these issues, and they can use our tools to do it (Manager, MS9P21).

• Message from workshop is staff have a hunger to be excited about their work, and it’s up to management to ignite that hunger (Manager, MS9P22).

• We cannot absolve all the responsibility to management to solve these issues, what can we do? (MWP, DIS9P22).

• We need to start regular short & sharp toolbox talks again on wetland & enviro issues (Forester, GS9P22).

• Need to develop a toolbox (forester 1, manager 1 MWP 1) to support informal learning & more 9) in your face* communications (manager 1, forester 1) short, concise, let’s deal with it or discuss it (Manager, CS9P24).

• We need to involve our neighbours in field days, to improve the information flow between us and local farmers like the old days (Forester, SrS9P25).

4. Personalised & meaningful communication needs to be strengthened.

• Staff need 10) informal feedback sessions (manager 3, forester 1) with management on recent trips, meetings, and happenings, so staff can make other connections and feel part of the whole Mondi – reinforce exiting KPI’s (Forester, PS9P15; manager, KS9P16; manager, MS9P16).

• Senior managers must demand area managers give feedback from important meetings to staff (Manager, MS9P16).

• We must communicate more 11) ‘face to face’ (forester 3 Enviro2,) and discuss reports together rather than just sending via emails which nobody reads (Enviro, JS9P27).

• Many participants agreed to this point (Enviro, DbS3P28; forester, GS3P28; forester, St S3P28; forester, SrS3P28).

5. All staff need to have a slice of understanding in forestry, environmental and communities issues, to better understand the different components of Mondi improving collaborative & independent working.

• To break down silos in Mondi everybody must help each other out & work across job descriptions if they can, instead of leaving it up to the most relevant job description to do it (CEF, VS9P25).

• All staff need to have 12) a slice of understanding (manager, forester 2, CEF 1, enviro 1) in forestry, environmental and communities, to better understand the different components of Mondi improving collaborative working (CEF, RS9P26).

• CEFs are becoming more important to forestry, and CEFs need a basic understanding of forestry & environment (Forester, GS9P29).

• We can put together short courses and individuals can decide which they need to go on, depending on their needs (Manager, KS9P29).

• Enviro specialists & foresters need to be sensitised to community issues too (Enviro, JS9P29).

• Not sure if this formalised route of forcing it to happen will work? (Manager, MS3P30).

• CEFs need to go on a course to learn about e.g. wetlands & grazing, otherwise how do CEFs explain overgrazing to the community? (Forester, GS9P30).

• Need to lay a foundation of formal learning, and then top that up with informal learning via the projects (Manager, KS3P31).

• Need to also have training for the contractor & therefore community at same time as safety, first aid, & peer education (Forester, PS9P31).

• We can integrate this training into the existing 13) contractor training matrix (manager 2, enviro 2, foresters 1) (Manager, KS9P32).

• Need to develop enviro education materials on these issues (Enviro, LS9P32).

• Need to educate facilitators on learning processes, and how to best use materials effectively (Enviro, LS9P33; MWP, MS9P33).

• Use existing SHE toolbox talk system as a vehicle to educate contractors on environmental issues (Forester, GS9P34).

Some interesting observations.

• It will be a big achievement to raise senior management awareness of these concerns & our solutions from this multidisciplinary group (Manager, MS9P35).

• Interestingly, every time the discussion goes up a different alley we keep coming back to our developing list of action points! (Manager, CS9P35).
SESSION 10: REFRAMING DRAFT ACTION PLAN TO FINAL VERSION.

1. Reframing the tools section: Manager 4, enviro 3.
   - The workshop facilitator grouped the 13 action points from the first 2 sessions into 4 groups: tools, field, management & communications (MWP, DI5P3). These were then reframed by participants.
   - Overview of the tools section consisting of induction at a local and national level, toolbox to catalyse informal learning, formal modules of a CEF/Forester/enviro specialist course, integrating this information into contractor training matrix (MWP, DI5P3).
   - The tools should be aimed at all levels from management to contractor employee (Manager, CS5P3; enviro, LS5P3).
   - Community needs to be included (Enviro, BS5P3; manager, MS5P3; enviro, LS5P3).
   - Specialist modules from the induction programme (new staff) can be used for formal staff course (existing staff) modules (Manager, CS5P3; manager, KS5P3; enviro, JS5P3).

2. Reframing the fieldwork section: Manager 10, enviro 6, forester 3.
   - Overview of the fieldwork section consisting of state of wetland report field days, local field days of various interests involving stakeholders & trips between forestry areas, a project for area staff to work on (MWP, DI5P5).
   - Field work should be grouped under the tools section to reduce number of headings (Manager, MS5P5).
   - We need to reduce action points from 13 to only a few otherwise nothing will get done (MS5P5).
   - Big debate about whether to say field work, training or learning as training is often seen as very structured (Manager, MS5P5; manager, CS5P5; enviro, JS5P5).
   - Are we talking about a ‘toolbox’ of information we use to train, or ‘toolbox talks’ - one pager fact sheets? (Enviro, JS5P6).
   - Toolbox talks can form part of the toolbox (Manager, MS5P6; enviro, LS5P6; enviro, TS5P6).
   - The key concern that came up from previous discussions was there is a problem with our training – not enough of it both formal and informal (Manager, MS5P6).
   - A big debate as to what section various bullets should go: training, informal learning etc (Manager, MS5P7; forester, GS5P7; forester, PS5P7; manager, CS5P7; manager, KS5P7).
   - The core problem is that people need knowledge (Manager, MS5P7).
   - Need to change tools heading to ‘learning tools’ (Enviro, JS5P7).
   - Big debate under which section ‘collaborative projects’ should go: tools, management, or implementation plan (Manager, MS5P8; enviro, JS5P8; forester, GS5P8; manager, CS5P9).

3. Reframing the management section: Enviro 7, manager 5, forester 2, CEF 2.
   - Overview of the management section consisting of management providing initiatives to excite people (leadership), and senior managers motivating area managers to do it (MWP, DI5P10).
   - Big debate on whether senior or area managers drive the motivational process, with some worried about finger pointing and nothing getting done till the message from the top filters down (Forester, PS5P10; CEF, ZS5P10; manager, KS5P10; enviro, LS5P11; enviro, TS5P11; forester, GS5P11).
   - There is no incentive for area managers to motivate their staff on these issues, so need senior managers to say ‘I want happy, motivated teams and a healthy showcase environment’ (Manager, MS5P11).
   - Big debate on how can senior management incentivise area managers to motivate their staff on these issues, so need senior managers to reward initiatives (Enviro, JS5P12; Sr5P13; creating the ‘space’ to motivate staff (Enviro, Db5P12; enviro, JS5P12; manager, CS5P13), evaluation & monitoring (MWP, MvS5P13; manager, MS5P13; enviro, JS5P13; CEF, ZS5P13), all supporting each other and giving recognition (Manager, KS5P13).
   - If senior management serious about informal learning, they need to get areas managers together & tell them to make it happen, create spaces and incentives (Enviro, JS5P15).
4. Reframing the **communications** section: enviro 8, manager 8, forester 2.

- Overview of **communications section** consisting of feedback sessions by management to staff, face to face feedback on reports, more ‘in your face’ communications, & education of management on informal learning (MWP, DIS10P15).
- There is too much ‘communication’; we need to change the section heading to highlight the need for more ‘face to face’ communication (Manager, MS10P16).
- Debate on what would be a better word than ‘communication’, resulting in **personalised interaction** (Enviro, JS10P16; manager, MS10P16; forester, GS10P16; manager, KS10P17).
- Debate on what was meant by ‘feedback sessions by management to staff’, resulting in a clarification of ‘drink tea & shoot the breeze (CEF, ZS10P17; enviro, JS10P18; manager, KS10P18; manager, MS10P18).
- Big debate on who needs to be educated on informal learning – managers or all? (Manager, KS10P19; enviro, LS10P19; enviro, JS10P19)
- **Area managers turning out to be a kingpin** in everything (Enviro, JS10P19).
- We need to reinforce the value of informal learning (Enviro, DBS10P19).
- Big debate on making sure more cascades happen when senior management go on a road show to an area to discuss issues of interest (Enviro, DBS10P20; manager, KS10P20; forester, SrS10P20; manager, MS10P21; enviro, TS10P22).

**SESSION 11: DEVELOPING IMPLEMENTATION PLAN FROM 13 POINT ACTION PLAN.**

Some discussion about silos before moving into implementation plan: manager 3, forester 2, MWP 1.

- Action plan includes little on communities (Manager, MS11P1).
- **Communities are a silo** as well (Forester, PS11P2).
- Silos are important to focusing people in their work, but the key is **how we build bridges between the silos** (MWP, DIS11P2).
- **Area managers have been tasked with bridging silos** – sort of part of their job description (Manager, MS11P2).
- The new functionalisation has strengthened silos from area manager upwards, so key challenge to ensure that info from top comes down to bottom (Forester, SrS11P3).
- All points in the **action plan MUST apply to operations & support staff, contractors & communities** (Manager, MS11P3).

1. Reframing the **induction process** for new people: Manager 27, enviro 15, forester 9.

- The **formal induction programme almost finalised** & with senior management now (Manager, KS11P5).
- **Biggest learning curve will be line managers inducting** new staff into the office (Manager, KS11P5).
- Need to say **new people and not new staff** so that it applies to contractors and communities as well (Manager, MS3P5).
- The induction consists of a **skeleton pack** with brief information about everything then **specialists will run sessions** at the induction and they will need to **prepare this information** (Manager, KS11P6).
- Induction will consist of **4 days**, if which 1 is generic HR/company info and the other 3 specialists like safety, silvex, harvesting, enviro etc (Manager, KS11P6).
- Not sure how frequent the induction courses will be held for new people (Manager, KS11P6).
- 4 day process will not work: Specialists need to collate materials & create space with area manager to induct new person, as one day too little, need to do over a longer period when staff have some **operational experience** (Manager, CS11P7; forester, GS11P7).
- When new person arrives need to go through HR info & then **give induction file to manager saying they have 6 months** to complete induction process after which signed off, otherwise they will forget content of 4 day course (Enviro, JS11P7).
- So the **area manager drives the process** but it’s the **new staff responsibility to drive & complete the induction process** (Enviro, JS11P7).
- Many participants agree to the adapted idea (Manager, KS11P7; forester, GS11P7; manager, MS11P7; forester, SrS11P7; enviro, TS11P7).
- New staff therefore need to have each section of the induction process signed off by specialists before being able to complete the induction & ‘take their pink vest off’ (Manager, MS11P7).
- **Training manager will try and change the induction** to include this adapted process (Manager, KS11P8).
- The **difficult part is ensuring new staff complete** the whole process (Forester, GS11P9; manager, KS11P9).
enviro, LS11P9).

- If needed existing staff do different modules using the same induction concept (Enviro, TS11P9; manager, KS11P9; manager, MS11P9; enviro, LS11P9).

- **Communities need to also do the modules** (or whatever tool is suitable) signed off by the specialists, as that is what the communities have been asking for - more knowledge! (Manager, MS11P10).

- We need to focus and reduce the number of actions, so let’s **concentrate on Mondi staff before going broader** to communities (Manager, CS11P10; forester, OS11P11).

- Need to collate existing **relevant information & make available on a disc** or whatever (Enviro, DbS11P11).

- Take that **pack out**, as it’s not going to happen! (Manager, MS11P12).

- **Big debate on should information packs should be developed or not** (Enviro, DbS11P12; manager, MS11P12; enviro, JS11P12; manager, CS11P13; forester, GS11P13).

- A specialist needs an information **pack to draw information from for a new person’s induction** (Enviro, JS11P12).

- If a specialist goes then **new specialist needs to know what information to use** for induction (Enviro, LS11P13).

- The **pack needs to consist of reference material** that the specialist and induction person needs to know (Manager, CS11P13; Enviro, JS11P13).

- Make sure current localised enviro, social & forestry information is available & included in the induction process (Manager, MS11P14, enviro, JS11P14).

- To confirm: it’s not a 4 day course, but an induction process lasting 3-4 months with new person responsible driving it together with the area manager (Forester, GS11P15; manager, KS11P15).

- Big debate on apart from the enviro manager, who will develop the other reference lists (Manager, CS11P15; manager, MS11P15, forester, GS11P16; manager, KS11P16).

- Manager of induction process to **task each department to put together the relevant information** (Enviro, TS11P16; manager, KS11P16; forester, SrS11P16, enviro, JS11P17; manager, MS11P17).

---

7. **Selecting projects that staff can collaboratively work on** (moved to action #7 to accommodate one staff leaving early): **Manager 19, enviro 16, MWP 6, forester 5, CEF 1.**

- Better to have **existing projects that are broadened** to include all stakeholders, than creating new projects that involve all stakeholders (Manager, MS11P19).

- A good project for Greytown at **Homesdale on Lake Merthley**, which includes stewardship, wetland rehabilitation, endangered species, community issues etc (Enviro, DbS11P19).

- **This project should be run by the Homesdale Wetlands Committee**, and all the other projects should also have committee to encourage collaboration (Manager, MS11P19).

- **Calderwood** is a good project for Mondi-Shanduka, and it has community grazing issues (MWP, DS11P20).

- **Langepan, Mtunzini, or Geluck** could be good projects for Zululand (Enviro, LS11P20).

- It’s important to try to have **projects with different orientations** in the different areas (Manager, CS11P20).

- Zululand chose the **Landfontein land claim at Babanago** (Manager, CS11P21; Enviro, LS11P21).

- The **livestock programme** for Central could concentrate on strengthening awareness & capacity of communities (Manager, CS11P21).

- **Someone needs to champion the implementation of these projects, & we need to keep track of lessons learnt**, what worked, what didn’t (Enviro, JS11P22).

- Need to **establish committees to champion & keep track** of progress (Manager, MS11P23; Enviro, LS11P23).

- In **6 months time we need to get together** as the same group, or committees, to look at progress made and share lessons learnt (Manager, CS11P23; Manager, MS11P23; Enviro, DbS11P23).

- It is important to see **how the projects are strengthening informal learning & collaboration** (Enviro, JS11P24, MWP, D1S11P24; forester, GS11P24).

- Rather than come together as one big group, it would be better for **individual committees to present to 2-3 key senior managers** how they worked together (Manager, MS11P24).

- To be decided on later but **as one big group, everybody can learn** from the other’s experiences (MWP, D1S11P24).

- **All staff to take responsibility for making projects happen** as nobody will be chasing up (MWP/DS11P25).

- But each project needs to have an **area manager to enforce project** implementation (Enviro, JS11P25;
manager, CS11P25).

- **Somebody has to lead** on making each project happen (MWP, DIS11P25).
- Big debate on **who would be responsible for leading** on each project (Manager, MS11P25; manager, KS11P25; enviro, DbS11P25; manager, CS11P26; enviro, LS11P27; ZS11P27; manager, KS11P27; forester, SrS11P27; enviro, TS11P27; CEF, RS11P28; forester, SrS11P29).
- **But Richmond area doesn’t have a project** (Manager, CS11P28).
- Either Harcourt or Seele wetland would be good projects for Richmond area (Enviro, JS11P28).
- Seele was chosen for New Hanover (Richmond area) for awareness, rehabilitation & Mondi own most of catchment (Manager, CS11P28; enviro, JS11P28&29; forester, SrS11P29).
- Interesting that 2 foresters, 2 CEFs and an area manager were chosen to lead = nice spread (MWP, DI11P27).
- It was decided to **meet in 6 months time** to report back on lessons learnt & how informal learning & collaboration have improved (MWP, DI11P30; enviro, JS11P30; enviro, DbS11P30; manager, KS11P30).
- Big debate on a forester from another area without a project to work with, & it was decided that he will support the Babanago project & sit on their committee – good example of learning across areas (Manager, CS11P31; enviro, LS11P31; forester, PS11P31; manager, KS11P31).

2. Creating **formal learning modules** for existing staff: Manager 9, enviro 2, forester 2, CEF 1.

- **Staff need to identify gaps in their knowledge**, and include in career development plans (Enviro, JS11P33; forester, GS11P33; manager, KS11P33).
- Big debate on **who is going to drive the training** of modules (Manager, KS11P33; manager, MS11P33; CEF, VS11P33; enviro, JS11P33).
- It’s a line manager’s responsibility to know what training staff need, & to ask training manager to facilitate access to it (Manager, MS11P34; Manager, KS11P34).
- We can achieve a **huge achievement if every CEF can go on forestry course** over the next year (Manager, MS11P34).
- Even though this was seen to be a **really important point**, it was decided to **not implement** until induction process started (Manager, CS11P34; manager, MS11P34; manager, KS11P35; forester, SrS11P34).


- Important to develop not just a toolbox with materials but also information on **what informal learning is and methods for using different tools to catalyse it** (Enviro, JS11P35&36; enviro, LS11P35; forester, GS11P35; manager, CS11P36).
- **MWP will develop** the toolbox (CS11P36; MvS11P36).
- The toolbox materials will also be **applicable to induction process** information required for new staff (Enviro, DbS11P37).

4. Integrating enviro toolbox information into **contractor training matrix**: Manager 2, enviro 1.

- Relevant **enviro materials** to be included in the SHE modules of the contractor training matrix using information from the toolbox and modules mentioned in #2 & #3 (Manager, KS11P38).
- Rather use the word **enviro courses not materials** that need to be included in the matrix as the training manager contracts the course out to service providers who make their own materials verified by SATCA (Manager, MS11P40, enviro, JS11P40).

5. MWP to hold **field days on State of Wetlands Report recommendations**: Manager 11, enviro 2, forester 1, MWP 1.

- A request was made to expand the **State of Wetlands Report** (SWR) to include all areas (Forester, SrS11P40; manager, MS11P41).
- Not all of Mondi’s wetlands can be assessed, so a **detailed process was gone through to select wetlands chosen for the SWR** (MWP, DIS11P40; manager, CS11P41).
- After these wetlands have been **completed, there will be a lot of discussion on the way forward** (Manager, CS11P41).
- **If the SWR is used as a process to motivate people** across Mondi, then at least one wetland needs to be done in each forester’s area, so nobody gets left out (Manager, MS11P41&43).
- Perhaps Calderwood & Seela are included in the SWR, as they are 2 of our chosen projects (Manager, KS11P41).
- **Prioritisation of wetlands based on provincial prioritisation of e.g. water & ecology, using little local information** (Manager, CS11P41).
- Other wetlands can be included in the next step, but not now (Manager, CS11P41).
- The **MWP will take local staff into their wetland, explain the SWR process**, the recommendations, and
see if its valuable to have it expanded (Manager, CS11P42).

- Perhaps link the SWR field days to the chosen projects in this action plan (Enviro, DbS11P42).
- SWR field days will still be held in each area even if their wetlands were not done (Manager, CS11P42).
- The SWR was designed to assess the health of Mondi’s wetlands, but we now realise that it can be used as a vehicle to get staff into the field to motivate them (Enviro, JS11P43; manager, MS11P43; manager, CS11P43).

6. Making local & cross area field days happen: Manager 4, enviro 2, forester 1, CEF 1.

- Need to reinforce area managers existing KPI’s to have 2 field trips per year (Manager, MS11P44).
- Environmental support function to create the space/ideas & opportunities for field days across areas (Manager, CS11P44; enviro, JS11P44).
- Enviro manager to identify opportunities, Greytown area manager to raise issue at area manager forum & encourage participation across areas (Manager, MS11P44).
- SWR field days will still be held in each area even if their wetlands were not done (Manager, CS11P43).
- Enviro & social events/days to be aligned with CSI strategy (Manager, CS11P47).

SESSION 12: CONTINUED.

8. Gaining support from area & senior management on workshop process (#7 completed earlier): Manager 10, forester 2.

- It’s important to report back to management the process the workshop went through so they can start to include the action plan in their management (Manager, MS12P1).
- Need to use the marketing issue with Waltons as a vehicle to present it (Manager, MS12P1).
- Crucial to get the buy-in & understanding from area managers if action plan is to be implemented (Manager, CS12P1&2; manager, MS12P2).
- Important to expand current field days area managers are having to include social & enviro issues (forester, SrS12P2; manager, CS12P3).
- Support services can suggest enviro ideas to expand field days, but mustn’t have to ‘push and pull’ to get enviro & social onto the agenda (Manager, CS12P3).
- South managers very interested in feedback from workshop #1, and results from this workshop, as they appear to be coming to similar conclusions independently (Manager, MS12P4).
- The objectivity of the workshop process is crucial as a selling point to management, as it’s not just staff pushing an agenda (Manager, MS12P4).

9. Senior management to create space for area management to motivate staff: manager 2, enviro 1.

- The same action point as for #8 applies (Manager, MS12P5; manager, CS12P5; enviro, LS12P5).

10. The need for Feedback sessions by management to staff: Manager 6.

- Training manager will speak to senior management to consider reintroducing cascades & informal feedback sessions (Manager, KS12P5).
- Apart from isolated visits senior management seldom visit the areas & speak to staff, including Pietermaritzburg (Manager, MS12P6; manager, KS12P6).
- Staff really appreciates it when senior management visit their area (Manager, MS12P6).
- Senior management in South Region has already recognised this weakness & started to have a monthly meeting with all harvesting & silviculture staff, with meetings soon to be held in a different area every month. (Manager, MS12 P6).
- These monthly meetings are an opportunity for senior management to speak to all staff in the evenings & may be an opportunity for an enviro specialist talk (Manager, MS12P6).

11. The importance of face to face report backs by specialists: Manager 3, enviro 2, forester 2.

- Consultants doing specialist reports need to provide face to face feedback to the people who the report is intended for (Manager, CS12P7; enviro, JS12P7).
- This needs to be put into their scope of work (forester, SrS12P7; manager, MS12P8).
- The feedback doesn’t have to be large, just a cup of coffee with relevant people who can understand & question the report (Manager, MS12P8; forester, SrS12P8).
12. **More ‘in your face’ communications are needed rather than emailing:** Manager 12, enviro 4, forester 2.

- Emailing is standard procedure, but need more ‘in your face’ communications to workshop new procedures, policies, guidelines with staff rather than only emailing it out (Manager, CS12P11).
- Nobody remembers email but **do remember personal visits** (Manager, CS12P11; enviro, LS12P11; manager, MS12P11).
- Enviro manager to **rollout enviro policies & procedures interactively** rather than electronically (enviro, JS12P11; forester, GS12P11; enviro, LS12P11; manager, CS12P12).
- At last meeting **finance decided to do a big road show** on audits, policies & procedures (Manager, MS12P12).
- Need to **workshop induction process face to face** introducing it to everyone, otherwise people won’t buy into it via email (Manager, MS12P12).
- Training manager to **workshop the role & responsibility with line managers** in induction process (Manager, KS12P12).
- This is probably the **most important aspect of induction** (Manager, KS12P12; manager, MS12P12; forester, SrS12P12).
- Debate on whether we need to **workshop with support staff as well**, not just line managers so they are aware why they need to do training (Manager, MS12P13; enviro, JS12P13; manager, KS12P13).
- Agreed that introduction induction **workshops to include line managers & support** staff (Manager, KS12P13).

13. **The need to educate management on what informal learning is:** Manager 4, enviro 3, forester 1, CEF 1, MWP 1.

- Big debate that this **point was already included** in a number of previously mentioned points, like #2, #3, #8, #9 (CEF, ZS12P14; forester,OS12P14; MWP, MvS12P14; manager, CS12P14; enviro, JS12P14; manager, MS12P15)
- Agreed that point #8 covered #13, but **#8 would be expanded to explicitly include informal learning**, and #13 deleted (Enviro, JS12P14; manager, MS12P14, MWP, DIS12P15; manager, KS12P14; enviro, LS12P14).

**CONCLUSION: TESTING IMPLEMENTATION PLAN AGAINST ORIGINAL TENSIONS & CONTRADICTIONS:**
Manager 8, MWP, 5, enviro 2, forester 2, CEF 1.

- All the original contradictions & tensions were read & the action plan evaluated to see if it solved the key contradictions & tensions that were chosen in Workshop #1 (All).
- Most of it was **covered by the implementation plan** (Manager, KS12P16).
- The plan is **thin on community involvement**; it supports working better as a Mondi team but not that team working better with the community (Enviro, JS12P16).
- The **rider at the bottom of the implementation plan** includes community involvement: ‘the plan must apply to all support/operations staff, contractors & community’ (Manager, MS12P16).
- The **plan talks about actions directly related to Mondi staff**, not how we are going to take it to the community (Enviro, JS12P16).
- But the **collaborative projects include the community**, which is adequate (Forester, OS12P17).
- And the **induction process will involve the communities** as well, but perhaps we need to be more specific in terms of the stated tensions (CEF, ZS12P17).
- The **plan is only the departure point for working collaboratively** to solve some of the bigger issues which may take a couple of years to solve (MWP, DIS12P17; forester, OS12P17).
- **Never really solved the staffing issue**; almost gave up before we started (Manager, MS12P17 & 18).
- The reason was we **cannot do anything about it**, so let’s work around it (MWP, DIS12P17).
- Is the plan really going to **break down the tension on ‘resistance to change’**? (CEF, ZS12P18)
- Hopefully the **workplan strengthens how we learn together** across different job descriptions & informal learning which should break down resistance to change (MWP, DIS12P18).
- The implementation **plan considers quite a few of the tensions** identified, and the correlation between the two has not been conscious which shows we are on the right track (MWP, DIS12P19).
- The plan is good & interestingly **many of these issues have already been identified, re-enforcing existing initiatives**, & providing **confirmation of subjective views** on some issues from our group (Manager, MS12P19).
- Those not **directly actioned in the plan cannot sit back & relax** & wait for those actioned to take the lead (Forester, PS12P20).
• The people on the implementation plan who are actioned will take the lead and be responsible for bringing together the others to make the action happen, but not to do all the work (MWP, DIS1220).
• Does the enviro manager honestly believe that improvement of wetlands & following this process is important to the company as a whole? (Manager, MS12P21).
• The environmental manager said emphatically ‘yes’, and that the Director of forestry is talking about the same thing; making Mondi into a learning organisation (Manager, CS12P21; manager, KS12P21).
• Area manager said that in that case ‘ok, if you guys believe it is important, we will do it’. (Manager, MS12P21).
Appendix 8:  Level 1 analytical memo of main issues discussed during workshops # 3
(On CD-ROM)
(See case records in CD-Rom, as number of pages of appendix 8 too long)

Appendix 9:  Level 2 analytical memo of main issues discussed during workshops # 3
(27 July 2013)

Table A. Summary of analytical memo

<table>
<thead>
<tr>
<th>1. Values, knowledge &amp; thinking change:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in how staff learn. Valuing of diverse roles in wetland management practices</td>
</tr>
<tr>
<td>• CEFs and foresters are now valuing the involvement of each other in their work - see report back from collab projects and reflective interviews (Zenezele grazing issues – where to graze and how – needs input from forester to help him) – also see wshop 2 conversation of Gustav saying we need a new type of forester for the future, and Zenezele’s comments that he wants a slice of understanding from forestry and enviro.</td>
</tr>
<tr>
<td>Staff better understand and place higher value on wetlands &amp; environment</td>
</tr>
<tr>
<td>• Include info from CEFs about how they understand and value the wetlands more (from collab project, EL process &amp; Michelle toolbox courses), so they can now support the communities better – Zenele wshop 3 wetland project feedback &amp; reflective interview.</td>
</tr>
<tr>
<td>Development &amp; use of environmental learning tools</td>
</tr>
<tr>
<td>• Or #4? Development of toolbox: MWP 1 (toolbox).</td>
</tr>
<tr>
<td>• Include more info from Michelle reflective interview and use of WOW in contractor training?</td>
</tr>
<tr>
<td>Knowledge practices are stronger</td>
</tr>
<tr>
<td>• Interactive &amp; collaborative informal field based enviro learning spaces created: Area mgt 1, enviro 1 (field days).</td>
</tr>
<tr>
<td>• PEP: Forestry area manager supportive of staff working together, PEP: Area mgt 1 (Langepan).</td>
</tr>
<tr>
<td>• Expansion of org learning from forester to forestry area manager: Area mgt 1 (field days).</td>
</tr>
<tr>
<td>• Repeat from 5: CEF working closer together with enviro after collaborative project, strengthening enviro learning &amp; practice (CEF, ZZW3P25&amp;26) (Langepan).</td>
</tr>
<tr>
<td>• See reflective interviews as well as Zenxele wshop 3 saying his wetland knowledge has improved, as well as any other CEF saying the same after the collab projects – like the MSN guys?</td>
</tr>
<tr>
<td>Staff learn to reflect more deeply</td>
</tr>
<tr>
<td>• EL process has helped staff reflect more deeply on their work: Snr mgt 1, area mgt 3, forester 2 (reflections).</td>
</tr>
<tr>
<td>• Staff recognise change starts with individual, but team work essential, only if learning space available: area mgt 1 enviro 1 (change starts wth individual).</td>
</tr>
<tr>
<td>Change in how staff collaboratively understand root causes inhibiting changed practice</td>
</tr>
<tr>
<td>• Forestry area manager reflects the NB of understanding root causes of enviro problems: area mgt 2 (validation).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Discourse change:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discourse of increased consciousness of understanding learning processes</td>
</tr>
<tr>
<td>• Manager has increased understanding of fieldtrip as important learning spaces: area mgt 1, (field days).</td>
</tr>
<tr>
<td>• Growing staff consciousness of the NB of interactive &amp; collaborative learning process &amp; tools &amp; agentive talk: Enviro 1, training mgt 2, area mgt 1, forester 1 (toolbox).</td>
</tr>
<tr>
<td>• Senior mgt recognising NB of interactive learning tool to org dev &amp; agentive talk: Snr mgt 1 (toolbox).</td>
</tr>
<tr>
<td>• PEP: Recognition of NB of learning tools having quality learning processes: Training mgt 1, forester 1 (training matrix).</td>
</tr>
<tr>
<td>• Management understand learning processes of induction (induction).</td>
</tr>
<tr>
<td>Discourse of staff participation that is more collaborative &amp; interactive - (process based language)</td>
</tr>
<tr>
<td>• Enviro staff show intended change of practice sharing consultant enviro specialist report backs supported by new collaborative interactive language: enviro manager 1, enviro 1 (personalised interaction).</td>
</tr>
</tbody>
</table>
Repeat from 2: PEP: Forestry area manager supportive of staff working together, PEP: Area mgt 1 (Langepan).
More info from collab projects and reflective interviews talking about ‘we’ (especially from those people who may not be changing actions yet, but their language is changing). New language on how the learning is structured (structural language)

Discourse change in how learning is structured (structural language) – fieldtrips, induction, comms
- Manager strongly promotes fieldtrip as important learning spaces: enviro mgt 1 (field days).
- PEP: New language reflected in collaborative ongoing dev of both formal & informal enviro learning processes implemented over long term & integrated into company’s structures: Enviro mgt 9 (training matrix).

Discourse of agentive talk for future actions and changed practice
- Agentive talk by enviro manager to change learning structures: Enviro mgt 2 (personalised interaction).
- Agentive talk of developing enviro learning courses: Training mgt 1 (training matrix).
- Repeat from above: Manager strongly promotes fieldtrip as important learning spaces: enviro mgt 1 (field days).
- EL process catalyses intended follow-up action from wshop#3 with mgt taking charge, and new structural & process based language: Snr mgt 1, enviro & area mgt, 6 (follow up action). Move to #4 after reflective interview?
- Area managers lobby snr mgt to support change orientated projects (PEPs): Enviro, area & snr managers 3 (personalised interaction).
- Agentive talk from collab projects as well.

3. Approach change:

More confident & independent new staff
- PEP: Induction process empowered staff to know what to do & company expectations: Forester 1 (induction).
- Process change: PEP: Induction process has catalysed dev of new staff relational agency improving work practice: Forester 6 (induction).
- See more info in induction section!
- Not sure where this bullet comes from? Not in detailed section 4 below. Maybe a combination of bullets from detailed AM level 1, in induction section?: New 3-month induction process provides enabling environment for new staff to grow professionally in new job, and understand area specifics of wetland & enviro management (Forester, PbiGW3P1&2; forester, TnPrW3P2S; forester, NrPrW3P2S; forester, CdPpW3P7&8; enviro manager, CZW3P15).

Communication system is more relational
- Dialogic discussion of new procedures/policies/specialist report backs empowers forester to work proactively & co-operatively with enviro & consultant; wants process to broaden & continue: Forester 1 (personalised interaction).
- More info on ‘they have changed how they work because the relations between them have strengthened’ therefore easier to speak to each other – see wetland project report backs.

Staff decision making more collaborative
- More info from burning cameo & specialist report backs!

Stronger integrated approach with other broader Mondi initiatives
- I don’t have enough evidence for this change, besides this is more a CEP that provides a contextual supportive environment for the other change processes
- EL process influences structural changes in enviro manager reporting line & strengthens broader Mondi interventions: Enviro & area managers 2 (personalised interaction). Or is this a structural change rather????

Breakdown of silos & blockages
- Can say how everybody is aware of the silos, but not broken them down yet, but they are all aware of them, and therefore will continue to try to bridge them – see reflective interviews!

4. Practice change:

Changed reporting communication
- Enviro staff change practice & communicate new procedures/policies/specialist report backs more interactively supported by new structural/process based language: enviro manager 4, enviro 3 (personalised interaction). Or rather use: Enviro staff change the way they communicate/interact with forestry operations staff when sharing specialist report-backs/new enviro policies/procedures (Enviro
Collaborative wetland practice: all of these 3 changes have been grouped as one (even though burning & comms are practice too), since the change processes are the same, and they all fall under collab projects so the processes would have been similar.

Wetland rehabilitation plans developed, alien plants in wetland removed & community grazing agreement reached.

- **Staff change how they work together**, with **intended action**, supported by collaborative interactive language & PEPs: Enviro 5, Forester 3, CEF 2 (Calderwood).
- **Staff change how they work together**, with **changed wetland practice**, supported by relational agency, new collaborative/interactive language & PEPs: Enviro 1, Forester 3, CEF 2 (Calderwood).

Strong project planning process developed

- **Staff change how they work together** with **intended action**, supported by collaborative interactive language, relational agency & PEPs: Enviro 2, area mgt 2, Forester 1 (Lake Merthley).

Wetland community grazing plan developed

- **Staff change how they work together** with **intended action**, supported by relational agency, new collaborative/interactive language & PEPs: Forester Enviro 2, CEF 3 (Langepan).
- **Staff change how they work together through project implementation**, supported by relational agency, new collaborative/interactive language & PEPs: Forester 1, CEF 2 (PR grazing).

Wetland burning changes

- **Area manager catalyses changed practice & org learning/dev**, by leading **collaborative staff discussion on burning & NB of dialogic learning processes**. Area mgt 3, enviro mgt 1, forester 3, enviro 1 (fire discussion). Add info from reflect interview?

5. **Structure change**:

New induction system

- **Dev of org induction structures & processes** institutionalises enviro and operational hand over processes and learning for new staff: Training mgt 5, enviro mgt 4, area mgt 2, forester 2 (induction).
- **PEP**: Language change from **short term passive transmission** of induction info to spaces provided for longer term interactive social learning opportunities with staff responsibility: Training mgt 3, Enviro mgt 4, area mgt 1, forester 1 (induction).

New learning structures

- **Dev of new formal learning structures** potentially institutionalises enviro learning in Mondi staff & forestry contractor sector: Enviro mgt 5, training mgt 1, enviro 1 (training matrix).

6. **CEP**

Changes in organisational culture provides enabling environment for wetland change

- **Changes in org culture strengthens enabling environment for enviro learning**: Training mgt 1, forester 3 (induction). Included in induction change.
- **CEP**: School based **EE integrated into business strategy** to reduce enviro risk: Enviro mgt 3 (CSI strategy).
- **CEP**: Integration of school based **EE into CSI strategy** broadens structures used in promoting long term enviro mgt: Enviro mgt 1, enviro 2 (CSI strategy).
- **FSC seen as Mondi enviro agenda** & way of life by snr mgt: Enviro mgt 1 (personalised interaction).
- **Broader Mondi initiatives that dovetail** with EL process strengthen org change: Enviro mgt 3, area mgt 5, snr mgt 1 (broader Mondi initiative).
- **CEF changed EE practice** with external parties, & new structural language: CEF 1 (PR grazing).

Social structure inhibits change

- **SEP**: Historical social (or cultural?) **structures inhibiting staff agency** in Piet Retief: CEF 4, MWP 1 (Nomusa interview). Moved up to change in practices section on staff working together.

7. **Bullets not used**

- **From ‘Approach’ – collab decision making**: EL process supports changed **collaborative & interactive practice**: CEF 1, Forester 1 (reflections).
- **PEP**: Increased understanding of **learning processes**: Forester 1 (induction). Not really this, but rather the forester saying that the 2 day induction would not work, as there is too much to learning to be done in 2 days.
- **Staff reflect how EL work applicable to broader enviro issues** and even outside enviro: snr mgt 1, area mgt 1, enviro 1 (validation).
### Table B. Details of analytical memo

#### 1. Values, knowledge & thinking change:

**Or #4? Development of toolbox: MWP 1 (toolbox).**

- MWP develops toolbox of resources on environmental issues related to Mondi’s enviro needs & aligned to staff training matrix & WOW (MWP, MvMsW3P11)

**Interactive & collaborative informal field based enviro learning spaces created: Area mgt 1, enviro 1 (field days).**

- Enviro specialist runs a couple of field days (Enviro, JGW3P28).
- Mgt create interactive & collaborative spaces for informal enviro learning between staff by 3 inter area fieldtrips resulting in staff more enthused, excited, & interested (Forestry area manager, MGW3P29&30).

**Expansion of org learning from forester to forestry area manager: Area mgt 1 (field days).**

- Expansion of learning from forester at initial EL workshops to forestry area manager catalysing informal learning spaces (structural change) in the field. (Forestry area manager, MGW3P30).

**Repeat from a Practice change bullet – no heading:**

- CEF working closer together with enviro after collaborative project, strengthening enviro learning & practice (CEF, ZW3P25&26) (Langepan).

**PEP: Forestry area manager supportive of staff working together, PEP: Area mgt 1 (Langepan).**

- Forestry area manager strongly supports Zululand ops staff need to work & learn together on collab wet projects & why. (Forestry area manager, IIZW3P2).

**Forestry area manager reflects the NB of understanding root causes of enviro problems: area mgt 2 (validation).**

- Forestry area manager shows deeper understanding for NB of dealing with root causes of problems (aliens) & not just the symptoms (Forestry area manager, MGW3P12).
- Forestry area manager stresses to Greytown ops staff the need to deeper understand environmental issues & consequences of ops actions (Forestry area manager, MGW3P13).

**Staff recognise change starts with individual, but team work essential, only if learning space available: area mgt 1 enviro 1 (change starts with individual).**

- Area managers stress to ops staff that change in practice will develop from individual change & increased teamwork, but Enviro shows strong consciousness of NB of learning interactions that snr mgt need to create spaces for it (GW3P25& 26).

**EL process has helped staff reflect more deeply on their work: Snr mgt 1, area mgt 3, forester 2 (reflections).**

- Ops staff find EL wshop useful to see what others think when faced with similar issues but don’t talk about them; issues accurately depicted; just need actions now (ZW3P26).
- Forestry area manager says EL wshop had helped staff deeply reflect on issues not normally spoken about in a structured & grounded process (Forestry area manager, IIZW3P3).
- Snr manager states EL process cuts to bone & and snr mgt need to know about it (Senior manager, AMsW3P19).

---

#### 2. Discourse change:

**Manager has increased understanding of fieldtrip as important learning spaces: area mgt 1, (field days).**

- Manager understands importance of informal learning space created by inter-area fieldtrips, indicating consciousness of learning interactions. (Forestry area manager, GsGW3P30).

**Growing staff consciousness of the NB of interactive & collaborative learning process & tools & agentive talk: Enviro 1, training mgt 2, area mgt 1, forester 1 (toolbox).**

- Enviro specialist highlighted NB of learning processes when using education resources in toolbox. (Enviro, DbMsW3P12&13).
- Training manager speaks of using materials in interactive collaborative way, & conscious of quality situated learning processes (Training manager, KGW3P19).
- Forestry area manager & forester (both not at previous EL wshops) speak about NB of WOW as quality EE resource in toolbox & agree to have training session on how to use WOW (Forestry area manager & forester, ZW3P19).
- Training manager thought that toolbox of enviro learning materials was very NB & pledged support to developing it collaboratively with enviro sp as long as they were used (Training manager, KGW3P19).

**Senior mgt recognising NB of interactive learning tool to org dev & agentive talk: Snr mgt 1 (toolbox).**

Arthur deciding to take WOW into mgt meeting to catalyse its use. (Senior manager, AMsW3P14).

**PEP: Recognition of NB of learning tools having quality learning processes: Training mgt 1, forester 1**

Training manager recognises **WOW as an interactive & situated learning tool** for introducing enviro concepts to staff & contractors training, but only when facilitated appropriately (Training manager, KGW3P19,20&21).

Forester begins to understand the **NB of the learning processes of WOW**, especially to help himself understand wetland issues (Forester, SfGW3P20). Maybe not rigorous evidence?

**PEP: New language reflected in collaborative ongoing dev of both formal & informal enviro learning processes implemented over long term & integrated into company’s structures:** Enviro mgt 9 (training matrix).

**New language that is long term & institutionalising** enviro learning within formal training matrix, career development plans, & contractor training programme (Environmental manager, CMsW3P15&16; CZW3P15&16; CPrW3P27&28).

Language is reflective & agentive on **changes in formal training participants have planned** to bring about in future. (Environmental manager, CMsW3P15&16; CZW3P15&16; CPrW3P27&28).

Language has **collaborative & ongoing orientation** as enviro staff have pledged to consult with ops staff on which courses are required by which positions. Not just short once off courses, but refreshers as well! (Environmental manager, CMsW3P15&16; CZW3P15&16; CPrW3P27&28).

**Agentive talk of developing enviro learning courses:** Training mgt 1 (training matrix).

Manager strongly promotes fieldtrip as important learning spaces: enviro mgt 1 (field days).

**Enviro staff show intended change of practice** sharing consultant enviro specialist reportbacks supported by new collaborative interactive language: enviro manager 1, enviro 1 (personalised interaction).

**Intended change of practice** in MSN & strong collaborative/interactive language from enviro manager of sharing results from enviro consultant specialist reports with forestry staff (Environmental manager, CMsW3P17).

Enviro specialist discusses **intended change in collaborative interaction** when enviro consultant specialist report completed (Enviro, JGW3P28).

**Repeat from Values section:** PEP: Forestry area manager supportive of staff working together, PEP: Area mgt 1 (Langepan).

Area managers lobby snr mgt to support change orientated projects (PEPs): Enviro, area & snr managers 3 (personalised interaction).

**Enviro manager lobbies senior mgt to support org change started by EL wshops, leading to DSL exec talk & seminar** (Environmental manager, CMsW3P17&18; CZW3P19; CPrW3P29).

**Forestry area manager lobbies senior mgt to support org change** & gets it, but reflects he should have **done same with the area mgt** who are key to changing ops (Forestry area manager, MGW3P28).

**Agentive talk by enviro manager to change learning structures:** Enviro mgt 2 (personalised interaction).

Enviro manager hopes snr mgt expands face to face feedback process to safety (Environmental manager, CPpW3P19)

**EL process catalyses intended action** from wshop#3 with mgt taking charge, and new structural & process based language: Snr mgt 1, enviro & area mgt, 6 (follow up action).

Snr manager says he will take **WOW into management meeting** to catalyse its use (Senior manager, AMsW3P14).

**Area manager says will discuss burning & erosion issue at next inter area fieldtrip** he organises (Forestry area manager, MGW3P15).

Area manager asks **MWP to interactively discuss erosion problem with forester** so he can deeper understand issue & potentially change practices (Forestry area manager, MGW3P15).

452
Enviro manager proposes to Zululand ops staff **workshop to collaborate on strengthening burning guidelines** to overcome burning issues (Environmental manager, CZW3P20).

Enviro manager sums up 3 actions emerging from Zululand wshop as WOW wshop, burning practice workshop, Langepan burning & grazing issues (Environmental manager, CZW3P26).

Ditto in PR wshop: Burning practice wshop, expanding SWR to new wetlands & funding from snr mgt for inter-area field days (Environmental manager, CPw3P7).

Ditto Paulpriet wshop: Mgt plan for Lenjane & Misty Valley, expand SWR to new areas, enviro presence at area mgt meetings (Environmental manager, CppW3P21).

Include evidence of the burning workshop that took place and resulting burn of Canewoods – from reflective interviews!!

Management understand learning processes of induction (induction).

- The enviro manager demonstrated increased consciousness of importance of contextually situated learning interactions by saying **induction now providing an interactive space for new staff** to learn about enviro issues relevant to their area (Environmental manager, CMsW3P11; CZW3P14&15).

- Training manager’s language reflects the continual **dev of induction as going social learning** process (Training manager, KGW3P21). How Arjen Wals defines sustainability.

3. Approach change:

PEP: Induction process empowered staff to know what to do & company expectations: Forester 1 (induction).
New staff empowered to confidently **know what to do & understand company expectations** (Forester, TnPpW3P22).

PEP: Induction process has catalysed dev of new staff relational agency improving work practice: Forester 6 (induction).
- Forester realises the **NB of developing relations with staff & understand Mondi culture to helps him do his work better**. (Forester, PblGW3P1). Strong evidence of developing relational agency with other staff.
- Forester develops agency to **work independently, proactive in meeting unknown people, & NB of learning process** of longer term induction (Forester, PblGW3P1).
- Forester empowered to develop the capabilities to be **independent in a new organisation, & find the appropriate people** who can help him find answers. He realises the importance of **working together to learn together** and therefore he is conscious of the importance of social learning interactions & relational agency (Forester, TnPpW3P25).
- Forester highlights that to learn meaningfully, you cannot be spoon fed, but need to interact and learn by doing. He also highlights the NB of independence, being proactive, & **relational agency are to improving practice & being an efficient professional** (Forester, CdpW3P7&8). i.e. these processes are supporting the development of his competence.
- Forester has strengthened his agency to **work independently, but in collaboration with others** (Forester, PblGW3P2). Strong evidence of how the induction has developed relational agency for Patrick, and it most likely will do for others, depending on how they engage with the process.

**Dialogic discussion of new procedures/policies/specialist report backs empowers forester to work proactively & co-operatively with enviro & consultant; wants process to broaden & continue: Forester 1 (personalised interaction).**

- Forester & enviro specialist **working more proactively & co-operatively together** due to new specialist reports back process & wants to **broaden process** to include harvesting foresters and roads contractors (TIZW3P1).
- Foresters feels **empowered because opportunity to enter into dialogic discussion** with the specialist report writer to give their opinions (Forester, TIZW3P1&2).
- Forester really believes in specialist reporting process, feels he is **finally being listened to in corporate & desperately wants it to continue** (Forester, TIZW3P2).

EL process influences structural changes in enviro manager reporting line & strengthens broader Mondi interventions: Enviro & area managers 2 (personalised interaction).
- EL process influences changing **of enviro manager reporting line to snr mgt** and not tech dept. (Forestry area manager, MGW3P28).
- Report back to snr mgt on **EL process strengthens broader Mondi interventions** aimed at integrating people across silos in dealing with broader strategic & mgt issues. (GW3P29).

See more info in induction section!
• Not sure where this bullet comes from? Not in detailed section 4 below. Maybe a combination of bullets from detailed AM level 1, in induction section?: New 3-month induction process provides enabling environment for new staff to grow professionally in new job, and understand area specifics of wetland & enviro management (Forester, PbiGW3P1&2; forester, TnPrW3P25; forester, NrPrW3P25; forester, CdPpW3P7&8; enviro manager, CZW3P15).

Communication system is more relational
• More info on ‘they have changed how they work because the relations between them have strengthened’ therefore easier to speak to each other – see wetland project report backs.

Staff decision making more collaborative
• More info from burning cameo & specialist report backs!

4. Practice change:

<table>
<thead>
<tr>
<th>Enviro staff change practice &amp; communicate new procedures/policies/specialist report backs more interactively supported by new structural/process based language: enviro manager 4, enviro 3 (personalised interaction).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enviro manager stresses changed practice with forestry staff for communicating new enviro procedures/policies now includes new interactive learning process (Environmental manager, CMsW3P16).</td>
</tr>
<tr>
<td>Changed practice of introducing new enviro procedures/policies to forestry staff &amp; new language of enviro manager (Environmental manager, CPrW3P26).</td>
</tr>
<tr>
<td>Changed practice of introducing new procedures/policies on waste management guidelines and EIA procedures to forestry staff in the MSN Area but the alien plant guidelines have been delayed (Enviro, DbMsW3P16&amp;17).</td>
</tr>
<tr>
<td>Enviro specialist changed her language &amp; practice of communicating new enviro procedures/policies to forestry staff to be more collaborative &amp; interactive (Enviro, JGW3P28).</td>
</tr>
<tr>
<td>Enviro staff change practice of introducing new enviro procedures/policies &amp; forestry staff react positively to change (ZW3P16&amp;17).</td>
</tr>
<tr>
<td>Enviro manager explains the changed practice for sharing enviro consultant specialist reports using interactive &amp; collaborative learning processes &amp; forestry staff like it (ZW3P18).</td>
</tr>
<tr>
<td>Enviro manager’s change in practice &amp; language for collaboratively/interactively sharing enviro consultant specialist reports &amp; to do so for other non enviro reports (Environmental manager, CPrW3P25).</td>
</tr>
</tbody>
</table>

MSN – Calderwood wetland

Staff change how they work together, with intended action, supported by collaborative interactive language & PEPs: Enviro 5, Forester 3, CEF 2 (Calderwood).
• Strong intentionality of what MSN ops staff plan to do collaboratively after lots of plan/talking (Enviro, DbMsW3P20).
• Lots of “we”, emphasis on working together & consulting each other in talk by MSN ops staff & long term plans to expand work. (Forester, OMsW3P20&21; CEF, VMsW3P20&21, Enviro, DbMsW3P20&21).
• MSN ops staff planning for short & long term impl by enviro & forester (Enviro, DbMsW3P22 & forester, OMsW3P22).
• MSN ops staff dev ideas for wetland rehab they now have to implement (Enviro, DbMsW3P26&27).
• MSN ops staff dev rehab plans intending to take learning to future wetland projects (CEF, VMsW3P29; Forester, OMsW3P29; Enviro, DbMsW3P29).

Staff change how they work together, with changed wetland practice, supported by relational agency, new collaborative/interactive language & PEPs: Enviro 1, Forester 3, CEF 2 (Calderwood).
• MSN forester focuses on alien plant control on Calderwood wetland not just plantations (Forester, OMsW3P22).
• MSN ops staff get community agreement to change grazing prac & find EL wshop strengthened collaborative thinking & prac (CEF, VMsW3P23,24&25; Forester, OMsW3P23&24).
• Collaborative planning strengthens relations between MSN ops staff as a precursor to changed prac (CEF, VMsW3P28).
• MSN ops staff working closer together has focused & given direction to their work for pooling resources & working with stakeholders (Forester, OMsW3P28; Enviro, DbMsW3P29).

Greytown – Lake Merthley wetland

Staff change how they work together with intended action, supported by collaborative interactive language, relational agency & PEPs: Enviro 2, area mgt 2, Forester 1 (Lake Merthley).
• Greytown Enviro explains slow but good stewardship project planning process with authorities & soon to
begin impl of grazing project with CEF. (Enviro, JGW3P32&33).

- Successful stewardship process resulted from collaboration at mgt level setting scene for collaborative impl at field staff level (GW3P34).
- Greytown forestry area manager suggests a Lake Merthley committee is set up to manage project, as time not right to start committee before (Forestry area manager, MGW3P34).
- Greytown forester explains improved changed practice of interacting with enviro to get wetland info & implement it (Forester, StGW3P36).

Zululand – Langepan

Staff change how they work together with intended action, supported by relational agency, new collaborative/interactive language & PEPs: Forester Enviro2, CEF 3 (Langepan).

- Zululand ops staff chose new Langepan project after first could not take place & collaboratively worked with community on grazing/burning to dev action plan (CEF, ZZW3P20&21; Enviro, LZW3P21&22).
- Community receptive to Zululand ops staff collaborative approach to dealing with grazing issue. (ZW3P24).
- CEF working closer together with enviro after collaborative project, strengthening enviro learning & practice (CEF, ZZW3P25&26).

Zululand – Langepan

Staff change how they work together with intended action, supported by relational agency, new collaborative/interactive language & PEPs: Forester Enviro2, CEF 3 (Langepan).

- Zululand ops staff chose new Langepan project after first could not take place & collaboratively worked with community on grazing/burning to dev action plan (CEF, ZZW3P20&21; Enviro, LZW3P21&22).
- Community receptive to Zululand ops staff collaborative approach to dealing with grazing issue. (ZW3P24).
- CEF working closer together with enviro after collaborative project, strengthening enviro learning & practice (CEF, ZZW3P25&26).

Area manager catalyses changed practice & org learning/dev, by leading collaborative staff discussion on burning & NB of dialogic learning processes. (Area mgt, enviro mgt, forester, enviro 1 (fire discussion).

- Zululand ops staff interactively discuss options for burning Canewoods that ultimately led to burning workshop & changed practice (ZW3P1-5 & reflective interviews).
- Forestry area manager strongly explains to staff burning decisions must be guided by a collaborative decision making process with agreement from enviro & forester (Forestry area manager, iZW3P8-9).
- Forestry area manager wants wetland mgt decisions to be guided by a collaborative decision making process across job descriptions (Forestry area manager, liZW3P2).
- Enviro manager says he wants to bring about change in how wetlands are burnt (Environmental manager, CPrW3P1).

Include evidence of the burning workshop that took place and resulting burn of Canewoods – from reflective interviews!!

Piet Retief – Cattle grazing

Staff change how they work together through project implementation, supported by relational agency, new collaborative/interactive language & PEPs: Forester 1, CEF 2 (PR grazing).

- Grazing project begins to increase PR ops team collaboration through planning & impl project & planned grazing cap bld with communities (CEF, NPrW3P20).
- Increased collaboration between the CEF and forester in planning PR grazing project and strengthening of relational agency (Forester, NPrW3P22).

5. Structure change:

Dev of org induction structures & processes institutionalise staff enviro learning: Training mgt 5, enviro mgt 4, area mgt 2, forester 2 (induction).

- Dev of new induction process (see 3 bullets in last heading titled Language change from short term passive ...).
- Inclusion of enviro issues & checksheet (artefact) in induction stimulates greater consideration of enviro issues supporting org change & strengthen staff enviro values. (Training manager, KGW3P16&17; Environmental manager, CMsW3P11; CZW3P14&15; Forestry area manager, MGW3P17).
- Senior mgt involvement increases chance of induction process succeeding in long term, supporting cultural & institutional change for enviro mgt because of collaborative/interactive design of induction process. (Training manager, KGW3P18).
- Increased enabling company enviro of induction strengthened new employee capacity & empowered them to work with others. (Forester, PbGW3P18).
- Through change in content & how induction takes place, it’s impact is felt into Mondi’s core business way beyond wetlands & environmental issues, since it covers all operational issues (Training manager, KGW3P16).

Dev of new formal learning structures potentially institutionalises enviro learning in Mondi & forestry contractor sector: Enviro mgt 5, training mgt 1, enviro 1 (training matrix).

- Dev of staff enviro training matrix + planned inclusion of enviro components into existing staff career dev plans & contractor training programme, potentially institutionalising enviro learning in Mondi & contractors (Environmental manager, CMsW3P15&16; CZW3P15&16; CPrW3P27&28).
The enviro specialist explained how enviro team had worked with MWP to begun inserting enviro learning into staff & contractor training matrix (Enviro, JGW3P22).

Future promotion will potentially depend on doing all relevant enviro courses in matrix (Environmental manager, CMsW3P15&16; CZW3P15&16).

Enviro module for contractor training programme being developed for both workers & supervisors not just in Mondi but also at forestry contractor sector level = industry development (Training manager, KGW3P19).

Language change from short term passive transmission of induction info to spaces provided for longer term interactive social learning opportunities with staff responsibility: Training mgt 3, Enviro mgt 4, area mgt 1, forester 1 (induction).

Induction changed from short course transmitting info to long term more interactive with responsibility on employee running induction (Training manager, KGW3P16&17; Environmental manager, CMsW3P11; CZW3P14&15; Forestry area manager, MGW3P17).

EL wshops expanded originally planned short 4 day induction to be held in one place, to longer term, interactive, & include broader variety of topics e.g. specialist & enviro aspects (Training manager, KGW3P19).

Good overview of the induction process from an inductees perspective (PbIGW3P1).

6. CEP

Changes in org culture strengthens enabling environment for enviro learning: Training mgt 1, forester 3 (induction).

Mondi wants individuals to drive their own learning to support dev into a learning org (Training manager, KGW3P18). Evidence of cultural change & another broader initiative outside CL workshops, where Viv is pushing for Mondi to change its culture and develop into a learning org!

Partick learning to be proactive & work independently, & value this, is an indicator of successful staff dev & personal cultural change through relational agency which could lead to org dev and org change when more new staff go thro induction & culture changes (Forester, PbIGW3P1&2). Check literature to see if relational agency & org dev are linked!

Patrick’s boss does not mind 25 days induction taken off money making activities, & he gets involved in helping the new employee know the ropes indicating org & culture attributes the induction may promote in Mondi (Forester, PbIGW3P4). His boss may have been this type of chap anyway (Sean Smith), but it may indicates org & culture change and dev.

Short lag time between being employed by Mondi & starting induction process indicates NB Mondi place on induction process; especially that training manager did not wait for arrival of other new employees (Forester, PbIGW3P2).

CEP: School based EE integrated into business strategy to reduce enviro risk: Enviro mgt 3 (CSI strategy).

School based EE recognised as NB to Mondi forestry business in CSI strategy to reduce enviro risk from new land claimants/owners (Environmental manager CMsW3P16; CPrW3P28; Enviro, JGW3P28). Also cultural change (strategy = artefact).

CEP: Integration of school based EE into CSI strategy broadens structures used in promoting long term enviro mgt: Enviro mgt 1, enviro 2 (CSI strategy).

Mondi taking on EE as a strategic business objective in CSI results in broader approach to enviro mgt + long-term thinking & increased consciousness of NB of education to forestry operations (Enviro, JGW3P28). Same reason as for Chris’s comments above.

Inclusion of EE in CSI strategy & assoc actions indicates a broadening of structures used in promoting long term enviro mgt. (Environmental manager, CPrW3P28).

Enviro specialist indicated intention to start up EcoSchools as a broader approach to enviro mgt in her area (Enviro, JGW3P28). Also agentive talk!

FSC seen as Mondi enviro agenda & way of life by snr mgt: Enviro mgt 1 (personalised interaction).

Snr mgt see FSC as Mondi enviro agenda & way of life. (Environmental manager, CMsW3P17&18).

Broader Mondi initiatives that dovetail with EL process strengthen org change: Enviro mgt 3, area mgt 5, snr mgt 1 (broader Mondi initiative).

Mondi exec bring back Cascades as new structure to improve comms, dovetailing with EL process & strengthening it (Environmental manager, CMsW3P17). Forestry area manager explains EL process contributed towards catalysing Cascades return (Forestry area manager, MGW3P31). Text evidence found in section on ‘Feedback sessions by management’ on p.19 of AM.

Snr manager states EL process cuts to bone & and snr mgt need to know about it; dovetails with broader
Mondi initiative SEAT (Senior manager, AMsW3P19).

- **Dir forestry ops encouraging area managers to take initiative** in motivating staff & drive projects at ground level (Forestry area manager, MGW3P31).
- **Dir of forestry ops instructed** every area to start an environmental project (Forestry area manager, MGW3P32).
- Forestry area manager warns that progress of Greytown wetland project **NOT just due to EL process, but accumulative impact** of broader Mondi initiatives (Forestry area manager, MGW3P34).
- All staff are encouraged to work together on forestry ops through ‘adopt-a-compartment’ programme (Forestry area manager, GsGW3P35).
- Additional pressure for improved enviro practice coming from Mondi Group CEO sitting on important global environmental forums (Environmental manager, CPrW3P1).
- Global pressure of Dow Jones strengthens link between wetland ecosystem services, enviro mgt & Mondi's share price (Environmental manager, CPrW3P5).

**CEF changed EE practice with external parties, & new structural language:** CEF 1 (PR grazing). CEF runs school based wetland EE activities, but with external parties not PR ops staff (CEF, NPrW3P20).

**CEF and/or SEP:** Historical social/cultural structures inhibiting staff agency in Piet Retief: CEF 4, MWP 1 (Nomusa Interview).

- CEF notes that **racial tensions in Mondi’s PR area are a cultural historical issue of region**, not just unique to Mondi (CEF, NPRW3P1).
- **Racial tension inhibiting teamwork across silos**, but relationships are slowly improving & changing this (CEF, NPRW3P2).
- Foresters work well one on one with CEF, but ‘pack mentality’ when in a group (CEF, NPRW3P4).
- **Racial power imbalances & historical structures suppress black voices**, but facilitator skills seen as NB way of overcoming this (CEF, NPRW3P3&4).
- **Racial power imbalance is restricting Mondi to only tapping into part of knowledge base** for solutions & decisions (DLNIPrW3P5).

### 7. Bullets not used

**Increased understanding of learning processes:** Forester 1 (induction).

- Forester realises that learning takes time & requires interacting & learning by doing (Forester, CdpW3P7&8).

**Staff reflect how EL work applicable to broader enviro issues and even outside enviro:** snr mgt 1, area mgt 1, enviro 1 (validation).

- Snr manager recognises NB of **EL work applicable more broadly to enviro** work not just wetlands (Senior manager, AMsW3P9).
- Enviro reiterates NB of **EL work being applicable more broadly to enviro** work not just wetlands (Enviro, JGW3P1).
- Forestry area manager stresses **EL work applicable more broadly** to enviro work (Forestry area manager, MGW3P23).

**EL process supports changed collaborative & interactive practice:** CEF 1, Forester 1 (reflections).

- CEF highlights that over past 6 months she is **working in a much more collaborative & interactive way** with the Enviro manager than in the past (CEF, NzPpW3P23).

**Validation of contradiction #1 on learning structures:** On asking those participants that were not at workshop #1 & 2 if they agreed or disagreed to the 2 stated contradictions.

- **Strongly agreed** with contr #1 (Forester, DsGW3P24; Forester, GgGW3P24; CEF, XGW3P24; Forestry contractor, BGW3P24; Forestry contractor, EGW3P24; Forester, DsGW3P24; Forestry area manager, RlwPrW3P11&12; CEF, #1PrW3P11&12; CEF, #2PrW3P11&12; CEF, #3PrW3P11&12; Forester, FuZW3P6; Forester, TmPpW3P3&4; CEF, NzpPw3P3&4; Forester, CdpW3P3&4; Forester, MpPpW3P3&4; Forestry area manager PlwP3P3&4; Forester, DszW3P9; Forester, ZkzW3P9).
- Validation of contradiction #5 on a **lack of a wetland performance monitoring system** (Forestry area manager, IZW3P7).
- Validation contr #10 not knowing what **desired state to manage the wet for** (Forestry area manager, IZW3P7)
- Validation of contradiction #10 on not knowing what **desired state to manage the wetland for** (Forester, TsZW3P8).
• Best way for all staff to learn about wetlands was to have a practical wetland project that staff can work on, where they can go and look for that information (CEF, TMsW3P7).
• Mondi’s structures top down not bottom up, so if the wetlands were not one of their focus areas they wouldn’t have that exposure to them (Forester, HMsW3P8).
• Don’t have to buy from outside we can share info & learning from each other (Forester, DsZW3P9; Forester, ZkZW3P9).

Validation of contradiction #2 on silos:

• Strong agreement with contradiction #2, (Forester, PbGW3P25; Forestry area manager, GnGW3P36; Forester, FGW3P35; Forester, PvZW3P11; forestry area manager, GfPrW3P15,16&17; Forester, Dg PrW3P15,16&17; Forester, TnPrW3P15,16&17; Forester NrPrW3P15,16&17; CEF, NmPrW3P18; Forester, HPrW3P18; Forester, MpPpW3P6-7; CEF, NzPpW3P6-7) with some adding that staff were the only ones who could change it (Forester, GKZW3P11; Forestry area manager, LmZW3P11) by proactively working together (Forestry area manager, LmZW3P13).
• Staff generally worked in silos across the company but not in Piet Retief (Forestry area manager, GfPrW3P15,16&17; Forester, Dg PrW3P15,16&17). But others disagreed (Forester, TnPrW3P15,16&17; Forester NrPrW3P15,16&17; CEF, NmPrW3P18; Forester, HPrW3P18). However two people added this was beginning to change over the past year (CEF, EmPrW3P18; forestry area manager, GfPrW3P17&18).
• A forester and CEF agreed that that staff worked in silos (Forester, MpPpW3P6-7; CEF, NzPpW3P6-7) but the forestry area manager and another forester disagreed (Forestry area manager, PiPpW3P6-7; Forester, TmPpW3P6-7).
• Organisational restructuring (2002) and reporting structures (recent) caused silos (Forester, GkZW3P12; Forestry area manager GfPrW3P17&18; Forestry area manager RfPrW3P17&18) with two staff adding this influenced how people interact with each other and work together (Forester, MpPpW3P6-7, CEF, NzPpW3P6-7).
• Poor communication to blame for silos (Forester, GKZW3P11; Forestry area manager, LmZW3P11).
• Silos caused by lack of foresters initiative to communicate (Forestry area manager, LmZW3P11) but forester disagrees saying its company structures and culture (Forester, GKW3P11).
• Collaborative interaction and organisational learning required to find solutions by field staff through more interventionist workshops and safe communication spaces, with area managers needing to ensure staff talk to each other across professions (Environmental manager, CZW3P12; Enviro, LZW3P12; Forestry area manager, IIZW3P1).
The following appendices are too long, and have been included in the CD-Rom.

**Appendix 10a:** Transcriptions - learning & practicing interviews (On CD-ROM)

**Appendix 10b:** Transcriptions - workshop #1 (On CD-ROM)

**Appendix 10c:** Transcriptions - workshop #2 (On CD-ROM)

**Appendix 10d:** Transcriptions - progress review workshops #3 (On CD-ROM)

**Appendix 10e:** Transcriptions - management meeting & seminar (On CD-ROM)

**Appendix 10f:** Transcriptions - management reflective interviews (On CD-ROM)

**Appendix 11:** Analytical memo of main issues discussed during reflexive interviews and management seminar (On CD-ROM)
Appendix 12: Reflexive interview questions

Questions that guided conversations with a selection of Mondi staff to encourage them to reflect on the expansive learning process over the two and a half year period they were involved. This was done to better understand what change had occurred, and how this change happened.

The questions were based on a framework of the five different types of changes that had emerged from analysis of the phase 3 data.

**Aim of interview:** for participants to reflect on the expansive learning process and share what they thought was important to emerge from it.

1. What has emerged from the expansive learning process for you, and why is it like that? (Values, knowledge & thinking, approach, practice, structure)
2. What have been the contributing factors to this? (SEPs CEPs & PEPs?)
3. What are the kinds of struggles that you are having? (SEPs CEPs & PEPs?)
4. How has the expansive learning process effected how you work with colleagues on wetland/environmental management? (Approach & practice)
5. How effectively have the action plan projects overcome the contradictions? (Structures)
6. Where there any barriers inhibiting project implementation? (SEPs CEPs & PEPs?)
7. Has wetland/environmental management improved since the expansive learning process started? (Practice & structures).
Appendix 13: Example email of member checking for interview transcriptions

An example email from person who was interviewed confirming member checking of the interview transcription.

From: Nel Lize [Lize.Nel@mondigroup.co.za]
Sent: 17 March 2010 03:51 PM
To: David Lindley
Subject: FW: Wetland interview transcription for your approval.
Attachments: Zululand. Lize Nel. Environmental specialist Kwambonambi. 4 March 10.doc

Hi David

Made one or two corrections in red rest is fine. Can see I am Afrikaans lots of ‘Yes’ and you were not kidding about sentences being disjointed. My verbal skills definitely require some attention. What is that saying “think before you speak” have new meaning now.

Cheers

From: David Lindley [mailto:lindley@wetland.org.za]
Sent: 15 March 2010 08:07 AM
To: Nel Lize
Subject: Wetland interview transcription for your approval.

Hi Lize

Attached is the transcription of our discussion, can you have a look at it and tell me if it accurately reflects what we discussed. I need to do this for ethical reasons, ensuring that I am truthful in generating, analysing and reporting on the data from the interviews.
Don’t worry about correcting the language. When looking through the interview, you’ll see how disjointed our sentences are at times – but don’t be too worried as funnily enough it is the way most of us speak, and I notice it especially with myself! We may think that we are speaking in a very flowing fashion, but sometimes this is not the case, and we only realise it when we see the text recording what we have said. Having said that, the subjects we explored during our interview were really interesting, and will certainly play a big role in giving our ideas to chew on at the workshops.

Thanks again, David

Mondi Wetlands Programme: Manager
Wildlife & Environment Society of South Africa
PO Box 338
Irene
0062
Pretoria, South Africa
Appendix 14: Example email requesting Mondi staff participation

Email from the Mondi environmental manager requesting staff participation in the research, and informing them what it was about.

The managers of those staff requested to participate in the research were copied in the email.

From: Burchmore Chris [Chris.Burchmore@mondigroup.co.za]
Sent: 22 February 2010 01:20 PM
To: McMaster Gustav; Zwane Nomusa; Meyer Werner; Shuttleworth Michael; Ngcobo Reginald; Richardson Steve; Sibiya Obed; Dlamini Velaphi; Burden Doug; Newton Terence; Gumede Zenzele; Ngcobo Professor; Nel Lize; Shuttleworth Jacqui; Thomo Sipho
Cc: le Roux Renier; Hlongwane Thobi; Ndlangamandla Christopher; Mlotshwa Khethiwe; Brown Sean; Adie Bruce; Bilbrough Arthur; Smith Sean; Harrison Ian; Bold Tony; Muller Rhudolf; Cox Philip; Venske Denzil; Pienaar Ben
Subject: Mondi Wetland Workshops
Attachments: People selected.doc

Dear All

The Mondi Wetlands Programme (MWP) has worked together with Mondi since 1997 in an effort to strengthen the sustainability of wetland practices. Over the past 13 years, the collaborative work of Mondi and the MWP has contributed to some significant successes, especially in wetland rehabilitation, wetland delineation, the removal of trees incorrectly
planted in wetlands and their adjacent buffer zones, and the development of a wetland management policy.

However, despite these successes many challenges are still being faced. These include those forestry practices and activities that have a negative impact on wetland integrity; such as the burning of wetlands for fire breaks, livestock grazing, stream crossings through wetlands, invasive alien plant control in and around wetlands.

We need to develop more of an integrated approach to wetland management, where foresters, environmental specialists, community engagement and development facilitators and the MWP all work and learn together to maintain those areas where we are working well, and strengthen those that are not working so well.

We also need to improve the integration of wetland sustainability practices into forestry operations.

To do this we are suggesting to collectively identify what barriers may exist that are currently inhibiting us from strengthening wetland sustainability practices.

Most importantly we need to identify what are causing these barriers, and then develop plans together for how we can start influencing behaviour change.

17 people from across Mondi’s operational and support staff will be taking part in this process which will involve a telephonic interview with David Lindley and the attendance of 2 workshops at Homeleigh (there is no “homework”). The following dates have tentatively been chosen and times set so that it will involve an overnight stay at Homeleigh and allow travel during daylight hours. David Lindley from the Mondi Wetlands programme will be facilitating the workshops, and will be contacting each of your personally before the time to provide you with more of an explanation for what we will be doing.

The dates are:

Workshop 1: Arrive 12pm 19 April – leave 2 pm 20 April.

Workshop 2: Arrive 12 pm 17 May – leave 2 pm 18 May.
If you are unable to take part in the workshops due to time pressures or a previous engagement, please let us know ASAP.

Regards

Chris Burchmore  
Environmental Manager - Forests  
South Africa Division

Mondi  
171 Jabu Ndlovu Street, Pietermaritzburg, 3200  
P.O. Box 39, Pietermaritzburg 3200, South Africa  
Tel: +27 (0)33 897 4082, +27 (0)33 897 4082, Fax: +27 (0)33 897 4075  
Cell: +27 (0)82 803 3653, +27 (0)82 803 3653  
Email: chris.burchmore@mondigroup.co.za  
www.mondigroup.com

Mondi Limited 1967/013038/06
Appendix 15: Example emails sent to Mondi staff participating in the research, and providing them with the notes from both workshop#1 and #2.

From: David Lindley [mailto:lindley@wetland.org.za]
Sent: 05 August 2010 06:07 AM
To: 'David Lindley'; 'Burchmore Chris'; 'McMaster Gustav'; 'Zwane Nomusa'; 'Shuttleworth Michael'; 'Ngcobo Reginald'; 'Richardson Steve'; 'Sibiya Obed'; 'Dlamini Velaphi'; 'Burden Doug'; 'Newton Terence'; 'Gumede Zenzele'; 'Ngcobo Professor'; 'Nel Lize'; 'Shuttleworth Jacqui'; 'Thomo Sipho'; 'Damian Walters'; 'Michelle van der Merwe'; 'Davies Kerry'
Subject: IMPORTANT: NOT A SAFETY OF FINANCE EMAIL! But a wetland one - please read.

Hi All

Hope you are all well and beginning to work together on our wetland action plan agreed to at the last Homeleigh workshop. I have attached the action plan to this message, just in case you have mislaid the hard copy that was handed out at the workshop. If you need any wetland support for getting your project going please do not hesitate to give one of the MWP team a shout. Our phone numbers are David (083 – 222 9155), Damian (083 – 684 8000) or Michelle (083 – 234 7277).

I have also attached a summary our last workshop, which will also provide you with a reminder of our conversations if you need any clarification for how the action and implementation plans developed. It is 8 pages long, and packed with 8 hours of conversation. Makes fascinating reading, as it is amazing how quickly we can forget what was discussed. The highlighted areas make for easy quick reading, if you only want to scan the document – just for you Steve!

Nomusa, we really missed you, but somehow managed to still do some good work in your absence. The notes of the workshop will give you a rough idea of how it all went. You will see that we have included you under one of the action points for a collaborative cattle project in the Piet Retief area. Chris was actioned to give you an overview of how the workshop went and to explain how you will hopefully be involved if you are still keen.

We will be in touch with you all in the next couple of months to set up a date in November when we can all provide feedback on how your projects are progressing. Remember we agreed to do this 6 months after the last workshop which was held 2½ months ago on 18-19 May.

Cheers, and good luck with your projects.

David

From: David Lindley [mailto:lindley@wetland.org.za]
Sent: 02 May 2010 08:23 AM
To: 'Burchmore Chris'; 'McMaster Gustav'; 'Zwane Nomusa'; 'Shuttleworth Michael';
Hi All

Some of you wanted electronic copies of the tensions and contradictions from our last workshop – so I have attached them to this email. The first document includes the 12 contradictions before we prioritised them. The second document includes all the tensions (from the interviews) belonging to each contradiction. And the third document has our prioritisation of the 12 contradictions that we decided on during the last workshop session.

Please remember to do some thinking about your homework in preparation for the next workshop – this is really important if we are to have another productive workshop where we start to develop solutions to the first two contradictions that we prioritised (highlighted in yellow in the last attached document). Just to remind you again of the three questions that we agreed to think about:

1. Using your historical knowledge of working for Mondi, what do you think the causes of the two contradictions are?
2. What effect do the contradictions have on your work?
3. What possible solutions to these contradictions can you think of that could help you in your work?

I look forward to seeing you all again at the next workshop starting at 12 pm on Tuesday 18 May at Homeleigh, and finishing at 1 pm on the Wednesday 19 May.

Regards, David

David Lindley
Mondi Wetlands Programme: Manager
Wildlife & Environment Society of South Africa
PO Box 338
Irene
0062
Pretoria, South Africa
Appendix 16: Environmental training matrix for Mondi staff (On CD-ROM).

Appendix 17: Detailed list of the SEPs CEPs and PEPs of five types of changes identified (On CD-ROM).