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The e-waste management behaviours of household consumers in Whangarei, New Zealand

A thesis presented in partial fulfilment of the requirements for the degree of Master of Environmental Management at Massey University, Palmerston North, New Zealand

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2018
Abstract

E-waste is known to have detrimental environmental, social and economic impacts, and its volume is growing up to three times faster than any other waste stream. Despite this growing problem, and the concurrent increase in detrimental impacts, New Zealand relies on voluntary schemes to manage the estimated 98,000 tonnes of e-waste generated in the country annually. While New Zealand could apply mandatory product stewardship of e-waste under the Waste Minimisation Act 2008, a recent report argued that there was insufficient data available to meet the requirements to enforce the labelling of e-waste as a priority product.

This research aimed to generate first-time data on Whangarei household e-waste options, knowledge and behaviours, to inform e-waste management policy, resources and services which could be specifically designed for the district, with the intention that it would work towards providing sufficient data to allow for the mandatory product stewardship of e-waste. Research was conducted by way of online survey which asked Whangarei District residents questions specifically relating to how their households managed e-waste, and what influenced these management decisions. The survey was informed by international literature on the subject, as well as a review local and central government policies, and of the e-waste management resources services available both in the Whangarei District and in New Zealand as a whole.

The research found that in the Whangarei District, cost and lack of knowledge of the services available are barriers to engagement in e-waste recycling, similar to international findings. However, contrary to international literature, general recycling behaviours and socio-demographic factors did not significantly influence e-waste behaviours in the district. The research also found that only 1.8% of the estimated e-waste generated in the Whangarei District each year was being recycled through the municipal services available. This figure could be improved via mandatory product stewardship at best, or e-waste recycling goals being set by the district council enable steps towards better services, resources and infrastructure at the very least. Whangarei and New Zealand as a whole are a long way from the appropriate management
of e-waste. It is hoped this research, coupled with other information already available in the field, will allow the planning stage to begin toward adaptation to appropriate e-waste management, encompassing the waste hierarchy principles, if not nationally, then at least in the Whangarei District.

**Keywords:** e-waste, WEEE (waste electronic and electrical equipment), e-waste management, behaviour change, Whangarei, New Zealand
Acknowledgements

I would like to acknowledge my lead supervisor, Dr. Trisia Farrelly, and her significant contribution to this thesis. I could not have completed this endeavour with her continuous guidance, feedback, and support, and for that I will be forever grateful. Acknowledgement must also be given to Jonathan Hannon for his notes and his invaluable knowledge of the ‘e-waste scape’ in New Zealand.

I would also like to thank the Whangarei District Council, specifically members of the Waste Management and Customer Services teams, for their support with providing me with information I required to use the district as my case study, and thanks to the members of the Whangarei community who took the time to complete the survey.

But the greatest thanks of all must go to my 11-year-old son, Matthew, for being so patient while I completed the most challenging part of my learning journey to date. My son, I am so proud to be your Mum and I love you to the moon…and back.
# Table of Contents

Abstract ................................................................................................................................. ii
Acknowledgements ................................................................................................................ iv
Table of Contents .................................................................................................................. v
List of Figures ......................................................................................................................... viii
List of Tables ......................................................................................................................... x
List of Abbreviations ........................................................................................................... xi

Chapter 1 – Introduction ....................................................................................................... 1
  1.1 Why Focus on E-waste? ............................................................................................ 1
    1.1.1 What is E-waste? .......................................................................................... 2
    1.1.2 What Causes E-waste Generation? ............................................................. 4
  1.2 Research Approach ............................................................................................... 7
  1.3 Thesis Approach ..................................................................................................... 8

Chapter 2 – E-Waste Problems and Solutions .................................................................... 9
  2.1 Volumes of E-waste .............................................................................................. 9
  2.2 Environmental and Health Impacts ..................................................................... 11
  2.3 Current Management Practices .......................................................................... 15
  2.4 Other Impacts ..................................................................................................... 19
  2.5 What are the Solutions? ....................................................................................... 21
    2.5.1 Product Stewardship and E-waste Prioritisation ........................................ 21
    2.5.2 Economic Instruments .............................................................................. 24
    2.5.3 Economic Possibilities ............................................................................. 25
    2.5.4 Resources and Services ............................................................................ 26
  2.6 Conclusion ........................................................................................................... 28

Chapter 3 – E-Waste Management in the Whangarei District and in New Zealand as a Whole 29
  3.1 E-waste Management in New Zealand ................................................................. 30
    3.1.1 New Zealand E-waste Policy Framework .................................................... 31
    3.1.2 E-waste Initiatives ..................................................................................... 34
    3.1.3 Mandatory Product Stewardship and Data Implications ........................... 36
    3.1.4 Recycling Standards in New Zealand ....................................................... 37
  3.2 E-waste management in the Whangarei District .................................................... 37
    3.2.1 E-waste Services in the Whangarei District .............................................. 38
    3.2.2 Whangarei District Waste Policies ............................................................ 41
    3.2.3 Illegal Disposal of E-waste ...................................................................... 42
  3.3 Conclusion ............................................................................................................ 43
Chapter 4 – Household E-waste Behaviours and Influences ....................................................... 45

4.1 Household Recycling Behaviours and Influences ............................................................. 46

4.2 Household E-Waste Recycling Behaviours and Influences ........................................ 50

4.3 Adaptation to E-waste Management ............................................................................ 53

4.4 Conclusion ................................................................................................................... 56

Chapter 5 – Methodology ............................................................................................................ 58

5.1 Research Method ......................................................................................................... 58

5.2 Context of Research .................................................................................................... 61

5.3 Data Generation Methods ............................................................................................ 61

5.3.1 Sampling .............................................................................................................. 61

5.3.2 Participants .......................................................................................................... 63

5.3.3 Online Survey ...................................................................................................... 63

5.3.4 Pre-Testing / Pilot Survey .................................................................................... 65

5.3.5 Research Validity ................................................................................................ 66

5.3.6 Research Limitations ........................................................................................... 67

5.3.7 Ethics ................................................................................................................... 69

5.4 Data Analysis ............................................................................................................... 70

5.5 Conclusion ................................................................................................................... 71

Chapter 6 – Results ...................................................................................................................... 73

6.1 Demographic Profile of SurveyRespondents .............................................................. 74

6.2 General Recycling Behaviours and Values ................................................................... 77

6.2.1 General Recycling Behaviours ............................................................................ 77

6.2.2 Impacts of Demographics on General Recycling Behaviours ....................... 78

6.2.3 Recycling Values ................................................................................................. 78

6.3 E-waste Disposal Behaviours ...................................................................................... 81

6.3.1 Reasons for Disposal ........................................................................................... 81

6.3.2 Reported Disposal Behaviours – Quantitative Results ................................ 83

6.3.3 Reported Disposal Behaviours – Qualitative Results ........................................ 87

6.3.4 Changes to Household E-waste Management ................................................... 89

6.4 E-waste Storage ........................................................................................................... 90

6.4.1 Number of E-waste Items in Storage ................................................................. 91

6.4.2 Reasons for Storing E-waste ............................................................................. 92

6.5 E-waste Management .................................................................................................. 94

6.5.1 Local E-waste Management ............................................................................. 94

6.5.2 National E-waste Management ........................................................................ 96

6.5.3 Willingness to Pay ............................................................................................. 99
## List of Figures

Figure 1.1 Composition of e-waste in Western Europe in 2000 .......................................................... 4  
Figure 1.2 An illustration of the planned obsolescence of cell phones. ................................................. 5  
Figure 2.1 Fluxes of contaminants associated with e-waste from producers to receivers and ultimately to humans ....................................................................................................................... 14  
Figure 2.2 Children burn the plastic casings of e-waste in Accra, Ghana, to access the precious metals inside ........................................................................................................................................ 14  
Figure 2.3 The ‘Waste Hierarchy’ and its relationship with e-waste ............................................................................................................................................................................................................................................................................................ 15  
Figure 2.4 An example of the typical material fraction in WEEE ........................................................................................................................................................................................................................................................................ 17  
Figure 2.5 Percentage of countries with e-waste regulation in force up to 2013 by continent ................ 19  
Figure 2.6 The transition from product stewardship to full EPR .................................................................. 22  
Figure 2.7 The circular economy model ................................................................................................... 23  
Figure 2.8 Percentage of e-waste collected via official takeback systems versus e-waste generated per nation ........................................................................................................................................................................................................................................................................ 27  
Figure 3.1 Sources and destinations of refuse and diverted materials ......................................................... 38  
Figure 3.2 Whangarei District e-waste management framework .................................................................. 39  
Figure 3.3 Two instances of fly-tipping witnessed in Parua Bay, Whangarei, NZ, both containing CRT TVs, October 2015 ........................................................................................................................................................................................................................................................................ 43  
Figure 4.1 Barr et al.’s path diagram of recycling behaviour ....................................................................... 47  
Figure 4.2 Moser, Ekstrom and Kaspersion’s phases and subprocesses throughout the adaptation process ........................................................................................................................................................................................................................................................................ 54  
Figure 4.3 The structural elements of the diagnostic framework: interacting actors, the governance and larger socio-economic context, and the system of concern ........................................................................................................................................................................................................................................................................ 55  
Figure 4.4 Moser, Ekstrom and Kaspersion’s scope and scale of adaptation to climate change ................. 56  
Figure 6.1 General recycling behaviour results by percentage ..................................................................... 78  
Figure 6.2 Response distribution to general recycling statements .................................................................. 79  
Figure 6.3 Response distribution to e-waste statements .............................................................................. 80  
Figure 6.4 Response distribution to environmental values statements ..................................................... 81  
Figure 6.5 Participant responses to influences on e-waste disposal by percentage ........................................ 83  
Figure 6.6 Participant responses to method of e-waste disposal by percentage ........................................... 85  
Figure 6.7 Self-reported disposal method by percentage ............................................................................ 88  
Figure 6.8 Question 16 qualitative disposal method responses by percentage compared with question 12 quantitative disposal mean results ........................................................................................................................................................................................................................................................................ 88  
Figure 6.9 Response distribution to possible e-waste behaviour impact statements ................................. 90  
Figure 6.10 Percentage of total respondents that indicated storing e-waste, further broken down by number of items ........................................................................................................................................................................................................................................................................ 92  
Figure 6.11 Response distribution to reasons for e-waste storage statements ............................................. 93  
Figure 6.12 E-waste services satisfaction by percentage ............................................................................. 95  
Figure 6.13 Local waste services awareness by percentage ......................................................................... 95  
Figure 6.14 NZ e-waste approach effectiveness by percentage ................................................................. 97  
Figure 6.15 Best e-waste approach for NZ 2018/2012 survey results comparison ........................................ 98  
Figure 6.16 Percentage of respondents willing to pay for e-waste recycling ............................................... 100  
Figure 6.17 2012 e-waste survey results for willingness to pay ................................................................. 101  
Figure 7.1 Proportion of New Zealand population with access to kerbside recycling in 1996 compared with 2006 ........................................................................................................................................................................................................................................................................ 109
Figure 7.2 Survey responses to question asking who is to blame for environmental problems stemming from waste generation........................................................... 111
Figure 7.3 Signs in a Salvation Army op-shop illustrating the donation issue, and advising that electronic goods will no longer be accepted for donation. ........................................ 116
Figure 7.4 Moser, Ekstrom and Kaspersion’s phases and subprocesses throughout the adaptation process, with an arrow indicating where this research is placed. .......................... 125
Figure 7.5 Scope and scale of adaptation to appropriate e-waste management – orange arrow indicates where the author proposes Whangarei District sits currently, and the green arrow indicating where the EU EPR approach could sit.................................................. 126
List of Tables

Table 1.1 Indicative list of EEE which falls into the EU Directive WEEE categories .......... 3
Table 2.1 Lifespan and weights of common e-waste items .............................................. 11
Table 2.2 Common hazardous substances found in e-waste and their possible health impacts. 12
Table 2.3 Some e-waste management approaches to EPR (not including EU Directives) .... 22
Table 3.1 The NZ e-waste scape: key national waste management policy documents, legislation, non-governmental initiatives, and supranational waste directives .............................. 33
Table 3.2 Current New Zealand consumer voluntary e-waste recycling methods/schemes..... 34
Table 3.3 E-waste sent for recycling from WDC managed processes ................................. 41
Table 5.1 Question, research aim, and literature map ......................................................... 59
Table 6.1 Participant age groups compared with 2013 NZ Census data ............................ 75
Table 6.2 Participant ethnic groups compared with 2013 Whangarei District demographic profile data .................................................................................................................................. 75
Table 6.3 Participant supported political party compared with 2017 general election results for Whangarei electorate ............................................................................................................ 76
Table 6.4 Participant responses to method of e-waste disposal by percentage with most common method of disposal by e-waste category and disposal method, and least common disposal method highlighted ........................................................................................................... 86
Table 6.5 Number of items participants held in storage by percentage with most common option highlighted ......................................................................................................................... 91
Table 6.6 E-waste services satisfaction 2018/2012 results comparison ............................... 96
Table 6.7 NZ e-waste approach effectiveness 2018/2012 results comparison .................... 97
Table 6.8 General themes from open forum question ......................................................... 102
### List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ADF</td>
<td>Advance Deposit Fee</td>
</tr>
<tr>
<td>CANZ</td>
<td>Computer Access New Zealand</td>
</tr>
<tr>
<td>CRT</td>
<td>Cathode Ray Tube</td>
</tr>
<tr>
<td>EEE</td>
<td>Electrical and Electronic Equipment</td>
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<tr>
<td>EOL</td>
<td>End-of-life / End of Useful Life</td>
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<tr>
<td>EPR</td>
<td>Extended Producer Responsibility</td>
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<td>EU</td>
<td>European Union</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
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<tr>
<td>ISWA</td>
<td>International Solid Waste Association</td>
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<tr>
<td>MFE</td>
<td>Ministry for the Environment</td>
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<tr>
<td>NEP</td>
<td>New Ecological Paradigm</td>
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<tr>
<td>NRC</td>
<td>Northland Regional Council</td>
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<tr>
<td>NZ</td>
<td>New Zealand</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>PBDE</td>
<td>Polybrominated Diphenyl Ethers</td>
</tr>
<tr>
<td>PCB</td>
<td>Printed Circuit Board</td>
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<tr>
<td>RoHS</td>
<td>Restriction of Hazardous Substances</td>
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<tr>
<td>SLR</td>
<td>SLR Consulting New Zealand Limited</td>
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<tr>
<td>SWMB</td>
<td>Solid Waste Management Bylaw</td>
</tr>
<tr>
<td>TV</td>
<td>Television</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
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<td>United Nations Environment Programme</td>
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<td>United States of America</td>
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<td>WDC</td>
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<td>WEEE</td>
<td>Waste Electrical and Electronic Equipment</td>
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