

DIGITAL MAPPING OF FRESHWATER
WETLANDS IN THE BAY OF PLENTY REGION -
BASED ON THE FRESHWATER WETLANDS
DATABASE AND THE REGIONAL DIGITAL
AERIAL MOSAIC (RDAM)
(DESK TOP STUDY)

2004

Contract Report No. 941

Report prepared for

ENVIRONMENT BAY OF PLENTY REGIONAL
COUNCIL
QUAY STREET
WHAKATANE



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Wildland Consultants Ltd 2004: Digital mapping of freshwater wetlands in the Bay of Plenty Region – Based on the Freshwater Wetlands Database and the Regional Digital Aerial Mosaic (RDAM) (desk top study). *Wildland Consultants Ltd Contract Report No. 941*. Prepared for Environment Bay of Plenty Regional Council. 26 pp.

1. INTRODUCTION

Wildland Consultants were commissioned by the Bay of Plenty Regional Council (Env BOP) to digitise the external boundaries of freshwater wetlands in the Bay of Plenty Region that have been identified in the March 2004 version of the Env BOP Freshwater Wetlands Database. This is to provide the spatial component of the database which is being developed by Env BOP for the Biodiversity Databases and Interfaces Project.

Freshwater wetlands adjacent to lakes in the Rotorua Lakes Ecological District were surveyed and mapped by Env BOP in early 2004. The extent of other wetlands in the Rotorua Lakes Ecological District were digitised by Wildlands as part of a separate project for Env BOP earlier in 2004. The digital data for all these wetlands has not been included in the dataset produced for this project. Env BOP will merge the layers for use in the Freshwater Wetlands Database.

2. METHODOLOGY

The external boundaries of 225 freshwater (palustrine¹) wetlands in the Bay of Plenty Region were digitised at a scale of 1:5,000 using the 2003 Regional Digital Aerial Mosaic (RDAM) as a base map. The wetland locations were identified from grid references obtained from the most recent version of the Env BOP Freshwater Wetlands Database, provided by Env BOP on 31 August 2004. The extent and location of wetland boundaries were identified from maps contained in relevant reference documents, or where this information was unavailable, from identification of wetland boundaries using the RDAM images as a guide. Where the boundaries of wetlands in reference documents appeared to be inaccurate or out of date, the RDAM images were used as the primary guide when digitising boundaries. This project was a purely desk-based exercise and field checks were not undertaken to confirm wetland boundaries and vegetation types. A 'level of confidence' was applied to digital wetland boundaries based on the approximate distance within which the actual boundary of each wetland is likely to be. The four levels of confidence are:

- High = an accuracy of 0-15 m
- Medium = 15-40 m
- Low = 40-100 m and
- Very Low = 100+ m

For 61 wetlands, more than one level of confidence was assigned to the digital boundaries. Areas/boundaries for which different levels of confidence were assigned were digitised into a separate shape file using separate polygons to identify these areas. Areas assigned a lower level of confidence may include areas which could be

¹ **Palustrine:** A wetland hydrosystem including lands bound by dry land or by any other hydrosystem, where attached/rooted **vegetation is emergent** (cf *Riverine* or *Lacustrine*) permanently or seasonally above **freshwater** (<0.5% salinity), non-tidal surface water or groundwater. Palustrine wetlands include marsh, bog, swamps, fens, bog, marshes, seeps, and flushes. Palustrine wetlands exclude wetlands influenced by saline water such as saltmarsh. (Clarkson *et al.* 2002)

dryland or wetland areas which may extend further but the true extent cannot be determined from existing information.

Comments were also made on the quality of RDAM images (i.e. glare, shadow, contrast, colour etc) where this resulted in a lower level of confidence in digitised wetland boundaries.

The shapefile (including attribute table) and associated data table produced for this project is consistent with that completed for wetlands in the Rotorua Lakes Ecological District.

3. OUTPUT

The extent of 225 wetlands were digitised out of a total of 339 wetlands in the Env BOP Freshwater Wetlands Database.

Attribute data for each wetland has been saved as a .dbf file associated with the wetland shape file. The attributes are as follows:

<i>Site_Name</i>	The specific name of the wetland.
<i>Dbase_ID</i>	The number assigned to the wetland in the Env BOP Freshwater Wetlands Database.
<i>Field_Chk</i>	Whether or not the wetland was field checked as part of this project.
<i>Base_map</i>	The base map onto which the wetland boundaries have been drawn, i.e. Env BOP Regional Digital Aerial Mosaic (RDAM) (2003) orthophotographs.
<i>Scale</i>	The scale at which the wetland was digitised, i.e. 1:5,000
<i>Lvl_conf</i>	The level of confidence held about the accuracy of the wetland boundaries (high, medium or low). Where high = within 0-15 m, medium = within 15-40 m, and low = within 40-100 m, very low = 100m+.
<i>Chng_xntnt</i>	Broad comments on any change in the extent of the wetland apparent on the Env BOP Regional Digital Aerial Mosaic (RDAM) (2003) orthophotographs since the completion of the reference document(s).
<i>Reference</i>	The reference document(s) containing a map of the wetland have been used to help identify the wetland boundaries.
<i>RDAM-qual</i>	Comments on the quality of the RDAM orthophotography (i.e. glare, shadow, contrast, colour, etc).

Metadata for the digital information produced for this project is presented in Appendix 1). Information captured in the attribute table is reproduced in Appendix 2.

The boundaries of 15 wetlands were not digitised as the location or extent could not be determined from existing sources (see Tables 1 and 2 in Appendix 3). It should be noted the location and extent of some of the wetland areas at the northwestern end of Matakana Island are uncertain, and one of these wetlands requires additional centrepoin ts added to the database (also listed in Appendix 3).

4. LIMITATIONS

Only boundaries of freshwater wetlands included in the Env BOP Freshwater Wetlands Database (excluding those in the Rotorua Lakes ED) were digitised as part this project. There will be other wetlands in the BOP Region that are not listed in the database. The identification of further wetlands that may be apparent upon inspection of RDAM orthophotographs was not within the scope of this project.

Many digitised wetland boundaries may be inaccurate as several of the reference documents used to help identify wetland boundaries are dated, and this project did not involve field inspections to determine the accuracy of wetland boundaries. Where the RDAM differed to reference documents, boundaries were determined from the RDAM. For many wetlands there are no reference documents available.

The accuracy of the digitised boundaries for 16 wetlands has been reduced due to the poor quality of some of the RDAM 2003 orthophotographs (see Appendix 3, Table 3). The reduced accuracy is due to one of several factors, including shadow, glare, contrast and colour which has compromised the ability to accurately determine wetland extent from the apparent division between vegetation and landform types.

For a further three wetlands whilst the quality of the RDAM was poor, the poor quality did not effect the accuracy of the boundaries - Lake Rotongata Wetlands (Kaharoa) (#500), and Lakes Aroaotamahine and Te Paritu Wetlands (#32).

ACKNOWLEDGMENTS

Joh Taylor and Sue Mavor (Env BOP) initiated and provided logistical support for this project.

REFERENCES

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- Beadel S.M. 1991: Fort Galatea Wetlands. Prepared for the Department of Conservation. 12 pp.
- Beadel S.M. 1992: Tauranga Harbour wetland vegetation. Prepared for the Bay of Plenty Regional Council. 82 pp plus A0 maps.
- Beadel S.M. 1993: The Coastal Environment Regional Plan – Ohiwa Harbour indigenous vegetation. Prepared for the Bay of Plenty Regional Council. 102 pp.
- Beadel S.M. 1994: Otanewainuku Ecological District survey report for the Protected Natural Areas Programme. Unpublished report. Prepared for the Department of Conservation, Rotorua. 412 pp.
- Beadel S.M. 1994a: Significant indigenous vegetation in the Bay of Plenty coastal zone. Prepared for the Bay of Plenty Regional Council. 412 pp.
- Beadel S.M. 1994b: Hiwarau Road Wetland. Prepared for the Department of Conservation, Whakatane.
- Beadel S.M. 1994c: Vegetation and fauna of McLaren Falls Park. *Wildland Consultants Ltd Contract Report*. 31 pp.
- Beadel S.M. 1995a: Vegetation and flora of lands administered by Bay of Plenty Conservancy. Department of Conservation, Rotorua. *Wildland Consultants Ltd Contract Report No. 130*. 556 pp.
- Beadel S.M. 1995b: Vegetation and flora of Waiohau Conservation Area. Prepared for the Department of Conservation, Whakatane. 24 pp.
- Beadel S.M. 1999: Vegetation and flora of Keepa Road Conservation Area, Whakatane. *Wildland Consultants Ltd Contract Report No. 240*. Prepared for the Department of Conservation, Whakatane. 24 pp.
- Beadel S.M.; Shaw W.B. and Gosling D.S. 1999: Taneatua Ecological District. Survey report for the Protected Natural Areas Programme. Department of Conservation, Rotorua. 268 pp.
- Beadel S.M.; Shaw W.B. and Gosling D.S. 2003 (Draft): Te Teko Ecological District. Survey report for the Protected Natural Areas Programme. Prepared for the Department of Conservation, Rotorua.
- Beadel S.M.; Shaw W.B. and Nicholls J.L. 1998: Rotorua Lakes Ecological District - natural area survey. *Wildland Consultants Ltd Contract Report No. 175*. 551 pp.

- Beadel S.M.; Townsend A.J. and Shaw W.B. 1996: Natural heritage of the Whakatane District. *Wildland Consultants Ltd Contract Report No. 140*. 280 pp plus maps.
- Clarkson B.R. and Regnier C.E. 1989: West Gisborne. *Biological Survey of Reserves Report No. 16*. Department of Conservation, Wellington.
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- Owen K.L. 1993: Protection and restoration of marshbird habitat in Tauranga Harbour Vol. II. *Technical Report Series No. 17*. Department of Conservation, Rotorua.
- Owen K.L. 1994: Marshbird habitat of Ohiwa Harbour. *Technical Report Series No. 22*. Department of Conservation, Rotorua. 152 pp.
- Shaw W.B. and Beadel S.M. 1998: Natural Heritage of the Rotorua District. *Wildland Consultants Ltd Contract Report No. 176*. 657 pp.
- Smale M.C. 1989: Structure and dynamics of monoao-dominant heathland on frost flats at Rangitaiki and Pureora, Central North Island. *Unpublished F.R.I. Report IFM4*. 6pp.
- Wildland Consultants 1999: Natural heritage of Opotiki District. *Wildland Consultants Contract Report No. 185*. 577 pp.
- Wildland Consultants 2000: Ecological assessment of four proposed environmental protection areas on Lochinver Station. *Wildland Consultants Contract Report No. 426*. 27 pp.
- Wildland Consultants 2001: Indigenous biodiversity of Tauranga District – State of the Environment reporting. *Wildland Consultants Contract Report No. 309*. 191 pp.
- Wildland Consultants 2003: Field inspections of selected wetlands in the Bay of Plenty Region. *Wildland Consultants Contract Report No. 539*. 16 pp.

FRESHWATER WETLANDS IN THE BAY OF PLENTY REGION METADATA FOR 2004 GIS DATA

A. BOP_wetlands_excl_rotED.shp

1. Identification Information

Data Set Name:

BOP_wetlands_excl_rotED.shp

Data Set Abstract:

A digital map of freshwater wetlands in the Bay of Plenty Region (excluding the Rotorua Lakes Ecological District) based on existing data (see *Wildland Consultants 2004 – Contract Report 941*). No field checking was undertaken.

Content of Data Set:

BOP_wetlands_excl_rotED.shp

<i>Site_Name</i>	The specific name of the wetland.
<i>Dbase_ID</i>	The number assigned to the wetland in the Env BOP Freshwater Wetlands Database.
<i>Field_Chk</i>	Whether or not the wetland was field checked as part of this project.
<i>Base_map</i>	The base map onto which the wetland boundaries have been drawn, i.e. Env BOP Regional Digital Aerial Mosaic (RDAM) (2003) orthophotographs.
<i>Scale</i>	The scale at which the wetland was digitised, i.e. 1:5,000.
<i>Lvl_conf</i>	The level of confidence held about the accuracy of the wetland boundaries (high, medium or low). Where high = within 0-15 m, medium = within 15-40 m, and low = within 40-100 m, very low = 100m+.
<i>Chng_xtn</i>	Broad comments on any change in the extent of the wetland apparent on the Env BOP RDAM (2003) orthophotographs since the completion of the reference document(s).
<i>Reference</i>	The reference document(s) containing a map of the wetland have been used to help identify the wetland boundaries.

RDAM-qual Comments on the quality of the RDAM orthophotography (i.e. glare, shadow, contrast, colour, etc).

Number of sites mapped in the GIS layer: 225

Key Words:

Wetlands, freshwater, Bay of Plenty, palustrine.

Resource:

GIS

Data Set Ids:

Env BOP to complete.

Metadata Date:

21/12/2004

2. Contact Details

Contact Organisation:

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3. Spatial Information

Geographic Extent:

Bay of Plenty Region excluding Rotorua Lakes Ecological District.

NZ Map Grid Co-ordinates:

North-west corner E2770000, N6430000.

North-east corner E2960000, N6400000.

South corner E2803000, N6242000.

Positional Accuracy:

Digitising scale: 1:5000, 20 metres.

4. Data Acquisition History

Period and Frequency of Record:

Data layer is based on Env BOP RDAM (2003).

Data Acquisition Method(s):

Wetland locations were identified from centrepoints contained in the Bay of Plenty Freshwater Wetlands Database (compiled by Env BOP). No fieldwork was undertaken. The database was completed by Env BOP in 1998 (Williams 1998). It was reviewed and revised in 2003.

5. Data Quality Information:

Data Quality:

Env BOP to complete.

Attribute Accuracy:

A 'level of confidence' was applied to digital wetland boundaries based on the approximate distance within which the actual boundary of each wetland is likely to be. The four levels of confidence are:

- High = an accuracy of 0-15 m
- Medium = 15-40 m
- Low = 40-100 m
- Very Low = 100+ m

Completeness:

Two hundred and twenty-five wetlands in the FFW database are mapped in the GIS layer. Twelve wetlands were not digitised because location or extent could not be determined from existing sources. One wetland was not included in the layer and should be deleted from the database (for Site 427 there is no evidence on the RDAM to suggest a freshwater wetland is present).

Ninety-eight wetlands in the BOP freshwater palustrine wetlands which are listed in the Rotorua Lakes Ecological District database are not mapped in the GIS layer. These wetlands were specifically excluded from this contract. (Refer to Section 3 in Report 941 for more detail.)

The freshwater wetland database is mainly based on existing information with few field checks. There will be wetlands that are not included in the database, and that have therefore not been mapped as part of this project.

Logical Consistency:

N/A

6. Distribution Information

Data Form:

Electronic.

Digital Format:

ESRI Shapefile.

Applications:

- Spatial information on location and extent of palustrine wetlands.
- Baseline data to determine long term changes in extent of wetlands in the BOP.
- Useful for determining whether a wetland is known to be present at a particular site (cannot be used to determine that wetlands are not present).

Data Set Availability:

Env BOP to complete.

7. Status Information

Data Status:

Env BOP to complete.

Current data based on desktop study.

8. Further Metadata Information

Related Information:

Beadel S.M. 1989: Botanical values of the Arawa Wetlands, Maketu. Prepared for the Department of Conservation, Rotorua.

Beadel S.M. 1991: Fort Galatea Wetlands. Prepared for the Department of Conservation. 12 pp.

Beadel S.M. 1992: Tauranga Harbour wetland vegetation. Prepared for the Bay of Plenty Regional Council. 82 pp plus A0 maps.

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Beadel S.M.; Shaw W.B. and Gosling D.S. 2003 (Draft): Te Teko Ecological District. Survey report for the Protected Natural Areas Programme. Prepared for the Department of Conservation, Rotorua.

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- Gosling D.S. 2001: Indigenous vegetation and flora of the proposed Gordon property subdivision, Thornton Road, Rangitaiki Plains. *Wildland Consultants Ltd Contract Report No. 455*. 17 pp.
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- Irving R.M. and Beadel S.M. 1992: Botanical surveys and assessments of Wildlife Reserves in the Te Teko Ecological District. *Technical Report Series No. 10*. 197 pp.
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- Owen K.L. 1994: Marshbird habitat of Ohiwa Harbour. *Technical Report Series No. 22*. Department of Conservation, Rotorua. 152 pp.
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- Smale M.C. 1989: Structure and dynamics of monoao-dominant heathland on frost flats at Rangitaiki and Pureora, Central North Island. *Unpublished F.R.I. Report IFM4*. 6pp.
- Wildland Consultants 1999: Natural heritage of Opotiki District. *Wildland Consultants Contract Report No. 185*. 577 pp.
- Wildland Consultants 2000: Ecological assessment of four proposed environmental protection areas on Lochinver Station. *Wildland Consultants Contract Report No. 426*. 27 pp.
- Wildland Consultants 2001: Indigenous biodiversity of Tauranga District – State of the Environment reporting. *Wildland Consultants Contract Report No. 309*. 191 pp.
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- Wildland Consultants 2003: Field inspections of selected wetlands in the Bay of Plenty Region. *Wildland Consultants Contract Report No. 539*. 16 pp.
- Wildland Consultants Ltd 2003: Environment BOP freshwater wetland database - Revision and expansion. *Wildland Consultants Ltd Contract Report No. 647*. Prepared for Environment BOP. 29 pp.

Wildland Consultants Ltd 2004: Digital mapping of freshwater wetlands in the Bay of Plenty Region - based on the freshwater wetlands database and the Regional Digital Aerial Mosaic (RDAM) (desk top study). *Wildland Consultants Ltd Contract Report No. 941*. Prepared for Environment Bay of Plenty Regional Council. 26 pp.

Williams S. 1998: Environment Bay of Plenty Freshwater Wetlands Database Project Assessment Report. 40 pp.

General Notes:

NA

Document Links:

Freshwater Wetlands Database March 2004 (Bay of Plenty Region).

This project is reported on in:

Wildland Consultants Ltd 2004: Digital mapping of freshwater wetlands in the Bay of Plenty Region - based on the Freshwater Wetlands Database and the Regional Digital Aerial Mosaic (RDAM) (desk top study). *Wildland Consultants Contract Report No. 941*. Prepared for Environment Bay of Plenty Regional Council. 26 pp.

WWW Links:

Env BOP to complete.

B. BOP_wetlands_diff_conf_lvls.shp

1. Identification Information

Data Set Name:

BOP_wetlands_dif_conf_lvls.shp

Data Set Abstract:

A digital map of freshwater wetlands for which two or more levels of confidence in the boundaries were assigned during a desk top mapping exercise of wetlands in the Env BOP FWWDDatabase (excluding the Rotorua Lakes ED). No field checking was undertaken.

Content of Data Set:

BOP_wetlands_excl_rotED.shp

<i>Site_Name</i>	The specific name of the wetland.
<i>Dbase_ID</i>	The number assigned to the wetland in the Environment BOP Freshwater Wetlands Database.
<i>Lvl_conf</i>	The level of confidence held about the accuracy of the wetland boundaries (high, medium or low). Where high = within 0-15 m, medium = within 15-40 m, and low = within 40-100 m, very low = 100m+.

Number of sites mapped in the GIS layer:

61 (which have been split into 157 shapes)

Key Words:

Wetlands, freshwater, Bay of Plenty, palustrine

Resource:

GIS , Groundwater, Surface waters

Data Set Ids:

Environment Bay of Plenty to complete

Metadata Date:

29/11/2004

2. Contact Details

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3. Spatial Information

Geographic Extent:

Bay of Plenty Region excluding Rotorua Lakes Ecological District.

NZ Map Grid Co-ordinates:

North-west corner E2770000, N6430000
North-east corner E2960000, N6400000
South corner E2803000, N6242000

Positional Accuracy:

Digitising scale: 1 : 5000, 20 metres

4. Data Acquisition History

Period and Frequency of Record:

Data layer is based on 2002 RDAM Aerial Photographs.

Data Acquisition Method(s):

Wetland locations were identified from centrepoinTs contained in the Bay of Plenty Freshwater Wetlands Database (compiled by Environment BOP). No fieldwork was undertaken. The database was completed by Environment BOP in 1998 (Williams 1998). It was reviewed and revised in 2003. Wetlands for which two or more levels of confidence were assigned for boundary accuracy were copied into this shapefile and then split to show the different levels of confidence.

5. Data Quality Information:

Data Quality:

Environment Bay of Plenty to complete.

Attribute Accuracy:

A 'level of confidence' was applied to digital wetland boundaries based on the approximate distance within which the actual boundary of each wetland is likely to be. The four levels of confidence are:

- High = an accuracy of 0-15 m
- Medium = 15-40 m
- Low = 40-100 m
- Very Low = 100+ m

Completeness:

172 wetlands in the BOP freshwater wetlands which are listed in the Rotorua Lakes Ecological District database are not mapped in the GIS layer. These wetlands were specifically excluded from this contract. (Refer to Section 3 in Report 941 for more detail.)

The freshwater wetland database is mainly based on existing information with no field checks. There will be wetlands that are not included in the database, and that have therefore not been mapped as part of this project.

This shapefile only contains wetlands for which multiple levels of confidence in the accuracy of the boundary have been assigned.

Logical Consistency:

N/A

6. Distribution Information

Data Form:

Electronic

Digital Format:

ESRI Shapefile

Applications:

- Baseline data to determine long term changes in extent of wetlands in the BOP.
- Useful for determining whether a wetland is known to be present at a particular site (cannot be used to determine that wetland is not present).

Data Set Availability:

Environment Bay of Plenty to complete

7. Status Information

Data Status:

Environment Bay of Plenty to complete.

Current data based on desktop study. It is intended to field check wetland boundaries as necessary, and also to undertake field survey to identify and map other wetlands not currently listed in the FWW Database.

As the project progresses it is also intended to undertake field surveys to map the vegetation types and habitats present within each wetland.

8. Further Metadata Information

Related Information:

Refer to *Wildland Consultants Ltd Contract Report No. 941*.

General Notes:

NA

Document Links:

Freshwater Wetlands Database March 2004 (Bay of Plenty Region)

This project is reported on in:

Wildland Consultants Ltd 2004: Digital mapping of freshwater wetlands in the Bay of Plenty Region - based on the Freshwater Wetlands Database and the Regional Digital Aerial Mosaic (RDAM) (desk top study). *Wildland Consultants Contract Report No. 941*. Prepared for Environment Bay of Plenty Regional Council. 26 pp.

WWW Links:

Environment Bay of Plenty to complete

ATTRIBUTE TABLE DATA

SITE_NAME	DBASE_ID	FIELD_CHK	BASE_MAP	SCALE	LVL_CONF	CHNG_XTNT	REFERENCE	COMMENTS	RDAM_qual
Whangaparaoa Dune Hollow Wetland	33	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland boundaries not shown on 1999 map. Therefore cannot determine any change in extent.	Wildland Consultants Ltd 1999 (p 478).		
Whangaparaoa A Wetland	472	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland boundary appears to be slightly different to that mapped in 1999.	Wildland Consultants Ltd 1999 (p 509).		
Mangatutara Wetland	494	No	RDAM 2003 orthophotographs	1:5,000	High	No map available.	W.B Shaw pers comm.		
Maraenui Wetland	526	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	Field Check 2002		
Rawea Wetland	467	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Boundary differs slightly to that shown in reference document.	Wildland Consultants Ltd 1999 (p 407).		
Tirohanga Wetland A	556	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		Colour
Tirohanga Pa Wetland	464	No	RDAM 2003 orthophotographs	1:5,000	Medium	Boundaries do not align with those depicted in reference document. Cannot determine division between freshwater and saline wetland areas.	Wildland Consultants Ltd 1999 (p 257).		
Tirohanga Wetland B	95	No	RDAM 2003 orthophotographs	1:5,000	Medium	Boundary differs slightly to that shown in reference document.	Wildland Consultants Ltd 1999 (p 255).		
Huntress Creek Wetlands	154	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Kanohirua Wetland	503	No	RDAM 2003 orthophotographs	1:5,000	Low/High	No map available.	None		
Ruatahuna Wetland	454	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Boundary of wetland appears different to that depicted in reference document.	Beadel et al. 1996 (p 169).		
Hiwarau North Wetlands	557	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1993 Sheet 3 of A0 maps		
Uretara Island Wetlands	372	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1993 Sheet 1 of A0 maps		
Ouaki Creek Wetlands	396	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1993 Sheet 1 of A0 maps		
Waiohou Wetland	70	No	RDAM 2003 orthophotographs	1:5,000	High	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 132).		
Whitiwhiti Wetland	84	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel et al. 1999 (p 64).		
Burma Road Wetlands	392	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent may differ to that shown in 1999 map. Difficult to determine boundary.	Beadel 1993 Sheet 1 of A0 maps		
Waiotane Stream Wetlands	118	No	RDAM 2003 orthophotographs	1:5,000	Low	Extent may differ to that shown in 1993 map. Difficult to determine boundary of freshwater wetland amongst saline wetland.	Beadel 1993 Sheet 1 of A0 maps		
Pahekepeke Road Wetland	249	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Lake Aniwhenua Wetlands	66	No	RDAM 2003 orthophotographs	1:5,000	High/Medium/Low/Very Low	Wetland may be more extensive than that mapped in reference document.	Beadel et al. 1996 (p 112).		
Pokairoa Road Wetlands A	68	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Wetland appears to be slightly less extensive than that mapped in reference document.	Beadel et al. 1996 (p 124).		
Pokairoa Road Wetlands B	528	No	RDAM 2003 orthophotographs	1:5,000	Low	No map available.	Field Check 2002		
Rangitaiki Side Stream (Kiorenui Rd) Wetlands	259	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Upper Pekepeke Stream (quarry) Wetlands	260	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		Colour, Shadow
Waiora Road Reservoir	261	No	RDAM 2003 orthophotographs	1:5,000	Medium	No map available.	None		
Upper Okahu Stream Catchment Wetlands	315	No	RDAM 2003 orthophotographs	1:5,000	Low	No map available.	None		
Arahaki Lagoon	22	No	RDAM 2003 orthophotographs	1:5,000	Medium	No map available.	None		
Rewi Covenant	245	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Te Pohue Wetlands	73	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Extent may differ to that shown in 1996 map. Difficult to determine boundary.	Beadel et al. 1996 (p 150).		Contrast
Te Whaiti Swamp	207	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Plot Road Wetland	292	No	RDAM 2003 orthophotographs	1:5,000	High/Medium	No map available.	None		
Otueta Stream Wetlands	316	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Otamatea Mire	132	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		Contrast, Colour
Lake Pouarua Wetlands	355	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Location of freshwater wetland area is not shown in reference document. Therefore any change in extent unknown.	Wildland Consultants Ltd 2001 (p 5).		Contrast, Colour
Waipai Lagoon	133	No	RDAM 2003 orthophotographs	1:5,000	High	No map available.	None		Contrast
Otangimoana Wetlands	278	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		Contrast, Colour
Upper Mangatiti Stream Wetlands	284	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		Contrast, Colour
Grassy Creek Lagoon Wetlands	282	No	RDAM 2003 orthophotographs	1:5,000	High/Medium	No map available.	None		
Dry Creek Wetland	281	No	RDAM 2003 orthophotographs	1:5,000	Low	No map available.	None		
Whakatane Estuary Wetlands	63	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent may differ to that shown in 1996 map. Difficult to determine boundary.	Beadel et al. 1996 (p 90).		Colour
Orini Wetland	483	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Wetland appears to follow the same boundaries as those drawn in 2003.	Beadel et al. 2003 draft (p 87).		
Keepa Road Wetland	204	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low/Very Low	Boundary differs slightly to that shown in reference document.	Beadel 1999 (Contract Report 240) (p 4).		
Raukokore River Mouth Wetlands	81	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent may differ to that shown in 1999 map. Difficult to determine boundaries.	Wildland Consultants Ltd 1999 (p 481).		
Thornton Lagoon Wildlife Management Reserve Wetlands	139	No	RDAM 2003 orthophotographs	1:5,000	Medium	Boundary of wetland appears slightly different to that depicted in reference document.	Irving and Beadel 1992 (p 115)		
Needham Ponds Wetland	482	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 2003.	Beadel et al. 2003 draft (p 86).		
Lake Otumahi Wetlands	49	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Extent may differ to that shown in 1996 map. Difficult to determine boundary.	Beadel et al. 1996 (p 56).		

SITE_NAME	DBASE_ID	FIELD_CHK	BASE_MAP	SCALE	LVL_CONF	CHNG_XTNT	REFERENCE	COMMENTS	RDAM_qual
Whakatane River Oxbow Wetlands	114	No	RDAM 2003 orthophotographs	1:5,000	High	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 163).		
Raroa-Matatare Wetlands	342	No	RDAM 2003 orthophotographs	1:5,000	High/Very Low	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 50).		
Mangatoetoe Stream Wetland	110	No	RDAM 2003 orthophotographs	1:5,000	High	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 100).		
Sisam Wetland A	112	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 157).		
Sisam's Trig Bush Wetland	106	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 45).		
Sisam Forest Remnant Wetlands	351	No	RDAM 2003 orthophotographs	1:5,000	Medium	Location of wetland area is not shown in reference document. Therefore any change in extent unknown.	Beadel et al. 1999 (p 185).		
Sisam Wetland D	115	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 168).		
Sisam Wetland B	113	No	RDAM 2003 orthophotographs	1:5,000	High/Very Low	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 160).		
Sisam Wetland E	116	No	RDAM 2003 orthophotographs	1:5,000	High	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 171).		
Papanui Road Swamp	93	No	RDAM 2003 orthophotographs	1:5,000	High	No map available.	Field Check 2002		
Hiwarau South Wetlands	87	No	RDAM 2003 orthophotographs	1:5,000	Medium	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1994b (Hiwarau Road Wetland)		
Little Swamp	92	No	RDAM 2003 orthophotographs	1:5,000	Medium	No map available.	Field Check 2002		
Makeo Wetlands	463	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 1999.	Wildland Consultants Ltd 1999 (p 234).		
Otanemutu Wetland	364	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low	Boundary differs slightly to that shown in reference document.	Wildland Consultants Ltd 1999 (p 271).		
Te Ranginui Swamp	123	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to follow the same boundaries as those drawn in 2004. Cannot accurately determine division between wetland and dryland areas.	Wildland Consultants 2004 (Draft) (Contract Report No. 886).		
Waimanu Wetland	469	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent appears to be the same as that depicted in 1999 map.	Wildland Consultants Ltd 1999 (p 464).		
Houpoto Swamp	82	No	RDAM 2003 orthophotographs	1:5,000	High/Very Low	Wetland appears to follow the same boundaries as those drawn in 1999.	Wildland Consultants Ltd 1999 (p 432).		
Ngarue Road Wetland	471	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Wetland appears to follow the same boundaries as those drawn in 1999.	Wildland Consultants Ltd 1999 (p 503).		
Te Rereauira Swamp	34	No	RDAM 2003 orthophotographs	1:5,000	Low/Very Low	Boundaries differ slightly to those in the reference document. It is possible that part of this wetland is now in pasture and some areas mapped may be dryland.	Wildland Consultants Ltd 1999 (p 500).		
Waipa Creek Wetland	122	No	RDAM 2003 orthophotographs	1:5,000	Medium	No map available	Field Check 2002		
Orini Wildlife Management Reserve Wetlands	130	No	RDAM 2003 orthophotographs	1:5,000	Medium	Boundary of wetland appears slightly different to that depicted in reference document.	Beadel et al. 2003 draft (p 87).		
Rangitaiki Conservation Area Wetlands	363	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent may differ to that shown in 1989 map. Difficult to determine boundary.	Smale 1989		Colour
Reids Central Canal Island Wetland	487	No	RDAM 2003 orthophotographs	1:5,000	High	No map available	?		
Wahieroa Wetland	62	No	RDAM 2003 orthophotographs	1:5,000	High/Medium	Extent appears to be the same as that depicted in 2001 and 2003 maps.	Gosling 2001, Beadel et al. 2003 draft (p 61).		
Bregman Wetlands	61	No	RDAM 2003 orthophotographs	1:5,000	High	Extent appears to be the same as that depicted in 1992 map.	Irving and Beadel 1992		
Kohika Wetlands	46	No	RDAM 2003 orthophotographs	1:5,000	Low	Extent appears to be the same as that depicted in 2003 map.	Beadel et al. 2003 draft (p 44).		
Tarawera Cut Wetlands	60	No	RDAM 2003 orthophotographs	1:5,000	High	Extent appears to be the same as that depicted in 2003 map.	Beadel et al. 2003 draft (p 41).		
Tarawera River Wetlands A	485	No	RDAM 2003 orthophotographs	1:5,000	Medium	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel et al. 2003 draft (p 87, 88).		
Kopuatawhiti Wetlands	47	No	RDAM 2003 orthophotographs	1:5,000	High	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 51).		
Awakaponga Wildlife Management Reserve Wetlands	42	No	RDAM 2003 orthophotographs	1:5,000	High	Willows have been removed. However wetland extent is the same as shown in reference document.	Beadel et al. 2003 draft (p 37).		
Tarawera River Wetlands B	486	No	RDAM 2003 orthophotographs	1:5,000	High	Extent appears to be the same as that depicted in 2003 map.	Beadel et al. 2003 draft (p 89).		
Braemar Road Wetland	481	No	RDAM 2003 orthophotographs	1:5,000	Medium	Extent appears to be the same as that depicted in 2003 map.	Beadel et al. 2003 draft (p 84).		
Matuku Wildlife Management Reserve Wetlands	129	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent is slightly more extensive than that depicted in 2003 map as wetland boundary does not follow cadastral boundary exactly.	Beadel et al. 2003 draft (p 49).		
Tuhua Wetland	136	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel et al. 1996 (p 237).		
Mangaone Stream Wetlands	54	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Wetland appears to follow the same boundaries as those drawn in 2003.	Beadel et al. 2003 draft (p 62).		
Tahuna Road Wetland	529	No	RDAM 2003 orthophotographs	1:5,000	High	No map available.	Field Check 2002		
Richardson's Wetland	78	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 233).		
Eivers Wetland	45	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 49).		
Park Road Wetland	56	No	RDAM 2003 orthophotographs	1:5,000	High	Boundary of wetland appears slightly different to that depicted in reference document.	Beadel et al. 1996 (p 79).		
Lamberts Wetland	53	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low/Very Low	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 67).		
Onerahi Wetland B	55	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 72).		

SITE_NAME	DBASE_ID	FIELD_CHK	BASE_MAP	SCALE	LVL_CONF	CHNG_XTNT	REFERENCE	COMMENTS	RDAM_qual
Tarawera Road Wetland (Kawerau)	57	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 81).		
Lake Tahuna Wetland (Tahuna-Putauaki)	51	No	RDAM 2003 orthophotographs	1:5,000	Medium/High	Extent may differ to that shown in 1996 map. Difficult to determine boundary.	Beadel et al. 1996 (p 62).		
Lake Pupuwharau Wetlands	50	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 59).		
Putauaki Crater Lake Wetland	197	No	RDAM 2003 orthophotographs	1:5,000	High	No map available.	None		
Hauone Stream Wetland	76	No	RDAM 2003 orthophotographs	1:5,000	High/Low/Very Low	Extent may differ to that shown in 1996 map. Difficult to determine boundaries.	Beadel et al. 1996 (p 217).		
Matamanu Wetlands	77	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent may differ to that shown in 1999 map. Difficult to determine boundary.	Beadel et al. 1996 (p 222).		Contrast
Ohinekoao Wetlands	126	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Three wetland areas appear to follow the same boundaries as those drawn in 1996. No map available for others.	Beadel et al. 1996 (p 205). No reference for part.		
Herepuru Wetlands	415	No	RDAM 2003 orthophotographs	1:5,000	Low	No map available.	None		
Waihi Wildlife Management Reserve Wetland	479	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent may differ to that shown in 1995 map. Difficult to determine boundaries.	Beadel 1995 (p 223).		
Waewaetutuki Wetland	151	No	RDAM 2003 orthophotographs	1:5,000	Low/Very Low	Wetland is more extensive than that mapped in 1994. However, entire wetland was not surveyed at the time. Cannot determine division between freshwater and saline wetland areas.	Beadel 1994a (p 122) (sig indig veg in BOP coastal zone)		
Arawa Wetland	148	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to follow the same boundaries as those drawn in 1989.	Beadel 1989 (p 2).		
Ford Road Lagoon	203	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1994a (p 116) (sig indig veg in BOP coastal zone)		
Kaituna River Wetlands	352	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low/Very Low	Wetland appears to follow the same boundaries as those drawn in 2000 and 1994.	Wildland Consultants 2000 (map 1 of 22), Beadel 1994a (p 116) (sig indig veg in BOP coastal zone)		
Lower Kaituna Wildlife Management Reserve Wetlands	146	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to be slightly less extensive than that mapped in reference document.	Irving 1991 (Figure 2).		
Kaituna Sand Dunes Wetland	455	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 2000.	Wildland Consultants 2000 (map 2 of 22).		
Lake Rotongata Wetlands (Kaharoa)	500	No	RDAM 2003 orthophotographs	1:5,000	High	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Shaw and Beadel 1998 (p 109).		contrast
Upper Waiteti Stream Wetlands	368	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Wetland appears to be less extensive than that mapped in 1998.	Shaw and Beadel 1998 (p 295).		
Otuaroa Road Wetland	188	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to have been drained and is less extensive than that mapped in 1998.	Shaw and Beadel 1998 (p 83).		
Copella Road Wetlands	450	No	RDAM 2003 orthophotographs	1:5,000	High/Medium/Low/Very Low	Some areas of wetland have not been mapped previously and therefore any change in extent is unknown. Areas that were mapped previously do not appear to have changed significantly in extent.	Shaw and Beadel 1998 (p 80 and 31). Part = none.		
Oropi Forest Wetland	459	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Wetland appears to be less extensive than that mapped in 1994.	Beadel 1994 (p 165).		
McPhail Road Wetland	125	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1994 (p 75).		
Opuiaki River Wetland	124	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to follow the same boundaries as those drawn in 1994.	Beadel 1994 (p 63).		
McLaren Falls Park Wetlands	358	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1994c (Figure 2). (Vegetation and fauna of McLaren Falls Park)		
McLaren Lake Wetlands	215	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1994c (Figure 2). (Vegetation and fauna of McLaren Falls Park)		
Waitao Stream Wetlands	386	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to be slightly less extensive than that mapped in reference document.	Wildland Consultants 2000 (map 18 of 22).		Shadow
Ranginui Road Wetlands	384	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 2000.	Wildland Consultants 2000 (map 17 of 22).		
Welcome Bay Wetlands	383	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Wetland appears to follow the same boundaries as those drawn in 2000.	Wildland Consultants 2000 (map 16 of 22).		
Kaitemako Stream Mouth Wetlands	382	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to follow the same boundaries as those drawn in 2000.	Wildland Consultants 2000 (map 15 of 22).		
Hairini Wetlands	381	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 2000.	Wildland Consultants 2000 (map 15 of 22).		
Poike Wetlands	380	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low/Very Low	Wetland appears to be slightly less extensive than that mapped in reference document with one area of willow cleared and possibly drained.	Wildland Consultants 2000 (map 14 of 22).		
Waimapu Estuary Wetlands	379	No	RDAM 2003 orthophotographs	1:5,000	Low/Very Low	Wetland appears to follow the same boundaries as those drawn in 2000, although cannot accurately determine division between freshwater and saline wetland areas.	Wildland Consultants 2000 (map 14 of 22).		
Waimapu Estuary Walkway Wetlands	378	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Wetland appears to follow the same boundaries as those drawn in 2000, although cannot accurately determine division between freshwater and saline wetland areas.	Wildland Consultants 2000 (map 13 of 22).		
Kopurererua Stream Wetland A	377	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low/Very Low	Wetland has been partially cleared and is now bisected by the Tauranga bypass.	Wildland Consultants 2000 (map 12 of 22).		
Rangataua Bay Wetlands	387	No	RDAM 2003 orthophotographs	1:5,000	Low/Medium	Wetland appears to follow the same boundaries as those drawn in 2000, although cannot accurately determine division between freshwater and saline wetland areas.	Wildland Consultants 2000 (map 19 of 22).		

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Waipu Bay Wetlands B	389	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low/Very Low	Wetland appears to be slightly less extensive than that mapped in reference document. Cannot accurately determine division between freshwater and saline wetland areas.	Wildland Consultants 2000 (map 21 of 22).		
Waipu Bay Wetlands A	388	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to follow the same boundaries as those drawn in 2000, although cannot accurately determine division between freshwater and saline wetland areas.	Wildland Consultants 2000 (map 21 of 22).		
Waipu Bay Wetlands C	390	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low	Wetland appears to follow the same boundaries as those drawn in 2000, although cannot accurately determine division between freshwater and saline wetland areas.	Wildland Consultants 2000 (map 22 of 22).		
Matahoro Reserve Wetlands	441	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 2000.	Wildland Consultants 2000 (map 9 of 22).		
Waikareao Estuary Wetlands A	373	No	RDAM 2003 orthophotographs	1:5,000	Low/Medium	Wetland appears to follow the same boundaries as those drawn in 2000.	Wildland Consultants 2000 (map 9 of 22).		
Matua Estuary-Yorke Park Wetlands	375	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Wetland appears to follow the same boundaries as those drawn in 2000.	Wildland Consultants 2000 (map 10 of 22).		
Wairoa Estuary Wetlands A	408	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to follow the same boundaries as those drawn in 2000.	Wildland Consultants 2000 (map 11 of 22).		
Okikimoke Point Wetlands	433	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 2000, although cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 13).		Colour
Kuka Road Wetlands	149	No	RDAM 2003 orthophotographs	1:5,000	Low/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 12).		
Waipa Road Wetland	505	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Difficult to determine extent from map in reference document. Willows appear to have been removed. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 12).		
Snodgrass Road Inlet Wetland	432	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 13).		
Te Puna Stream Mouth Wetlands A	407	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Wetland appears to follow the same boundaries as those drawn in 1994.	Beadel 1994a (p 102) (sig indig veg in BOP coastal zone)		
Waikaraka Wetlands (Mangawhai Bay)	507	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 12).		
Turner Road Wetlands	429	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 11).		Contrast, Colour
Wainui Estuary Wetlands A	402	No	RDAM 2003 orthophotographs	1:5,000	Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 11).		
Te Rereatukahia Stream Wetlands	426	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 10).		
Tetley Road Inlet Wetland	425	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1992 (map sheet 9).		
Park Road Estuary Wetlands	411	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 1992.	Beadel 1992 (map sheet 9).		
Katikati Wetlands A	401	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 9).		
Tuapiro Wetlands	409	No	RDAM 2003 orthophotographs	1:5,000	Low/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 2).		
Hikurangi Wetlands	422	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference documents. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 1) and Owen 1993 Vol II (p1, site No. 10).		
Athenree Road Wetlands	421	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference documents. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 1).		
Athenree Settlement Wetlands	419	No	RDAM 2003 orthophotographs	1:5,000	Low	Difficult to determine extent from map in reference documents. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 1).		
Steele Road Wetlands A	519	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to be less extensive than that mapped in 1992.	Beadel 1992 (map sheet 1).		
Steele Road Wetlands B	520	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland area mapped in 1992 appears to be less extensive. However, an area to the west of the mapped wetland also appears to be wetland.	Beadel 1992 (map sheet 1).		
Matakana Wetland B	25	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Owen 1993 Vol II (p 1, site No. 16).		
Matakana Wetland D	27	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Owen 1993 Vol II (p 1, site No. 19).		
Matakana Wetland E	410	No	RDAM 2003 orthophotographs	1:5,000	Medium	Difficult to determine extent from map in reference documents. Therefore any change in extent unknown.	Beadel 1992 (map sheet 3).		

SITE_NAME	DBASE_ID	FIELD_CHK	BASE_MAP	SCALE	LVL_CONF	CHNG_XTNT	REFERENCE	COMMENTS	RDAM_qual
North Eastern Blue Gum Bay Wetlands	155	No	RDAM 2003 orthophotographs	1:5,000	Medium	Reference map only shows very small area of wetland at harbour margin. Therefore any change in extent unknown.	Part = Beadel 1992 (map sheet 4 and 5). Part = none.		
Hunters Creek Wetlands	400	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1992 (map sheet 5).		
Opureora Wetlands	405	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low	Wetland appears to follow the same boundaries as those drawn in 1992. However, cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 5).		
Nukuhou Wetlands	344	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Cannot determine extent from map in reference document. Therefore any change in extent unknown.	Beadel et al. 1999 (p 142).		
Waiohau Forest Wetland	357	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Cannot determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1995a (Figure 2) (Vegetation and Flora of Waiohau Conservation Area).		
Owhakatoro Road Swamp	140	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None.		
Melville Swamp Maire Forest	131	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available	None		
Pikowai Wetlands	466	No	RDAM 2003 orthophotographs	1:5,000		No map available	None		Colour
Judea Wetland	456	No	RDAM 2003 orthophotographs	1:5,000	Medium	No map available.			
Murupara Landfill Wetland	439	No	RDAM 2003 orthophotographs	1:5,000	Low/High	No map available.	None		
Oponae Headwater Wetlands	497	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None.		
Moutuhora (Whale Island) Wetland	356	No	RDAM 2003 orthophotographs	1:5,000	Low	No map available.	C. Bishop pers. comm.		Contrast, Glare
Torere Dune Swamp	101	No	RDAM 2003 orthophotographs	1:5,000	High	No map available.	Field Check 2002		
Hanamahihi Wetlands	74	No	RDAM 2003 orthophotographs	1:5,000	Low	Boundary depicted in reference document does not appear to correspond to wetland area.	Beadel et al. 1996 (p 180).		Contrast, Colour
Whirinaki (Hautapu) Bog	141	No	RDAM 2003 orthophotographs	1:5,000	High	No map available.	None		
Rangitaiki River Wetland (Ngapuketuru Rd to Kiorenui Rd)	268	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Wheao River Wetland (Riki Road wetland)	265	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Wetland boundaries not shown on 1996 map. Therefore cannot determine any change in extent.	Beadel et al. 1996 (p 110).		
Rangitaiki River Marginal Strip (Wheao) Wetlands	72	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Wetland boundaries not shown on 1996 map. Therefore cannot determine any change in extent.	Beadel et al. 1996 (p 110).		
Otupiri Stream Wetlands	262	No	RDAM 2003 orthophotographs	1:5,000	Low	No map available.	None		
Marawaiwai Wetland	462	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Clarkson and Regnier 1989 (p 80).		
Totara Road Wetlands	69	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel et al. 1996 (p 128).		
Tauwharemanuka Wetlands	75	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Extent may differ to that shown in 1999 map. Difficult to determine boundary.	Beadel et al. 1996 (p 187).		
Fort Galatea Wetlands	65	No	RDAM 2003 orthophotographs	1:5,000	Low/Very Low	Very difficult to ascertain extent from reference document. Therefore any change in extent unknown.	Beadel 1991 (Fort Galatea Wetlands)		
Pokairoa Stream Wetlands	250	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Tuhoe Forest Wetlands	105	No	RDAM 2003 orthophotographs	1:5,000	High/Medium/Very Low	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 42).		
Te Kairere Wetland	119	No	RDAM 2003 orthophotographs	1:5,000	High/Very Low	Wetland appears to follow the same boundaries as those drawn in 1999.	Beadel et al. 1999 (p 180).		
Sisam Wetland C	109	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Extent may differ to that shown in 1999 map. Difficult to determine boundary.	Beadel et al. 1999 (p 90).		
Tukiri Block Wetlands	58	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low/Very Low	Extent may differ to that shown in 1996 map. Difficult to determine boundaries.	Beadel et al. 1996 (p 85).		
Onerahi Wetland A	48	No	RDAM 2003 orthophotographs	1:5,000	High/Medium/Low	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 54).		
Lake Taikehu Wetlands	52	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to follow the same boundaries as those drawn in 1996.	Beadel et al. 1996 (p 65).		
Ngakaroa Stream Wetland	71	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Extent may differ to that shown in 1996 map. Difficult to determine boundary.	Beadel et al. 1996 (p 134).		
Williams Wetland	111	No	RDAM 2003 orthophotographs	1:5,000	Low	Location of wetland area is not shown in reference document. Therefore any change in extent unknown.	Beadel et al. 1999 (p 142).		
Papanui Road Wetlands	399	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1993 Sheet 3 of A0 maps		
Te Kooti Inlet Wetlands	393	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1993 Sheet 3 of A0 maps		
Wainui Wetland	395	No	RDAM 2003 orthophotographs	1:5,000	Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1993 Sheet 1 of A0 maps		
Pukeruru Wetlands	350	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1993 Sheet 2 of A0 maps.		
Reeves Road Wetlands	397	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater/saline wetland areas.	Owen 1994 (Figure 2).		
Arawaputuna Wetlands	117	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Boundary of wetland area is not shown in reference document. Therefore any change in extent unknown.	Beadel et al. 1999 (p 174).		
Waiotahi Wetland	461	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Clarkson and Regnier 1989 (p 158).		
Omaramutu	465	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent and location of wetland areas may differ to those depicted in reference document. One vegetation type not mapped, cannot locate eastern area of wetland.	Wildland Consultants Ltd 1999 (p 260).		

SITE_NAME	DBASE_ID	FIELD_CHK	BASE_MAP	SCALE	LVL_CONF	CHNG_XTNT	REFERENCE	COMMENTS	RDAM_qual
Big Lake Wetlands	163	No	RDAM 2003 orthophotographs	1:5,000	High/Medium/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Shaw and Beadel 1998 (p 89).		
Tumurau (Braemar) Lagoon Wetlands	44	No	RDAM 2003 orthophotographs	1:5,000	Low	Extent is slightly different to that depicted in 2003 map as wetland boundary does not follow cadastral boundary exactly.	Beadel et al. 2003 draft (p 47).		
Young Wetlands	64	No	RDAM 2003 orthophotographs	1:5,000	Medium	Extent is slightly more extensive than that depicted in 2003 map as wetland boundary does not follow cadastral boundary exactly.	Beadel et al. 2003 draft (p 50).		
Tumurau North Wetland	560	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Extent appears to be the same as that depicted in 2003 map.	Beadel et al. 2003 draft (p 52).		
Cornwall Road Wetlands	191	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Tauwhare Pa Wetlands	343	No	RDAM 2003 orthophotographs	1:5,000	Medium	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater/saline wetland areas.	Beadel 1993 Sheet 1 of A0 maps		
Oroi Wetland	468	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Extent may differ to that shown in 1999 map. Difficult to determine boundary. One vegetation type not mapped.	Wildland Consultants Ltd 1999 (p 409).		
Pungarehu Stream Wetlands	328	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Awaiti Wildlife Management Reserve Wetlands	41	No	RDAM 2003 orthophotographs	1:5,000	High	Wetland appears to follow the same boundaries as those drawn in 2003.	Beadel et al. 2003 draft (p 36).		
Matata Lagoon Wildlife Refuge Reserve	128	No	RDAM 2003 orthophotographs	1:5,000	Low	GIS data showing wetland areas does not appear to be accurate to a 1:5,000 scale. Therefore any change in extent unknown.	GIS digital data (produced for Te Teko PNAP report, Beadel et al 2003 (Draft)).		
Matata Wetland	134	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.			
Te Pareoterawahiria Wetland	460	No	RDAM 2003 orthophotographs	1:5,000	High/Medium/Low/Very Low	Wetland extent appears to be less than that mapped in 1994.	Beadel 1994 (p 172).		
Ngapeke Road Wetlands	385	No	RDAM 2003 orthophotographs	1:5,000	Low	Wetland appears to follow the same boundaries as those drawn in 2000, although cannot accurately determine division between freshwater and saline wetland areas.	Wildland Consultants 2000 (map 17 of 22).		
Omokoroa Wetlands	511	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Waipapa Estuary Wetlands A	403	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 12).		
Waipapa Estuary Wetlands B	404	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 12).		
Wainui Estuary Wetlands B	412	No	vRDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 11).		
Motiti Wetlands	414	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		
Waiherehere Road Wetlands	434	No	RDAM 2003 orthophotographs	1:5,000	Medium	Difficult to determine extent from map in reference documents and part of the wetland was not mapped. Therefore any change in extent unknown.	Beadel 1992 (map sheet 5).		
Blue Gum Bay Wetland	502	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Reference map does not shown whole wetland and it is therefore difficult to determine extent. Therefore any change in extent unknown. Cannot accurately determine division between freshwater/saline wetland areas.	Beadel 1992 (map sheet 4).		
Wolseley Road Wetlands	423	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 1) and Wildland Consultants Ltd 2003 (Contract report 773a).		
Ongare Wetlands	424	No	RDAM 2003 orthophotographs	1:5,000	Medium/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown. Cannot accurately determine division between freshwater and saline wetland areas.	Beadel 1992 (map sheet 2).		
Matakana Wetland A	24	No	RDAM 2003 orthophotographs	1:5,000	Low	Difficult to determine extent from map in reference documents. Therefore any change in extent unknown.	Owen 1993 Vol II (p 1, site No's. 13, 14, 15, and 17).		
Matakana Wetland C	26	No	RDAM 2003 orthophotographs	1:5,000	Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Owen 1993 Vol II (p 1, site No. 18).		
Lakes Aroarotamahine and Te Paritu Wetlands	32	No	RDAM 2003 orthophotographs	1:5,000	Medium	No map available.	None		Contrast
Otamarakau Wetlands	243	No	RDAM 2003 orthophotographs	1:5,000	Low	No map available.	None		
Rangiwaea Island Wetlands	406	No	RDAM 2003 orthophotographs	1:5,000	Low/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1992 (map sheet 6).		
East Rangiwaea Island Wetlands	430	No	RDAM 2003 orthophotographs	1:5,000	Low/Very Low	Difficult to determine extent from map in reference document. Therefore any change in extent unknown.	Beadel 1992 (map sheet 6).		
Hogg Road Wetland A	508	No	RDAM 2003 orthophotographs	1:5,000	Medium	No reference	No reference		
Rangitaiki River Wetlands	271	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		Contrast, Colour
Lower Mangatiti Stream Wetlands	275	No	RDAM 2003 orthophotographs	1:5,000	Very Low	No map available.	None		Contrast, Colour
Mangorewa Forest (Southern Outlier) Wetlands	242	No	RDAM 2003 orthophotographs	1:5,000	Medium/Low	No map available.	None.		
Roy Road Lagoon	127	No	RDAM 2003 orthophotographs	1:5,000	High	No map available.	None.		
Wairoa River Wetlands	376	No	RDAM 2003 orthophotographs	1:5,000	Medium	Wetland appears to follow the same boundaries as those drawn in 2000, although cannot accurately determine division between freshwater and saline wetland areas.	Wildland Consultants 2000 (map 11 of 22).		
Lake Tamarenui Wildlife Management Reserve Wetlands	43	No	RDAM 2003 orthophotographs	1:5,000	Medium	No reference	No reference		
Reid Wetlands	437	No	RDAM 2003 orthophotographs	1:5,000	Low				

WETLANDS LISTED IN THE FWWDATABASE WHICH HAVE NOT BEEN MAPPED (EXCLUDING WETLANDS IN THE ROTORUA LAKES ECOLOGICAL DISTRICT) AND RECOMMENDED EDITS FOR THE FWWDATABASE

Table 1: Wetlands identified in the literature for which boundaries have not been mapped as wetland location or extent cannot be determined

Env BOP FWW Database Record No.	Wetland Name
108	Ngati Awa Wetland
391	Tunanui Stream Inlet
394	Wainui Stream Wetlands
327	Waitahanui Catchment Wetlands
333	Pikowai Stream Wetlands A
334	Pikowai Stream Wetlands B
102	Stones Bush Wetlands ¹
506	Te Puna Stream Mouth Wetland B
239	Kopurererua Stream Wetlands B
241	Tautau Stream Wetlands
107	Te Kooti Road Block Wetland
247	Butler Covenant
349	Onekawa Wetlands
244	Waitahanui

Table 2: Wetland database entries for which boundaries have not been digitised and which should be deleted from the database as there is no evidence on the RDAM to suggest a freshwater wetland is present

Env BOP FWW Database Record No.	Wetland Name
427	Waitekohe Stream Mouth

¹ The location of this wetland could not be determined from the RDAM or information in the FWW Database. However, a wetland within the FWW Database appears to be present to the east of #102 at NZMG E2774110, N6369218.

Table 3: Wetlands for which the level of confidence in the mapped boundaries has been reduced due to the poor quality of RDAM 2003 orthophotographs in those locations

Env BOP FWW Database Record No.	Wetland Name
556	Tirohanga Wetland A
260	Upper Pekepeke Stream (quarry) Wetlands
73	Te Pohue Wetlands
132	Otamatea Mire
355	Lake Pouarua Wetlands
278	Otangimoana Wetlands
275	Lower Mangatiti Stream Wetlands
63	Whakatane Estuary Wetlands
363	Rangitaiki Conservation Area Wetlands
77	Matamanu Wetlands
386	Waitao Stream Wetlands
433	Okikimoto Point Wetlands
429	Turner Road Wetlands
466	Pihouai Wetlands
356	Moutohora (Whale Island) Wetland
74	Hanamahihi Wetlands

Table 4: Recommended changes/updates to be made to the FWWDatabase

Site	Recommended Changes (Updates)
24	Additional centrepoints should be added as follows: 2775865 6408876 2775531 6408841 2775789 6408811 2775335 6408765 2775312 6408689 2775570 6408631
560	Delete centrepoint 2838369 6352353
107	Te Kooti Road Block Wetland - change name to Te Kooti Road Block Wetlands
437	Change name to Reid Wetlands