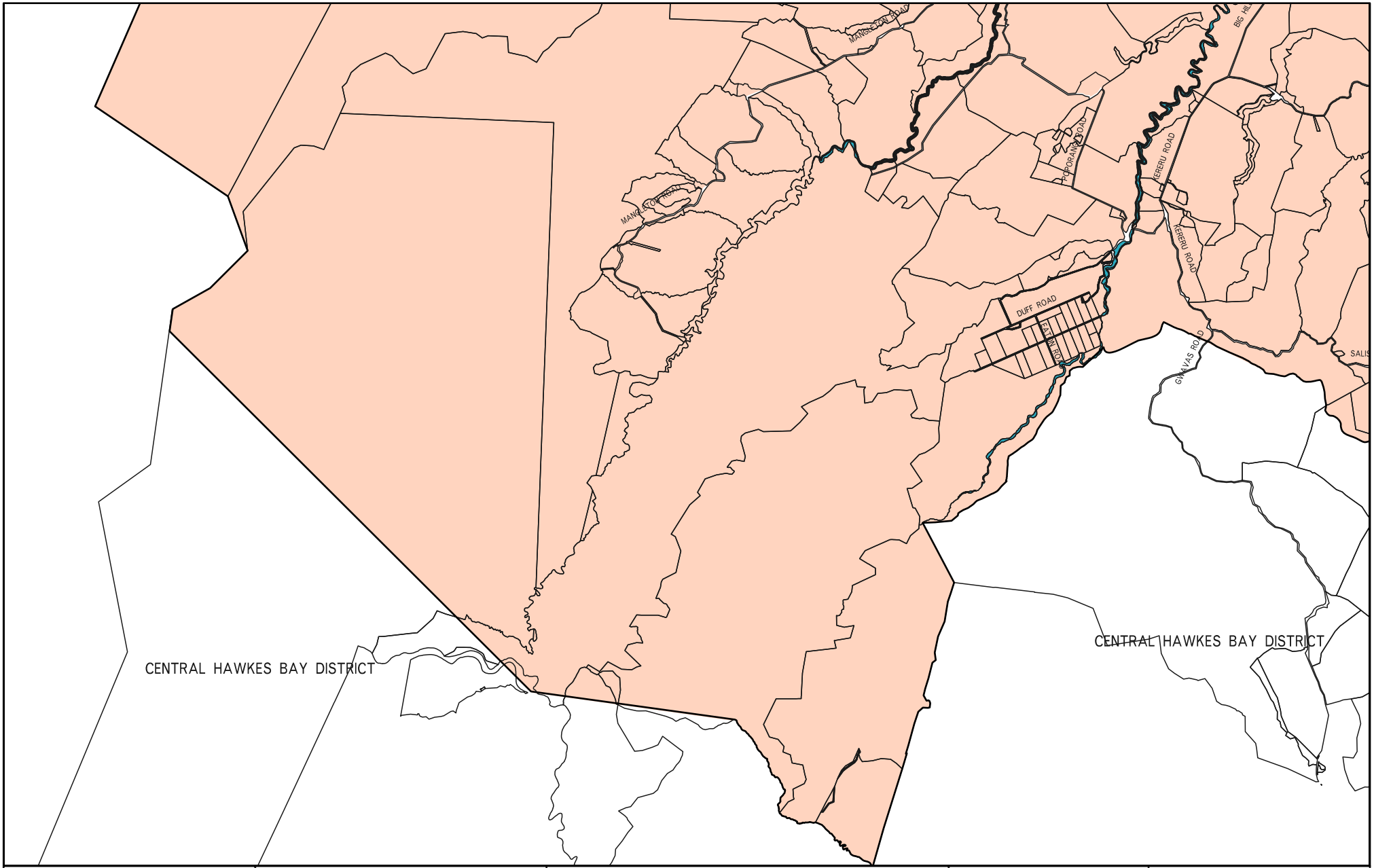
APPENDIX C

HASTINGS DISTRICT PLANNING MAPS



HASTINGS DISTRICT COUNCIL

N

June 2003

District Plan Zones

Scale 1:100000

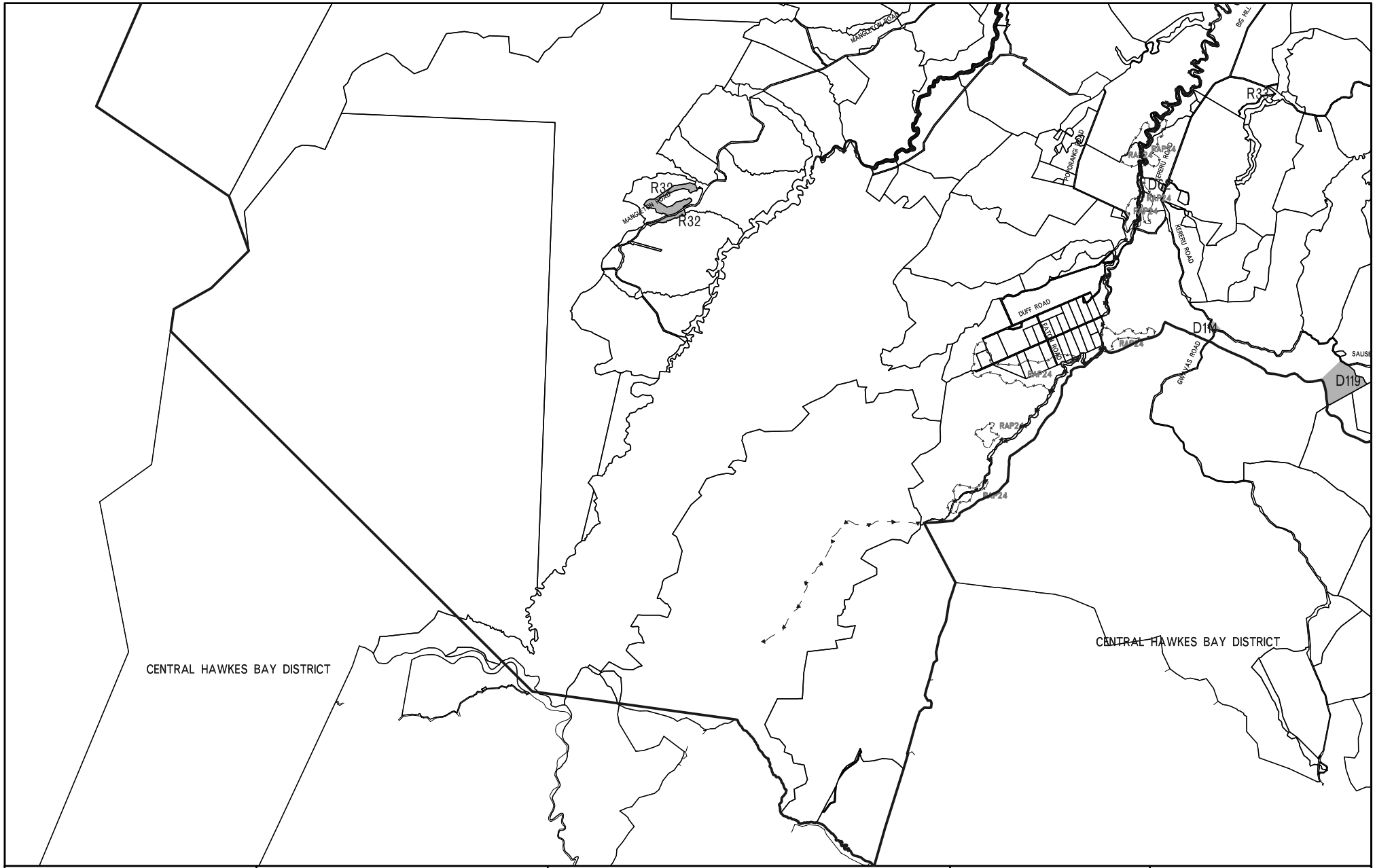
100 0 100 200 300 400

Metres

13	14
16a	17
	20

DATA SOURCE
Cadastral information derived from the Land Information New Zealand's Core Record System (CRS).

DISCLAIMER
The Hastings District Council cannot guarantee that the data shown on this map is 100% accurate.



HASTINGS DISTRICT COUNCIL

N

June 2003

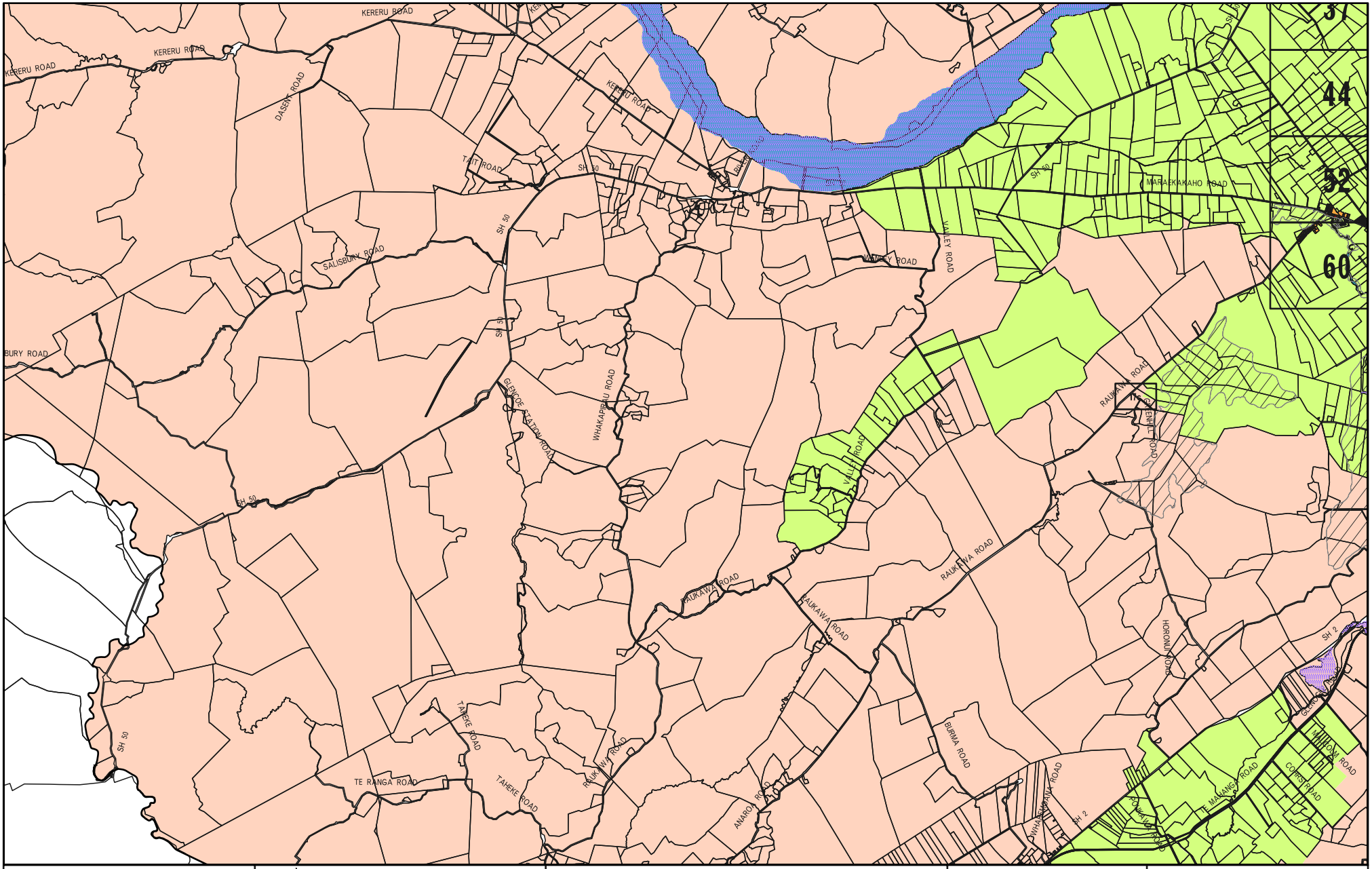
District Plan Designations

Scale 1:100000

0.5 0 0.5 1 1.5 2

Kilometres

13	14
16b	17
	20


KERERU ROAD
DASSON ROAD
TAIT ROAD
SH 50
SALISBURY ROAD
GLENCOE STATION ROAD
WHAKAPIRU ROAD
VALLEY ROAD
MARAEKAKAHO ROAD
RAUKAWA ROAD
TE RANGA ROAD
TAHEKE ROAD
ANAROA ROAD
BURMA ROAD
HOROMONOHOROMONO ROAD
SH 2
TE MANANGA ROAD
CORFS ROAD
37
44
52
60
17a
13
14
15
16
18
20
21
HASTINGS DISTRICT COUNCIL
N
June 2003
District Plan Zones
Scale 1:100000
100 0 100 200 300 400
Metres
COPYRIGHT
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DATA SOURCE
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CROWN COPYRIGHT RESERVED
DISCLAIMER
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HASTINGS DISTRICT COUNCIL

May 2007

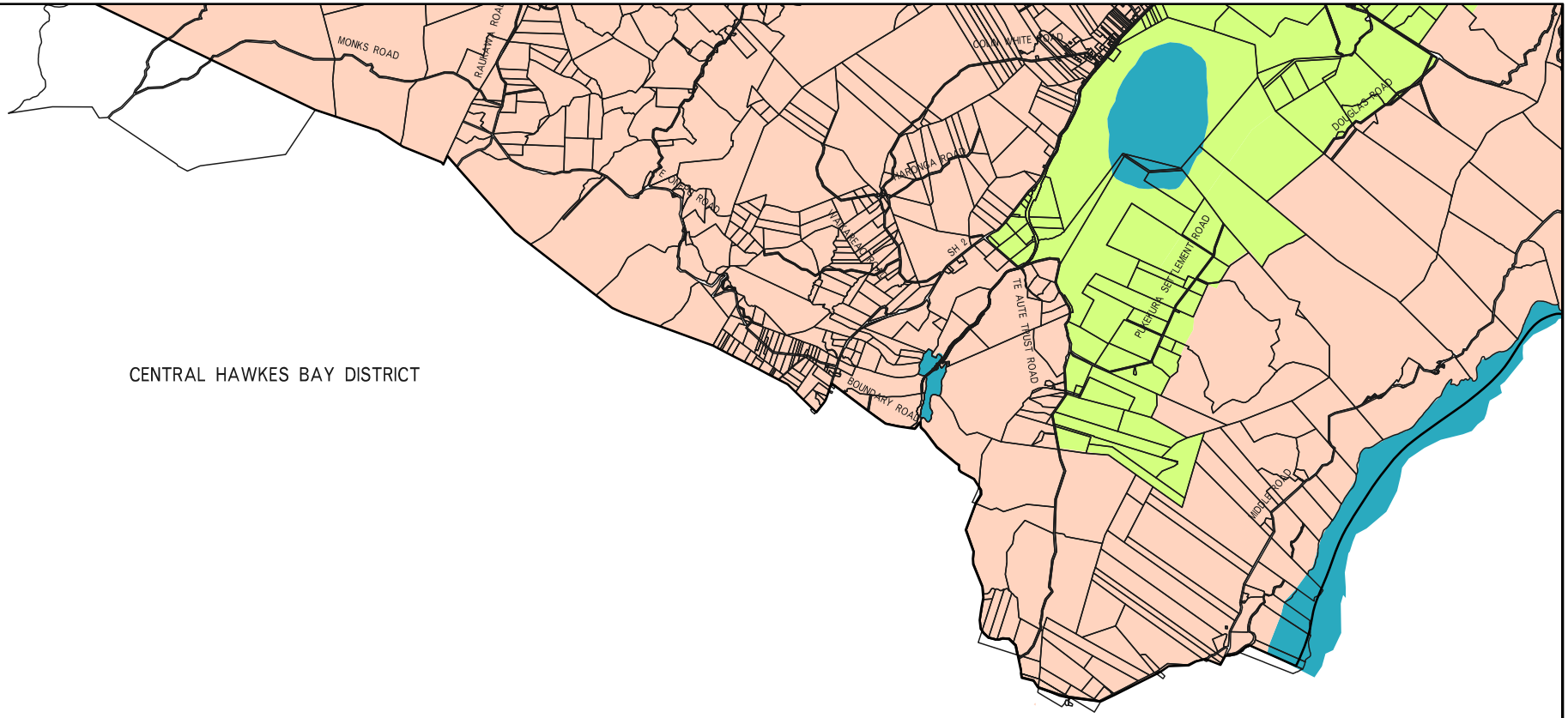
District Plan Designations

Scale 1:100000

0.5 0 0.5 1 1.5 2

Kilometres

13	14	15
16	17b	18
	20	21



CENTRAL HAWKES BAY DISTRICT

HASTINGS DISTRICT COUNCIL

N

June 2003

District Plan Zones

Scale 1:100000

100 0 100 200 300 400

Metres

16 17 18

20a

21

DATA SOURCE
Cadastral information derived from the Land Information New Zealand's Core Record System (CRS).

DISCLAIMER
The Hastings District Council cannot guarantee that the data shown on this map is 100% accurate.

CENTRAL HAWKES BAY DISTRICT

HASTINGS DISTRICT COUNCIL

June 2003

District Plan Designations

Scale 1:100000

0.5 0 0.5 1 1.5 2

Kilometres

16 17 18

20b

21

DATA SOURCE
Cadastral information derived from the Land Information New Zealand's Digital Cadastral Database (DCDB).

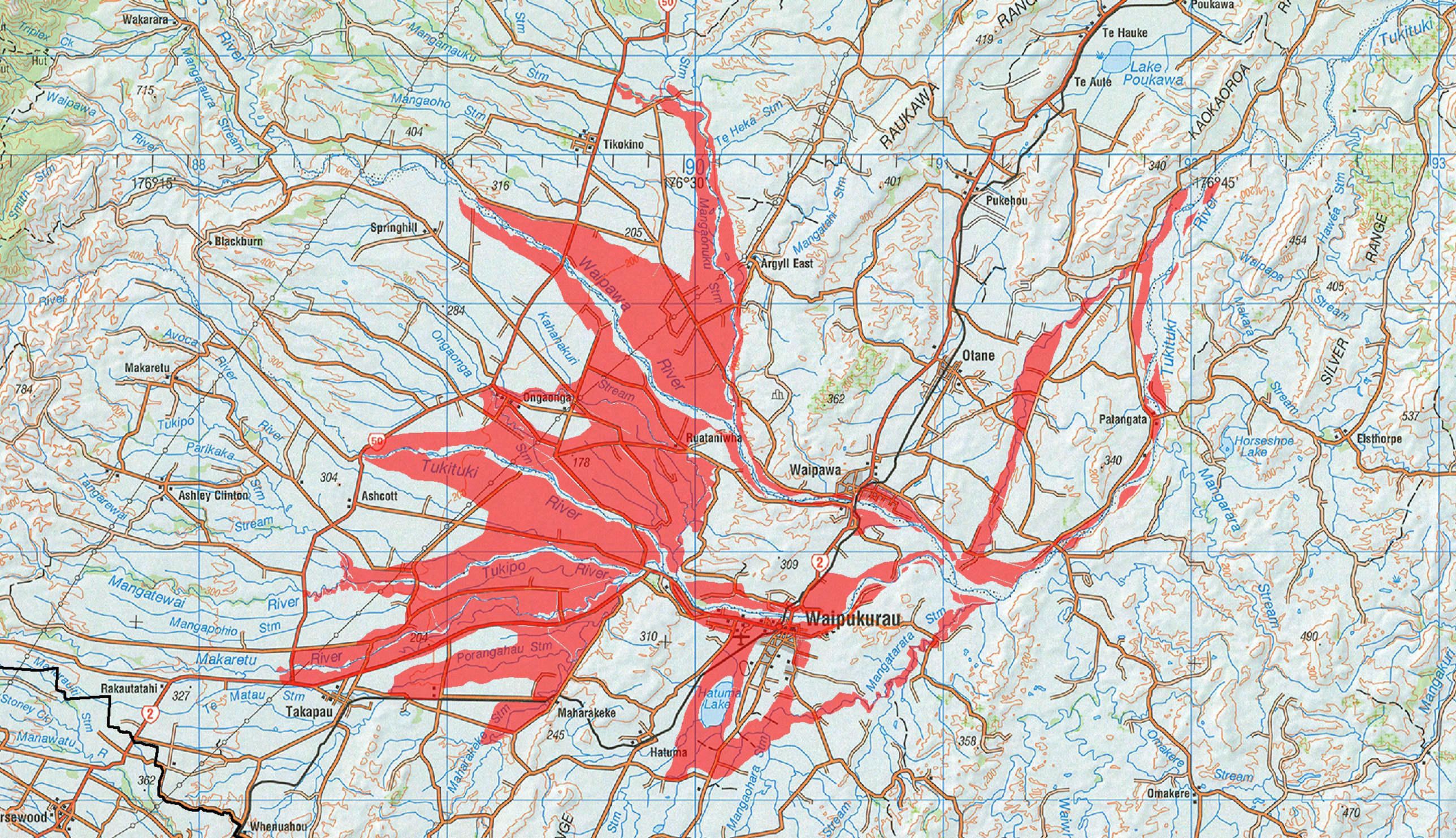
DISCLAIMER
The Hastings District Council cannot guarantee that the data shown on this map is 100% accurate.

Legend

- Rural Zone
- Rural Residential Zone
- Plains Zone
- Plains Residential
- General Residential
- Deferred General Residential
- Coastal Residential
- Central Commercial
- Commercial Service
- Central Residential Commercial
- Suburban Commercial
- Regional Sports Park
- Industrial 1
- Industrial 2
- Deferred Industrial 2
- Deferred Industrial 2 - Irongate
- Industrial 3
- Industrial 4
- Industrial 5
- Industrial 6
- Large Format Retail
- Te Mata Special Character Zone
- Restricted Building Area
- Tuki Tuki Special Character Zone
- River / Lakes
- Central Character Precinct
- Coastal RMU
- River RMU
- Flooding RMU - Clive, Southland, Te Awanga
- Haumoana Inundation RMU
- Flooding RMU - Karamu
- Land Instability RMU
- Lifestyle Area
- Coastal Environment Inland Boundary (Information Only)
- Coastal Environment Inland Boundary (Rule 15.1.7.3)
- Riparian Areas
- Riparian Areas - List 1
- Riparian Areas - List 2
- Prohibited Building Area
- Heretaunga Plains Unconfined Aquifer
- Recommended Areas for Protection (RAP)
- Contaminated Sites *(CS)*
- Designated Sites *(D)*
- Heritage Items *(H)*
- Marae *(m)*
- Outstanding Natural Features and Landscapes *(ONF)*
- Outstanding Trees *(T)*
- Railway (Designation No. 55)
- Reserves *(R)*
- Significant Landscape Character Areas *(SLC)*
- Waahi Tapu Sites *(W)*
- Lakes

APPENDIX D

MAP OF UPPER TUKITUKI FLOOD CONTROL SCHEME AREA


Wakarara
Triplex Ck
Hut
Waipawa River
Mangatoura Stream
Mangamauku Stm
Mangaoho Stm
Te Heka Stm
Tikokino
176°15'
176°30'
176°45'
Smith Stm
Springhill
Blackburn
Waipawa River
Mangaonuku Stm
Argyll East
Mangatahi Stm
RAUKAWA
Pukehou
Te Hauke
Poukawa
Lake Poukawa
Te Aute
KAOKAOROA
Tukituki River
Hawea Stm
Waipapa Stream
Makara Stream
RANGE
SILVER
Avoca River
Makaretu
Ongaonga Stream
Kahahakuri Stm
Ongaonga
Tukituki River
Ruataniwha
Otane
Patangata
Horseshoe Lake
Elsthorpe
Tukipo River
Parikaka Stm
Tangarewai Stream
Ashley Clinton
Ashcott
Waipawa
Mangatarara Stream
Mangatewai River
Mangapohio Stm
Tukipo River
Waipukurau
Porangahau Stm
Makaretu River
Rakautatahi
Te Matau Stm
Takapau
Stoney Ck
Manawatu R
Maharakeke
Maharakeke Stm
Hatuma Lake
Hatuma
Mangatarara Stm
Mangaohara Stm
Omakere Stream
Omakere
Waiwhare Stream
Whenuahou
rsewood
Mangakuri
50
2
715
404
316
205
284
784
419
401
340
454
405
537
362
178
304
309
310
204
327
245
358
470

APPENDIX E

GROUNDWATER CONTAMINATION REPORT

REPORT

Hawke's Bay Regional Investment Company Ltd

Preliminary Site Investigation for Ground Contamination
Ruataniwha Water Storage Scheme, 3083 Wakarara Rd Tikokino

Tonkin & Taylor

ENVIRONMENTAL AND ENGINEERING CONSULTANTS

REPORT

Hawke's Bay Regional Investment Company Ltd

Preliminary Site Investigation for Ground Contamination RuataniwhaWater Storage Scheme, 3083 Wakarara Rd Tikokino

Report prepared for:

Hawke's Bay Regional Investment Company Ltd

Report prepared by:

Tonkin & Taylor Ltd

Distribution:

Hawke's Bay Regional Investment Company Ltd	1 copy
Tonkin & Taylor Ltd (FILE)	1 copy

March 2013

T&T Ref: 27690.967 V5

Table of contents

Executive summary

Assessments undertaken

Tonkin & Taylor has been commissioned by Hawke's Bay Regional Investment Company Ltd to undertake a PSI for 3083 Wakarara Rd, Tikokino (Pt Sec 8 SO 7439). The property is one of a number which make up the area being re-developed with the Ruataniwha Irrigation Project. Part of the site will likely be used as a an aggregates screening plant during the construction phase of HBRIC Ltd's Ruataniwha Water Storage Scheme, and in the longer term it will be inundated by the water storage reservoir component of the Scheme .

This PSI has been undertaken in order to confirm, what current and historic activities have occurred at 3083 Wakarara Road, Wakarara, and what the potential is for these activities to have resulted in ground contamination. The work has been done without conducting a site visit other than for geotechnical assessment.

If an activity described in the Hazardous Activities and Industries List (HAIL) has been undertaken, the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NES (Soil)) potentially apply. The exception to this is if the site meets the definition of production land, as the NES (Soil) would be unlikely to apply.

To conduct the PSI, the following work was undertaken:

- Review Central Hawkes Bay Council property files;
- Review of a "Site Contamination Enquiry" and Regional Council records of pollution incidents;
- Review of selected historic aerial photographs dating back to 1951;
- Review of current and historic certificates of title;
- Interview with long-term employee Mr Peter Raynor to establish historic land uses and potentially contaminating activities;
- Preparation of this report documenting the findings of the investigation.

Results of assessments

Based on the historical review, saw mill activities were occurring in the eastern half of the site from 1926. A former worker at the mill, Mr Peter Raynor, recalled that sawdust from the mill was spread across the site. Historical aerial photographs showed earthworks/filling occurring along the northern tip of the eastern half of the site adjacent to the mill activities, likely to be the spreading of sawdust. Mr Raynor indicated that no timber treatment was undertaken at the site and therefore it is considered that no potential contaminants are associated with the filling activities. However, Mr Raynor did indicate that small amounts of diesel and petrol were stored at the site which were kept in drums and stored within a shed. Mr Raynor also indicated that the buildings at the mill were burnt down by the site owners after mill operations ceased in 1959.

NES applicability

As HAIL activities have occurred on site, the provisions of the NES potentially apply. As long as excavation within the former sawmill footprint is not carried out, further NES assessment is not required. The likelihood of significant contamination remaining within the former sawmill footprint is considered to be very low given

- it is not known whether a release did actually occur,

- the considerable degradation which is likely have occurred over the 50 years since the mill operations, and
- likely limited extent given the small quantities stored.

The key points of the regulatory assessment can be summarised as follows:

- The NES has been triggered by anecdotal evidence from an ex employee interview, that hydrocarbons were stored in drums at the site in small quantities, and that the mill was demolished by burning the buildings down.
- The HAIL activity identified triggering the NES is "Storage Tanks or drums for fuel, chemicals or liquid wastes".
- Potential contaminants from both activities are considered to only pose a low risk to potential receptors once the site is inundated.
- Potential contaminants from both activities are thought to only pose a low risk to site personnel and/or earthworks contractors if excavated. Further this risk can be managed by implementation of the CEMP.
- Permitted activity (PA) and consent requirements would potentially apply for excavations in the footprint of the former sawmill (HAIL activities), but can likely be met to establish a screening plant.
- It is not considered that inundation of the site with the proposed reservoir constitutes a 'change of use' for the purpose of the NES, as given the very low risk of significant contamination remaining, it would not be likely to harm human health.
- The Hawkes Bay regional plan contains a series of rules related to contaminated sites. The plan is operative, but only has limited rules related to contaminated land. While not a lot of information exists to assess the need for consent under the regional plan, given the nature of the past use of the site and proposed use, only a low potential for unacceptable risk is likely. Communication with HBRC staff indicates that based on the information available, no consent application is required.

Suggested approach for issues identified

Based on the above assessment we consider that the following options are available:

- The screening plant could be located away from the former HAIL activity (sawmill footprint) without needing to meet the requirements of the NES (Soil).
- If soil disturbance works are required within the footprint of the former sawmill, then they could be carried out to meet PA requirements, i.e. <350m^3 of soil disturbed given the HAIL footprint of 7,000m^2, and other conditions including health and safety controls and duration.
- Consent applications, supported by conditions requiring a site or contamination management plan, could be made on a discretionary basis. Appended to the project description report, is a draft Construction Environmental Management Plan (CEMP)[1] which provides guidance on management of contamination, should any be encountered. The construction issue of the CEMP should be updated to reflect the outcome of this PSI.

We note that further assessment of soil contamination, and if necessary consent application, could be undertaken in advance of the proposed works. However, given the uncertainty surrounding the layout of the former mill and fuel storage areas within the

[1] T&T, March 2013, *Ruataniwha Water Storage Scheme, Draft Construction Environmental Management Plan*, 27690.965

former sawmill footprint area, and low potential risk, we do not consider that this option is either practicable or necessary.

This PSI was undertaken by a suitably experienced contaminated land practitioner, as required by the NES Regulations (2012).

1 Introduction

Tonkin & Taylor has been commissioned by Hawke's Bay Regional Investment Company Ltd to undertake a preliminary contamination investigation (otherwise known as a preliminary site investigation or PSI) for 3083 Wakarara Rd Tikokino (Pt Sec 8 SO 7439) (referred to below as the site, **Map 1** and **Figure 1**). The property is one of a number which make up the area being re-developed with the Ruataniwha Irrigation Project.

This PSI was undertaken in accordance with our proposal of 18 February 2013.

Map 1: Site Location

1.1 Background

The Ruataniwha Water Storage Scheme proposed by Hawke's Bay Regional Investment Company Limited (HBRIC Ltd) will flood a 5km long section of the Makaroro River including part of the subject site where an historic sawmill site[2] was located. The proposed scheme will deliver water down the natural flow path of the Makaroro River to the Waipawa River where an intake structure will direct flow into canals and pipelines to provide irrigation to farms north and south of the Waipawa River.

The project site straddles both the Hastings District Council and Central Hawke's Bay District.

We understand that queries have been raised during the consent document completeness check by the Environmental Protection Authority (EPA) regarding whether the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES (Soil)) applies to the development.

[2] Clough and Associates Ltd, July 2012, *Ruataniwha Irrigation Project: Archaeological Assessment*

In particular, a question has been raised regarding whether there are any Hazardous Activities and Industries List (HAIL) activities at the site. The project description report[3] indicates that the historic sawmill site may be used for a screening plant during works. Appended to the project description report, is a draft Construction Environmental Management Plan (CEMP)[4] which provides guidance on management of contamination, should any be encountered.

If an activity or industry described in the Ministry for the Environment's HAIL list is being, or has been, undertaken on a site, the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES Soil) potentially apply if soil disturbance activities are to take place at the site.

The HAIL is a compilation of activities and industries that are considered to have the potential to cause land contamination resulting from hazardous substance use, storage or disposal. However the list merely indicates that such activities and industries have a greater probability of site contamination occurring than other uses or activities, not that hazardous substances are definitely present in the land.

To the extent applicable, the NES (Soil) requires that a PSI be undertaken to establish the need for further investigation and consents to support any soil disturbance and/or land development activities (above permitted activity thresholds). This PSI has been undertaken in order to confirm the current and historic activities that are occurring or have occurred at the site, and the potential for these activities to have resulted in ground contamination.

1.2 Objective and scope of work

1.2.1 Objective

As described in Section 1.1, this PSI has been undertaken in order to confirm current and historic activities at 3083 Wakarara Rd Tikokino (Pt Sec 8 SO 7439), including the site of an historic sawmill and the potential for these activities to have resulted in ground contamination on that property.

The broader site (Pt Sec 8 SO 7439) in question may be used for a screening plant during irrigation project preparation works. The plant could be distanced from the former mill buildings footprint. Once construction works are finalised the saw mill and adjacent property will be inundated when the Makaroro River is dammed. On this basis, the PSI has addressed the following:

- Identification of the sawmill buildings footprint such that the screening plant can be situated so as not to disturb the former footprint;
- Recommendations for the maximum annual volume of earthworks to excavate within the sawmill buildings footprint (should that be necessary) without incurring the requirement for further investigation or consent; and
- Eventual inundation of the part of the site.

1.2.2 Scope

The following scope of work was undertaken to meet the objectives outlined above:

- Review Central Hawkes Bay Council property files;
- Review of a "Site Contamination Enquiry" and Regional Council records of pollution incidents;

[3] T&T, March 2013, *Ruataniwha Water Storage Project Description Report*, 27690 Issue A
[4] T&T, March 2013, *Ruataniwha Water Storage Scheme, Draft Construction Environmental Management Plan*, 27690.965 Section 3.7

- Review of selected historic aerial photographs dating back to 1951;
- Review of current and historic certificates of title;
- Interview with long-term employee Mr Peter Raynor to establish historic land uses and potentially contaminating activities;
- Preparation of this report documenting the findings of the investigation.

This report documents our findings and comments on the potential for ground contamination at the site, in the context of the proposed development, including potential consenting implications.

1.3 Regulatory compliance

This report has been prepared in general accordance with the requirements for a PSI referred to in the NES (Soil) and as outlined in the MfE's Contaminated Land Management Guideline No. 1 "*Reporting on Contaminated Sites in New Zealand*".

The persons undertaking, managing, reviewing and certifying this PSI are suitably qualified and experienced practitioners as defined in the NES (Soil).

2 Site Description

2.1 Site identification

The site is located at 3083 Wakarara Road, Wakarara, Hawke's Bay (Figure 1). It is legally described as Pt Sec 8 SO 7439, certificate of title P1/656. The property covers area of 163ha and is irregular in shape.

A site walkover was not undertaken as part of this assessment, therefore current site features were identified by reviewing aerial photographs on Google Earth. The aerial photograph review indicated that the site appears to be used for pastoral purposes. It is therefore considered to currently be 'production land' as defined in section 2 of RMA.

A residential dwelling is present along the southern boundary of the site, and a forest is located in the western half of the site. The site is transected by a stream with drains to the Makaroro River.

A previous site walkover assessment undertaken by T&T (geotechnical) indicated that the historic saw mill site is mainly level ground, within a terrace observed in the northern tip of the eastern half of the site. The topography map[5] for the area indicates that the remainder of the site is of variable topography with bluffs identified in the northern areas of the site adjacent to the Makaroro River.

2.2 Surrounding land use and environment

The site is bound by rural residential properties to the west, Wakarara Road to the south and the Makaroro River to the north and east (see **Figure 2**).

2.2.1 Geology

The published geology beneath the site is described by Lee et al 2011[6] as a mixture of Mangaheie group and Kidnapper Group sediments. The Mangaheie group sediments comprise ridge forming limestone or sandstone horizons and basal conglomerate coarse grained sandstone and pebbly limestone layers. The Kidnapper Group sediments include basal fossiliferous sandstone overlain by conglomerate sandstone, carbonaceous mudstone, tephra and ignimbrite layers.

2.2.2 Hydrogeology and hydrology

Based on topography and proximity to the Makaroro River, groundwater is anticipated to occur at around 1-2m depth and predicted to flow in an easterly direction. Groundwater is anticipated to discharge to the adjacent Makaroro River.

The Makaroro River and deeper groundwater below the level of the stream is predicted to discharge to the Waipawa River located 9km south of the site (refer **Figure 1**) with the ultimate discharge point being the Hawke's Bay.

2.2.3 Sensitive Receptors

The proposal is to flood a 5km long section of the Makaroro River which will deliver water down the natural flow path of the river to the Waipawa River.

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[5] MapToaster 1:50,000{Topo50} + Sheet: BK37 v1:01 2009. Ltd 2011. Scale 1:33,333

[6] Lee, J.M; Bland, K.J; Townsend, D,B; Kamp, P.J.J. 2011. *Geology of the Hawke's Bay Area. Institute of Geological & Nuclear Sciences 1:250,000 Geological Map 8.*

The inundation of the site is likely to physically exclude direct human exposure, but creates a potential contaminant exposure pathway to the extent there are any significant contamination residues within the site, and they are mobilised following inundation. However, as discussed in Section 4 and 5 any risk to environmental receptors is considered highly unlikely to occur given the limited probability of any significant contamination, age and distance to receptors.

Should earthworks be required over the former mill footprint, potential receptors may also include earthworks contractors and plant personnel.

3 Site History

Historical information relating to the site has been collected from a variety of sources including a phone interview with a former employee of the saw mill, the Central Hawke's Bay Council property file and contamination enquiry, historic aerial photographs and current and historical certificates of title. This history focuses on on-site activities, except for the aerial photograph review where comments are also provided on readily observable surrounding land use. The information reviewed is summarised in the following sections.

3.1 Phone Interview

On 5 March 2013, T&T conducted a phone interview with Mr Peter Raynor (a former employee of the saw mill). The purpose of the interview was to establish historic land uses and potentially contaminating activities.

Mr Raynor indicated that the eastern half of the site was used as the Gardner and Yeoman sawmill which was operational between 1926 and 1959. The western half of the site was used for pastoral purposes. Prior to 1926 the entire site was covered in bush. Mr Raynor indicated that no timber treatment was carried out at the saw mill and milling activities were restricted to native timber. Mr Raynor also indicated that sawdust was spread across the sawmill site in places; however a big timber retaining wall was constructed to ensure no sawdust tailings entered the Makaroro River at the request of local community groups.

Mr Raynor indicated that drums of diesel and petrol were stored at the saw mill to refuel machinery. He noted that the drums were stored within a shed on a high platform approximately 30m from the mill. No other hazardous substances were known to have been stored at the site.

After the mill was closed the site owners burnt down the remaining buildings at the saw mill. The entire site has remained as a farm since the closure of the mill in 1959.

Mr Raynor also indicated that no sheep dipping has been undertaken at the site. He noted that sheep requiring treatment were taken to a neighbour's property approximately 2-3km away.

3.2 Site ownership

T&T conducted a review of current and historic certificates of titles. This information, combined with that obtained from the other historic information sources described in this section, indicates the following with respect to ownership and use of the site:

- The first available certificate of title for the site was issued in 1983 to Paul Edwards and William Bennett (Accountants). Older certificates of title references were available but were yet to be scanned and therefore were unavailable for review at the time of writing this report.
- The site was transferred in 1989 to a consortium of private owners. The ownership of the company was then transferred to Landcorp Investments Limited in 1990.
- The site was transferred to current owners Christopher Minehan and the Ruataniwha Trustees Limited in 1991.

Copies of the certificates of title are provided in Appendix B.

3.3 Historic aerial photographs

Historic aerial photographs obtained from NZ Aerial Mapping and Google Earth were reviewed. The aerial photographs obtained from NZ Aerial Mapping only covered the eastern half of the site where milling activities had occurred. Historical information suggests the western half of the site

was used for pastoral purposes and therefore historical aerials have not been reviewed for this area as part of this assessment. Relevant features of the site and surrounds are summarised from each aerial photograph in **Table 2**.

Table 2: Summary of aerial photograph review

Aerial photograph (date and source)	Key points identified	Surrounding land features
1951 1712/24 NZ Aerial Mapping	The northern tip of the eastern half of the site is used predominately for mill activities. Large industrial buildings occupy the middle of the mill site and are surrounded by residential houses and timber storage areas. The eastern extent of the mill site appears to be being disturbed by earthworks/filling at the time the photograph was taken. Small gravel roads transect the mill site. A bridge connecting the mill site to a forestry area on the opposite side of the Makaroro River is also present. The southern eastern area is mainly pastoral with a few residential dwellings. A road connecting Wakarara Road to the mill transects the site. A small stream which drains to the Makaroro River is also evident within the southern portion of the eastern area.	The surrounding land use is pastoral in nature. The Makaroro River meanders around the northern tip of the eastern half of the site.
1963 1567/C3 NZ Aerial Mapping	Mill buildings still remain however no mill operations (timber storage etc) were evident in the aerial photograph. The northern boundary has also changed in size and shape, due to changes to the size and shape of the Makaroro River since the 1951 aerial photograph. The northern boundary is now narrower with the Makaroro river now flowing through the former eastern extent of the mill area. The eastern half of the northern tip of the site appears to have been disturbed by earthworks/filling at the time the photograph was taken. No other apparent changes have occurred at the site since the 1951 aerial photograph.	Industrial sized buildings are now located on the property to the south of the site. A road has been constructed on the property to the north of the site (on the other side of the Makaroro River).

Aerial photograph (date and source)	Key points identified	Surrounding land features
1975 2800/F4 NZ Aerial Mapping	A large industrial building evident in the 1963 aerial photograph has been demolished. Tree logs were scattered across the demolished building's location. All other buildings identified in the previous aerial photographs remain. The area identified as having earthworks in the 1963 aerial now appears to be pastoral. No other apparent changes have occurred at the site since the 1963 aerial photograph.	An industrial sized building has now been constructed on the property directly north of the site (on the other side of the Makaroro River). A large horticultural/planted forestry area is also now evident on this property. No other apparent changes have been made to the surrounding area since the 1963 aerial photograph.
2006 Google Earth	The buildings evident within the eastern half of the site in the previous aerial photographs have been removed. The bridge which joined the northern tip of the eastern half of the site with the property on the other side of the Makaroro River has also been removed. The site (including the western area) is now pastoral in nature. A dwelling is present along the southern boundary within the western half of the site. An area of recent earthworks is also evident within the middle of the western half of the site. A stream transects the earth worked area and drains to the Makaroro River. The centre of the site is covered in trees.	The southern surrounding area is pastoral in nature, while the northern area is now dense forest.
2010 Google Earth	Small scale land disturbance appears to have occurred within the eastern half of the site and near the western boundary. No other apparent changes have occurred since the 2006 aerial photograph.	The southern property has undergone recent earthworks since the 2006 aerial photograph. No other apparent changes have been made to the surrounding land use since the 2006 aerial photograph.

3.4 Council property file review

The property file for 3083 Wakarara Road, Wakarara was obtained from Central Hawkes Bay District Council and reviewed by Rob Christie (HBRC) at the council offices. The files were reviewed to identify potential on site sources of onsite contamination. The file contained a number of building consents and a resource consent application for a camping grounds licence. No files relevant to ground contamination were found. The building consents issued for the site included:

- A building permit was issued in 1969 for the construction of a super bin shelter;
- In 1973 a building permit was issued for additions to cattle yards;
- A building permit was issued in 1974 for the construction of a hay barn;
- In 1976 a building permit was issued for the extension of sheep yards;

- A building permit was issued in 1977 for a dwelling addition;
- In 1979 a building permit was issued for the construction of a woolshed;
- A building permit was issued for the construction of a toilet block in 1980.
- In 1985, a building permit was issued for the construction of a toilet block and a planning consent was granted for a camping grounds licence.
- A building permit was issued in 1992 for the construction of a free standing solid fuel burner;
- In 1999, a building consent was issued for the installation of an inbuilt fire place.
- A building consent was issued in 2011 for the installation of a freestanding fireplace.

A discussion with Bronwyn Swanson, Regulatory Services Officer at Central Hawkes Bay District Council revealed that there was no mention of the former mill site in any of the files. A search of the council's database also revealed that there were no separate hazardous files held for the site.

3.5 Council contamination enquiry

A contamination site enquiry was made over the phone to Mr Fred King, the Pollution Incident Officer at the Hawke's Bay Regional Council (HBRC).

Mr King indicated that no incidents relating to contamination had been recorded for the site. Email correspondence between T&T and Mr King is included in **Appendix C**.

4 Site characterisation

4.1 Potential for contamination

A portion of the site (eastern half) has been used as a saw mill between 1926 and 1959. The western half of the site was used for pastoral activities. Since 1959, the entire site has been used for farming activities. A phone interview with Mr Peter Raynor (a former employee of the saw mill) indicated that no timber treatment had been undertaken at the mill site. However, a small amount of diesel and petrol was stored in drums to refuel machinery and was kept in a shed on a high platform at the site. A large controlled fire was also used to demolish buildings associated with the mill.

The PSI has identified HAIL activities were undertaken (or likely to have been) in the piece of land associated with the mill activities at the site. The inferred locations of these activities are presented on **Figure 2.**

The activities, potential contaminants and an assessment of the potential magnitude of the effects are presented in **Table 3.**

Table 3: Potential for contamination

Land use/activity	Potential contaminants	Magnitude, possible extent and likelihood of contamination	HAIL Activity reference
Storage of diesel and petrol in drums.	Hydrocarbons	Shallow subsurface soils beneath and directly surrounding storage areas and potential refuelling points. **Potential for risk of contamination in respect of this proposal: *Low***	Yes Activity – Storage tanks or drums for fuel, chemicals or liquid waste. (HAIL A17)
Fire used to demolish buildings	Hydrocarbons, heavy metals.	Shallow subsurface soils beneath buildings demolished by fire. **Potential for risk of contamination in respect of this proposal: *Low***	Yes (HAIL I)

During the discussion with Mr Raynor, it was confirmed that sawdust was spread across the site. Mr Raynor also indicated that a retaining wall was built to contain the sawdust to ensure the sawdust did not enter the River. As Mr Raynor confirmed that no timber treatment was undertaken at the site there are no potential contaminants associated with the filling activities. The council property file also noted that extensions to sheep yards were granted in 1976. Mr Raynor confirmed that no sheep dip was located at the site.

4.2 Conceptual site model

As stated in Section 4.1, the information reviewed during this assessment indicates that the eastern half of the site has been used as a saw mill between 1926 and 1959. The entire site has been used for pastoral purposes since 1959. HAIL activities have occurred at the potential site of the screening plant (refer Section 4.1). Contamination from these activities (if any) is likely to be confined to the shallow subsurface soils in the fuel storage and delivery areas and former buildings.

A conceptual model of the site has been developed from available published and site information. A conceptual site model identifies geological, hydrological and hydrogeological site conditions, possible contaminants and potential exposure pathways.

The site environmental setting, **Section 2**, sets out the available information. As previously discussed, the site is located on a mixture of geological types comprising limestone, sandstone and mudstone layers. The site's northern and eastern boundary is bound by the Makaroro River. Small streams also transect the site which drains to the Makaroro River. A previous T&T walkover assessment indicated that the topography of the site is relatively flat. A review of aerial photographs indicates that the site is mainly grassed with limited internal gravel roads. Groundwater is approximately 1-2m below ground surface.

For there to be an effect from soil disturbance works (if these are carried out) there has to be a contamination source and a mechanism (pathway) for contamination to affect human health or the environment (receptor). This is the source-pathway-receptor model.

Given that

- only small volumes of fuel would have been stored;
- the storage was aboveground (as opposed to underground) and releases are more evident to site users;
- the time elapsed since any release is greater than 50 years and natural attenuation including biodegradation is likely to have significantly decreased the levels of any released hydrocarbons;
- the nature of any contamination associated with a building fire is unlikely to be significant given the type and construction of the structures. The fire was used for demolition purposes and contents of value are likely to have been removed;

it is considered that the potential for contamination to be present in any significant quantities is very low.

Nevertheless, the **Table 4** summarises the source-pathway-receptor assessment for possible environmental and human health risks associated with the low potential for a release, should earthworks be required.

Table 4: Summary of potential effects if soil disturbance works are carried out

Potential Source	Pathway	Onsite Receptors	Offsite Receptors
Although a release has not been confirmed, if present soil contamination would likely consist of hydrocarbons and metals above background concentrations	Excavated materials becoming dry and creating dust that could be inhaled Dermal contact and ingestion of contaminated soil due to poor hygiene practices during land disturbance work.	Maintenance/ excavation and other onsite workers during soil disturbance works.	Future site users following development works.
	Mobilisation during rainfall events or via dust during land disturbance work		Flora and fauna in nearby surface water body (Makaroro River directly adjacent to the site)
	Leaching of contaminants	Underlying groundwater and surface water of the Makaroro River.	

Potential Source	Pathway	Onsite Receptors	Offsite Receptors
	Excavated materials disposed to a landfill		Flora and fauna related to the landfill disposal site.

For inundation (as discussed above), any risk to environmental and human-health receptors is considered highly unlikely to occur given the limited probability of any significant contamination, small footprint in regards to the reservoir size, age or potential contamination, distance to receptors. Further, the intended use of water from the Scheme is principally for irrigation application to production land, not human consumption.

5 Regulatory Implications

The rules and associated assessment criteria relating to the control of contaminated sites in the Hawke's Bay region are specified in the following documents:

- NES (Soil);
- The Central Hawke's Bay District Plan (District Plan) and the Hastings District Council Plan; and
- The Hawke's Bay Regional Resource Management Plan (Regional Plan).

The NES (Soil) and District Plan consider issues relating to land use and the protection of human health while the Regional Plan has regard to issues relating to the protection of the general environment, including ecological receptors. The following assessment, against these regulatory requirements, forms the basis of our evaluation of the need, or otherwise, for contamination related consents relevant to the site redevelopment.

5.1 NES (Soil)

5.1.1 Applicability

The NES (Soil) came into effect on 1 January 2012. The main objectives of the NES (Soil) are to set out nationally consistent planning controls appropriate to district and city councils for assessing contaminants in soil and to provide a set of chemical specific soil contaminant thresholds or soil contaminant standards (NES contaminant standards) that define an adequate level of protection for human health for a range of differing land uses in New Zealand.

All territorial authorities (district and city councils) are required to give effect to and enforce the requirements of the NES (Soil) in accordance with their functions under the Resource Management Act (RMA) relating to contaminated land. As a result the NES (Soil) now prevails over the rules in the District Plan, except where the rules permit or restrict effects that are not dealt with in the NES (Soil).

NES contaminant standards for 12 priority contaminants were derived and published in the MfE Users' Guide. The NES (Soil) requires that the MfE's *Contaminated Land Management Guideline No.2 – Hierarchy and Application in New Zealand of Environmental Guideline Values* (MfE Guideline No. 2) be used where an NES contaminant standard is not provided. However, the NES (Soil) does not consider environmental receptors, accordingly the application of guidelines relevant to environmental receptors shall be implemented according to MfE Guideline No.2 and any relevant rules in Regional Plans.

The NES (Soil) also includes a series of requirements related to soil disturbance, soil sampling, fuel systems removal, subdivision and land use change for any given piece of land. The Users' Guide sets out a number of methods to assess if the NES (Soil) apply to a piece of land. The User's Guide clarifies (Page 13) that in referring to the term "piece of land" the NES (Soil) is intending to be specific, and that activities may take place within a broader site, but still not trigger application of the NES (Soil), if it is not likely that the HAIL activity in question took place on that broader area. On that basis, the following table (**Table 5**), as provided in the NES (Soil) Users Guide (April 2012), indicates that the NES (Soil) does not apply to the activity outside the former sawmill footprint.

Table 5: PSI checklist as applied to activity outside of the HAIL (former sawmill) footprint

NES (Soil) Requirement	Applicable to site?
Is an activity described on the HAIL currently being undertaken on the piece of land to which this application applies?	No
Has an activity described on the HAIL ever been undertaken on the piece of land to which this application applies?	No
Is it more likely than not that an activity described on HAIL is being or has been undertaken on the piece of land to which this application applies?	No
If 'Yes' to any of the above, then the NES for Assessing and Managing Contaminants in Soil to Protect Human Health may apply. The five activities to which the NES applies are:	
Is the activity you propose to undertake removing or replacing a fuel storage system or parts of it?	No
Is the activity you propose to undertake sampling soil?	No
Is the activity you propose to undertake disturbing soil?	No
Is the activity you propose to undertake subdividing land?	No
Is the activity you propose to undertake changing the use of the land?	No (refer discussion below)
Conclusion: The NES (Soil) does not apply unless earthworks are to be carried out for a screening plant within the former sawmill footprint.	

We note that if the site is considered to be production land (as defined in Section 2 of the Resource Management Act 1991 to be for production of primary products including agricultural) then based on Regulation 5 (8 (b) the NES (Soil) would not appear to apply if the only activity proposed was soil disturbance for the purpose of creating a screening plant (rather than residential buildings). Based on regulation 5(8) (d) however, the NES (Soil) applies if there is a change of use of the site such that is no longer production land, as would be the case if a screening plant was constructed, and potentially following inundation. However, it is considered that a land use change would not trigger NES (Soil) requirements for the HAIL site. This because regulation 5(6) of the NES (Soil) states that it applies to any change of use that is 'reasonably likely to harm human health'. For the reasons set out above at Section 4.2, this is not considered to be the case.

The inference then is that if the site is considered to be production land, soil disturbance and land use change associated with a screening plant may not be considered to trigger the NES (Soil), given the contaminant levels which remain (if any) would not be expected to be at concentrations which would pose a risk to human health under this proposed temporary use.

If regulation 5 (8) is not deemed relevant, then the NES would apply to soil disturbance activities within the former sawmill footprint itself, as the relevant 'piece of land'. Section 5.1.2 below discusses the permitted activity requirements should land disturbance be required in the former sawmill footprint.

5.1.2 Permitted activity requirements

The NES (Soil) sets out a number of rules related to soil disturbance, soil sampling, fuel systems removal, subdivision and land use change. Soil sampling, fuel systems removal and subdivision are not applicable to the proposed works, as shown in Table 6.

The NES (Soil) Users' Guide sets out a number of methods to assess whether the proposed works could be classed as permitted, controlled, restricted discretionary or discretionary, assuming the NES applies. The following table assesses the proposed works against the NES (Soil) Permitted Activity conditions in the event that soil disturbance activities within the former sawmill footprint are required.

Table 6: NES (Soil) Permitted Activity assessment in the event that land disturbance is required within the former sawmill footprint (Regulation 8(3))

NES (Soil) Land Disturbance Permitted Activity conditions	Assessment
(a) Implementation of controls to minimise exposure of humans to mobilised contaminants.	CAN COMPLY- If controls are in place to prevent mobilisation of contamination.
(b) The soil must be reinstated to an erosion free state within one month of completing the land disturbance.	CAN COMPLY- If the area of land disturbance is reinstated to an erosion free state on completion of the works.
(c) The volume of the disturbance of the piece of land must be no more than 25 m^3 per 500 m^2.	CAN COMPLY- Volume of disturbance proposed at the site is currently unknown. However, earthworks required to prepare for a screening plant are likely to meet this requirement. (350m^3 based on an area of 7,000m^2)
(d) Soil must not be taken away unless it is for laboratory testing or, for all other purposes combined, a maximum of 5 m^3 per 500 m^2 of soil may be taken away per year.	CAN COMPLY- Unlikely that any soil will need to be removed to prepare for operation of a screening plant.
(e) Soil taken away must be disposed of at an appropriately licensed facility.	CAN COMPLY- If soil removed from site is disposed to an approved facility.
(f) The duration of land disturbance must be no longer than two months.	CAN COMPLY- The duration of the earthworks is currently unknown. However, earthworks required to prepare for a screening plant are likely to meet this requirement.
(g) The integrity of a structure designed to contain contaminated soil or other contaminated materials must not be compromised.	NOT APPLICABLE - as there are no structures containing contamination within the area subject to land disturbance.

5.1.3 Implications

As discussed in Section 4.2 above, it is considered that there is very low potential for the HAIL activities to have resulted in a release of contaminants at the site. Any such release is likely to be very limited in magnitude and extent. Nevertheless, the former HAIL activities mean that if soil disturbance works are carried out within the former sawmill footprint , and proposed works do not meet the provisions of a Permitted Activity under the NES (Soil) Regulation 8(3)(4), to the extent applicable, consent would be required under the NES.

If soil disturbance works are carried out in the HAIL activity footprint that meet the volumes specified by the NES, then the works could be carried out as a permitted activity (PA). Given earthworks required to prepare for a screening plant are likely to be low, it is likely this work could be carried out as a PA.

If NES consent is required:

- soil sampling and testing (completion of a Detailed Site Investigation (DSI)) would be required to understand whether the activity would need a controlled or restricted discretionary consent. Sampling and testing would help identify the nature of any contamination and be useful in identifying offsite disposal requirements, as required.
- Without a DSI, the activity is restricted discretionary and would require preparation and implementation of a management plan.

If the investigation indicates that contaminants are at or below background concentrations, then the NES no longer applies (NES regulation 5 Application (9)).

In summary then, given the PA and consenting requirements outlined above, the screening plant could be located away from the former HAIL activity, and on that basis the works could be carried out with needing to meet the requirements of the NES (Soil). If works are required within the footprint of the former sawmill, then they could be carried out to meet PA requirements, i.e. <350m^3 of soil given the HAIL footprint of 7,000m^2, and other conditions including health and safety controls and duration (see Table 7).

The HAIL activity footprint is shown on Figure 2.

Appended to the project description report, is a draft Construction Environmental Management Plan (CEMP)[7] which provides guidance on management of contamination, should any be encountered. The construction issue of the CEMP should be updated to reflect the outcome of this PSI.

5.2 Regional Plan applicability

5.2.1 Hawkes Bay Regional Resource Management Plan

The Hawkes Bay Regional Resource Management Plan (HBRRMP) became operative on 28 August 2006. The HBRRMP includes a series of rules relating to the discharge of contaminants to land and water. These rules principally relate to agricultural discharges, which are not relevant to ground/soil contamination. However, Rule 52 addresses discharges that do not comply with other Rules in the plan and states that "discharges of contaminants onto or into land, or into water, or water into water which do not comply with other rules in the plan are a discretionary activity". .

The HBRRMP defines contaminated land as:

"a site which hazardous substances or organic waste occur at concentrations above background levels and where assessment indicates it poses, or is likely to pose, an immediate or long-term hazard to human health or the environment. Background levels refer to ambient levels of a contaminant in the local area of the site under consideration".

[7] T&T, March 2013, *Ruataniwha Water Storage Scheme, Draft Construction Environmental Management Plan*, 27690.965 Section 3.7

5.2.2 Implications

, Given the nature of the past use of the site and proposed use, only a low potential for unacceptable risk is likely. Communication with HBRC staff indicates that based on the information available, no consent application is required. However, if observations during further work at the site indicate that circumstances are otherwise, then this should be re-assessed[8].

We understand that regional plan Resource Consents are being sought for all other relevant discharges associated with the Water Storage Scheme.

5.3 District Plan applicability

As noted in Section 5.1 the NES (Soil) now prevails over the rules in the District Plan, except where the rules permit or restrict effects that are not dealt with in the NES.

The District Plan does not include any rules more restrictive than those set out in the NES (Soil) thus District Plan provisions have not been considered further.

[8] Malcolm Miller, Consents Manager, HBRC, e-mail dated 13 March 2013

6 Conclusions and recommendations

Tonkin & Taylor has been commissioned by Hawke's Bay Regional Investment Company Ltd to undertake a PSI for 3083 Wakarara Rd, Tikokino (Pt Sec 8 SO 7439). The property is one of a number which make up the area being re-developed with the Ruataniwha Irrigation Project. Part of the site will likely be used as a an aggregates screening plant during the construction phase of HBRIC Ltd's Ruataniwha Water Storage Scheme, and in the longer term it will be inundated by the water storage reservoir component of the Scheme .

This PSI has been undertaken in order to confirm, what current and historic activities have occurred at 3083 Wakarara Road, Wakarara, and what the potential is for these activities to have resulted in ground contamination. The work has been done without conducting a site visit other than for geotechnical assessment.

If an activity described in the Hazardous Activities and Industries List (HAIL) has been undertaken, the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NES (Soil)) potentially apply. The exception to this is if the site meets the definition of production land, as the NES (Soil) would be unlikely to apply.

Based on the historical review, saw mill activities were occurring in the eastern half of the site from 1926. A former worker at the mill, Mr Peter Raynor, recalled that sawdust from the mill was spread across the site. Historical aerial photographs showed earthworks/filling occurring along the northern tip of the eastern half of the site adjacent to the mill activities, likely to be the spreading of sawdust. Mr Raynor indicated that no timber treatment was undertaken at the site and therefore it is considered that no potential contaminants are associated with the filling activities. However, Mr Raynor did indicate that small amounts of diesel and petrol were stored at the site which were kept in drums and stored within a shed. Mr Raynor also indicated that the buildings at the mill were burnt down by the site owners after mill operations ceased in 1959.

As HAIL activities have occurred on site, the provisions of the NES potentially apply. As long as excavation within the former sawmill footprint is not carried out, further NES assessment is not required. The likelihood of significant contamination remaining within the former sawmill footprint is considered to be very low given

- it is not known whether a release did actually occur,
- the considerable degradation which is likely have occurred over the 50 years since the mill operations, and
- likely limited extent given the small quantities stored.

The key points of the regulatory assessment can be summarised as follows:

- The NES has been triggered by anecdotal evidence from an ex employee interview, that hydrocarbons were stored in drums at the site in small quantities, and that the mill was demolished by burning the buildings down.
- The HAIL activity identified triggering the NES is "Storage Tanks or drums for fuel, chemicals or liquid wastes".
- Potential contaminants from both activities are considered to only pose a low risk to potential receptors once the site is inundated.
- Potential contaminants from both activities are thought to only pose a low risk to site personnel and/or earthworks contractors if excavated. Further this risk can be managed by implementation of the CEMP.

- Permitted activity (PA) and consent requirements would potentially apply for excavations in the footprint of the former sawmill (HAIL activities), but can likely be met to establish a screening plant.
- It is not considered that inundation of the site with the proposed reservoir constitutes a 'change of use' for the purpose of the NES, as given the very low risk of significant contamination remaining, it would not be likely to harm human health.
- The Hawkes Bay regional plan contains a series of rules related to contaminated sites. The plan is operative, but only has limited rules related to contaminated land. While not a lot of information exists to assess the need for consent under the regional plan, given the nature of the past use of the site and proposed use, only a low potential for unacceptable risk is likely. Communication with HBRC staff indicates that based on the information available, no consent application is required.

Based on the above assessment we consider that the following options are available:

- The screening plant could be located away from the former HAIL activity (sawmill footprint) without needing to meet the requirements of the NES (Soil).
- If soil disturbance works are required within the footprint of the former sawmill, then they could be carried out to meet PA requirements, i.e. <350m^3 of soil disturbed given the HAIL footprint of 7,000m^2, and other conditions including health and safety controls and duration.
- Consent applications, supported by conditions requiring a site or contamination management plan, could be made on a discretionary basis. Appended to the project description report, is a draft Construction Environmental Management Plan (CEMP)[9] which provides guidance on management of contamination, should any be encountered. The construction issue of the CEMP should be updated to reflect the outcome of this PSI.

We note that further assessment of soil contamination, and if necessary consent application, could be undertaken in advance of the proposed works. However, given the uncertainty surrounding the layout of the former mill and fuel storage areas within the former sawmill footprint area, and low potential risk, we do not consider that this option is either practicable or necessary.

This PSI was undertaken by a suitably experienced contaminated land practitioner, as required by the NES Regulations (2012).

[9] T&T, March 2013, *Ruataniwha Water Storage Scheme, Draft Construction Environmental Management Plan*, 27690.965

7 Applicability

This report has been prepared for the benefit of Hawke's Bay Regional Investment Company Ltd with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

The persons undertaking, managing reviewing and certifying this PSI are suitably qualified and experienced practitioners as defined in the NES Soil.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor Ltd by:
.....	.....
Chris Bailey	Shane Moore
Senior Environmental Engineer	Project Director

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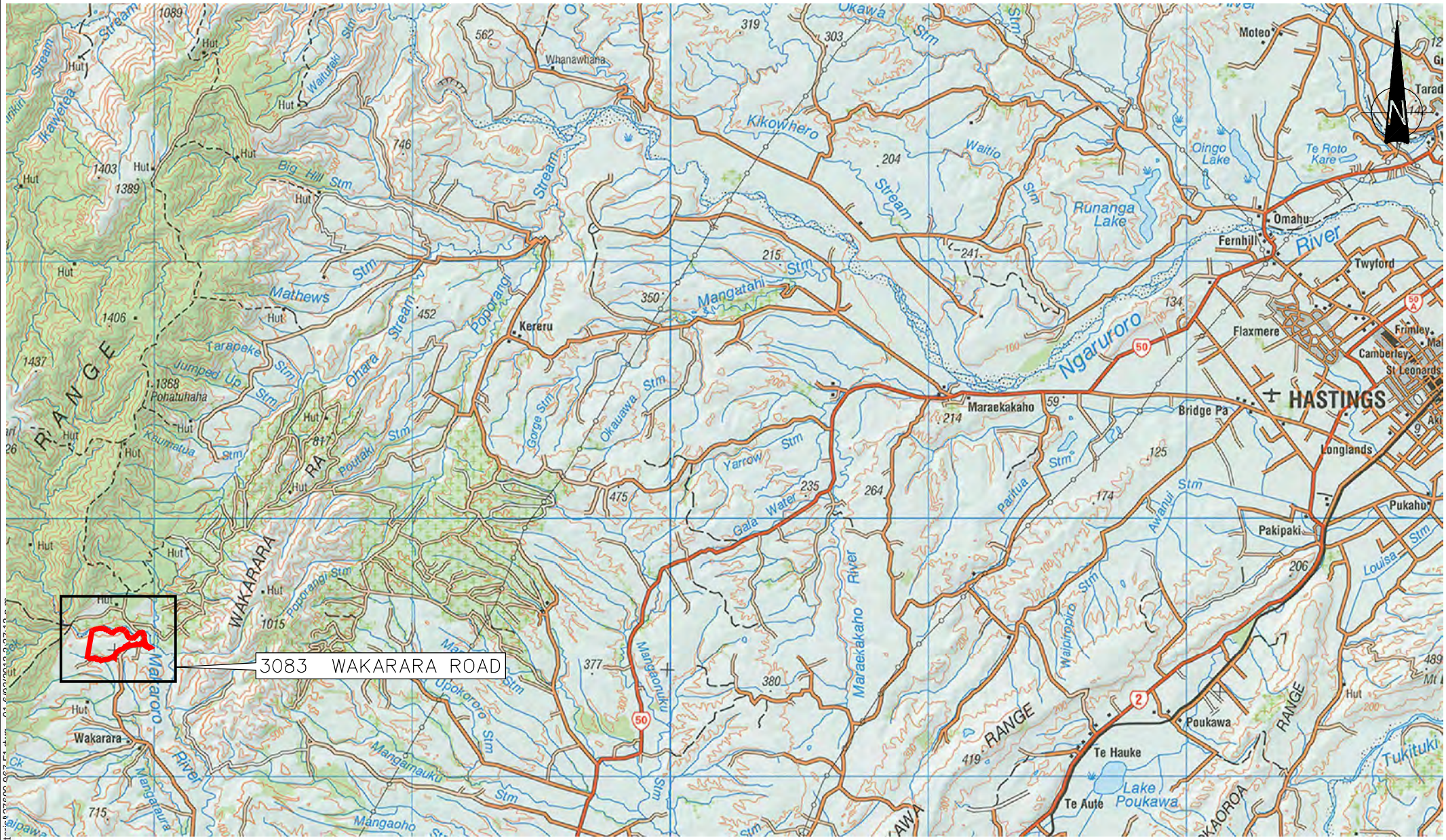

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HAWKE'S BAY REGEONAL

INVESTMENT COMPANY

PRELIMINARY SITE INVESTIGATION

Location Plan

FIG. No. Figure 1

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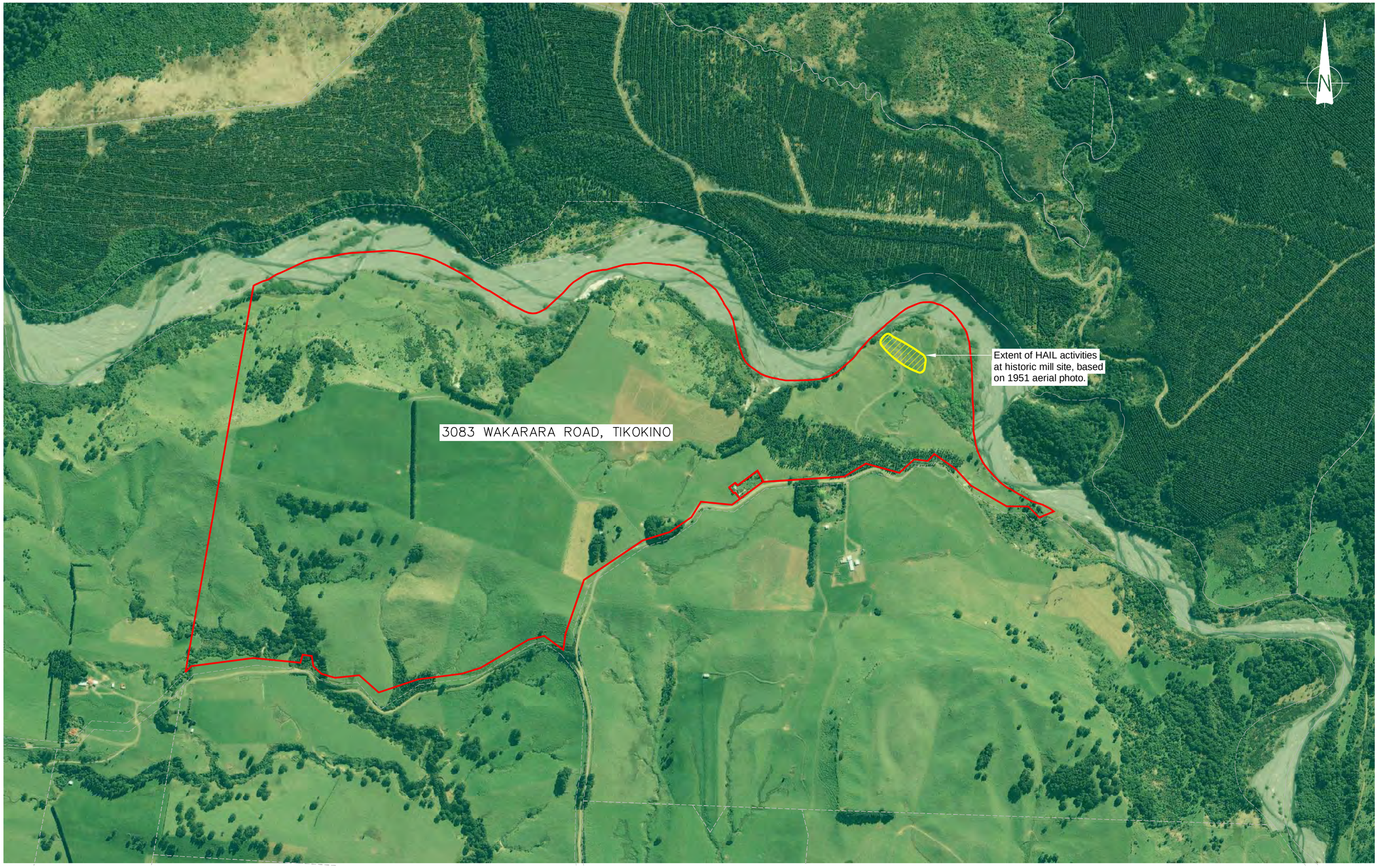

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HAWKE'S BAY REGIONAL
INVESTMENT COMPANY
Preliminary Site Investigation
Site Plan

FIG. No. Figure 2

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