

For the Attention of:

**Juliet Johnson,
District Planning Lead Policy**

Request for Private Plan Change and Application to Vary Consent Notice

Requestee/Applicant: Oakura Farm Park Limited

Lodged by:



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15/03/2018 @ 1400 hrs.

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REQUEST FOR PRIVATE PLAN CHANGE

(together with application for variation of Consent Notice 9696907.4)

OAKURA FARM PARK LIMITED
WAIRAU ROAD – SURF HIGHWAY SH45, OAKURA

Prepared by: **COMBER CONSULTANCY**
RMA & ENVIRONMENTAL PLANNING
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Executive Summary

Oakura Farm Park Ltd is proposing to develop its remaining farmland at Oakura for residential and rural lifestyle living. The development proposal, to be known as 'Wairau Estate', includes adjoining land at 132 Upper Wairau Rd and other adjoining land fronting SH45 South Road owned by Powerco and surplus to its requirements. The total area for consideration is some 64ha.

All of the land included in the proposal is zoned Rural Environment Area in the Operative New Plymouth District Plan with a portion of the land (some 13ha) identified for Future Urban Development.

Before the proposed development can be undertaken it is necessary for the company to have a zoning change approved by the District Council. To this end a Private Change Request is being applied for pursuant to the provisions of the Resource Management Act 1991. If approved (and subject to the variation of a Consent Notice attaching to a portion of the site) this will result in the zoning of the subject land being changed from Rural to Residential and Rural Lifestyle with approximately 395 lots being available for settlement.

The land included in the Request has been subject to a wide range of technical investigations to evaluate its suitability for land use change. These include ecology, landscape, archaeology, historic heritage, land stability, infrastructure, traffic and traffic noise. These reports have concluded that the land is suitable subject to the proposed urban and rural lifestyle development being undertaken in accord with current land subdivision and development standards with attention being given to the mitigation of any potential adverse environmental effects that have been identified. The natural gullies that feature though the site will be retained and enhanced with plantings.

A vision for the development of the area has been produced and a comprehensive urban design prepared. To help to ensure the vision is implemented and to give certainty to the community of the future direction of development it is proposed that this be incorporated into the District Plan statutory framework by means of a Structure Plan.

The vision also proposes that the SH45 South Rd/Wairau Road intersection be redesigned as a roundabout with an accompanying pedestrian underpass under SH45. This will facilitate traffic efficiency and safety at the intersection as Wairau Estate is settled while at the same time addressing a long-standing traffic safety concern for Oakura residents.

Tangata Whenua have been consulted. Discussions have been held with the state highway controlling authority. To inform the community of the proposal a website has been developed and community engagement undertaken through a series of public meetings.

The Wairau Estate proposal is long-term. Following the extension of existing trunk mains for water supply and sewer services to the site, development is planned to proceed in a logical and sequential manner. Sections will be developed in stages of approx. 10-30 lots and released for sale in response to demand. Based on an average uptake of 10 -15 sections per year, Wairau Estate will take some 20-40 years to be fully developed.

If approved, Wairau Estate will be able to deliver a continual supply of serviced residential lots long term. This will contribute to supporting and sustaining present and future generations at Oakura enabling them to provide for their social, economic, and cultural well-being and for their health and safety. This development will also contribute positively to the wider District.

16 March 2018

New Plymouth District Council
Private Bag 2025
New Plymouth 2025

Attention:

Rowan Williams, Team Leader Consents; and
Juliet Johnson, Environmental Policy – Planning Lead
Hamish Wesley – Senior Consultant Planner

REQUEST FOR PRIVATE PLAN CHANGE: OAKURA FARM PARK LTD

Part 1 – Introduction

1.1 Background

‘Oakura Farm Park’ is a tract of rural land at Oakura, lying to the south of Wairau Road and with Surf Highway SH 45 on its western boundary.

In 2010 the land owner, Oakura Farm Park Ltd, sought and obtained from the Council consent for the subdivision and development of a portion of the Farm Park land holding for rural-residential lifestyle. This development, known as “The Paddocks”, is accessed from Upper Wairau Road via Pahakahaka Drive and Ekuarangi Place.

A hallmark of the development is the retention of the natural land features, and the maintenance and enhancement of the natural vegetation. All the original vegetation, including the natural water courses, has been protected as Open Space for future generations under a Queen Elizabeth II (QEII) Trust Covenant.

Oakura Farm Park Ltd now considers the time is right to proceed with the development of the remaining land in the company’s ownership.

An adjoining property at 132 Upper Wairau Rd, in the ownership of LM Thurman and JM Williams, and through which road access will pass, together with some surplus Powerco land, is also incorporated in this request.

In summary, this Request seeks to rezone the described land from Rural Environment Area, some of which is already identified in the District Plan for Future Urban Development, to enable residential subdivision and development to occur (together with an area for rural lifestyle living).

As a separate application, but to be considered in conjunction with the Request, a variation to Consent Notice 9696907.4 attaching to the Oakura Farm Park property is also sought.

1.2 The Applicant

Applicant: Oakura Farm Park Limited
c/- Comber Consultancy
PO Box 517
New Plymouth 4340

1.3 Extent of Area subject to Request

Area A:

Site Address: 156 Upper Wairau Road and 1215-1277 South Road, Surf Highway 45, Oakura

Legal Description: Lot 29 DP 497629 being 62.5880ha more or less.

Land Owner: Oakura Farm Park Ltd

Note: The area of Lot 29 subject to this Request does not include the area subject to a QE II Covenant adjoining "The Paddocks" subdivision. Excluding the QEII area 'E' (on LT 497629 27/5/2016) comprising some 5.9305ha the net area of Lot 29 subject to this request is some 56.6575ha.

Area B:

Site Address: 132 Upper Wairau Rd, Oakura

Legal Description: Lot 3 DP 21111 being 1.3090ha more or less

Land Owner: LM Thurman and JM Williams

Area C:

Site Address: 1235 State Highway 45

Legal Description: Part of Pt Sections 14 Oakura District being an area of 5,094m² to be purchased from Powerco Limited. – Refer scheme plan in Appendix 1

Land Owner: Powerco Ltd

Refer Appendix 1 for copy of Computer Freehold Register for each Area.

Note: From hereon Areas A, B and C are referred to together as the 'subject land' or 'subject site'. Where discussed separately, Area B is referred to as the 'Thurman' site.

1.4 Statutory Basis for the Request

The subject land is within the Rural Environment Character Area of the Operative New Plymouth District Plan. A portion of the land is subject to the Further Urban Development (FUD) Overlay.

The relevant maps of the Operative New Plymouth District Plan to be affected by the Request, namely A60, A61, E2 and E3 are included in Appendix 2.

The applicant desires to develop the land for urban and rural lifestyle living. To achieve this a change of environment area is required.

This request is made pursuant to Clause 21 (1) of Part 2 of Schedule 1 of the Resource Management Act 1991 (herein after referred to as 'RMA '). For completeness Clause 21(1) is restated in full:

Any person may request a change to a district plan or a regional plan (including a regional coastal plan).

Clause 21 (3A) provides that no request may be made to change a policy statement or plan earlier than 3 years after the date on which a statement or plan becomes operative. Clause 25 provides that a local authority may reject a Request where it affects a plan that has been operative for less than two years.

The New Plymouth District Plan became operative on 15 August 2005. The most recent planning provision change materially affecting the subject site was Plan Change 15, Future Urban Development Overlay. This became operative on 25 March 2013.

Clause 22 states:

22 Form of request

- (1) A request made under clause 21 shall be made to the appropriate local authority in writing and shall explain the purpose of, and reasons for, the proposed plan or change to a policy statement or plan and contain an evaluation report prepared in accordance with section 32 for the proposed plan or change.*
- (2) Where environmental effects are anticipated, the request shall describe those effects, taking into account clauses 6 and 7 of Schedule 4, in such detail as corresponds with the scale and significance of the actual or potential environmental effects anticipated from the implementation of the change, policy statement, or plan.*

To satisfy the requirements of Clause 22 this Request is set out in as follows:

Part 1 - Introduction

Part 2 – Purpose and Reasons

Part 3 – Schedule of Changes Requested

Part 4 – Section 32 Evaluation Report

Part 5 – Assessment of Effects on the Environment

Part 6 – Statutory Considerations

Part 7 - Appendices

1.5 Application to vary Consent Notice

Background

Incorporated with this Request is an application to vary Consent Notice 9696907.4.

The Oakura Farm Park property, Lot 29 DP 497629 (Area A as previously described) has a Consent Notice attached to it.

Lot 29 is the balance area of the original Oakura Farm Park property resulting from the creation of "The Paddocks" rural/residential lifestyle subdivision approved by the Council in 2011 (Ref: NPDC RC45196 8 March 2011 – Hearing Commission decision).

A number of conditions relating to the 2011 resource consent were attached to the resulting Lot 29 by a Consent Notice pursuant to s221 of the Resource Management Act 1991.

A copy of the Consent Notice 9696907.4 is included in Appendix 1

Clause 4 of the Consent Notice states:

'4. Lot 29 shall not be further subdivided while the land remains in the Rural Environment Area.'

The purpose of the Consent Notice, as discussed through the course of "The Paddocks" hearing before Commissioner Helen Tobin, was to assist in preserving the views of the foreground and setting of the Kaitake Ranges Outstanding Natural Landscape (ONL), particularly when viewed from SH45.¹

However, the Commissioner noted that the receiving environment about the then proposed Paddocks development was 'a very busy' landscape and could be described as 'not typically rural'.¹

'The Paddocks' hearing also considered the Oakura Structure Plan 2006 (OSP) and the Future Urban Development (FUD) area in relation to the subject site. The Commissioner noted that, while arrived at through a community consultative process, the OSP was not a statutory planning document (and this remains its current status). In making reference to the FUD area she noted that it was a proposal within the then Proposed Plan Change 15 and that it (the FUD area) would be 'a question for the future' in conjunction with Plan Change 15.²

Plan Change 15, including the FUD area on the subject site, was subsequently incorporated into the Operative District Plan on 25 March 2013. This is shown as an Overlay on Planning Map A61.

One side of the FUD 'Triangle' on the subject site extends from Wairau Rd southward along SH 45, i.e. the road frontage boundary of the site, for some 600m. The southern boundary of the subject site intersects with the SH 45 boundary some 400m further south.

¹ Hearing Commission Decision – 8 March 2011 – e.g. ref pgs 52, 53, 57,58

² Hearing Commission Decision – 8 March 2011 – pg 87

The Triangle occupies the foreground of the view toward the Kaitake Range when viewed from SH45 for an average depth of approx. 250m. The topography rises across the FUD area some 10-12 metres vertically from the SH45 boundary.

Putting aside the current Request, were the FUD overlay triangle of some 12ha affecting the subject site to proceed to rezoning for residential development, by way of either landowner or Council initiative, one outcome impinging on the visual foreground when viewed from SH45 could be expected. A noise attenuation bund along the 600m of SH45 several metres in height would be an almost certain requirement by NZTA (as an affected party) out of concern to avoid reverse sensitivity issues for the road controlling authority. The alternative of not providing an attenuation bund and setting development back a minimum of 80m from the SH (NZTA default position) would severely impact the economics of such development as the lot yield would be significantly reduced.

An attenuation bund would be some 2-4m in height and would visually occupy the immediate foreground when viewed from the SH45 from the Wairau Rd intersection for a distance of approx. 600m. If one could view over the bund from the State Highway the near foreground would most likely be occupied by residential urban form (e.g. dwellings outbuildings, fences, landscaping etc), Even with building height limitations to a single story (6m) urban built form would be visible in the foreground; however, the Kaitakes' would remain the dominant backdrop landscape feature.

It can be noted that the attenuation bund in the proposed Structure Plan extends for a similar distance along SH45 to that that would be required to protect the FUD area. The remaining 400m on the road fronting travelling south will front the residential-rural Rural E Environment where an attenuation bund will not be necessary as any dwellings will be able to located a minimum of 80m distant from the SH road frontage.

Thus, an noise attenuation bund along the state highway frontage for a distance of some 600m would be, more likely than not, a feature of both the FUD only area and the scheme proposed in this Request. Also common to both options (Options 2 and 3 respectively)³ would be urban development in the near foreground but eastward of the bund.

Having regard to those properties in 'The Paddocks' subdivision that may have a view westward toward the coast, these properties are situated approx. 20m to 35m in vertical elevation above the SH45 ground level some 600m – 900m distance. The QEII covenant area separates these properties from the proposed Wairau Estate. While many of these properties currently have distant sea views out to the horizon it could be expected that as the supplementary plantings within the QEII area mature that these distant views will diminish, with the development within the Structure Plan area being screened at least partially, or fully in some instances). The 6m building height limit and low reflectance exterior surfaces will further mitigate the views of the build form from 'The Paddocks' when viewed toward SH45.

The lowest peak of the Kaitake Range lies directly to the south of the subject site and is some 210m in height above SH45, some 1.2kms distance. The highest peak of the Kaitakes' is situated some 3kms further southeast of the lower peak and is some 570m above SH 45 when viewed from the road boundary of the subject site.

³ Part 4 – Section 32 Evaluation Report

The Kaitake Range is the dominant 'backdrop' landscape feature in the Oakura environs with the best views from SH45 when travelling toward Oakura being obtained from approx. 5kms to the north of the township.

The form of this Request for Plan Change is to include all of Lot 29 within a Structure Plan to enable the subject site to be 'comprehensively planned to facilitate an integrated approach to and development while addressing site specific issues to provide for accessible, connected, efficient, liveable communities and coherent urban spaces.'⁴

The comprehensive design incorporated within the Structure Plan provides for a mix of residential, rural-residential (with an equestrian emphasis) open space, business and roads. The Structure Plan and a spatial yield analysis is shown in Appendix 11.2.

If the Request is approved the future development of the area will be controlled wholly by the provisions of the Structure Plan. This will effectively remove the subject area from the Rural Environment Area.

Following approval of the Request, it is proposed that development of land within the Structure Plan area will proceed in stages. The Staging Concept Plan is shown in 2.2.7 below.

Based on anticipated demand for lots it is envisaged the staged development will be progressed by a series of subdivision plans over a number of years. This will result in the current Lot 29 as a balance area progressively reducing in area until the present Lot 29 has been fully subdivided consistent with the Structure Plan.

Variation Sought

To give effect to the Structure Plan application is made on behalf of Oakura Farm Park Limited pursuant to section 221 (3) (a) of the Resource Management Act 1991 to vary Consent Notice 9696907.4 to amend Clause 4 of the said Consent Notice to read as follows:

'4. Subdivision of Lot 29 is permitted subject to such subdivision being in accord with the Structure Plan incorporated within Plan Change XX as approved by the New Plymouth District Council on xxx and subsequently incorporated in the Operative District Plan as Plan Change No.xx.'

Statutory Considerations

s221 (3) (a) of the Resource Management Act 1991 states:

At any time after the deposit of the survey plan, -

(a) the owner may apply to a territorial authority to vary or cancel any condition specified in a consent notice:

s221 (3A) of the RMA states:

Sections 88 to 121 and 127(4) to 132 apply, with all necessary modifications, in relation to an application made... under subsection (3)

⁴ NPDC Operative District Plan: Objective 23 – The need to comprehensively plan for future urban development.

In summary, the relevant applicable sections include:

- s88 – Application to be in prescribed form with Assessment of Environmental Effects.
- s92 – Council may request further information
- s95 – Time limit for TA to decide notification (10wd)
- s95A - Notification at TA discretion
- 95E - Deciding if person an affected person where effects minor or more than minor
- s96-101 – Matters related to submissions, hearings etc.
- s113 – 116 – Matters relating to giving of decisions
- s127(4) - When considering who is adversely affected TA must consider original submitters and others who may be affected by change or cancellation

There is no specific guidance as to the class of application that should be sought to vary a Consent Notice. However, having regard to the ‘with all necessary modifications’ directive of s221 (3A) we suggest the following approach would be appropriate:

- The originating application for “The Paddocks” subdivision was for a non-complying activity.
- The Commission treated the application as a non-complying activity and gave its decision pursuant to s104B of the RMA.⁵
- Accordingly, taking a ‘like for like’ approach, this application for variation of the subject Consent Notice is submitted as an application for non-complying activity.
- Having regard to s127(4), and again on a ‘like for like’ basis, we consider all original submitters to ‘The Paddocks’ application should be individually notified of the application to vary the Consent Notice.
- The Council may also consider others to be affected by the variation sought to include the current owners of lots within ‘The Paddocks’ subdivision.
- The Assessment of Environmental Effects set out in the Request covers matters that are relevant for consideration in the application to vary the Consent Notice, and specifically include consideration of landscape and rural character. We are not aware of any other AEE matters that need to be considered specific to the variation of Consent Notice.

1.6 The Planning Approach

Following a preliminary assessment of Lot 29 for development purposes it was concluded that to limit consideration of residential development within Lot 29 to the Future Urban Development (FUD) area in the north western aspect of the site would be an inefficient use of the available land resource. It was apparent that in imposing the triangular shape of the FUD on the topography, little, if any, consideration appears to have been given to the future development of the available land for urban use.

⁵ Hearing Commission Decision – 8 March 2011 – pg 92

It is also clear that Clause 4 of the Consent Notice does not contemplate the prohibition of the further development of Lot 29 for all time, but rather, only for so long as '...the land remains in the Rural Environment Area.'

Following this initial assessment it was then decided to adopt a design-led approach to plan for the future urban use of Lot 29 in a comprehensive, integrated and 'best use' manner. The design-led approach enabled consideration of options for a more efficient use of the land resource (than provided if limited to the FUD area) while at the same time respecting the natural features to ensure they would contribute positively to urban settlement of the area.

The design-led approach also takes into account a number of land-supply and demographic factors including the location of Lot 29 at the Oakura urban fringe, the long-experienced absence of any serviced greenfield sites for residential growth at Oakura to meet 'natural' demand, expressions of interest from a long-time aging resident population expressing a desire to downsize but remain living in Oakura and the absence of lots catering for the local equestrian community.

The design-led approach has also identified transportation improvements to the local roading network (i.e. roundabout and pedestrian underpass) that will address longstanding community road safety concerns and also contribute positively and significantly to traffic efficiency and safety for present and future generations.

A comprehensive assessment of the suitability of Lot 29 for development in accord with the proposed Structure Plan has been undertaken. The results of these various assessments are included in the appendices to this Request.

The overall conclusion of these various assessments is that Lot 29 is suitable for and has the capacity to absorb the urban development that the Structure Plan will facilitate recognising the various development controls that will apply to address the identified actual and potential adverse effects.

The Kaitake Range will continue to be the dominant landscape feature to the Oakura environs and the retention of the Consent Notice in its present form is far outweighed by the economic, social, environmental benefits that will flow from implementation of the requested plan change.

Part 2 – Purpose and Reasons

2.1 Purpose

The purpose of this Plan Change Request is to seek specified changes to the Operative New Plymouth District Plan to rezone the subject land from Rural Environment Area (with part Future Urban Development overlay) to Residential Environment Area (with a limited area adjoining for rural lifestyle living) and to comprehensively plan for the proposed change in landuse facilitated through the statutory planning mechanism of a Structure Plan.

2.2 Reasons

The primary reasons for making this request include:

2.2.1 Available

The applicant, Oakura Farm Park Ltd, wishes to make the subject site available for residential development. The company, under the leadership and direction of Director Mike McKie, is experienced in land development having successfully delivered, to a high standard, “The Paddocks” development lying to the east and adjoining the subject site. (Ref: NPDC SUB10/45196).

The fact that the subject site, being of the size that it is and essentially in one ownership, together with a willing and capable applicant, is not a common occurrence in the New Plymouth District. This almost unique set of circumstances will help to ensure that the proposal can be delivered in an integrated and holistic fashion and to a high standard.

2.2.2 Timely

As at the date of lodging this Request, a search of three websites (i.e. open2view.com; realestate.com and trademe.co.nz) revealed there were no ‘greenfield’ serviced land available for purchase for residential settlement (i.e. on which to build new dwellings) within any part of the Oakura Residential Environment Area. Further, as far as can be ascertained, there are no land owners of other Rural FUD overlay land at Oakura who are currently contemplating or have an appetite to undertake land development that will cater for the urban expansion of Oakura.

The recent historic rate of residential development at Oakura is discussed in Part 4 – Section 32 Evaluation Report of this Request.⁶

This Request will ensure the demand for new residential serviced building sites at Oakura will be able to be satisfied well into the future.

2.2.3 Strategic

The subject site subject is near the Oakura township centre with the arterial transport route of State Highway 45 bordering the entire western boundary of the property.

⁶ 4.3.7.5 Oakura Structure Plan – pg. 27

The site can be readily connected to the local roading network via Upper Wairau Road and is with easy walking distance of the local convenience shops and services available in the village, the Oakura Primary School, the Kaitake Golf Club and the coastal recreational opportunities.

2.2.4 Logical

The urban expansion of Oakura is geographically constrained at the coastal edge to the west, the Oakura River to the north, and the Egmont National Park to the east.

The present southern most urban edge of Oakura east of SH 45 is on the south side of Upper Wairau Road and adjoins the subject site, further confirming that developing the property for urban living is a logical and efficient expansion of the Oakura urban fabric.

Expanding the urban fabric of Oakura essentially south either side of State Highway 45 has long been regarded by successive Councils and the community as being logical. This has been evidenced in various planning documents over recent decades, and most recently in the Oakura Structure Plan 2006⁷ and the operative New Plymouth District Plan⁸. **Refer Appendix 2**

The land is 'zoned' Rural Environment Area. Approximately 21 percent of the site, a triangular section of some 12 ha on the north-western aspect, is subject to a Future Urban Development (FUD) overlay.

The proposed development of the subject site can be readily connected to Wairau Road by road, and to the existing Council public water supply and sewerage networks.

Regarding the extent of the proposal, best practice in community placemaking suggests it is logical and efficient to plan for future residential development of communities comprehensively and holistically.

Approx. 12ha of the Oakura Farm Park Ltd property is already identified in the Operative District Plan for 'Future Urban Development' (FUD). The FUD area identified (which will yield approx. 120 sections) is an awkward and inefficient shape (i.e. a large triangle) and does not lend itself to a logical and well-planned urban extension of the Upper Wairau Rd residential area. Further, removing 12ha from the existing dairy farm will most likely render it uneconomic.

The extent of the proposed residential development (385 lots) will, as a staged development, provide for the residential needs of Oakura well into the future. The remaining area of the property (some 25 ha) lends itself to meeting a local need for rural/residential living, and equestrian lifestyle in particular. This rural/residential area of some 12-14 lots will also provide a buffer between the adjoining rural land on the neighbouring property and the proposed residential activity.

It is considered while the property is in one ownership that the responsible approach is to comprehensively plan for the development of the whole site as proposed. This approach will avoid future 'piece meal' and inefficient extensions but will enable an attractive and well-planned living environment for the future generations that will become residents.

⁷ Oakura Structure Plan 2006 – pg. 4 - Map

⁸ New Plymouth District Plan – Map A61

2.2.5 Suitable

The topography of the site is essentially flat but rises west to east more or less evenly as an inclined plane away from the State Highway. The site is predominantly in pasture and features several shallow gullies and streams running generally east to west toward the State Highway. These natural features, have been interrupted by the long established arterial state highway formation, and carry beyond the State Highway to the west and typically terminate at the coastal edge. This 'easy' topography means that the site will be able to be developed with minimal 'cut and fill' earthworks.

Excluding the above-mentioned gullies, the property is all in pasture and operates as a small (approx. 57ha) dairy unit. There is one dwelling on the property, this being the residence of the sharemilker and their family. As with the milking shed and associated outbuildings further to the south, these are accessed from SH45. The only other structure of note on the site is a large barn-type building situated midway into the site toward the south boundary.

The size of the property determines that the dairy farming of it is becoming increasingly marginal due to its small scale. Looking to the future the small size of the dairy unit renders it uneconomic as a going concern for on-selling. In the not too distant future it could reasonably be expected, in terms of best economic use, that the value of the property for pastoral farming will be overtaken by its value for future urban development.

Site investigations have shown the site soils to be suitable for built development including housing, roading and other horizontal infrastructure. Soil conditions are also indicated as being suitable for soakage for domestic onsite stormwater disposal and for effluent disposal on the proposed lifestyle blocks.

Given the easy contour and orientation of the site for residential purposes it is envisaged that development of the property will be able to be undertaken with minimal soil disturbance. The gullies will be reserved from development and utilised for stormwater disposal from the local roads along with conservation and enhanced with supplementary planting of the natural vegetation.

2.2.6 Forward-looking and addressing community needs

The present arrangement of pastoral land being actively farmed contiguous with residential settlement, as is the case with the applicant's property, does result in complaint from residents from time to time concerned with such matters as rural odours and noise from farm machinery. The proposed equestrian lifestyle area will have the effect of providing a more passive rural buffer in proximity to residential settlement.

The equestrian lifestyle area will also (with the subdivision controls proposed) 'bookend' the further southward urban expansion of Oakura providing an effective planning mechanism for defining the urban limit of Oakura inland of SH 45 for many decades into the future.

The vision⁹ that the applicant has for the subject site is that of a comprehensively planned development that will address a number of longstanding community issues. These include:

- The proposed roundabout at the intersection of SH45 and Wairau Road will help to calm traffic through the village, especially vehicles arriving from the south.
- The roundabout will also provide a strong visual cue for drivers entering and leaving the village as it will help to demarcate the southern urban extent of residential settlement.
- The pedestrian underpass proposed under SH45 southward of the Wairau Rd intersection will provide safe passage for walkers, cyclists, and horse riders moving between Upper Wairau Road and the beach and associated facilities.
- Oakura and environs has a significant equestrian fraternity. The vision for Wairau Estate incorporating an area for equestrian lifestyle is in response to the lobbying by the equestrian community of the council and community board over many years to have their particular needs better recognised and met. Incorporating equestrian lifestyle lots into the Estate together with a bridle trail and arena will go some way toward meeting that expressed need. The equestrian lifestyle area will be located within an area, for the most part, defined by a small watercourse and esplanade strip separating the proposed residential area along its northern margin and the southern boundary of the property.
- Persons residing in Oakura or within the broader catchment of the coastal community have limited choice for local retirement village living with the closest facilities being at Opunake to the south or Barrett Road, New Plymouth to the north. Approximately 4ha of the Estate is being set aside for a small lot/small dwelling living to provide for retirees who wish to downsize their living arrangements and live, or continue to live, in Oakura.

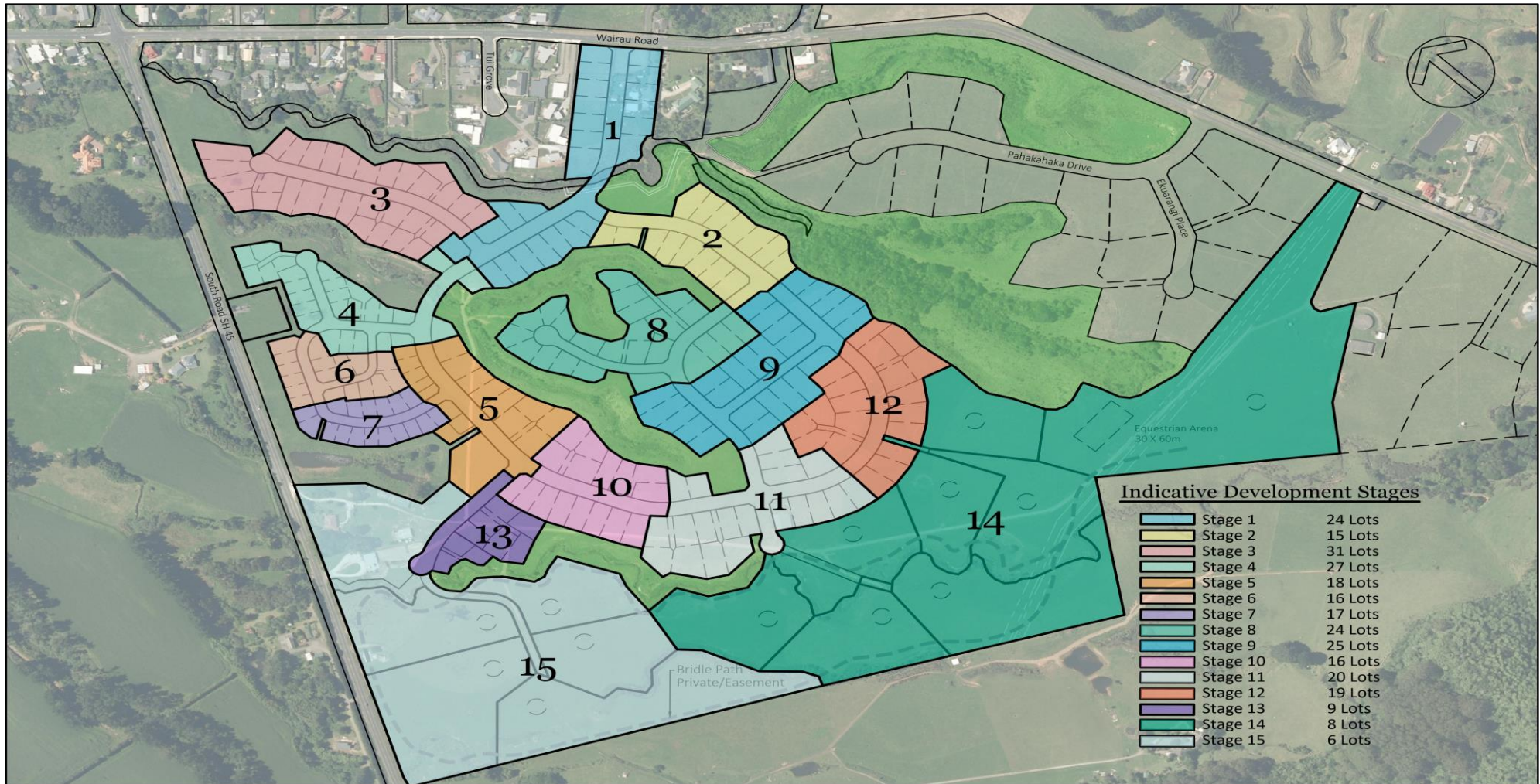
2.2.7 Staged Development


The underlying urban design of the Request provides for the staging of development in an orderly manner and for a logical extension of services. A staged concept plan has been developed. This provides for expansion over 15 stages, with each residential stage ranging in size from 15 to 31 lots. The rural lifestyle lots are spread over two stages of 6-8 lots.

The proposed staging will allow for development to be undertaken in a cost-efficient manner and in response to demand for lots. This will help to ensure a balance between always having serviced lots available for purchase and building on while having a clear blueprint for moving on to the subsequent stage.

The Staging Concept Plan is set out on the following page. This is also included in Appendix 3.1

⁹ Appendix 3 - Vision Statement and Preliminary Structure Plan – Wairau Estate



 <p>3 Young Street, PO Box 116 New Plymouth 4340 North Taranaki 06 758 5342 South Taranaki 06 278 4456 mckinlaysurveyors.co.nz</p>	<p>TITLE</p> <p>STAGED CONCEPT PLAN - Wairau Estate, Oakura</p> <p><i>This plan is prepared only for the purpose of obtaining a Resource Consent under the Resource Management Act 1991. It should not be used for any other purpose. Areas and dimensions are approximate and are subject to change on final field survey.</i></p>	<p>COMPRISED IN</p> <p>Lot 29 DP 482991</p>	<p>AREA</p> <p>66.3389ha</p>	<p>JOB</p> <p>O-160109</p>
		<p>TERRITORIAL AUTHORITY</p> <p>New Plymouth District Council</p>	<p>DATE</p> <p>24/01/18</p>	<p>DRAWING</p> <p>C-07</p>
		<p>PREPARED FOR</p> <p>Oakura Farm Park Ltd</p>	<p>SCALE</p> <p>1:4000 @ A3</p>	<p>SHEET OF</p> <p>1 1</p>

COMBER CONSULTANCY
RMA & ENVIRONMENTAL PLANNING

Part 3 – Schedule of Changes Requested

3.1 Overview

To give effect to the requested plan change will require a number of amendments to be made to the Operative New Plymouth District Plan. The changes required will traverse Volume I - Issues, Objectives, Policies and Rules; Volume II – Appendices and Volume III - Planning Maps.

The details of the requested changes (including reasons) are set out in Appendix 11.

In summary, the changes are comprised as follows:

Operative District Plan – Vol. 1

Polices to provide for the comprehensive development of the subject site and to provide for a roundabout and pedestrian underpass at the intersection of SH45 and Wairau Road.

Rules to limit building heights to no greater than 6m, controls on site and front coverage, limits on light reflectance values of roof and exterior claddings, limiting development to one habitable building (dwelling) per lot and limits on traffic movements associated with a new rural lifestyle area (Rural E Environment Area).

Rules requiring subdivision and development to be undertaken in accord with the Wairau Estate Structure Plan and allowing for subdivision down to lot sizes of 300m² within a new Residential D Environment Area are also proposed.

Consequential amendments to include the new Residential D Environment Area in definitions for 'Front Yard' and 'Residential Environment Area' and a definition for Rural E Environment Area.

Operative District Plan – Vol. 2

The addition of Appendix 32 to include the Wairau Estate Structure Plan.

Operative District Plan – Vol. 3

Amendments to Planning Maps A60 and A61 (Oakura) and E2 and E3 (Rural) to reference and show the extent of the Wairau Estate Structure Plan Area.

Part 4 – Section 32 Evaluation Report

4.1 Introduction

This Part of the Plan Change Request has been prepared accordance with the current provisions of section 32 of the RMA.

This Part of the application has also been prepared with reference to guidance published by the Ministry for the Environment.¹⁰ The format of this evaluation generally follows the best practice guidance as set out in the guide.

4.2 Statutory Context

In undertaking this evaluation, the Purpose of the RMA, as set out in section 5 of the Act, has been borne in mind. For completeness section 5 RMA is restated:

5 Purpose

(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.

(2) In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

- (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Turning to the particulars of the evaluation, Section 32 states:

32 Requirements for preparing and publishing evaluation reports

(1) An evaluation report required under this Act must—

- (a) examine the extent to which the objectives of the proposal being evaluated are the most appropriate way to achieve the purpose of this Act; and
- (b) examine whether the provisions in the proposal are the most appropriate way to achieve the objectives by—
 - (i) identifying other reasonably practicable options for achieving the objectives; and

¹⁰ Ministry for the Environment. April 2017. *A guide to section 32 of the Resource Management Act: Incorporating changes as a result of the Resource Legislation Amendment Act 2017.*

(ii) assessing the efficiency and effectiveness of the provisions in achieving the objectives; and

(iii) summarising the reasons for deciding on the provisions; and

(c) contain a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the proposal.

(2) An assessment under subsection (1)(b)(ii) must—

(a) identify and assess the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the provisions, including the opportunities for—

(i) economic growth that are anticipated to be provided or reduced; and

(ii) employment that are anticipated to be provided or reduced; and

(b) if practicable, quantify the benefits and costs referred to in paragraph (a); and

(c) assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions.

(3) If the proposal (an **amending proposal**) will amend a standard, statement, national planning standard, regulation, plan, or change that is already proposed or that already exists (an **existing proposal**), the examination under subsection (1)(b) must relate to—

(a) the provisions and objectives of the amending proposal; and

(b) the objectives of the existing proposal to the extent that those objectives—

(i) are relevant to the objectives of the amending proposal; and

(ii) would remain if the amending proposal were to take effect.

(4) If the proposal will impose a greater or lesser prohibition or restriction on an activity to which a national environmental standard applies than the existing prohibitions or restrictions in that standard, the evaluation report must examine whether the prohibition or restriction is justified in the circumstances of each region or district in which the prohibition or restriction would have effect.

(4A) If the proposal is a proposed policy statement, plan, or change prepared in accordance with any of the processes provided for in [Schedule 1](#), the evaluation report must—

(a) summarise all advice concerning the proposal received from iwi authorities under the relevant provisions of [Schedule 1](#); and

(b) summarise the response to the advice, including any provisions of the proposal that are intended to give effect to the advice.

(5) The person who must have particular regard to the evaluation report must make the report available for public inspection—

(a) as soon as practicable after the proposal is made (in the case of a standard or regulation); or

(b) at the same time as the proposal is notified.

(6) In this section, —

objectives means, —

(a) for a proposal that contains or states objectives, those objectives:

(b) for all other proposals, the purpose of the proposal

proposal means a proposed standard, statement, national planning standard, regulation, plan, or change for which an evaluation report must be prepared under this Act

provisions means, —

(a) for a proposed plan or change, the policies, rules, or other methods that implement, or give effect to, the objectives of the proposed plan or change:

(b) for all other proposals, the policies or provisions of the proposal that implement, or give effect to, the objectives of the proposal.

4.3 The Evaluation

This evaluation comprises the following elements: defining key issues, scope, identification and assessment of objectives; options and evaluation of options and conclusions. Each of the elements is now addressed in turn.

4.3.1 Key Issue

The key issue is whether or not it is appropriate, having regard to the 'sustainable management' purpose of the RMA to rezone the Requestee's land to provide for a change of land use from its present rural use to that of residential with a portion being retained as rural lifestyle.

4.3.2 Scope

This evaluation considers the proposal in the wider context of the relevant hierarchy of plans and policies, including the National Policy Statement on Urban Development Capacity, 2016, the Regional Policy Statement, the Operative District Plan, the Framework for Growth 2008, the Oakura Structure Plan 2006 and the Draft District Plan 2016.

4.3.3 Objective

As this Private Plan Change Request has no stated objectives, the objective that is adopted for this evaluation is the purpose of the proposal¹¹. The purpose of the request is set out in Part 2 of this Request and is restated here in full:

The purpose of this Plan Change Request is to seek specified changes to the Operative New Plymouth District Plan to rezone the subject land from Rural Environment Area (with part Future Urban Development overlay) to Residential Environment Area (with a limited area adjoining for rural lifestyle living) and to comprehensively plan for the proposed change in landuse facilitated through the statutory planning mechanism of a Structure Plan.

The extent to which the purpose of this Request is the most appropriate way to achieve the purpose of the Act is discussed at '4.3.7 - Appropriateness of Purpose.'

4.3.4 Options

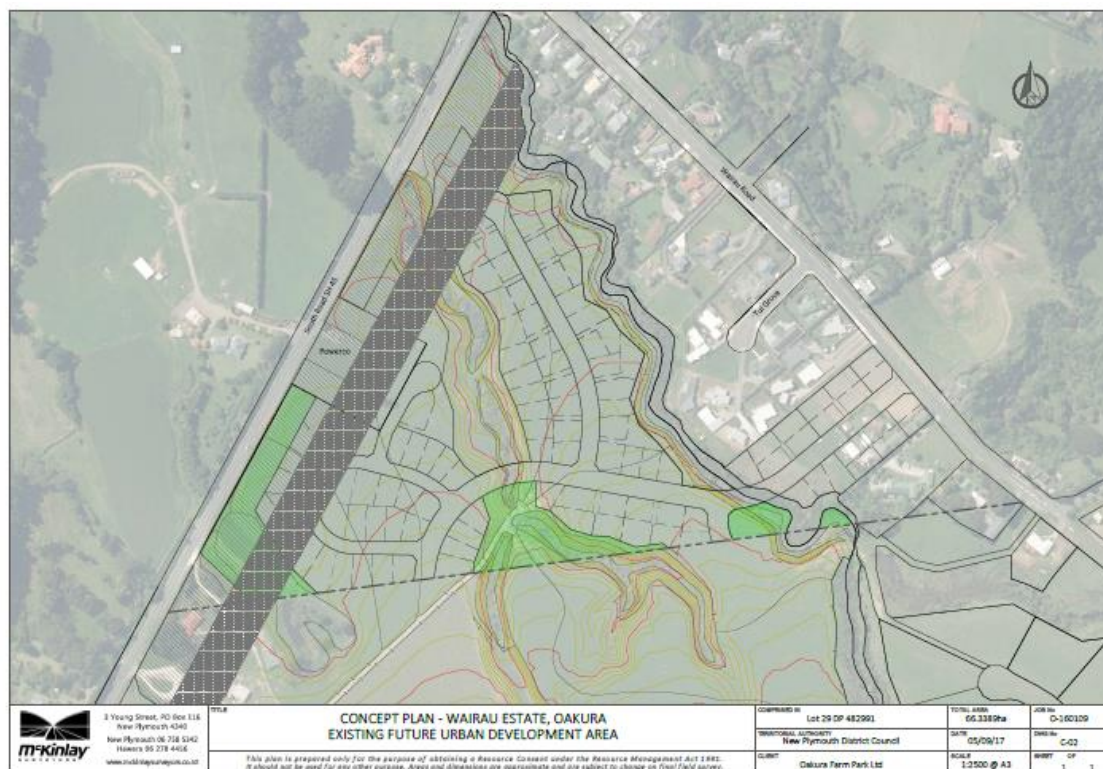
The options to be considered in this evaluation are:

4.3.4.1 Option One

'Status Quo' that is, continue to use the subject land for pastoral farming as a small dairy unit.

4.3.4.1 Option Two

'FUD Area only' – that is, seek to 'rezone' for residential use only that portion of the 56ha site that is subject to the Future Urban Development (FUD) Overlay area, being approximately 12ha or 21 percent of the subject property. The following concept plan illustrates Option Two.



¹¹ s32 (6) RMA

4.3.4.2 Option Three

'All Subject Site' - that is, seek to 'rezone' for residential and rural lifestyle use all of the available subject site area of 58ha, including the 12ha the Future Urban Development (FUD) Overlay area. The following proposed Wairau Estate Oakura Structure Plan illustrates the extent of Option Three.



4.3.5 Evaluation of Options

4.3.5.1 Option One – the 'Status Quo' option

The subject site is currently used for dairy farming. While the area dedicated to pastoral farming is approximately 56 ha, taking into account the vegetated gullies, ponds, farm tracks and the area set aside for the sharemilker's house and curtilage together with the dairy shed, farm buildings and associated tanker track, it is estimated the effective area utilised for pastoral production is in the order of approximately 52ha.

The dairy unit currently milks 140 cows producing approximately 45,000kg of milk solids per season. The labour input to achieve this production is one full time equivalent (FTE,) who lives on-site, supported by the landowners (one - two persons) for a period of 6-8 weeks over the annual calving period.

The dairy farm unit is small by present day standards. In November 2016, the average herd size for Taranaki dairy farms was 291 cows and for New Zealand the average herd size was 419 dairy cows.

The average dairy farm size in Taranaki was 103ha; for all of New Zealand the average farm size was 147ha.¹²

The small size of the subject dairy unit means it is adversely affected by economies of scale. One standout example is Council Rates. For the current Rating Year (2017/18) the subject site, with a rateable value of \$5.5m is being charged a total annual rate (NPDC + TRC) of \$16,284 GST inclusive. By contrast, a dairy farm of over twice the land area (127 ha) situated approx. 4.5km further south along State Highway 45 with a rateable value of \$5.8m is being charged \$16,764. It is suggested the proximity to Oakura Township is the primary reason for the far higher rateable value (i.e. over twice) of the subject property.¹³

While there is merit in continuing to farm the subject property as a small dairy unit, it could be expected it will become increasingly uneconomic (or at greater economic risk) if the required productive inputs continue to increase in cost over time and the dairy pay-out continues to fluctuate from year to year as it has done in the recent past. In any event, at best, the economic benefit will continue to be limited to supporting just one household (the sharemilker's) together with a return on investment to the landowner.

The local economic benefit will be limited as the majority of farm inputs (e.g. dairy shed sanitizers, supplementary feed, fencing materials, metal for farm tracks etc) are not available in the Oakura township, and have to be sourced from New Plymouth or further afield.

The Rural subdivision rules in the operative District Plan limit the future subdivision of the property to, in effect, two large lots as the minimum permitted lot size is 20ha. With the FUD overlay over part of the property any subdivision would be treated as a non-complying activity.¹⁴

4.3.5.2 Option Two - 'FUD Area only'

Changing the use of the FUD Area only on the subject property to Residential would be an inefficient use of resources for a number of reasons. These include:

- Removing the approx. 12ha FUD area from the current 52ha effective area dairy farm would leave an area of some 40ha for pastoral use. This is most likely to render dairy farming on the property uneconomic. In such circumstances, the most likely pastoral use would be the grazing of dry stock. This would not require a full-time labour input. The existing dwelling on the property would then either be vacant, or at best, rented to a household that would need to find employment off the property.
- Assuming the primary roading connection would come from Wairau Road (through 132 Wairau Rd as is currently proposed), any local roading layout would be somewhat inefficient as the majority of new lots would be located toward the state highway (western boundary), with the lots along the eastern boundary perhaps being limited to a single section depth fronting a local road. If the natural gully systems are to be preserved a disproportionate length of the internal roading would be of the cul-de-sac type, limiting the efficiency of traffic movement.
- Adopting the ratio of 10 sections per ha inclusive of roads and open space (e.g. public reserves) this 12ha area (Oakura Farm Park land only) would yield approximately 120 sections.¹⁵ Using a

¹² NZIER, Statistics NZ, Dairy NZ Economics Group - Nov 2016.

¹³ NPDC – Valuation Numbers 11631/071.23 and 11631/083.00

¹⁴ District Plan rules OL33F and Rur77

¹⁵ The total area of this FUD (inclusive of Thurman and adjoining properties) is some 15ha.

figure of 2.67 persons per household¹⁶ this would, in time, add approximately 320 persons to the 1,476 persons (22% increase) comprising the permanent population of Oakura Township at the time of the last Census.¹⁷

- While a 22% increase in additional residents would provide a positive economic and social impact to the township, the associated increase in traffic numbers would be unlikely to justify the roundabout and pedestrian underpass proposed with a larger development. Thus, traffic inefficiencies (traffic delays and increased probability of crashes) could be expected at the Wairau Road-SH45 intersection and increase risk for pedestrians crossing SH45 'on-grade' in the vicinity of the Wairau Rd intersection.
- Given the smaller area available for residential development (by comparison to utilising the whole of the subject property) would limit the options for choice of site size. It would most likely be both impractical and uneconomic for the developer to include any Rural Lifestyle lots in a development of such reduced size.
- While extending a trunk sewerage system eastward across the State Highway could most likely be carried out economically, the extension of the water supply from 'The Paddocks' development westward to the FUD Area would be inefficient as it would result in an un-utilised section of several hundred metres of trunk main between 'The Paddocks' and the FUD Area.
- It could be expected that, over the long term, the pressure for outward residential expansion would see the balance of the subject property utilised for residential settlement. It could be anticipated this delayed but inevitable demand would necessitate an upgrading of various trunk infrastructure (e.g. water supply, sewer, electricity and possibly access roading etc). Having to increase these various capacities at a later date would most likely be an inefficient use of resources by contrast to planning for and installing all the necessary services for the entire area (as proposed) in a sequential manner consistent with the demand and uptake of the lots over the larger site.

4.3.5.3 Option Three - 'All Farm Area'

Changing the use of the subject property from dairying to Residential and Rural Lifestyle as proposed is considered to be the most efficient and effective means of development for the subject property. The reasons include:

- While a small dairy farm would be lost from production, the site will yield some 399 lots for residential and lifestyle living. Fully developed with a dwelling on each lot averaging 2.67 persons per household will result in the Oakura urban population increasing by some 1,065 persons, boosting the resident population by some 72 percent over the long-term.¹⁸
- Based on a (conservative) average house floor area of 182 square metres with construction costs of \$1,660 - \$1,800 per square metre (GST Incl but not including legal fees, consent fees or land costs)¹⁹ will result in economic activity of some \$120M-\$130M over the construction phase of the development. Note: Some sources suggest the average floor area of new single household dwellings is around 218 square metres with current construction costs in excess of \$2,200 per square metre.
- While much of this economic benefit could be expected to benefit goods and service providers mainly domiciled in New Plymouth and environs (e.g. house construction firms, subtrades,

¹⁶ ¹² ¹³ Census 2013, Oakura Area Unit plus adjoining mesh blocks 1555706 & 1555707, Statistics NZ

¹⁴ - Spare

¹⁹ Statistics NZ – October 2016

building materials suppliers etc) local 'fixed premise' service providers at Oakura will also benefit. New small businesses may also establish such as self-employed builders, plumbers, electricians, property maintenance etc.

- The provision of the required infrastructure of local roads, water supply, sewer, and telecoms/data etc will also generate significant construction phase economic activity.
- There will also be significant ongoing economic benefit for the Oakura Township as the Wairau Estate develops through to maturity (i.e. to fully built-up). Existing local service providers such as the food market, tavern, café's, takeaway's, pharmacy, medical centre, hairdresser, service station, real estate firm etc will benefit from increased demand for goods and services thereby improving their financial sustainability and increasing local employment opportunities in these sectors. Further demand on the Oakura Primary School (? requiring additional teachers and support staff) could also be expected.
- An increase in the population of the Oakura township by some 860 persons
- will have significant positive social and cultural effects. It could be expected existing community organisations such as surf-life saving, volunteer fire service, school parent help and the like will receive increase support drawn from the increased population. The larger population will also mean larger potential pool of candidates for the likes of the local Community Board.\

4.3.6 Conclusions on Options

Part of the subject property, along with other land at Oakura, was identified at some 12 years ago to provide development land for the urban expansion of Oakura.²⁰ This long-standing Council policy affecting the subject property was incorporated into the Operative District Plan as a Further Urban Development (FUD) area in March 2013.²¹

The imposition of a FUD Overlay over at least part of the property confirms the subject site is strategic in its location to the further expansion of Oakura; arguably the whole of the property is strategic to the further expansion of Oakura.

While retaining the subject property as a small dairy farm has merit over the near term (Option One), it is inevitable that its small scale will see it become increasingly financially marginal, and ultimately to the point of being unsustainable as a business. This will largely be influenced by increasing land values in the adjoining Oakura township. As the underlying land value of the subject property increases, as is historically the case with pastoral land in close proximity to urban settlement, Council rates will increase to the point where they will be a disproportionate input cost, and, in economic terms, the 'best economic use' of the property will be urban development.

Developing only the current FUD area on the property (Option Two) will be an inefficient use of the land for urban development and will also result in an inefficient use of the remainder of the property for pastoral farming.

On balance, it is considered that giving over the use of the subject property to residential living with some rural lifestyle represents the most efficient use of the land for the long term. The

²⁰ NPDC Framework for Growth 2006

²¹ NPDC Plan Change PLC09/00015

scale of development will mean that infrastructure can be planned comprehensively for integration into the exiting local networks enabling cost effective provision of services.

The nature of land development for urban settlement determines that it is more cost effective to plan comprehensively and well ahead of demand. It is in the nature of urban development that providing for urban capacity must be undertaken in such a way that supply inevitably occurs in 'step changes', with demand occurring progressively over time to take up the available buildable lots commensurate with progressive extension of infrastructure.

Summary of s32 Evaluation of Options

Option 1 'Status Quo'	Benefits	Costs
Economic	Retention of one small dairy farm for food production; Employment 1 FTE	Deficit of serviced land available at Oakura for residential settlement persists. Farm small economies of scale persist; overheads disproportionate to production; best economic use of land diminishes overtime as land value increases due to urban proximity. Opportunity foregone for increase in local goods and services resulting from increased population.
Social	Maintain one farming household in the district.	Opportunity for urban expansion and increase in population lost. No land made available for residential settlement.
Cultural	No Maori, historic heritage or other cultural values affected.	No Maori, historic heritage or other cultural values affected.
Environmental	Small scale mitigates environmental impact to waterways etc; rural character maintained.	Potential adverse effect from pastoral farming on waterways
Efficiency	Small scale farm means more 'hands on' with farm management and animal husbandry etc and limits farm efficiency; no ability to upscale without remote grazing; limited ability to use new technologies due to limited production and farm income.	
Effectiveness	Small scale limits increasing production. The Request objective will not be achieved.	
Risks	If the proposal does not proceed there is a risk of fragmentation of subject land due to further permitted subdivision into different ownerships; this will significantly diminish the opportunity to develop efficiently for future urban expansion.	
Objective	Not met	
Option 2 'FUD Area Only'	Benefits	Costs
Economic	Additional serviced land made available at Oakura for residential settlement. Economic activity related to construction and increased local permanent demand for goods and services generated	Small dairy farm rendered uneconomic; balance land used for grazing only. Compliance costs to rezone and service land likely to higher per lot than Option 3.

	associated with an approx. 115 lot subdivision and 300 plus increase in population.	
Social	Additional population growth contributing to sustainability, vibrancy and social cohesion of Oakura community. More people available for volunteerism, local organisations and local employment	Loss of one permanent household from the property. Farmhouse would most likely be rented.
Cultural	No Maori, historic heritage or other cultural values affected.	No Maori, historic heritage or other cultural values affected.
Environmental	Natural features retained. Part retention of rural character. Increased traffic on Upper Wairau Rd	Reduction in rural character. Developing to the FUD boundary will be aesthetically and environmentally unsympathetic to the local landscape and environment. Reduction in performance and safety of Wairau Rd/SH45 intersection.
Efficiency	Necessitated cul de sac roading pattern development sub-optimal. Extension of services (truck sewer, water etc) would be sized to service the development only; in the long term it would be likely services to the balance land would require upsizing/duplication. Traffic inefficiencies (e.g. increased delays) will occur at Wairau Rd/SH45 but roundabout and pedestrian underpass will not be justified/affordable.	
Effectiveness	The development will not be as attractive (e.g. cul de sac roading will dominate) to prospective purchasers/residents. The Request objective will be achieved in part only.	
Risks	Balance land transferring to separate ownership; pressure for further residential development on balance land, and to a lesser standard than initial development. (e.g. loss of natural features through piping of water courses.). Current ongoing issues at Wairau Rd/SH45 intersection will not be addressed over long-term.	
Objective	Met in part only	
Option 3 'All Subject Site'	Benefits	Costs
Economic	Additional serviced land available at Oakura for residential settlement. Economic activity related to construction and increased local permanent demand for goods and services generated associated with an approx. 399 lot subdivision and population increase of 1000 plus.	Loss of small dairy farm. Compliance costs to rezone and service land less per lot than Option 2.
Social	Additional population growth contributing to sustainability, vibrancy and social cohesion of Oakura community. More people available for volunteerism, local organisations and local employment. Sufficient population for enlarged or second school.	Loss of one permanent household from the property/community.
Cultural	No Maori, historic heritage or other cultural values affected.	No Maori, historic heritage or other cultural values affected.
Environmental	Retention and enhancement of natural features; increase in wildlife habitat/	Loss of rural character.

	biodiversity. Increase in traffic at Wairau Rd/SH45 intersection	Roundabout and pedestrian underpass viable; traffic efficiency and safety issues can be addressed.
Efficiency	Extension of services (truck sewer, water etc) would be sized to service the full extent development for the long term. Roundabout and pedestrian underpass will address predicted traffic inefficiencies (e.g. increased delays) that will occur at Wairau Rd/SH45 and will be justified/affordable.	
Effectiveness	Well located and comprehensively planned 'smart' settlement to meet community housing needs and choices well into the future.	
Risks	The Requestee has a track record of delivering on projects (e.g. 'The Paddocks'); risk of not undertaking the development as promoted is therefore low. NZTA, Council and Requestee can't agree on cost-sharing formula for roundabout and pedestrian underpass	
Objective	Objective met in full.	

4.3.7 Appropriateness of Objective of Request

As stated at 4.3.3, the objective of the Request is:

The purpose of this Plan Change Request is to seek specified changes to the Operative New Plymouth District Plan to enable the comprehensive planning of the subject site for residential and rural lifestyle activity by way of a Structure Plan in substitution for the current 'zoning' of Rural Character Environment Area with part Further Urban Development (FUD) Overlay.

The objective is considered to be the most appropriate way to achieve the purpose of the Act (s5 RMA) for the subject site having regard to, among other things, the following matters:

- The majority of the subject site is currently a small dairy farm which is projected to become increasingly uneconomic due to its small scale and the evitable increase in production input costs and fixed overheads including Council rates.
- The proximity of the subject site to the immediately adjoining Oakura township lends itself to a logical extension of the urban area.
- There is ongoing demand for residential living at Oakura. This demand has been recognised by the Council in various planning documents, most notably the Oakura Structure Plan 2006. This Plan is discussed in detail in section 4.3.7.5.
- All the Thurman property and approx. 12 ha of the Oakura Farm Park Ltd property is already identified for future urban development as these areas are subject to the FUD overlay within the Rural Environment Area. As the FUD overlay has resulted from a plan change process incorporated into the Operative District Plan in March 2013²². Insofar as the FUD areas are

²² NPDC Plan Change PLC09/00015

concerned the purpose of the Request is consistent with, and gives effect to, the relevant objectives and policies of the Operative District Plan.

- Limiting the requested urban land use change to the existing FUD area will render the dairy farm uneconomic.
- The extent of the existing FUD area appears to have been done for plan drafting convenience and does not take account of the topographical features or legal boundaries of the affected properties.
- The proposal, considered as a whole and adopting a long-term view, will enable the property owners to manage the transition in land use for rural to mostly urban in a way and at a rate that will enable then and the community to provide for the further evolution of the local social, economic and cultural well-being of the Oakura community.
- The natural and physical features of the subject will be sustained and enhanced in such a way that contribute to the active and passive recreational needs of future generations of residents while safeguarding and enhancing the natural ecosystems with the subject site.
- As discussed in 'Part 5 – Assessment of Effects on the Environment' any adverse effects from the change in land use proposed will or can be either avoided, remedied or mitigated.
- For the above reasons, it is considered that the objective of the Request is an appropriate and suitable way to achieve the purpose of the Act in relation to the appropriate future use of the subject site.

4.3.8 Appropriateness of the proposed regulatory planning provisions.

'Part 3 – Schedule of Changes Requested' (of this document) summarises the changes to the Operative District Plan considered necessary to give effect to this Request.

The detail of the requested amendments is set out in Appendix 11.

The Operative New Plymouth District Plan is almost unique as a 'First Generation' district plan developed under the RMA 1991 in that it is a totally 'effects based' plan. Notwithstanding that more recent planning practice nationally has tended toward an activities-based approach, the New Plymouth Operative District Plan under the custodianship of council planning staff has maintained an effects-based approach. A significant number of plan changes have been incorporated since the Plan first became operative in 2005 but with the original framework of the Plan being firmly adhered to.

The changes proposed in this Request have been drafted consistent with the framework of Operative Plan. This has been done in the interests of being able to readily incorporate the proposed amendments and also in the interests of the ongoing administrative efficiency of the Plan.

All the proposed changes are supported with reasons as set out in Appendix 11.

s32 Evaluation of proposed policies, methods and rules

Policy 23.8, methods, and rules	Summary: A policy providing for residential, rural-lifestyle and business land use by the mechanism of a structure plan with associated methods and rules so as to enable the comprehensive urban development of greenfields land at Oakura consistent with avoiding and/or mitigating adverse effects. ²³	
	Benefits	Costs
Economic	The residential development that will be provided over the long-term will bring substantial economic benefits to the local community both from construction of new infrastructure and dwellings together with increased demand for local good and services.	Loss of small dairy farm. Compliance costs to rezone and service land.
Social	A choice of section sizes and associated varying sizes of dwellings is likely to result in a diversity of household types (e.g. families, couples etc) which will contribute to a diverse and resilient community both locally and to the District. The increase in population overtime will result in more resident persons in the local community being available to contribute to local community organisations e.g. school committee, fire brigade, pony and surf clubs etc.	Some will view the increase in population over the long-term as a 'social cost'.
Cultural	No Maori, historic heritage or other cultural values affected.	No Maori, historic heritage or other cultural values affected.
Environmental	Controls on lot sizes, building heights, building density, site coverage and light reflectance values, traffic generation, definitions etc that differ from the standard controls of the Operative District Plan have been designed to ensure residential development within the Structure Plan area that is sensitive to the natural attributes of the local environment. This applies particularly to the thresholds for building heights. The traffic generation thresholds for the rural lifestyle area are reflective of the environment that could be expected in a locality that will be more	Buildings of lesser footprint and volume than otherwise permitted by standard district plan controls.
Efficiency	Adopting a similar format and an approach to that in the operative plan (and consistent with precedent plan changes of a similar nature) will allow for the ready integration of the proposed provisions within the existing operative plan rule framework. This will promote administrative planning efficiency. Allowing for a limited area of smaller lot sizes will promote efficiency of land use. Staging of the development	

²³ Refer Appendix 11.1 for full text of policy, methods and rules.

	by the Requestee will help to ensure that the rate of development and release of serviced sections is responsive to market demand.
Effectiveness	Adopting a similar format and an approach to that in the operative plan will allow for the ready integration of the proposed provisions within the existing operative plan rule framework. This will ensure the rule framework is similar in effectiveness to that already existing within the operative District Plan. The staged development of the area proposed for development will help to contribute to the urban development capacity of Oakura and the wider District.
Risks	If the proposal does not proceed there will be no serviced greenfields land available for development in Oakura for the foreseeable future.
Objective	Adoption of Policy 23.8 and associated structure plan, methods and rules will help to ensure the Object of the Plan Change is met.

Policy 23.9 and method	Summary: A policy providing for a safe and efficient ROAD TRANSPORTATION NETWORK to meet the long-term needs of the Oakura urban area including the provision of a roundabout and pedestrian underpass at the intersection of State Highway 45 and Wairau Road, planned in conjunction with NZTA and the Council and being funded jointly by developers and the road controlling authorities. ²⁴	
	Benefits	Costs
Economic	A roundabout and pedestrian underpass at SH45/Wairau Rd intersection will facilitate ready traffic movement through and within Oakura resulting in improved travel times and \$ savings through crash and injury avoidance. Capital cost shared between road controlling authorities and currently proposed and future land development (FUD areas) at Oakura.	One-of capital cost to install the proposed infrastructure.
Social	Developer-lead initiative that recognises a long-standing community concern and proposes a forward-looking solution. Improved feeling of individual and community well-being and pride through modern and safe traffic infrastructure addressing long-term community traffic safety concerns.	In the interests of personal safety pedestrians wanting to cross on-grade near the intersection will need to do so at a safe distance from the roundabout to avoid traffic conflict.
Cultural	No Maori, historic heritage or other cultural values affected.	No Maori, historic heritage or other cultural values affected.
Environmental	Well-designed traffic infrastructure providing for the safe and efficient movement of motor vehicles, pedestrians and active transport modes (cyclists, horse riders etc).	
Efficiency	Well-designed traffic roundabouts and pedestrian underpasses promote the efficient movement of people, goods and services. Improved administrative efficiency through	

²⁴ Refer Appendix 11.1 for full text of policy, methods and rules.

	significant reduction in incidence of complaint to road controlling authorities about a long-standing problem intersection at Oakura.
Effectiveness	The SH4/Wairau Rd intersection has become increasingly busy over time. The proposed modern infrastructure will be effective in separating pedestrians from traffic where people they are wanting to cross SH45; it will be effective in reducing the risk of traffic crashes through the intersection.
Risks	The road controlling authorities have no medium or long-term plans to undertake improvements to the SH45/Wairau Rd intersection. There is a risk if the Wairau Estate development were to proceed without the proposed infrastructure planned that the intersection efficiency would degrade over time to a point where traffic delays would become excessive and the probability of traffic crashes would increase significantly.
Objective	Planning for the proposed intersection improvements as expressed in the proposed Policy 23.9 will contribute significantly to the overall achievement of the Request objective.

4.3.9 Consideration of Relevant Plans and Policies

4.3.9.1 *National Policy Statement on Urban Development Capacity 2016*

The National Policy Statement on Urban Development Capacity (NPS-UDC) 2016 came into effect on 1 December 2016.

The NPS-UDC recognises the national significance of:

- urban environments and the need to enable such environments to develop and change
- providing sufficient development capacity to meet the needs of people and communities and future generations in urban environments.

The NPS-UDC directs local authorities to provide sufficient development capacity in their resource management plans for housing and business growth to meet demand.

Development capacity refers to the amount of development allowed by zoning and regulations in plans that is supported by infrastructure. This development can be “outwards” (on greenfield sites) and/or “upwards” (by intensifying existing urban environments).

The NPS-UDC requires that sufficient development capacity is necessary for urban land and development markets to function efficiently to meet community needs. In well-functioning markets, the supply of land, housing and business space matches demand at efficient (more affordable) prices.

The NPS-UDC contains objectives and policies that local authorities must give effect to in their resource management decisions that provide direction on:

- the outcomes that urban planning decisions should achieve
- the evidence underpinning those decisions
- responsive planning approaches
- coordination between local authorities and providers of infrastructure.

Within these four, the NPS-UDC targets the more challenging requirements for urban areas experiencing the most significant growth.

As a medium growth area, the New Plymouth District Council is required to have completed a housing and business development capacity assessment by 31 December 2018, and thereafter three-yearly.²⁵ At the time of preparing this Request the Council has not produced its initial development capacity assessment.

The following objectives apply to all decision-makers when making planning decisions that affect an urban environment.

The NPS-UDC sets out the following objectives; these have application to all decision-makers when making planning decisions that affect an urban environment.

Objective Group A – Outcomes for planning decisions²⁶

OA1: Effective and efficient urban environments that enable people and communities and future generations to provide for their social, economic, cultural and environmental wellbeing.

OA2: Urban environments that have sufficient opportunities for the development of housing and business land to meet demand, and which provide choices that will meet the needs of people and communities and future generations for a range of dwelling types and locations, working environments and places to locate businesses.

OA3: Urban environments that, over time, develop and change in response to the changing needs of people and communities and future generations.

Regarding OA1, the proposed urban expansion of Oakura through the Wairau Estate proposal will result in an effective and efficient urban environment. It is intended development will be designed and built in accord with current urban design 'best practice'. Care and attention to maintaining and enhancing the natural environment with an emphasis on connectivity to the existing infrastructure networks and accessibility within and beyond the Estate will help to ensure the community of people within the Estate and future generations will be enabled to provide for their social, economic, cultural and environmental wellbeing.

The proposal will also be consistent with OA2. The four-differing residential and rural-residential Environment Areas together with two choices of Open Space will provide a range of opportunities for the development of housing, differing housing types, and local recreation and lifestyle choices that will meet the needs of persons who chose to live within the Estate and for the generations that follow. Given the limited size of the Estate, and its close proximity to businesses in Oakura township (including vacant business land in the township), there is not a need to provide for business land within the Estate, apart from one lot for a café or similar.

With regard to OA3, it could be expected, over the very long term (50-75 yrs. plus), that much of the housing development now contemplated will be reaching the end of its economic life. The range of lot sizes proposed will help to ensure that future generations will be able to erect replacement residential development to meet their needs, insofar as we current understand them to be.

²⁵ NPS-UDC – PB1 – pg. 12

²⁶ NPS-UDC – Objectives – pg. 10

4.3.9.2 *Regional Policy Statement*

Taranaki Regional Policy Statement (RPS) became operative on 1 January 2010. It contains a section, Section 15, that addresses the Built Environment. This section identifies resource management issues of regional significance, which have their primary effect on Taranaki's built environment.

In backgrounding the issue, the RPS defines urban sustainability as a process of managing urban change to improve the quality of life by delivering better social, environmental and economic outcomes for all people in the present and in the future.²⁷

The RPs also states It is generally recognised that there is a need to create and maintain urban environments that are sustainable, function well, are accessible, and provide a safe, healthy and stimulating environment. In so doing, those who live in and visit urban areas value them. Conversely, uncoordinated development or insufficient or poor-quality development can result in a range of effects including traffic congestion, reduced amenity values, unsustainable energy use, overloaded urban infrastructure (water supply, wastewater treatment, transport, energy, and housing), a lack of distinctive identity, social isolation and, in some cases health issues.

The primary objective in the RPS for the built environment is 'To promote sustainable urban development in the Taranaki region.'

The RPS sustainable urban development policy is expressed as follows:

To promote sustainable development in urban areas by:

- (a) encouraging high quality urban design, including the maintenance and enhancement of amenity values;
- (b) promoting choices in housing, work place and recreation opportunities;
- (c) promoting energy efficiency in urban forms, site layout and building design;
- (d) providing for regionally significant infrastructure;
 - a. integrating the maintenance, upgrading or provision of infrastructure with land use;
 - b. integrating transport networks, connections and modes to enable the sustainable and efficient movement of people, goods and services, encouraging travel choice and low-impact forms of travel including opportunities for walking, cycling and public transport;
 - c. promoting the maintenance, enhancement or protection of land, air and water resources within urban areas or affected by urban activities;
 - d. protecting indigenous biodiversity and historic heritage; and
 - e. avoiding or mitigating natural and other hazards.

Notwithstanding that the Request of itself cannot be considered to be a matter of regional significance, it is considered the Wairau Estate proposal acquits itself well when considered against the various components of the RPS policy. Considerations include:

- (a) the proposal provides a setting for the achievement of high quality urban design, including the maintenance and enhancement of amenity values;

²⁷ Taranaki Regional Council – RPS – Section 15.1 – pg. 117

- (b) the proposal, through offering a range of living lot sizes will inherently promote choices in housing typologies; recreational opportunities, primarily informal, will be available within the Estate, and a wide range of recreational opportunities, both formal and informal, will be available within the Oakura urban area in existing reserves, along the coastal edge and the nearby National Park.
- (c) the aspect and orientation of the site will help to ensure maximum exposure to available sunlight and without any natural feature to create shading. These site attributes lend themselves to energy efficiency in urban form, site layout and building design;
- (d) the site will take advantage of available local infrastructure networks which in turn are part of regionally significant infrastructure including sewage treatment at New Plymouth and the state highway as part of the regional transportation network.
- (e) Wairau Estate is located to be able to readily integrate local and regional transportation networks, connections and modes to enable the sustainable and efficient movement of people, goods and services. It is considered that additional population at Oakura that the Estate will bring will add to the sustainability of existing public transport services. Integral to the Estate are walking, cycling and equestrian trails, thus encouraging recreational opportunities and low-impact forms of local travel including opportunities for walking (for recreation, local shopping and entertainment and to the local primary school), cycling and horse-riding;
- (f) the retention of the natural gully systems and watercourses within the site will promote the maintenance, enhancement and protection of land, air and water resources within this proposed new urban area;
- (g) while there is very limited indigenous biodiversity (and no known historic heritage) within the site, supplementary planting of the gully systems and watercourse with indigenous vegetation will promote biodiversity including both flora and fauna, and birdlife in particular; and
- (h) while there are no known natural hazards affecting the site, attention to stormwater management design will help to ensure any adverse effects from stormwater both within the site and beyond are either avoided or mitigated.

4.3.9.3 Operative District Plan

Issue 1 of the Operative District Plan addresses 'The adverse effects of activities on the character of areas and on other activities'.

The Issue Objective is expressed as 'To ensure activities do not adversely affect the environmental and amenity values of areas within the district or adversely affect existing activities.'

There are three underlying policies; these read as follows:

Policy 1.1 - Activities should be located in areas where their effects are compatible with the character of the area.

Policy 1.2 - Activities within an area should not have adverse effects that diminish the amenity of neighbouring areas, having regard to the character of the receiving environment and cumulative effects.

Policy 1.3 - New activities that are sensitive to the elements that define the character of the area in which they intend to locate should be designed and/or located to avoid conflict.

For the reasons previously stated, endeavouring to plan for the residential development of only the 12 ha FUD area of the subject site could not be considered to be 'efficient use and development of natural and physical resources'.²⁸ By comprehensively planning, in both the context of urban design and statutory planning, for the whole of the subject site as a mix of Residential, Rural, and Open Space as set out in the Area Structure Plan Objective 1 and the associated Policies 1.1, 1.2 and 1.3 can effectively be achieved.

Issue 4 addresses the loss or reduction of rural amenity and character. Objective 4 aims 'To ensure the subdivision, use and development of land maintains the elements of RURAL CHARACTER.'

Forty-four percent, or 25.5 ha, of the subject site is to be retained as rural in character but with an emphasis on rural equestrian lifestyle. It is intended the lot sizes will be between 1-2 ha (to support 1-2 horses/lot) so relative low density and spaciousness supported by vegetation plantings on associated open space areas will help to maintain elements of rural character. Comment on maintaining rural character to achieve Objective 4 and associated policies also features in the Landscape and Visual Impact Assessment.²⁹

As the Request adopts a Structure Plan approach for the FUD area specifically, no matters fall for consideration under Issue 1A 'The adverse effects of activities on the future rezoning and development of areas identified as FUTURE URBAN GROWTH AREAS.'

Within the Operative District Plan, 'Issue 23: The need to comprehensively plan for future urban development',³⁰ the plan discusses the need for comprehensive planning of Further Urban Growth Areas (FUD) to help to ensure that any site-specific issues are addressed through detailed planning ahead of development. The risk of not taking a comprehensive approach may result in 'fragmented' and 'disjointed' development and less than desirable environmental outcomes. 'Such outcomes can result in places that are less than optimal in terms of pleasantness, coherence, convenience and accessibility for the persons and communities that will reside there.'

The Issue Statement goes on to state: 'Connectivity of transport corridors and the orderly and logical extension of infrastructure may not be able to be adequately considered without a comprehensively planned approach. Site specific features or constraints will only get considered if they are currently listed in the District Plan; and it is known there are such features and constraints that are not currently identified in the District Plan in some areas identified for future urban growth. Therefore, to achieve desired environmental outcomes where complex site-specific issues arise within defined geographical areas, an integrated and comprehensive planning approach, utilising the mechanism of structure plans is required. There are numerous opportunities to achieve this on land identified for future urban use prior to subdivision or land development occurring.'

It is acknowledged that approx. 12 ha or approx. 21 percent of the McKie owned area is identified as FUD land. However, the reasons for utilising all of the McKie farm, i.e. Option 3, for future urban development have been previously discussed. Accordingly, a comprehensive structure plan planning approach has been adopted and underpins this Request.

²⁸ RMA s7 Other matters s7(b)

²⁹ Appendix 5 – Landscape and Visual Impact Assessment – Blue Marble Landscape – August 2017

³⁰ New Plymouth Operative District Plan – Vol 1 – pg. 126

Issue 23 adopts the following objective:

Objective 23

That land identified for future urban use is comprehensively planned to facilitate an integrated approach to land development while addressing site specific issues to provide for accessible, connected, efficient, liveable communities and coherent urban spaces.

This Request to 'rezone' land, currently in rural use, for residential and rural lifestyle development is being comprehensively planned by adopting an integrated approach to land development. Site specific issues have been addressed to ensure that the environmental outcomes for the development achieve appropriate levels of accessibility, connectedness, efficiency, amenity and liveability within an array of coherent and legible urban spaces appropriate to the site and its environs.

The policy within the operative district plan to achieve the stated Objective 23 reads as follows:

Policy 23.1

To control the design and layout of future urban areas through structure plans to allow for the comprehensive development of the area by ensuring:

- a) The type, location and density of the development is suitable for the site;*
- b) Infrastructure is provided in a co-ordinated manner by considering location, type and staging;*
- c) The development considers topography and minimises changes to landform;*
- d) That the constraints are identified and managed to ensure resilient and safe communities.*
- e) Interfaces with surrounding land-uses are assessed and adverse effects are mitigated;*
- f) Open space, parks and esplanade reserves or strips are provided for;*
- g) Connectivity and accessible urban form is provided for; and*
- h) That special features are recognised and that those features of particular significance are protected.*

At the heart of the Request, consistent with the adopted comprehensive planning approach, is a Structure Plan.³¹

Addressing each of the above policy components in turn the following comments can be made:

- (a) The type, location and density of the development has been carefully considered. Where rule parameters for each of the proposed Environment Areas have been adopted from the Operative District Plan (i.e. Residential A and C, Open Space B and C, and Business C) they are considered appropriate to the site and the adjoining Oakura township and also to be in the best interests of regulatory administrative efficiency.

Where a new Environment Area has been introduced (i.e. Residential D and Rural Lifestyle E) the proposed character of these areas and rule parameters is in response to identified and/or expressed local community needs and aspirations, (e.g. aging resident population, equestrian lifestyle) and contemporary urban living trends (smaller lots and smaller homes for retirees.)

³¹ Refer Appendix 11.2

- (b) Infrastructure, be it water supply, sewerage, stormwater, roading, electricity, gas, telecoms etc will be able to be provided in a co-ordinated manner. The lots to be created will all be able to be serviced through the extension of and/or connection to existing nearby available infrastructure networks. All have adequate capacity to respond to the additional demands. The proposed roading and lot layout of the Wairau Estate lends itself to staging in such a way that roading and the other required infrastructure networks will be able to be logically and efficiently staged from a commencement point at the Thurman property on Upper Wairau Rd southward into the McKie property.
- (c) The relatively easy contour of the entire Wairau Estate site lends itself to development that will result in minimal changes to the existing landform. Indeed, the natural gully systems will be retained and enhanced.
- (d) Arguably the greatest constraint is the potential traffic and pedestrian conflict at the intersection of SH45 and Wairau Rd together with the potential safety issues associated with pedestrians need to cross SH45 near to the same intersection. These constraints have been identified and mitigation measures proposed in the form of a traffic roundabout at the intersection and a pedestrian underpass to the south of that intersection. These particular mitigation measures will help to ensure the resiliency and safety of the local community.
- (e) The northern aspect (Wairau Rd side) of the site will see residential development adjoining the long-established residential development separated only by open space. These a proposed and existing uses are obviously compatible.

Along the eastern aspect the residential development of Wairau Estate will adjoin the natural QEII covenanted area. A potential undesirable outcome might be domestic pets (e.g. cats and dogs) having an adverse effect on the birdlife and other fauna resident in the habitat the QEII area provides.

It is envisaged that the Rural Lifestyle (Equestrian) area along the entire length of the southern boundary will be a comfortable fit with the Rural Environment Area and rural land use (mainly pastoral farming) to the immediate south. The Rural Lifestyle (equestrian) lots will be of sufficient area to provide for the keeping of horses (and perhaps other farm animals such as sheep) without creating nuisance for the Residential lots to the north, particularly recognising that the two uses will be mostly separated by a narrow buffer of elongated natural open space.

Along the northern boundary the site adjoins the State Highway. The proposed traffic noise attenuation bund will mitigate traffic noise that might otherwise adversely affect the adjoining Residential D development. The bund will also provide a visual and physical (safety) separation from the State Highway.

- (f) Integral to the urban design of Wairau Estate is the provision of open space in the form of natural areas, and a neighbourhood 'kick-a-ball' park. The natural area Open Space C natural areas amount to 8.73ha, or 15 percent of the site. It is proposed these areas be vested in Council as local purpose reserves. The Open Space B neighbourhood park is approx. to 0.24ha or 0.4% of the site. It is intended this also be vested as Local Purpose Reserve.
- (g) The urban design of the site provides for a well-connected and accessible urban form; and
- (h) The special features of the site are considered to be the natural gully systems. Priority has been given in the design to the protection and enhancement of these natural areas.

Methods of Implementation

Issue 23.1 calls for 'Rules requiring development and subdivision to be undertaken in accordance with the relevant structure plan.'

A framework of rules specific to Wairau Estate, designed to be integrated into the rule framework of the Operative District Plan are proposed along with a Structure Plan. These are set out in Appendix 11.³²

Concluding Comments

For the reasons set out above it is considered that the Request with its proposed policy and rule framework will give effect to Policy 23.1 and in so doing achieve Objective 23.

4.3.9.4 Draft District Plan 2016

The New Plymouth District Council is in the process of reviewing the Operative District Plan ('the 10-year Review').

The Council publicly notified a Draft District Plan in October 2016, received community feedback and is now working toward producing and publicly notifying a Proposed District Plan.

On 5 February 2018 the Council published a Draft District Plan and invited community feedback. This latter document is in electronic format (an interactive 'ePlan') and further develops and refines the 2016 draft. The 2018 ePlan is discussed in 4.3.9.5 below.

The Draft District Plan 2016 (DDP) has no statutory effect.

The DDP, by comparison to the Operative District Plan, proposes a new framework with new objectives policies and zones. The New Plymouth District Blueprint eight key directions underpin the DDP's strategic approach for the future land use planning of the District.

This discussion has a focus on the draft provisions that are most relevant to the Wairau Estate Plan Change Request.

The proposed structural design of Wairau Estate will contribute to a 'cohesive urban environment' that will allow the urban community of Oakura to 'enjoy liveable, connected, accessible and safe urban spaces to live, work and play.'³³

In looking to develop land for urban development, the Request proposes providing for 'compatible activities located together within 'zones' in a 'compact form' that will result in the efficient use of land and resources while at the same time will be contributing to 'a sufficient supply of urban land' within the District.³⁴

It is considered that the vision statement and structure plan (refer Appendix 3) demonstrates that the proposed Wairau Estate comprises 'good quality urban design and incorporates sustainable development principles.'³⁵

The Request is also consistent with the associated underlying policies that seek to provide a sufficient supply of land to meet the 'diverse social and economic housing needs' of the community. The proposal will also contribute to enabling 'a range of densities and housing forms in new

³² Appendix 11 - Required Changes to Operative District Plan

³³ Draft District Plan 2016 – Urban Development – Objective UD-01

³⁴ Draft District Plan 2016 – Urban Development – Objective UD-02

³⁵ Draft District Plan 2016 – Urban Development – Objective UD-03

neighbourhoods and areas appropriate for growth where the predominant character will transition over time.³⁶

With regard to Rural Development³⁷, the Wairau Estate proposal contributes to the achieving the objective of providing for 'limited areas for rural lifestyle living' ... 'while ensuring that the potential and versatility of productive land is not comprised.'³⁸ The change of land use from dairying to equestrian lifestyle does not diminish the potential and versatility of the underlying productive land. It will essentially remain in pasture. What will change is the nature of the benefits and utility people derive from that land. With dairying, the major benefit derived is economic through food production; with the land use being equestrian lifestyle, the major benefit that people derive is social through rural lifestyle and recreation. In the case of Wairau Estate, the equestrian lifestyle use will be compatible with and will not compromise the extensive pastoral farming use of the land adjoining the south boundary.

The Request is also essentially consistent with Rural Development policy that addresses 'rural lifestyle living opportunities'.³⁹ As part of the proposed Oakura Structure Plan Area, the fragmentation and urbanisation of productive, versatile land is avoided, if it is accepted that the remainder of the subject site is suitable and appropriate for urban development. Further, as provided for in the policy, the equestrian lifestyle area, is located in close proximity to an existing urban area and community facilities (i.e. Oakura township), with the predominant character proposed as low density living with small scale (e.g. 1-2 horse per lifestyle lot) rural activities. The lots will be access from local roads with back lots being accessed from right of ways. The predominant character of the Wairau Estate rural lifestyle area will be vegetation (i.e. pasture for grazing of horses) and adjoining naturally vegetated gullies and open space areas.

The Draft District Plan discusses Future Urban Growth and identifies several expansion areas at the existing urban/rural interface of the New Plymouth urban area.⁴⁰ While not specifically addressed in the Draft Plan, it is assumed that the existing Future Urban Development (FUD) Areas and Structure Plan Areas within the Operative District Plan will be carried forward into the Proposed District Plan for public notification.

The Wairau Estate Oakura Area Structure Plan proposed in this Request is consistent with the draft plans Future Urban Growth objectives. The Request, through the proposed Structure Area Plan and supporting policy and rule framework, will achieve the urban growth to be provided for in 'a cohesive, compact and structured way' and 'occurs predominantly' in an area, that is, to the south of the Oakura township, in an area 'identified for future urban growth.' The proposal is 'comprehensively planned by a structure plan' and development will be staged to 'transition from rural to urban and the effects of the transition managed.'⁴¹

Under the heading of 'Living Zones' the District Plan discusses the 'Residential Zone' and defines this as providing for low density suburban housing in the urban area of New Plymouth. Oakura is specifically included.⁴²

³⁶ Draft District Plan 2016 – Urban Development – Policies UD-P1 and P2

³⁷ Draft District Plan 2016 – pg. 18

³⁸ Draft District Plan 2016 – Rural Development – Objective RD-04.

³⁹ Draft District Plan 2016 – Rural Development – Policy RD-P2

⁴⁰ Draft District Plan 2016 – pg. 22 and Appendix One

⁴¹ Draft District Plan 2016 – Future Urban Growth – Objectives FUG-01, 02 and 03.

⁴² Draft District Plan 2016 – pg. 98 – 3.1 Residential Zone

While the rule framework for Wairau Estate provides for a range of lot sizes (i.e. 700m² down to 300m²) all lots are limited to one dwelling. These parameters, together with the proposed building height limitations, will ensure low density housing will be achieved.

The Draft District Plan has signalled a new direction for the rural environment by providing for a Rural Lifestyle Zone, a feature that is absent from the Operative District Plan.⁴³

The Rural Lifestyle (Equestrian) Environment Area proposed within Wairau Estate, at 25ha and 13-15 lots, is a relatively small area. Positioned between the proposed residential living area of the Estate and the Rural Environment Area bordering to the south it will provide an appropriate transition interface between the residential land use and rural. The predominant activity in the Rural Lifestyle (Equestrian) Environment Area will be rural lifestyle living. The indicative subdivision pattern⁴⁴ will achieve a pattern of development and allotment sizes that provide opportunities for rural lifestyle living. The management of activities to ensure compatibility and the avoidance of adverse effects will be managed through the Structure Plan Rule Framework with integration to the Operative Plans Rural Environment Rule Framework. As such the proposed Rural Lifestyle (Equestrian) Environment Area with Wairau Estate will be consistent with achieving the Rural Lifestyle Zone Objectives of the Draft Plan.⁴⁵

Concluding Comments

As stated at the outset, the Draft District Plan 2016 (DDP) has no statutory effect; it is a useful indication for the future direction of land use planning and environmental management in the District, recognising that the statutory process of District Plan Review, in the form of the public notification of a Proposed District Plan and all that could be expected to will ensue, has still to commence. However, from the preceding discussions, and for the reasons given, it is apparent that the Wairau Estate proposal as set out in this Request has a high level of congruence with the relevant provisions of the Draft District Plan and the achievement of the relevant objectives.

4.3.8.5 Draft District Plan 2018

As introduced in 4.3.8.5 above, a second version of the Draft District Plan was published for community comment by the Council on 5 February 2018.

As with the Draft District Plan 2016 (DDP), the 2018 'ePlan' has no statutory effect.

It is noted that there has been a reordering of some provisions, refinement of formatting, some amendment to provisions and content added as between the 2016 and the 2018 versions of the draft Plan.

The inclusion of Strategic Objectives and Rules are obvious important developments as is the greater emphasis on the use of Structure Plans for the realisation of urban development capacity in the Future Urban Development (FUD) areas, now called Urban Growth Areas.

⁴³ Draft District Plan 2016 – pg. 128

⁴⁵ Draft District Plan 2016 – Rural Lifestyle Zone – Objectives RLZ-01, 02, 03 and 04

The 2018 edition includes a set of strategic objectives and policies. These capture many of the themes of the 'New Plymouth District Blueprint' discussed in 4.3.8.7 below and incorporate them into the draft plan framework.

These higher level strategic matters span across Natural Environment, Community Environment, Tangata Whenua, Growth and Land Supply, Urban Form and Connectivity Appropriately Located Activities, Centres, Business and Industry, Housing Choice and Rural Production and Rural Industry.

Having regard to the carrying forward of the Future Urban Development (FUD) areas of the Operative District Plan, as 'Urban Growth Areas', into the Draft District Plan 2018, this Request is not inconsistent with the strategic direction signalled in the ePlan.

This Request is consistent with the four objectives of the District Wide Provisions for Urban Growth Areas. In particular, the primary statutory mechanism to facilitate the proposed development will be a structure plan and infrastructure is available or will be provided by the Requestee.⁴⁶ The Wairau Estate Structure Plan⁴⁷ is designed manage the key issues identified in the Overview to Appendix 4 – Structure Plans⁴⁸, namely:

- Urban consolidation/intensification;
- Multi-modal transport links (including pedestrian links);
- Location, type and scale of infrastructure;
- Reserve and open space networks;
- Provision of community facilities;
- Protection of key features (cultural, ecological or heritage sites);
- Areas of contamination; and
- Provision and location of network utilities.

It is considered that the rule framework approach in the Request, as set out in Appendix 11 and modelled on the Operative District Plan, will readily integrate with the draft Activities Rules framework for Urban Growth Areas as set out in Table 1 of the Urban Growth Areas of the ePlan.

With regard to the Rural Lifestyle provisions, the proposed rule framework for Wairau Estate Rural Lifestyle Area appears to be a good fit. The building height provisions in the Request are more restrictive than those of the draft plan as they are designed to respond sensitively to the particular attributes of the Wairau environment.

Concluding Comments

The 2018 iteration of the Draft District Plan reaffirms the overall direction that the Council intends to take with the statutory planning framework for the future resource management planning of the District.

As with the concluding comments above for the 2016 Draft Plan, the Wairau Estate proposal, with specific reference to the changes to the operative district plan requested by this Request, continue

⁴⁶ Draft District Plan 2018 – Urban Growth Area – Objectives OG-01, 02, 03 and 04

⁴⁷ Appendix 3 – Vision and Structure Plan – pg. 9

⁴⁸ Draft District Plan 2018 – Appendix 4: Structure Plans

to have a high level of congruence with the relevant provisions of the Draft District Plan 2018 and are consistent with the achievement of the relevant draft objectives, policies and rules.

4.3.8.6 Oakura Structure Plan 2006

The Oakura Structure Plan (OSP) was adopted by the Council in 2006 following extensive consultation with the local community. It was 'prepared in a philosophy of partnership between the community and the council, as well as through consultation and participation with other key stakeholders.'⁴⁹

The vision adopted in the OSP states "...where the sun lingers...to be a vibrant and distinct community celebrating links from mountain to sea.'⁵⁰

The features that make Oakura unique are expressed as:

*Oakura is a growing and popular coastal community located 12km south of New Plymouth city. Oakura boasts numerous recreational opportunities related to the natural environment including boating, fishing, hiking, camping, surfing, and horse riding. These recreational opportunities can be attributed to the coastal setting, rural atmosphere and the community's proximity to Egmont National Park.'*³³

The geographic area included in the Oakura Structure Plan area is shown on the map included in the OSP – refer Appendix 2.1. The subject site is wholly included in the OSP Area.

The OSP identified that the population of Oakura as at the then most recent Census (2001) was approx. 1200 residents and was growing at two percent per year. Subsequently the Census 2006 records the population as 1359, and for Census 2013 as 1380, an increase of 1.5% over the intra-census period. This slowing of population growth in the township could be attributed in part, to the NZ-wide slowdown of the economy due to the Global Financial Crisis (GFC), but more likely to the absence of green fields land available for new residential development in Oakura.

Greenfields subdivision over recent decades has been sporadic and relatively small scale as the following table illustrates:

Locality	Year (Deposited Plan)	Buildable Lots
Prudence Place	1974	26
Kaitake Place	1979	23
Arden Place	1983	31
The Outlook	1996	9
Shearer Drive	2004	22
Tui Grove	2006	11
Cunningham Lane	2010	6
	Total	128

⁴⁹ Oakura Structure Plan 2006 – pg. 7 - Para 2.1

⁵⁰ Oakura Structure Plan 2006 – pg. 5 - Para 1.2

The OSP noted a demand for residential growth within Oakura and surrounding areas and that the Council has committed to extending its wastewater network to the Oakura township in 2008/09. Although the Structure Plan is a separate process from the wastewater reticulation project, the implications on future development in Oakura as a result of the wastewater extension has been taken into account in the Structure Plan.⁵¹ The Council has subsequently completed the wastewater reticulation project in the township. It is this system that will service Wairau Estate development.

The OSP contains an Action Plan; this recognises that the implementing the OSP is a long-term programme of 20 years of ongoing work. A number of the Issue topics in the Action Plan, which are expressed more in the nature of objectives, are relevant to the to this Request. These are set out in the following table in summary form:

Issue	Action Implementation	Comment
PG1 - Residential growth should be located away from the sea to protect the natural character of the coast.	The OSP proposes a 'Coastal Community Environment Area' to recognise 'the uniqueness and special values of Oakura.' Parameters to include maximum site coverage of 35%, maximum building height of less than 9m, minimum lot size of 600m ² together with permeability and landscaping rules Encourage future residential development on the land between existing residential areas in Oakura, the State Highway and the Kaitake Golf Course. Future residential development may also occur on the landward side of State Highway 45.'	The subject site located away from the coastal edge and is on the landward side of SH45. The natural character of the coast will not be affected by the proposal
SOP1 - New development needs to recognise the uniqueness and special values of Oakura, and the views from the Kaitake Ranges to the sea and from the sea to the ranges should be protected.	The OSP aims to ensure that views and outlooks are preserved and building heights are consistent with the 'village appeal' .	The subject site and environment has been professionally assessed for landscape and visual impact. ⁵² Development controls including lot size, density, building heights and roof cladding reflectivity are proposed. With one exception these controls will be consistent with, or more restrictive than, the current development applying to the Oakura urban area and will be consistent with village appeal.

⁵¹ Oakura Structure Plan 2006 – pg. 8 - Para 2.1 & 2.2

⁵² Appendix 5 – Landscape and Visual Impact Assessment – Blue Marble Landscape – August 2017

		<p>The Rule Framework proposes a range lot sizes from minimums of 700m² down to 300m² for a specific area (proposed Residential D) of the Estate</p> <p>Since community consultation for the OSP took place in 2006 there is anecdotal indications that community expectations have shifted and are accepting of smaller lot sizes. This appears to be driven by an aging population some of who are now thinking about downsizing both in lot size and dwelling size for their retirement years.</p> <p>Building heights of no more than 6m are integral to the Wairau Estate rule framework and are designed to take account of the landscape sensitivities.</p>
IN1 - Need for integration of the existing road network with any new residential development in the community.	<p>The OSP proposes that traffic study be undertaken to confirm an appropriate roading network to accommodate urban growth and including the separation of traffic and pedestrians.</p> <p>To manage potential 'reverse sensitivity Impacts' on the state highway from adjacent residential development the OSP advocates the development of greenbelt along either side of the state highway through a Plan Change, where the proposed residential development is to take place. The greenbelt should create a buffer between residential and state highway activities.</p>	<p>The Requestee has designed an appropriate local roading and pedestrian network for the subject site and undertaken a traffic impact assessment.⁵³</p> <p>At the SH45 and Wairau Rd intersection a roundabout and pedestrian underpass is proposed.</p> <p>A landscaped noise attenuation bund is proposed along the State Highway boundary of the subject site to create a buffer between residential and state highway activities.⁵⁴</p>
ROS2 - Availability of pathways within the Oakura area, as well as along the coast and linkages	The OSP advocates the development of walkway linkages and walking tracks through the Structure Plan area	The Requestee is proposing a network of trails (and with the specific user groups in mind that the SOP identifies) within the natural gully systems of the subject site that will link to other existing and proposed trails beyond the site.

⁵³ Appendix 9 - Traffic Impact Assessment – AMTANZ – August 2017

⁵⁴ Appendix 10 – Traffic Noise Attenuation Assessment - Marshall Day Acoustics – March 2017

between the coast and township.	and beyond when new subdivisions occur that build on the existing trail system. The OSP also advocates pathways to accommodate specific user groups, e.g. equestrians, cyclists, walkers etc.	
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4.3.8.7 *The New Plymouth District Blueprint*

Commencing in late 2014, the New Plymouth district community and the Council developed a District Blueprint. This was formerly adopted by the Council in June 2015.⁵⁵

The New Plymouth District Blueprint is a high level spatial plan for the District that is intended to guide Council decision making to deliver more integrated social, economic and environmental outcomes for the community. Elements of the Blueprint are relevant to Oakura and the Wairau Estate proposal. These include the following key directions:

- **Enhance the natural environment with biodiversity links and clean waterways:**

This key direction recognises the district's unique natural environment and the significant areas of indigenous vegetation and rivers and waterways that flow from the mountain to the sea. This theme, while most relevant to the rural environment, is also relevant to the development of greenfield sites for urban living. It identifies that enhanced biodiversity will not only be positive for the natural environment and clean water but will also have significant cultural and economic spin-offs.

The intended preservation and enhancement of the natural areas including the natural watercourses within the subject site together with the work already undertaken by the applicant in the adjoining "The Paddocks" development is consistent with and gives effect to this key environmental direction.

- **Strengthen and connect local communities**

This key direction recognises that New Plymouth district and the city are made up of many communities and neighbourhood centres. Strengthening and connecting local communities ensures that they become successful, safe and liveable environments for residents. The Council's role is to support and enable various community, business and industry initiatives by providing high quality public infrastructure and a pragmatic and facilitative regulatory response.

The comprehensive approach adopted within this request, as demonstrated at the outset in the Vision and Structure document, is consistent with the objectives of this key direction, and in particular, the strengthening of and connection with the existing Oakura township, notwithstanding the outward expansion proposed. Local consultation identified the township being located either side of SH45; the proposed roundabout at the SH45/Wairau Rd intersection

⁵⁵ NPDC Report to Council - DM 6544156 – 2 June 2015

is a key element in this proposal to help ensure the village remains readily 'connected' as it inevitably expands.

- **Direct a cohesive growth strategy that strengthens the city and townships.**

This key direction acknowledges that the district is growing and the need to think about how we provide for growth into the future. To provide for anticipated population growth, it states new growth areas will be required in both the city and townships to provide for additional dwellings over the next 30 years. Determining the appropriate locations for growth is important to achieve key community outcomes. It also acknowledges that the Council has a role in being clear on how and where it will accommodate growth into the future, through providing adequate land supply and planning for network infrastructure in appropriate locations.

Again, this Request is consistent with this key direction in that it is consistent with the long-established Council with policy for urban expansion at Oakura and will add significantly to the urban land supply at Oakura supported by infrastructure integrated into the local available networks.

4.3.8.8 'Oakura – A Growing Community'

The above titled document was the output of a Kaitake Community Board community engagement project undertaken over 2014-16.⁵⁶

An 18-person community-based project group, chaired by Kaitake Community Board chairperson Doug Hislop oversaw the project. An 'Oakura – A Growing Community' discussion document was produced during the first phase of the project; community feedback was conveyed to the project group through a written submission process.

The 'preamble' to the document comments that part of the purpose of the 'community engagement project was to test whether it was appropriate to grow the village to the size and at the rate shown in the FUD Planning Overlay.' The preamble stated 'the very strong community feedback' is that the village is:

- Not ready to grow to that (FUD) size in the short or medium term or in the foreseeable future;
- There is a need for staged, smart and targeted growth that considers the limitations on growth including:
 1. Changes to the special character of Oakura that would arise as the result of rapid and widespread expansion;
 2. Size and location of school and current school roll; and
 3. Traffic and parking issues on State Highway 45 and the CBD.

Comment: The areas identified for Future Urban Development at Oakura are shown as overlays on Rural Environment Area land on Operative District Planning Maps A60 and A61. These FUD areas were adopted into the District Plan in March 2013 pursuant to a publicly notified RMA plan change process.⁵⁷

⁵⁶ 'Oakura – A Growing Community' NPDC Doc ID 7111832 V1; 2 May 2016

⁵⁷ NPDC Plan Change PLC09/00015

Before the FUD areas can be utilised for residential purposes they will need to be subject to a further statutory RMA process to 'zone' the land for residential purposes, either by way of a plan change process or through a District Plan Review.

Nowhere in the District Plan is the rate of development for the FUD area specified.

In the ordinary course of events, both historically and in the foreseeable future, the rate of development at Oakura has been, and will be, determined by market forces, that is, at the rate at which serviced lots available to the market are purchased for housing. For the most part purchases will be made by private citizens for private housing with building being initiated and funded by purchasers.

As the population grows at Oakura, it could be expected that young families with school age children will be part of the demographic mix. The Ministry of Education is responsible for ensuring communities are provided with sufficient school capacity. Oakura will be no different. The Wairau Estate proposal along with the other land that has been identified for future residential development at Oakura will enable the Ministry to anticipate and plan for the further longer-term educational needs of the Oakura community.

Given the comprehensive urban design approach of the Wairau Estate the proposal could be considered to be 'smart growth'.

Following the 'preamble' section, the 'Oakura – A Growing Community' document focused on five themes: Environment, Destination, Growth/ Industry/Talent, Community/Citizens and Centres. Discussion on each theme follows:

- Environment – This theme has an emphasis on preserving and enhancing the local natural environment, providing access to it, protecting 'the natural character of views' and retaining 'a low built density environment'.

Comment: The Wairau Estate proposal has an emphasis on preserving and enhancing the natural features of the subject site as shown in the Vision Statement and proposed Structure Plan.

- Destination – Balancing the lifestyle needs of residents with attracting visitors is a primary community concern. Opportunities to link to the Taranaki Traverse and provision of a safe walkway/cycleway from Oakura to New Plymouth were the other two matters.

Comment: Attracting visitors and promoting the Taranaki Traverse will result in increased traffic on Upper Wairau Road, including pedestrians and cyclists, a matter specifically identified in the Traffic Impact Assessment included in Appendix 9.⁵⁸

- Growth/ Industry/Talent – Themes relevant to this Request are 1) Staged rezoning to support sequential village growth; 2) provision of variable housing choices rather than large scale tract housing development of uniform housing types; and 3) increased density, small lot sizes and higher site coverage rules targeted in appropriate areas of new residential development.

⁵⁸ Traffic Impact Assessment - Wairau Estate – AMTANZ Ltd – June 2017

Comment: It is envisaged that the development of Wairau Estate will be both staged and sequential and will occur at such a rate (e.g. 10-15 sections per year) that the community of Oakura will be able to absorb and adjust to it, just as it has done in past years. The mix of minimum lot sizes within Wairau Estate will provide for a range of housing choices consistent with the traditional density of settlement at Oakura and will also provide an area of smaller lots appropriate to new residential developments.

- Community/Citizens – This theme includes, as a ‘fundamental cornerstone’ maintenance of ‘village identity and character’; design that enables a friendly, safe connected liveable community environment and a walkable neighbourhood.

Comment: While the identity and character of Oakura is not defined it can be inferred that the attributes include accessibility (e.g. bridle paths, cycleways walkways etc) and an emphasis on active modes of transport (e.g. walking, cycling and equestrian). These attributes are consistent with the Wairau Estate proposal which has a walkaway/cycling network integral to the Estate and beyond, along with a bridle path within the equestrian lifestyle component of the proposed development.

- Centres – Concerns/issues include CBD to be less vehicle dominated, highway through CBD should invite travellers to stop, use of design devices to calm traffic through CBD and provision of better pedestrian movement opportunities. Specifically, with regard to ‘Traffic’, the strengthening of village ‘gateways’ to calm traffic and reconfiguration of Wairau Rd/ intersection were identified along with a preference for additional entrances and exits to future urban development areas onto SH45 to reduce traffic volumes away from the Wairau Rd intersection.

Comment: The proposed roundabout at the intersection of SH45 and Wairau Rd will act as a gateway when approaching Oakura from the south and will help to demarcate the southern extent of the Village. As discussed in the Traffic Impact Assessment in Appendix 9⁵⁹, the NZTA do not favour multiple vehicle assess points along the SH out of consideration for highway safety and efficiency, hence the preference to reconfigure the SH45/Wairau Rd intersection with a roundabout and pedestrian underpass.

4.3.9.9 Consultation with Tangata Whenua

During the course of the preparation of this Request, consultation has been undertaken with the Mana Whenua within whose Rohe the subject site is located.

A record of the consultation undertaken with representatives of the Ngati Tairi Hapu is included in Appendix 4.

The particular advice received from Ngati Tairi Hapu is summarised as follows:

1. That disposal of storm water within the proposed development area does not adversely impact instream values.
2. Hapu be given opportunity to recommend the name for the Wairau Estate loop road; this would be reflective of the early (mana whenua) history of the locality.
3. Any earthworks to be subject to archaeological supervision (pursuant to an NZHPT archaeological authority) with Hapu participation.

⁵⁹ Traffic Impact Assessment - Wairau Estate – AMTANZ Ltd – June 2017

4. MOU to be developed to record understandings and undertakings of OFPL and the Hapu in respect of matters of cultural importance relating to the Wairau Estate project with MOU being lodged as part of the Plan Change Request to NPDC.

Part 5 – Assessment of Effects on the Environment

5.1 Introduction

This statement of effects provides an assessment of the actual and/or potential effects on the environment that will actually, or may potentially, result from the change of the use of the subject site from rural to residential and rural lifestyle.

This Assessment should be read together with the preceding discussion in Para 4.3.7.3 Operative District Plan which assesses this Request against the Objective and Policies for 'Issue 23: The need to comprehensively plan for future urban development'.⁶⁰

5.2 Description of the Site and Environs

The site and its environs have been described in Part 2 – Section 2.2.5 in this Request.

In summary, the site is predominantly in pasture and the milking platform for a small dairy farm. A series of natural gullies vegetated variously with indigenous and exotic species and pasture feature on the subject site

The recorded history of the property is described in the Archaeological Assessment accompanying this Request.⁶¹ The predominant use of the land for the past 100 plus years has been 'agriculture' (Ref: Pg. 14 of Archaeological Assessment). Anecdotal evidence supports this; it is known the property has been used as a dairy farm since at least the 1930's when the property was in the ownership of the Marsh family.⁶²

A dairy factory (? to produce butter) was established on the property in 1898 by the Oakura Cooperative Dairy Company. The factory was situated near SH 45 where the present dairy milking shed is now located. It is now known when the dairy factory ceased operation but was most likely after 1915 when the factory was taken over by the Omata Co-operative Dairy Company. Nothing remains of the original dairy factory, although concrete footings and abutments surrounding the existing dairy shed and incorporated into present farm outbuildings may relate to the earlier recorded use (Ref: Pgs. 14,15 & 16 of Archaeological Assessment).

5.3 Community Engagement

5.3.1 Introduction

During November 2017, engagement with the Oakura community was undertaken using a variety of channels.

A website, created for the expressed purpose of informing the Oakura community of the proposed plan change requested, went live on Saturday, 11 November 2017.

The website can be viewed at <https://www.wairauestate.co.nz/>

Also on 11 November, a brochure informing residents of the Wairau Estate proposal was delivered into the letterboxes of approximately 240 residences on Upper and Lower Wairau

⁶⁰ New Plymouth Operative District Plan – Vol 1 – pg. 126

⁶¹ Appendix 6 – Archaeological Assessment – Ivan Bruce – March 2017

⁶² Pers Comm – McKie-Comber – 16 December 2017

Roads, Telford Terrace, Cunningham Lane, McKellar Street, Tui Grove, Surrey Hill Road, Ekuarangi Place, Pahakahaka Drive and Kaitake Place.

The brochure, a copy of which is included in Appendix 12, drew attention to the website. Readers were invited to view the website and submit feedback.

Readers were also invited to attend one of a series of meetings to have their questions answered. The venues, dates and times of the meetings and attendance numbers were as follows:

Oakura Public Library	Oakura Town Hall*	Attendance
Mon, 13 Nov 2pm – 4pm		4
Thurs, 16 Nov 9.30am – 10.30am		2
Fri, 17 Nov 2pm – 3.30pm		3
	Sat, 18 Nov 2pm-4pm	9
	Sun, 19 Nov 2pm-3.30pm	5
	Thurs, 23 Nov, 2pm-3pm	9
	Fri, 24 Nov 2pm-3pm	3
	Total Attendance	35

*The Hi Tide Café was the original venue for this series of meetings. At short-notice this venue became unavailable; signage at the Hi Tide Café on each of the meeting days redirected intending participants to the nearby Oakura Town Hall.

As at 12 February 2018 there had been 969 visitors to the web site. 508 (52%) of these were from 'New Plymouth'. The 'New Plymouth' geographic area includes Oakura. It is assumed most of the 508 local users would be from the Oakura area, and particularly from among those residents that had been letterbox dropped with the brochure on 11 November. The majority of visits to the website occurred in the period 12-30 November 2017.

The average view time of the New Plymouth users was 3mins 46 secs against the overall average viewing time of 3mins 16 secs. 162 (34%) of the New Plymouth viewers were returning visitors.

As of 12 February 2018, 15 persons had submitted comments of the Wairau Estate proposal via the website. In addition, as of 12 February 2018 there were 26 subscribers for updates to the website.⁶³

On 24 November a meeting was held with the Oakura School Principal, Mrs Lynne Hepworth and Board Member, Mr Richard Shearer. The school representatives were briefed about the Wairau Estate proposal and copies of the Vision Statement provided for circulation among other Board members.

5.3.2 Analysis of Community Feedback Issues

The issues identified through community engagement are discussed here in the same order as that shown in Appendix 12.3.

5.3.2.1 - Access Point

- A preference was expressed for the primary access to Wairau Estate to be from Surf Highway 45.

⁶³ Statistics sourced from Goggle Analytics 12 February 2018 - <https://analytics.google.com/>

Response: NZTA do not favour an access point off SH45 in the interests of highway safety and efficiency.

- It was suggested that the property on the south-eastern corner of SH45/Wairau Road intersection (100 Upper Wairau Road) be purchased and used for access to the site. The suggestion was in effect to create a fifth road off the roundabout.

Response: The suggestion is considered impractical in the context of traffic safety and efficiency.

5.3.2.2 – Equestrian

- Concerned at increase in horses on Wairau Rd and about village that may result.

Response: Horses lawfully entitled to be ridden on public roads. Obligation of riders to control and look out for the safety of others and also to collect horse droppings.

- Concern at banning of dogs and horses on existing esplanade walkway from 'The Paddocks' through to SH45.

Response: Use of the esplanade walkway is subject to District Council Bylaws.

- Equestrian lifestyle lots supported.

Response: Oakura has a longstanding equestrian community and provision of equestrian lifestyle lots is in response to a perceived demand. Support noted.

5.3.2.3 – Lot sizes

- Preferences were expressed supporting and not supporting lot sizes down to 300m²

Response: The smaller lot sizes, along with lot sizes of up to 1-2ha, are intended to provide for a wide range of housing and lifestyle choices at Wairau Estate. The smaller lots will suit those wishing to reside in 1-2 bedrooms (e.g. first home builders and retirees.) Preferences for and against smaller lot sizes noted.

5.3.2.4 - Pace of development

- Will the development be staged and how long will it take to develop?

Response: Wairau Estate is a staged, long-term development plan. It is proposed that following the extension of existing trunk mains for water supply and sewer services to the site, that development would proceed in a logical and sequential manner.

Sections will be developed in stages of 15-30 lots and released for sale in response to demand. Based on an average uptake of 10-15 sections per year, Wairau Estate will take some 20-40 years to be fully developed. The building of dwellings will be arranged and undertaken by the section owners in their own time.

In summary, the development plan is forward looking, long-term and intergenerational.

5.3.2.5 – Retirement village

- Preference expressed for retirement village

Response: While a fully-fledged retirement village (i.e. independent living, assisted care through to hospital care) is not being planned for, the smaller lots will be suitable for retirees.

5.3.2.6 – Reverse sensitivity

- Concern expressed at existing rural uses being adversely constrained by residential living in close proximity.

Response: The equestrian lifestyle area will provide a buffer between the residential area of the Estate and the adjoining rural property to the south. SH45 together with the acoustic bund/fencing along the western boundary of the site will also provide a buffer between the Estate residential lots and the rural uses on the seaward side of the state highway.

5.3.2.7 – Roundabout

- Concern at proximity of roundabout to adjoining properties.

Response: The proposed roundabout will be accommodated within the extent of the existing road reserves.

- Locate the roundabout further south and create a new intersection to service future residential development both sides of state highway.

Response: In the interests of state highway efficiency NZTA does not favour a new intersection south of Wairau Rd to service future residential development at Oakura.

- Preferences expressed both supporting and not supporting roundabout and pedestrian underpass.

Response: A roundabout and pedestrian underpass at the SH45/Wairau Rd intersection will promote traffic efficiency and safety over the long-term, and will help to address the longstanding issues of residents regarding intersection traffic delays, unsafe traffic manoeuvres and excessive traffic speeds in the vicinity along SH45. The opposing preferences noted.

5.3.2.8 – Rural Character

- Concern expressed at the loss of rural outlook from Tui Grove.

Response: Land to the immediate south and east of Tui Grove, while currently 'zoned' Rural, is subject to a 'Future Urban Development' (FUD) overlay. The FUD overlay was put in place following a publicly notified process under the RMA. Accordingly, under existing District Plan provisions, it is only matter of time before residential zoning of the FUD land occurs and residential development follows.

- What about limitation of further subdivision of rural land.

Response: All of the Oakura Farm Park Ltd land is 'zoned' Rural. About 12ha is subject to the 'Future Urban Development' (FUD) overlay. The balance of the land has a subdivision restriction placed on it for as long as the land continues to be within the Rural

Environment Area. The subject Request for Private Plan Change, if successful, will address the respective limitations of each of these District Plan requirements.

- Maintain rural character - develop the land similar to "The Paddocks" i.e. lifestyle block.

Response: The landowner, 'Oakura Farm Park Ltd', considers, given part of the property has been identified for Future Urban Development, that the best long-term use of the land is for urban purposes.

5.3.2.9 – Size of Development

- Concern expressed at the size of the development; why so big; why so many lots?

Response: Best practice is to plan for future residential development of communities comprehensively and holistically. Approx. 12ha of the Oakura Farm Park Ltd property is already identified in the Operative District Plan for 'Future Urban Development' (FUD). The FUD area identified (which will yield approx. 120 sections) is an awkward and inefficient shape (it is in essence a large triangle) and does not lend itself to a logical and well-planned urban extension of the Upper Wairau Rd residential area.

Further, removing 12ha from the existing dairy farm will most likely render it uneconomic. On reflection, it is considered while the property is in one ownership that the responsible approach is to comprehensively plan for the development of the whole site as proposed. This approach will avoid future 'piece meal' and inefficient extensions but will enable an attractive and well-planned living environment for the future generations that will be residents.

Sections will be developed in stages of 10-20 lots and released for sale in response to demand. Based on an average uptake of 10-15 sections per year, Wairau Estate will take some 20-40 years to be fully developed. The building of dwellings will be arranged and undertaken by the section owners in their own time.

In summary, the development plan is forward looking, long-term and intergenerational.

5.3.2.10 – Traffic

- SH45 – concern expressed at additional traffic and congestion affecting left turn from Pitcairn St onto SH45.

Response: This issue will need to be addressed by NZTA as road controlling authority.

- SH45 – concern expressed at additional traffic and congestion affecting right turn into Donnelly St from SH45.

Response: This issue will need to be addressed by NZTA as road controlling authority.

- SH45 - concerns expressed at additional traffic 'through The Village'.

Response: Any increases in traffic volumes 'through The Village' i.e. along the State Highway will be accessed and managed by NZTA as the road controlling authority.

- SH45 – suggestion that 50kph posted speed limit be shifted further south.

Response: If this Private Plan Change Request is granted, and the Roundabout is constructed, it could be expected that that the 50kph posted speed limit will be moved further to the south along SH45.

- Upper Wairau Rd - concerns expressed at pedestrian safety and lack of footpaths

Response: The District Council may address the lack of footpaths if and when pedestrian numbers increase that can be attributed to development.

- Upper Wairau Rd - concerns expressed at vehicle speeds and construction traffic

Response: All road users are obligated to abide by speed limits; construction traffic is lawfully entitled to travel on public roads.

- Upper Wairau Rd - concerns expressed at state and width of seal.

Response: The road reserve width of Upper Wairau Road is 20m over its entire length. The reserve width is sufficient to accommodate anticipated traffic growth well into the future. The District Council will no doubt address the adequacy of the condition of the road, including seal widths, in response to ongoing maintenance requirements and/or increased traffic volumes attributable to development.

- Upper Wairau Rd – suggestion that a crossing point be provided for school children opposite Donnelly St walkway.

Response: The District Council will no doubt address the need for a pedestrian/refuge/threshold treatment as part of any assessment of the traffic and pedestrian requirements of Upper Wairau Rd.

5.3.2.11 – Urban Design

- Concept supported – it's a good design

Response: Noted

- Excited by walkways and pedestrian linkages

Response: Noted

- Landscape the entry road (trees)

Response: This suggestion will be considered as part of the overall landscaping of the Estate.

- Oakura has changed a lot over time and will continue to change

Response: Noted.

- Plantings at “The Paddocks” appreciated.

Response: The vegetative plantings at “The Paddocks” are giving effect to the landscape plans approved for that development and there is more planting to be undertaken. It is intended that the landscape design of Wairau Estate, and particularly the enhancement

and expansion of the existing indigenous vegetation in the natural features to be retained, will compliment "The Paddocks" precinct.

5.3.2.12 – Increased urbanisation of Oakura

- Existing properties will be devalued.

Response: We are unsure as to the basis for this opinion. However, such a view would need to be supported by a valuation undertaken by a professionally qualified person. The relevance of property values as an issue of adverse effect in the RMA context would also need to be questioned.

- The increase in population will create additional demand on existing facilities in the village such as shops, medical facilities and the school.

Response: It could be anticipated that additional private sector services will be provided in response to local demand.

The Ministry of Education is responsible for ensuring communities are provided with sufficient school capacity. The Wairau Estate proposal along with the other land that has been identified for future residential development at Oakura will enable the Ministry to anticipate and plan for the further longer-term educational needs of the Oakura community.

- The increase in population and the proposed intensity of settlement will result in loss of village character.

Response: Based on past and recent activity, it is anticipated the uptake of lots will, at best, be no more than 10-15 lots per year. At this rate it will take some 25-40 years for Wairau Estate to become fully settled. At a ratio of say 2.5 persons per household, it is considered that the existing facilities will be able to service and grow in line with the gradual increase in population.

Apart from approx. 4ha of smaller lots (e.g. 350m²) to meet the housing choice of those wanting smaller homes (i.e. 1-2 bedrooms), the proposed residential lot sizes in the Estate will be consistent with lot sizes throughout the existing Oakura urban area.

It is accepted that the character of the village may change over the long term.

- New residents coming into Oakura will be a positive.

Response: Noted.

- There is high demand for houses and sections and the Oakura lifestyle.

Response: Noted.

5.3.2.13 – Utilities

- What about the adequacy of the existing water supply and sewerage capacity?

Response: The civil engineering assessment undertaken by Red Jacket Ltd (refer report in Appendix 8) confirms there is adequate water supply and sewer capacity available to accommodate the full scope of Wairau Estate as proposed.

- What about the effect of development on stormwater discharge for downstream properties?

Response: Stormwater within lots will be disposed of by way of underground soakaway within lot boundaries.

Stormwater from roads and the public spaces will be disposed of into the natural gully systems. Bunds will be constructed within these natural features to attenuate stormwater flow within the existing water courses to ensure hydraulic neutrality is maintained. (i.e. stormwater flows post-development are no greater than those occurring before development.)

5.3.2.14 – Property Specific Concerns

- 97 Upper Wairau Rd

At the community engagement meeting on 13 November 2017 the owner-occupiers of the above property expressed concern at the proximity of the proposed roundabout to their property which is situated on the north-eastern aspect of the Upper Wairau Rd/SH45 intersection.

The owners apparently already experience difficulties exiting their property due to its close proximity to the intersection and the almost blind nature of the left turn for traffic leaving the State Highway to travel east along Upper Wairau Rd.

Response: Examination of aerial imagery shows that the sight distance to SH 45 for vehicle entering or exiting the subject property is currently approx. 20m. The roundabout would place the left turn travelling lane some 10m closer to the properties current sole vehicle crossing and there is currently limited formed manoeuvring space within boundaries of the property.

The Traffic Impact Assessment demonstrates that a 10m radius roundabout with travelling lanes can be located within the existing road reserves at the subject intersection.⁶⁴

While the property's vehicle crossing is physically some 20m from the SH45, the vehicle crossing is in fact only some 2m from the corner-splayed front boundary.

In due course some form of mitigation to address the property owners' concerns may need to be considered, regardless of the roundabout proposal. One option would be to move the position of the vehicle crossing toward the eastern boundary of the property. This would help to preserve the current 20m sight visibility distance to SH45 if the roundabout proposal is adopted; if not, the sight visibility distance would be improved to be some 30m; further, reconfiguring the front yard of the property could be undertaken to improve onsite manoeuvring to enable vehicles to exit the property in a forward direction.

- 130B Upper Wairau Rd

At the community engagement meeting on 18 November 2017 the owner of the above property, expressed concern at the potential loss of rural outlook from the second floor

⁶⁴ Traffic Impact Assessment - Wairau Estate – AMTANZ Ltd – June 2017 – Pg. 23 Fig 19

of her dwelling and also that there would be residential development on what is currently rural land adjoining her property.

Response: The applicant (Mr McKie), Richard Bain and Melanie Sparks, Bluemarble landscape architects and the writer, by arrangement with the owner visited the subject property on 20 November 2017 and viewed the subject site from the second floor of the dwelling.

What became apparent onsite is that the subject views (primarily to the east, south and south-west) from the Ween second floor are across land of the subject site, that, while currently in the Rural Environment Area, is also subject to Future Urban Development (FUD) overlay. This suggests that in time the current near rural views to the east and south will become urban in character in any event. Views to the west and north west from the same second floor north are of urban residential Oakura.

With regard to the land immediately to the east and adjacent that is subject to the FUD overlay (i.e. the Thurman/Williams property which forms part of this Request), it is likely that the Thurman land will, when developed, be lowered by some 1.5 metres to be at least level with the accessways to the adjoining properties along the north boundary, of which the property at 130B Wairau Rd is one. It is understood this would alleviate an existing overland stormwater flow issue for the subject property (130B Upper Wairau Rd) and will also mitigate the potential loss of views from future residential development.

5.4 Assessment of Effects

The following matters have been assessed for actual and potential effects on the environment in with regard to the change in land use that will follow-on from the change of use of the subject site from rural pastoral to residential and rural lifestyle.

5.4.1 Ecology

The ecology of the subject site has been assessed by a suitably qualified and experienced ecologist. The assessment report is included in full in Appendix 7 to this Request.⁶⁵ The ecologist has also walked the site with the engineers who prepared the feasibility report of the site and has reviewed the engineering feasibility report.⁶⁶

The findings of the ecological assessment can be summarised as follows:

- a) The central and southern tributaries of the Wairau Stream have existing riparian vegetation and a significant number of raupō beds of good ecological value, which will be enhanced by the proposed planting of native plants within the stream gullies.
- b) A range of native and exotic fauna were observed on the subject site. None of the species observed are considered threatened under the New Zealand Threat Classification System.

⁶⁵ Ecological Values and Impact Assessment: Wairau Estate Subdivision – Oecologico Ltd – July 2017

⁶⁶ Feasibility Report – Proposed Subdivision – Wairau Estate – 2017 – Red Jacket Ltd

- c) The retention of the natural gully systems and the revegetation plantings proposed will provide good opportunities to create habitat for fauna as well as a significant food source for native birds.
- d) The control of stormwater run-off from the local roading network can be easily achieved in the gully system of the central tributary of the Wairau Stream with the formation of retention ponds; the proposed short retention time of the ponding water is unlikely to negatively affect the raupō and flax beds in the gullies.
- e) Silt control measures to manage run-off during site works can be easily implemented to mitigate this risk and the proposed revegetation plantings and re-grassing will aid in the control of silt laden run-off from earthworks.
- f) Domestic cats and dogs, which already established in the locality can have adverse effects on native fauna.
- g) Clearance of pasture grass from the subject site along with any associated earthworks will be of minor ecological impact.

The recommendations contained in the ecological assessment, and the intended response of the Requestee, can be summarised as follows:

- a) Raupō beds to remain in full sunlight and not shaded by revegetation plantings.
Response: To be actioned through landscape design and management.
- b) Revegetation plantings to include large patches of flax and toetoe so as to provide habitat for native lizards, such as the gold striped gecko.
Response: To be actioned through landscape design and management.
- c) Specified species of indigenous flora to encourage native bird life.
Response: To be actioned through landscape design and management.
- d) Short detention times (i.e. less than 24 hrs) to allow excess stormwater to discharge from retention ponds.
Response: To be actioned through engineering design and construction.
- e) Stormwater retention ponds bund heights to be as low as practical, and no greater in height than 3m.
Response: To be actioned through engineering design and construction.
- f) Any new culverts designed to enable effective passage of migratory native fish.
Response: To be actioned through engineering design and construction.
- g) Any areas excavated in the proposed development are re-grassed or built over (e.g. road), as soon as practicable after earthworks are complete.
Response: To be actioned through engineering design and land development phase.
- h) Revegetation planting of the gullies is carried out before house site and roading earthworks are commenced.

Response: To be actioned through engineering design and land development phase.

- i) Domestic cats are prohibited from Wairau Estate.
Response: A contentious issue in which most communities have strong views for and against. While property owners in the adjoining 'Paddocks' are bound by private covenant not to keep cats, it is considered that such an obligation would be difficult to enforce on the larger scale of development contemplated at Wairau Estate. Such a ban would also likely be of limited value (given the distances which household felines are known to wander) unless domestic cats were banned from a wider area e.g. Oakura urban area.

- j) Minimum specified fencing requirements to exclude dogs from natural areas where lots adjoin proposed natural areas
Response: It is proposed natural areas be fenced to define the extent of wetlands and natural areas to deter human intrusion; dog proof fences will be investigated as part of landscape and engineering design.

- k) Public walking tracks are effectively fenced off from wetland areas so as to exclude dogs.
Response: It is proposed natural areas be fenced to define the extent of wetlands and natural areas to deter human intrusion; dog proof fences will be investigated as part of landscape and engineering design.

- l) Dogs on public walking tracks are kept on a leash at all times; esplanade strips within Wairau Estate to be subject to 'Leashed control areas for dogs' under the NPDC Dog Control Bylaw 2010.
Response: 'Leashed control areas for dogs' pursuant to the Council's dog control bylaw is within esplanade strips and other public spaces within Wairau Estate is supported.

- m) Ongoing monitoring of wetland birds, especially spotless crane, within the subject site.
Response: Ongoing monitoring of wetland birds and other fauna within Wairau Estate is supported. Requestee looks forward to working with relevant agencies such as TRC and Fish and Game etc.

The summary it is concluded that, having regard to the ecological assessment, the potential ecological effects of the proposed development on the subject site, carried out in accord with the mitigation measures as proposed in the responses indicated above, will be no more than minor.

5.4.2 Landscape

A Landscape and Visual Impact Assessment of the subject site and environs has been undertaken by a suitably qualified and experienced landscape architect. The Assessment is included in full in Appendix 5 to this Request.⁶⁷

The Assessment discusses the anticipated landscape effects; acknowledges the change that will occur to the landscape character through land modification but concludes this to be justifiable given the subject sites proximity to Oakura township. The Assessment also identifies the visual

⁶⁷ Landscape & Visual Impact Assessment - Wairau Estate Subdivision –Richard Bain – August 2017

effects that will occur and proposes a range of mitigation measures including limitations on building heights, lot areas, numbers of habitable buildings per lot, maximum reflectivity values for roof cladding and other exterior claddings, fence types, heights and location, vegetative planting in the natural areas and amenity planting within lots, retaining a buffer zone of rural character adjoin the pastoral land to the south and a bund planted with native vegetation along the state highway boundary.

The landscape assessment also addresses the matter of the Consent Notice attaching to Lot 29 within the subject site.⁶⁸

In summary, the Assessment concludes that the proposed Structure Plan approach to guide the development of the site (and supported by rules as proposed) will avoid otherwise potential adverse landscape and visual effects through the creation of the various Character Areas proposed together with the mitigation methods of the proposed development controls.

5.4.3 Archaeology and Historic Heritage

An Archaeological Assessment of the subject site has been undertaken by a suitably qualified and experienced archaeologist. The Assessment is included in full in Appendix 6 to this Request.⁶⁹

The Assessment found there was no archaeological sites or historic heritage on the subject site. However, it considers there are reasonable grounds to expect archaeological evidence may be encountered when earthworks are undertaken and recommends, as a means of mitigation, that an archaeological authority be obtained from the HNZPT ahead of any earthworks being undertaken on the site. The applicant is familiar with HNZPT archaeological authority process (this was followed in "The Paddocks" development) and the intends to act on the archaeological authority recommendation as part of the development and subdivision of Wairau Estate.

5.4.4 Infrastructure

A feasibility study has been undertaken by a suitably qualified and experienced civil engineering firm to evaluate the subject site as to its suitability for residential settlement. The feasibility report is included in full in Appendix 8 to this Request.⁷⁰

The feasibility study assessed the subject site in respect of stability to support residential development (i.e. light timber framed construction) and associated infrastructure including adequate available capacity to meet projected demands from the development for potable water supply, waste water and stormwater disposal.

The feasibility study concluded that the subject site was suitable as to soil stability, ground conditions, available infrastructure (i.e. water supply and waste water) and potential onsite and offsite stormwater disposal to achieve the minimum requirements of the New Plymouth District Council District Plan and the Council's current land development and subdivision development standards. (Refer Land Development and Subdivision Infrastructure NZS4404:2010 incorporating Amendment No 1 adopted by Council 30 August 2013.) It can therefore be concluded that in respect of the development of the site consistent with the minimum requirements of the

⁶⁸ Appendix 3 – LVIA – Addendum – Bluemarble – February 2018

⁶⁹ Archaeological Assessment - Wairau Estate – Ivan Bruce – March 2017

⁷⁰ Feasibility Report - Wairau Estate – Red Jacket Ltd – December 2017

Councils land development and subdivision standards that effects in respect of infrastructure will be less than minor.

5.4.5 Traffic

A Traffic Impact Assessment (TIA) has been undertaken by a suitably qualified and experienced traffic engineer to evaluate the traffic impacts that are likely to be generated by the development in relation to the local roading network over the long term. The TIA is included in full in Appendix 9 to this Request.⁷¹

The focus of the TIA is the potential long-term effects of traffic generated from within the proposed Wairau Estate on the road network beyond site, and the Wairau Road/State Highway intersection.

The TIA concludes that the proposed development will generate in the order of 2,550 vehicle trips/day when fully developed and that the effects of the projected traffic volumes will be significant on Upper Wairau Rd where the access to the development is proposed. The TIA Recommends that monitoring of the generated traffic volumes should be undertaken so that improvements to the subject sites intersection with Upper Wairau Road are implemented to offset these effects.

The assessment also concludes that the intersection of Wairau Rd and State Highway 45 will be significantly affected by the growth in traffic volumes. The TIA predicts that over the medium to long-term the performance (i.e. unacceptable delays for turning traffic and increased safety risks) of this intersection will deteriorate. The construction of a roundabout, together with a pedestrian underpass, at the intersection will address the effects of the development and provide certainty of the intersection performance for the foreseeable future.

It can be concluded that over the medium to long-term as the development of Wairau Estate matures, the adverse traffic effects will become more than minor. Mitigation of these potential adverse effects will be mitigated through the provision of a roundabout at the Wairau Road/ State Highway 45 intersection.

The Requestee supports the conclusions of the Traffic Assessment and has already initiated discussions with the NZTA and the Council. Both agencies have indicated support in principle for the roundabout and pedestrian underpass subject to an appropriate three-party funding formula and the timing of implementation being agreed. The Requestee contributed \$25,000 to SH45/Wairau Rd intersection improvements as part of "The Paddocks" development (c.2010) and will make an equitable contribution to the roundabout and pedestrian underpass proposal.

⁷¹ Traffic Impact Assessment - Wairau Estate – AMTANZ Ltd – June 2017

5.4.6 Traffic Noise

An acoustic assessment has been undertaken to assess the impact of traffic noise from State Highway 45 on the subject site. The assessment has been undertaken by a suitably qualified and experienced acoustic firm. The assessment is included in full in Appendix 10 to this Request.⁷²

To mitigate the adverse effects from state highway noise on residential development at Wairau Estate the assessment recommends an acoustic noise barrier (e.g. earth bund and/or fencing) that meets NZTA standard acoustic design requirements be installed along the boundary of the site adjoining State Highway 45.

As shown on the proposed Wairau Estate Area Structure Plan⁷³ an acoustic barrier along the SH45 frontage is integral to the design of the site.

5.4.7 Potential for Reverse Sensitivity Effects

The Wairau Estate proposal as set out in the Structure Plan and Policy and Rule Framework has been assessed for the potential for creating adverse effects due to reverse sensitivity and/or incompatibility between uses.

As a general approach to the urban design of Wairau Estate, compatible Environment Areas have been grouped or associated so as to avoid adverse effects, including reverse sensitivity issues arising between likely uses. For example, the Residential Environment Areas are all associated with or adjoining Residential Environment Areas.

Where reverse sensitivity effects have been anticipated between likely uses, 'structural' mitigation measures have been incorporated in the design. These are now discussed:

Residential - Rural

Residential development will be separated from the Rural Environment Area along the south boundary by the Rural E (equestrian lifestyle) Area. The Rural E Area, which will comprise lots of 1-2ha for dwelling houses and the keeping of animals, will be compatible with the pastoral use (dairy farming and grazing of animals etc) in the adjoining Rural Environment Area.

It is envisaged the residents/occupiers of the Rural E Area will for the most part will keep animals (i.e. one or two horses). As animal keepers themselves, they will/should have an understanding of, and be emphatic with and tolerant of, the day to day activities of a working dairy farm.

In turn, as shown on the proposed structure plan⁶⁰, the Residential C Environment Area will be buffered from the Rural E Environment Area by a vegetated strip of open space (Open Space C).

Residential – State Highway

The potential for reverse sensitivity issues arising between residential living and State High 45 has been recognised from the outset.

The mitigation of traffic noise from the state highway and residential development will be undertaken in accord with the NZTA document 'Guide to the management of effects on noise

⁷² Wairau Estate Acoustic Environment Assessment – Marshall Day Acoustics – March 2017

⁷³ Appendix 11.2

sensitive land uses near to the state highway network' as recommended in the acoustic assessment undertaken for the applicant.⁴⁵ The mitigation measures will involve the formation of an earth bund and timber fencing, either alone or in combination, designed in accord with NZTA guidance to achieve the required attenuation of traffic noise.

Residential - Powerco Substation (SH45)

The Oakura Electricity Substation is accessed from SH45 and is located some 380m south of the Wairau Rd intersection. The substation land is shown on the Structure Plan and will have a common boundary to the proposed Residential D Environment Area.

The substation comprises two buildings of domestic scale and appearance housing transformer and switch gear and is currently located on a 90m x 90m (8100m²) parcel of land. Powerco propose to reduce the size of the substation site to 53.6m x 56m (3001m²) and dispose of approx. 5000m² to the applicant. This surplus land will be incorporated into the Residential D Environment Area.

With the reduced land area, the existing buildings will be a minimum of approx. 12m from the revised boundaries at the closest point. It is envisaged a solid wooden screen fence will be erected on the new common boundary in conformance with District Plan Rule Res 23.

Powerco have reported that with the reduced lot size the maximum permitted parameters for electrical field strength and magnetic flux as set out in Operative District Plan rules Res20 and 21 will not be exceeded at the proposed new common boundary of the Powerco and the Requestee's land. Powerco have undertaken onsite readings and have forwarded their report to the Requestee.⁷⁴

The applicant has been in negotiation with Powerco concerning the overhead electricity lines that run from Wairau Road above the proposed Residential D Environment Area to the Oakura substation. It is proposed that these overhead lines will undergrounded in due course but prior to any development of the affected land for residential purposes.

For the reasons set out above it is considered that any potential reverse sensitivity or incompatibility issues associated with the Oakura substation can be avoided, remedied or mitigated.

Other matters:

With the above exceptions, we are not aware of any other potential reverse sensitivity or incompatible between uses that may occur.

The exceptions described of the subject site are not unique in the context of the New Plymouth District.

It could be expected the District Plan rule framework that will apply to the Wairau Estate thus setting the environmental standards for the area will be appropriate to the management of any adverse effects that might otherwise arise, along with the other regulatory enforcement tools available to the Council.

⁷⁴ Powerco (K Soffe) to Comber Consultancy – email dated 19 Dec 2017

Part 6 – Statutory Considerations

6.1 Introduction

There are two primary matters for consideration for statutory decision-making; the Request for Private Plan Change and the Application to vary Consent Notice as a non-complying activity.

Both fall for a broad assessment under Part 2 of the RMA, namely the Purpose, (s5), Matters of National Importance (s6); Other Matters (s7) and Treaty of Waitangi (s8).

More specifically the application to vary the Consent Notice falls for consideration against the provisions of s104, 104B and 104D.

6.2 Sequencing of decision-making

There are matters relating any actual and potential effects on the environment that are common to the both the Request and the variation of Consent Notice.

Accordingly, in our view it is appropriate, for administrative efficiency, that they are heard and considered together.

The Request for Plan Change clearly needs to be considered not only in the context of Part 2 of the RMA, and Schedule 1, Parts 1 and 2 but also in the context of District Planning objectives, policies and methods. We suggest if the Request is considered separately on its own merits ahead of the variation to the Consent Notice it will become ready apparent as to how the decision-making ought to flow.

If the Request is agreed to and approved, it will be forming new plan provisions (i.e. objective, policies, methods and rules etc). The variation to consent notice can then be considered to satisfy the test under s104D, that is, the variation sought will not be contrary to the objectives and policies of the plan, (and Lot 29 will no longer be considered to be in the Rural Environment Area.)

If the Request is not approved in whole or in part, the application to vary the Consent Notice will need to be separately considered against s104, s104B and s104D.

6.3 Form of Notification

The RMA requires that a request for plan change be publicly notified, and within 4 months of accepting the request.⁷⁵

A proposed change to a plan, including a private plan change request, falls within the meaning of 'proposed plan'.⁷⁶

⁷⁵ Schedule 1 Part 2 Clause 26 (b) RMA

⁷⁶ s43AAC (1) RMA

In addition to public notification, a territorial authority is required to give individual notice to every ratepayer, who in the authority's opinion, is likely to be directly affected by the proposed change.⁷⁷

As discussed in 5.3.1 Community Engagement, approximately 240 residences on Upper and Lower Wairau Roads (i.e. from 44 Lower Wairau Rd both sides to Upper end), and all of Telford Terrace, Cunningham Lane, McKellar Street, Tui Grove, Surrey Hill Road, Ekuarangi Place, Pahakahaka Drive and Kaitake Place were invited (by individual letterbox drop) to provide feedback on the proposed plan change. It is suggested, for consistency, that the Council may like to consider these ratepayer properties likely to be directly affected by the proposed change and give notice of the proposal, in addition to the more general public notice.

With regard to the application to vary Consent Notice, the originating Paddocks non-complying status application was publicly notified. Adopting the 'like for like' principle discussed earlier, it would follow that the consent application also be publicly notified, and for administrative efficiency, with the Request.

Accordingly, it is considered that the Request and the application to vary Consent Notice 9696907.4 can be bundled for public notification.

We consider all original submitters to 'The Paddocks' application should be individually notified of the application to vary the Consent Notice.

The Council may consider others to be affected by the variation to include the current owners of lots within 'The Paddocks' subdivision i.e. Ekuarangi Place and Pahakahaka Drive

6.4 Part 2 RMA Assessment

Both the Request and the application to vary the Consent Notice fall for assessment against Part 2 Purpose and Principles of the Resource Management Act 1991.

It is well-established and accepted planning practice that matters being considered are subject to a broad assessment against the overarching provisions of Part 2 comprising Purpose, (s5), Matters of National Importance (s6); Other Matters (s7) and Treaty of Waitangi (s8). Assessing each in turn:

s5 - Purpose:

As set out in section 5 of the Act, its purpose is to promote the sustainable management of natural and physical resources.

In the context of the Act, 'sustainable management' means:

'managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

⁷⁷ Schedule 1 Part 1 Clause 5(1A) RMA

- (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.'

By taking a comprehensive and integrated approach design-led approach to the rezoning of the subject site for residential and rural lifestyle living through the mechanism of a Structure Plan it is submitted that this Request proposes a logical and efficient use of natural and physical resources (excluding minerals) that is sufficiently forward looking to meet the reasonably foreseeable needs of future generations of persons seeking to reside in the Oakura township.

The Request will support and facilitate present and future generations at Oakura and enable them to provide for their social, economic, and cultural well-being and for their health and safety.

The specialist reports supporting the Request demonstrate that, in respect of the subject site an Oakura environs that the life-supporting capacity of air, water, soil, and ecosystems will be safeguarded and that any adverse effects on the environment can be avoided, or mitigated and in any event, will be no more than minor or less than minor.

The availability of serviced greenfield lots for residential living (there are currently none at Oakura) that can be progressively developed in an economic and efficient manner will provide for the orderly, managed but limited expansion of Oakura over the long term, contributing to the urban land supply and capacity of the Oakura urban area and the wider District.

s6 - Matters of National Importance:

s6 requires that certain environmental components be recognised and provided for in managing the use, development and protection of natural and physical resources. The relevant matters are considered to be:

- (a) Preservation of wetlands, rivers and their margins from inappropriate, subdivision, use and development:

Integral to the urban design for the development of the subject site is the preservation and enhancement of the natural gully systems and their margins which include watercourses (some ephemeral), and wetlands. These natural features will be preserved, the natural hydrology restored (partially if not fully) and enhanced with supplementary indigenous planting.

- (b) Protection of outstanding natural landscapes from inappropriate subdivision, use and development.

An outstanding natural landscape (ONL) the Kaitake Ranges, feature as the dominant visual backdrop to Wairau Estate and the Oakura environs generally. The Kaitakes' are located within the adjoining Egmont National Park. It is generally accepted that the foreground to

the Kaitakes in the Oakura environs is a 'busy' and 'mixed' landscape i.e. it is not a pristine rural landscape but more in the nature of peri-urban.

In acknowledgment of the Kaitake ONL, and by way of mitigation, the proposed development controls for Wairau Estate limit dwelling height to 6m and require all exterior surfaces of built form to be of low colour reflectivity. Approx. 60 percent of the Structure Plan Area will either be Open Space or for large-lot Rural Residential living. This varied visual aesthetic will integrate with the busy and mixed landscape that already exists in the local environment.

Having regard to the Kaitake ONL, and applying a broad assessment, the proposal is not considered to be, in the context of s5(b), inappropriate subdivision, use and development.

- (c) the relationship of Maori and their cultural and traditions with their ancestral lands.

Consultation has been undertaken with Mana Whenua. There are no sites of significance within Wairau Estate. Mana Whenua have been invited to name the primary street within Wairau Estate. In addition, the funding of a stone carving with design arranged by Mana Whenua to be located on Upper Wairau Rd has been agreed by Oakura Farm Park Ltd.

s7 Other matters

Part 2 requires certain other matters to be recognised and provided for. The relevant matters are considered to be:

- (b) The efficient use and development of natural and physical resources.

The s32 analysis discussed in Part 4 of this Request demonstrates the proposal (Option 3) represents an efficient use of natural and physical resources for the present and future generations of Oakura and the wider District.

- (c) Maintenance and enhancement of amenity values.

A change to local amenity is inevitable when a change in landuse from rural to urban is contemplated. However, the Structure Plan for Wairau Estate together with its proposed development controls will help to ensure a high standard of urban amenity is achieved within the proposed development and that it integrates well with the level of amenity in the wider environment.

- (d) Maintenance and enhancement of the quality of the environment.

The proposed development will contribute positively to the maintenance and enhancement of the quality of the immediate environment within Wairau Estate and the environment of the Oakura urban area.

A wide range of living choices (including equestrian lifestyle) will be provided for, integrated with preserved and enhanced natural features.

The development will feature transport networks for both vehicular and active transport modes, and pedestrians, linked to the wider networks with the safe and efficient

movement of people, goods and services specifically provided for through the proposed traffic roundabout and pedestrian underpass.

s7 Treaty of Waitangi

The principles of the Treaty have been taken into account most notably through the consultation undertaken with Mana Whenua, the naming of the Estate after the primary watercourse through the site, the archaeological survey undertaken of the site, the invitation to mana whenua to name the primary street within Wairau Estate and the offer to fund a stone carving as a cultural marker in the local landscape for present and future generations.

6.5 Application for variation of Consent Notice

An application for Non-Complying Activity to vary Consent Notice 9696907.4 is set out in section 1.5 of this document.

The application is required to be considered against sections 104, 104B and 104D of the RMA.

Considering each in turn:

s104 – Consent authority must, Subject to Part 2, have regard to:

- (a) any actual and potential effects on the environment of allowing the activity; and
- (ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and
- (b) any relevant provisions of—
 - (i) a national environmental standard:
 - (ii) other regulations:
 - (iii) a national policy statement:
 - (iv) a New Zealand coastal policy statement:
 - (v) a regional policy statement or proposed regional policy statement:
 - (vi) a plan or proposed plan; and
- (c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.

Assessment:

The actual and potential effects relating to the variation sought have been assessed at Section 1.5 and again in Part 5 of this document.

s104B – After considering an application for a non-complying activity, a consent authority may grant or refuse the application, with or without conditions.

S104D – A consent authority may grant a resource consent for a non-complying activity only if it is satisfied that either –

- (a) the adverse effects of the activity on the environment (other than any effect to which section 104(3)(a)(ii) applies) will be minor; or
- (b) the application is for an activity that will not be contrary to the objectives and policies of—
 - (i) the relevant plan, if there is a plan but no proposed plan in respect of the activity; or
 - (ii) the relevant proposed plan, if there is a proposed plan but no relevant plan in respect of the activity; or
 - (iii) both the relevant plan and the relevant proposed plan, if there is both a plan and a proposed plan in respect of the activity.

Assessment:

As discussed in 7.2 above, if the Request is agreed to and approved, it will be forming new plan provisions (i.e. objective, policies, methods and rules etc). The variation to consent notice can then be considered to satisfy the test under s104D, that is, the variation sought will not be contrary to the objectives and policies of the plan, (and Lot 29 will no longer be considered to be in the Rural Environment Area.)

If the Request is approved but the consent authority forms the view that the Rural E portion of the Structure Plan is still considered to be within the Rural Environment Area, the 'minor effects test' of s104D (1) (a) must then be considered.

If there is a 'split' decision, i.e. the Request is granted but the Rural E portion is still considered to lie within the Rural Environment Area it is suggested that the benefits of implementing the Structure Plan as a comprehensive and integrated design outweigh the disadvantages of not allowing the Rural E portion of the Structure Plan to proceed. In this context we believe it is open to the consent authority to reach a decision that the effects of the activity on the environment will be no more than minor.

Accordingly, to give effect to the Structure Plan Request, it is recommended that the variation be approved pursuant to section 221 (3) (a) of the Resource Management Act 1991 to vary Consent Notice 9696907.4 to amend Clause 4 of the said Consent Notice to read as follows:

'4. Subdivision of Lot 29 is permitted subject to such subdivision being in accord with the Structure Plan incorporated within Plan Change XX as approved by the New Plymouth District Council on xxx and subsequently incorporated in the Operative District Plan as Plan Change No.xx.'

Prepared by:



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COMBER CONSULTANCY
RMA & ENVIRONMENTAL PLANNING

Part 7 - Appendices

Appendix 1 Computer Freehold Register

Appendix 1.1 Oakura Farm Park Ltd

Appendix 1.2 LM Thurman and JM Williams

Appendix 1.3 Powerco Ltd

Appendix 1.4 Consent Notice 9696907.4.



Title Plan - DP 497629

Survey Number DP 497629
Surveyor Reference O-151201 OFP Stage 2
Surveyor Alan Leonard Doy
Survey Firm McKinlay Surveyors 2010 Limited (New Plymouth)
Surveyor Declaration I Alan Leonard Doy, being a licensed cadastral surveyor, certify that:
(a) this dataset provided by me and its related survey are accurate, correct and in accordance with the Cadastral Survey Act 2002 and the Rules for Cadastral Survey 2010, and
(b) the survey was undertaken by me or under my personal direction.
Declared on 27 May 2016 02:37 PM

Survey Details

Dataset Description LOTS 17- 22 AND 24 - 29 BEING A SUBDIVISION OF LOT 31 DP 481737 AND LOT 29 DP 482991
Status Deposited
Land District Taranaki
Submitted Date 27/05/2016
Survey Class Class B
Survey Approval Date 27/05/2016
Deposit Date 20/06/2016

Territorial Authorities

New Plymouth District

Comprised In

CT 680373

Created Parcels

Parcels	Parcel Intent	Area	CT Reference
Lot 17 Deposited Plan 497629	Fee Simple Title	0.4021 Ha	735359
Lot 18 Deposited Plan 497629	Fee Simple Title	0.4029 Ha	735360
Lot 19 Deposited Plan 497629	Fee Simple Title	0.4010 Ha	735361
Lot 20 Deposited Plan 497629	Fee Simple Title	0.4002 Ha	735362
Lot 21 Deposited Plan 497629	Fee Simple Title	0.4023 Ha	735363
Lot 22 Deposited Plan 497629	Fee Simple Title	0.4046 Ha	735364
Lot 24 Deposited Plan 497629	Fee Simple Title	0.3213 Ha	735365
Lot 25 Deposited Plan 497629	Fee Simple Title	0.3569 Ha	735366
Lot 26 Deposited Plan 497629	Fee Simple Title	0.3556 Ha	735367
	Road	0.7425 Ha	
Lot 28 Deposited Plan 497629	Fee Simple Title	3.5969 Ha	736913
Lot 29 Deposited Plan 497629	Fee Simple Title	62.5880 Ha	736913
Area A Deposited Plan 497629	Easement		
Area B Deposited Plan 497629	Easement		
Area C Deposited Plan 497629	Easement		
Area D Deposited Plan 497629	Easement		
Area E Deposited Plan 497629	Land Covenant		
Area F Deposited Plan 497629	Easement		
Area G Deposited Plan 497629	Land Covenant		
Area H Deposited Plan 497629	Land Covenant		

Title Plan - DP 497629

Created Parcels

Parcels	Parcel Intent	Area	CT Reference
Area I Deposited Plan 497629	Land Covenant		
Area J Deposited Plan 497629	Land Covenant		
Area K Deposited Plan 497629	Land Covenant		
Area L Deposited Plan 497629	Land Covenant		
Area M Deposited Plan 497629	Land Covenant		
Area N Deposited Plan 497629	Land Covenant		
Area O Deposited Plan 497629	Easement		
Area P Deposited Plan 497629	Easement		
Area Q Deposited Plan 497629	Easement		
Area R Deposited Plan 497629	Easement		
Area S Deposited Plan 497629	Easement		
Area T Deposited Plan 497629	Easement		
Area U Deposited Plan 497629	Easement		
Area V Deposited Plan 497629	Easement		
Area X Deposited Plan 497629	Easement		
Area Y Deposited Plan 497629	Easement		
Area Z Deposited Plan 497629	Easement		
Area AA Deposited Plan 497629	Easement		
Area AB Deposited Plan 497629	Easement		
Area AC Deposited Plan 497629	Easement		
Area AD Deposited Plan 497629	Easement		
Area AE Deposited Plan 497629	Easement		
Area AF Deposited Plan 497629	Easement		
Area AG Deposited Plan 497629	Easement		
Area AH Deposited Plan 497629	Easement		
Area AI Deposited Plan 497629	Easement		
Area AJ Deposited Plan 497629	Easement		
Area AK Deposited Plan 497629	Easement		
Area AL Deposited Plan 497629	Easement		
Area AM Deposited Plan 497629	Easement		
Area AN Deposited Plan 497629	Easement		
Area AO Deposited Plan 497629	Easement		
Esplanade Strip AP Deposited Plan 497629	Esplanade Strip		
Total Area		70.3743 Ha	



Land Registration District

TARANAKI

Plan Number

DP 497629

Territorial Authority

NEW PLYMOUTH DISTRICT

SCHEDULE OF EXISTING EASEMENTS			
Purpose	Shown	Servient Tenement	Created by
Right of Way and rights to transmit Electricity & Electronic communications	O, Q	Lot 29 DP 497629	T 460007.5
Right to convey water	U, AB, AD, AE	Lot 29 DP 497629	T 460007.5
Right (in gross) to pump, move, convey & transport natural gas products, petroleum products, water, other liquids and gases and mixtures of any of the foregoing	AH, AI, AJ	Lot 29 DP 497629	T 328362
Oaonui –Huntly gas & condensate pipeline	AK, AL, AM, AN	Lot 29 DP 497629	PC 270029
Right of way and right to convey water	Y, Z, AA, AB, AC	Lot 29 DP 497629	T 126622
Right (in gross) to pump, move, convey, transport and carry petroleum, water and other liquids	V	Lot 29 DP 497629	T 401438.2
Right to transmit electrical energy	AO	Lot 29 DP 497629	T 178241
Right to convey sewage	C	Lot 28 DP 497629	EI 9696907.5
Rights (in gross) a right of way (pedestrian access)	B, C	Lot 28 DP 497629	EI 9696907.6
Right (in gross) to convey water	X	Lot 29 DP 497629	EI 9696907.6
Right (in gross) to drain water	D	Lot 28 DP 497629	EI 9696907.6
Right (in gross) to drain sewage	F	Lot 29 DP 497629	EI 9696907.6
Right (in gross) to convey and discharge water	Z, AF, AG	Lot 29 DP 497629	EI 9696907.8
Right (in gross) to convey water	O, P, Q	Lot 29 DP 497629	EI 10207742.3



SCHEDULE OF EXISTING EASEMENTS			
Purpose	Shown	Servient Tenement	Created by
Rights (in gross) to convey electricity, telecommunications and computer media	P	Lot 29 DP 497629	EI 10207742.3
Right (in gross) to convey water	R, S	Lot 29 DP 497629	EI 10286990.1
Right (in gross) to convey electricity	T	Lot 29 DP 497629	EI 10286990.1

MEMORANDUM OF EASEMENTS IN GROSS			
Purpose	Shown	Servient Tenement	Grantee
Right to drain water	A	Lot 22 DP 497629	New Plymouth District Council

SCHEDULE OF EXISTING COVENANTS		
Purpose	Shown	Created by
Consent Notice	B, C, D, E, F, G, H, I, J, K, L, M, N, O, Q, R, S, U	CONO 9696907.4
Open Space Covenant pursuant to Section 22 Queen Elizabeth The Second National trust Act 1977	D, E	COV 9696907.10

Land contained in Computer Freehold Register 680373 is subject to:
296768 Proclamation defining the middle line of the Oaonui - New Plymouth Liquefied Petroleum Gas pipeline

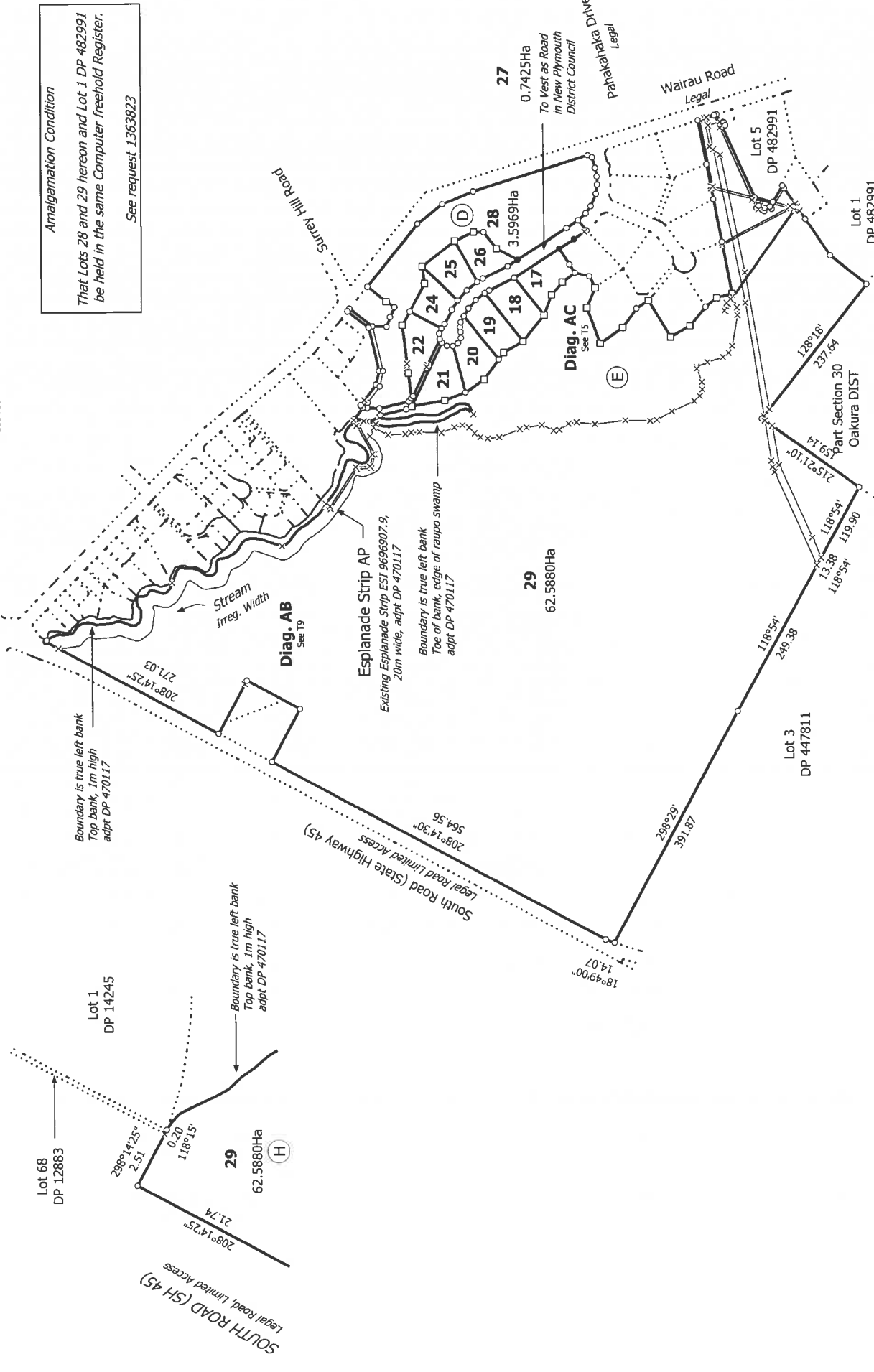


Amalgamation Condition
 That Lots 28 and 29 hereon and Lot 1 DP 482991
 be held in the same Computer freehold Register.
 See request 1363823

Diag. AA
 See T10

Diag. A

Diag. AAA



T 1/10

Land District: Taranaki

LOTS 17- 22 AND 24 - 29 BEING A SUBDIVISION OF LOT 31 DP 481737 AND
 LOT 29 DP 482991

Surveyor: Alan Leonard Doy
 Firm: McKinlay Surveyors 2010 Limited (Nz)

Title Plan
 DP 497629

Digitally Generated Plan

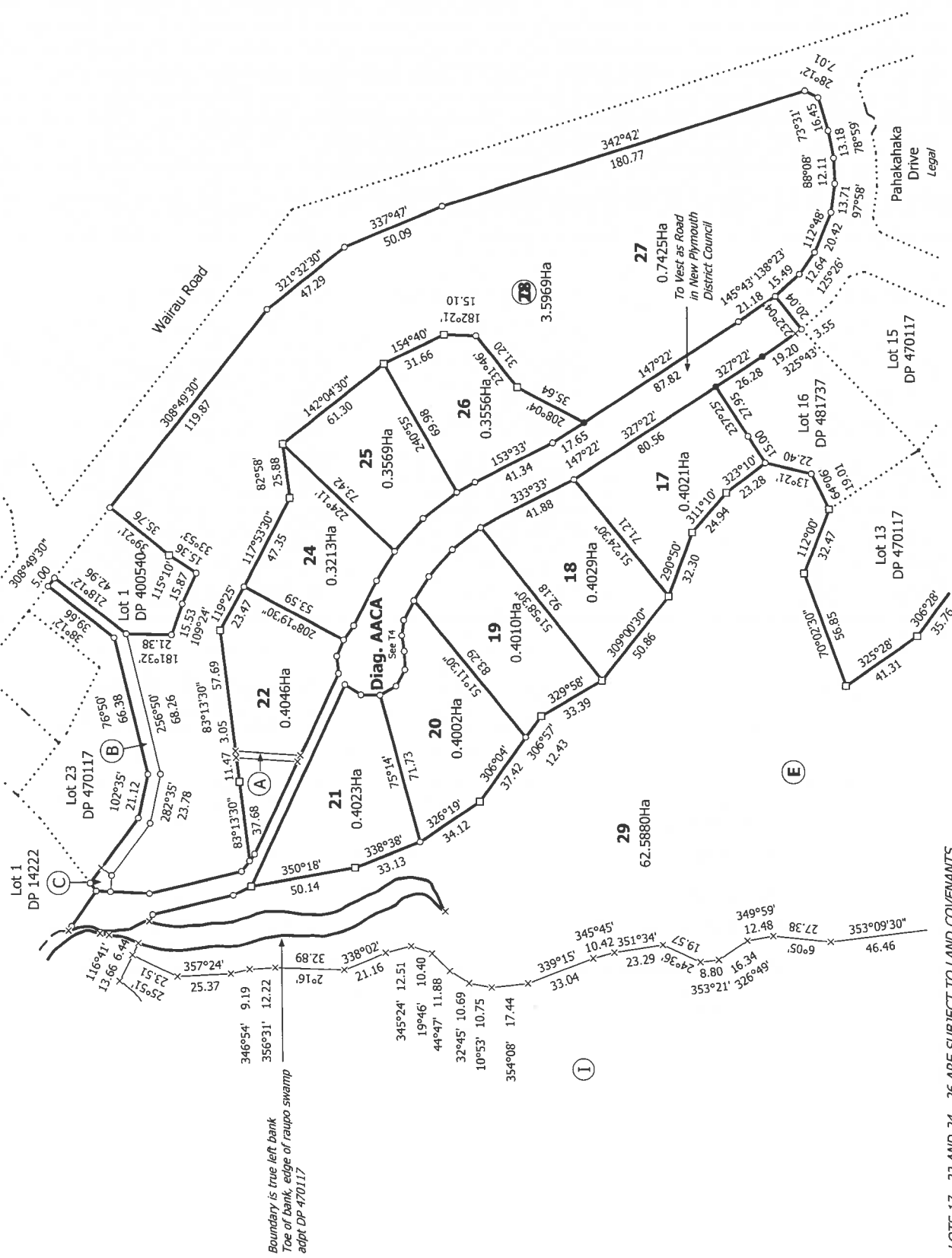
Generated on: 09/08/2016 1:56pm Page 5 of 14

Deposited on: 20/06/2016



Diag. AAC

T 2/10



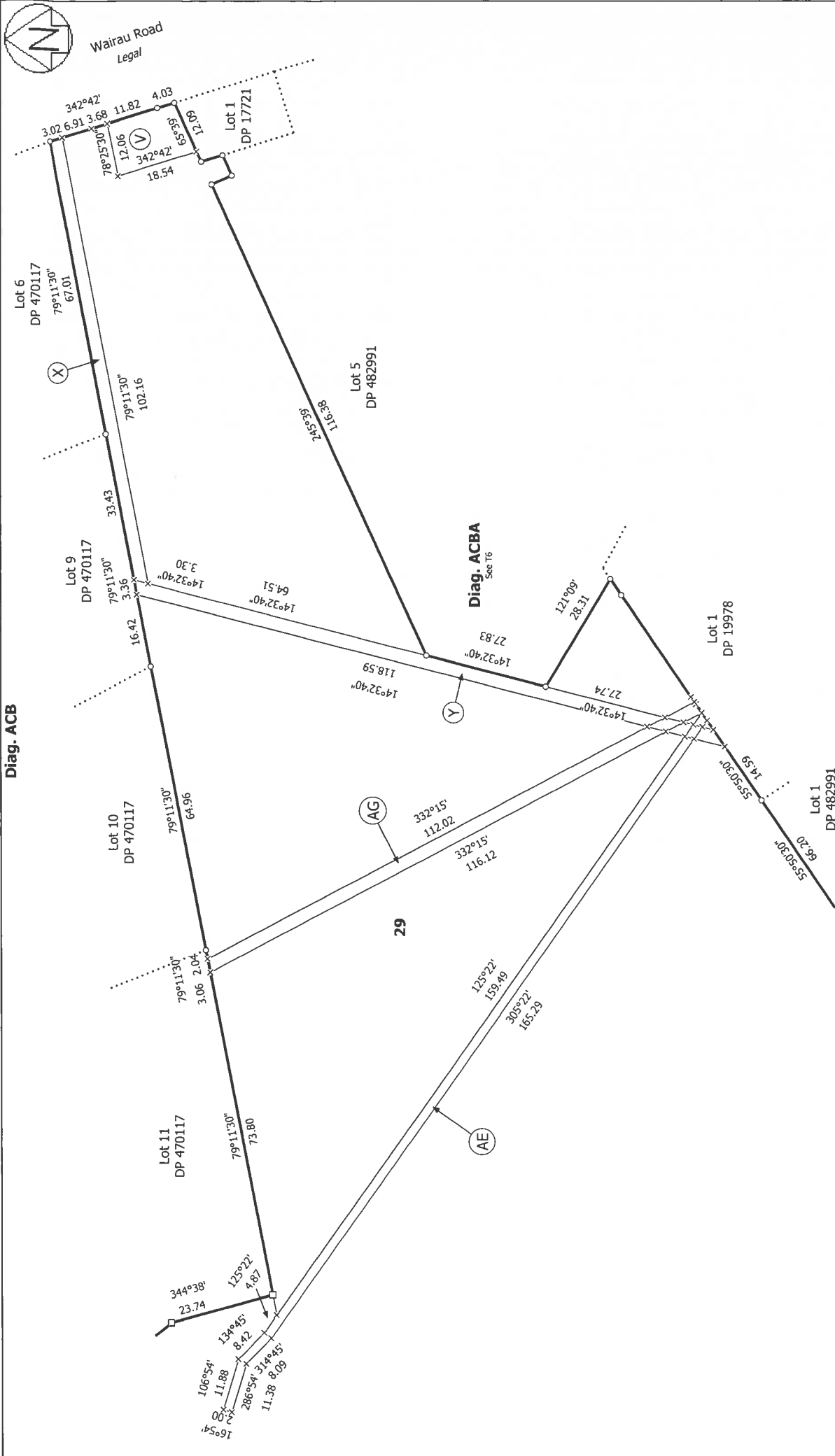
Surveyor: Alan Leonard Doy
 Firm: McKinlay Surveyors 2010 Limited (Nz)

LOTS 17 - 22 AND 24 - 26 ARE SUBJECT TO LAND COVENANTS
 LOT 29 DP 482991

Land District: Taranaki
 Digitally Generated Plan
 Generated on 09/08/2016 1:56pm Page 6 of 14

Title Plan
 DP 497629

Deposited on: 20/06/2016



T 8/10

Title Plan
DP 497629
Deposited on: 20/06/2016

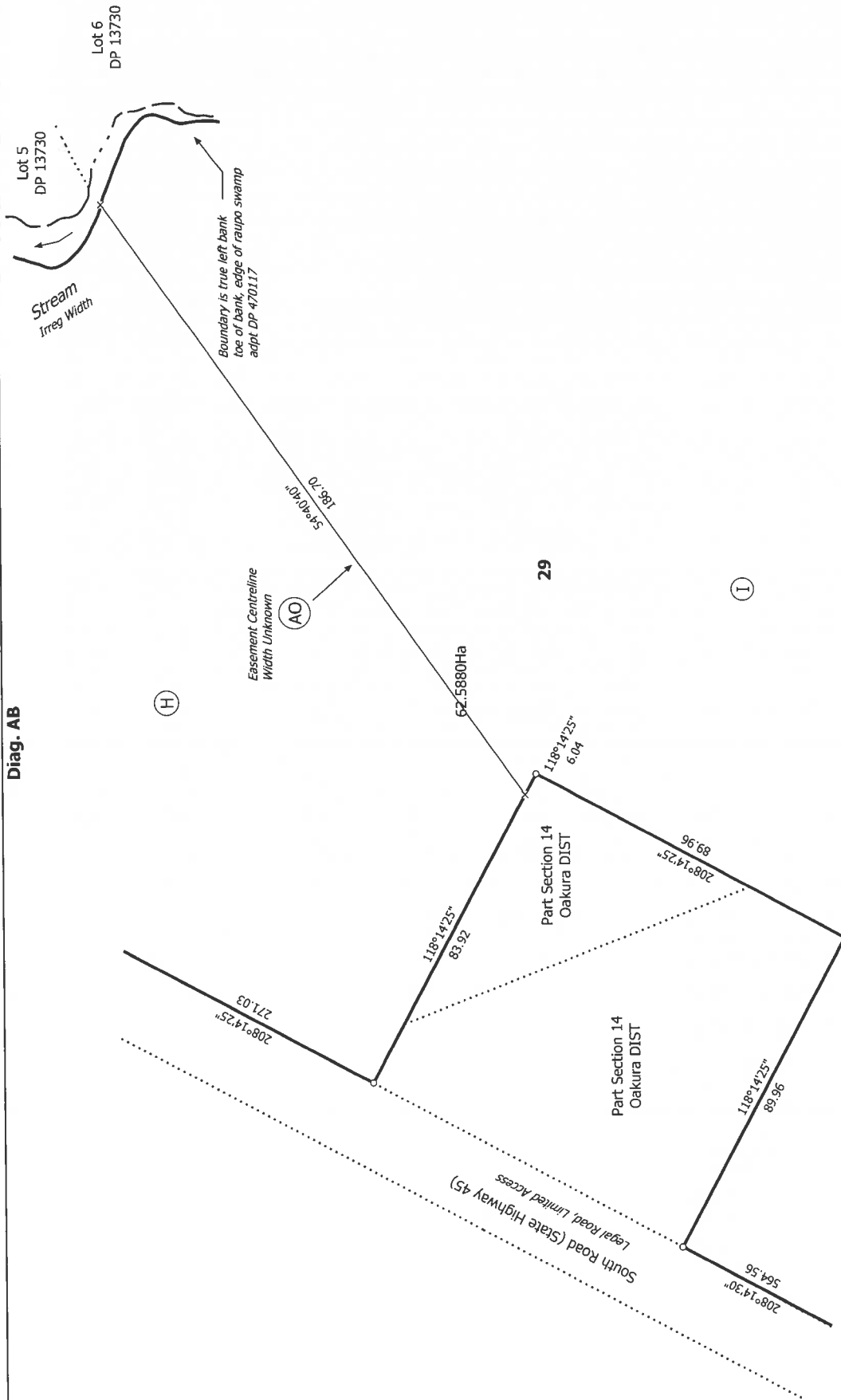
Surveyor: Alan Leonard Doy
Firm: McKinlay Surveyors 2010 Limited (Nz)

LOTS 17-22 AND 24 - 29 BEING A SUBDIVISION OF LOT 31 DP 481737 AND LOT 29 DP 482991

Land District: Taranaki
Digitally Generated Plan
Generated on: 09/08/2016 1:56pm Page 12 of 14



Diag. AB



T 9/10

Title Plan
DP 497629
Deposited on: 20/06/2016

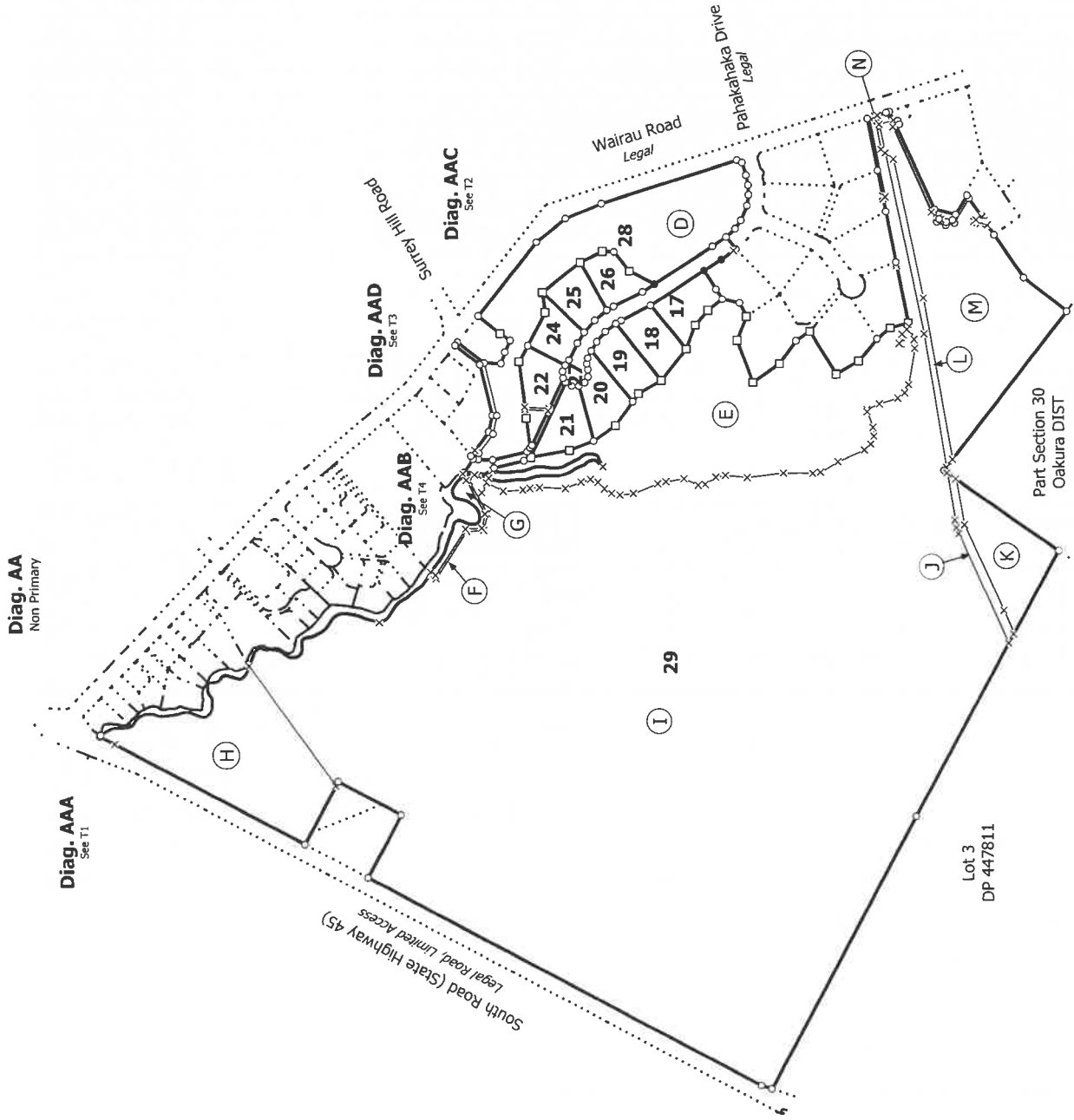
Surveyor: Alan Leonard Doy
Firm: McKinley Surveyors 2010 Limited (Nz)

LOTS 17- 22 AND 24 - 29 BEING A SUBDIVISION OF LOT 31 DP 481737 AND
LOT 29 DP 482991

Land District: Taranaki
Digitally Generated Plan
Generated on: 09/08/2016 1:56pm Page 13 of 14



T 10/10



Land District: Taranaki

Digitally Generated Plan

Generated on: 09/08/2016 1:56pm Page 14 of 14

LOTS 17- 22 AND 24 - 29 BEING A SUBDIVISION OF LOT 31 DP 481737 AND LOT 29 DP 482991

Surveyor: Alan Leonard Doy
Firm: McKinlay Surveyors 2010 Limited (Nz)

Title Plan
DP 497629

Deposited on: 20/06/2016



COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952



R. W. Muir
Registrar-General
of Land

Search Copy

Identifier 736913
Land Registration District Taranaki
Date Issued 20 June 2016

Prior References

680373

Estate	Fee Simple
Area	70.6247 hectares more or less
Legal Description	Lot 1 Deposited Plan 482991 and Lot 28-29 Deposited Plan 497629

Proprietors

Oakura Farm Park Limited

Interests

Subject to a right of way and a right to convey water (in gross) over part Lot 29 marked Y, Z, AA, AB & AC on DP 497629 and over part Lot 1 marked AF & AG and a right of way (in gross) over part Lot 1 marked AH & AI and a right to convey electricity (in gross) over part Lot 1 marked AJ and a right to construct, maintain and use a bridge (in gross) over part Lot 1 marked AH & AI and a right to construct, maintain and use a pump shed (in gross) over Lot 1 on DP 482991 in favour of the Taranaki County Council created by Transfer 126622 - 23.1.1962 at 11:15 am

Subject to a right to transmit electrical energy over part Lot 29 marked AO on DP 497629 created by Transfer 178241 - 7.8.1970 at 10:45 am

257835 Certificate declaring South Road (State Highway 45) to be a Limited Access Road - 7.5.1979 at 1:51 pm (Affects Lot 29 DP 497629)

270029 Pipeline Easement Certificate pursuant to Section 70 of the Petroleum Act 1937 by Minister of Energy to (now) Maui Development Limited and Shell Todd Oil Services Limited and First Gas Limited in shares over part Lot 29 marked AK, AL, AM & AN on DP 497629 - 19.8.1980 at 9:01 am

296768 Proclamation defining the middle line of the Oaonui-New Plymouth Liquefied Petroleum Gas pipeline pursuant to Section 71 of the Petroleum Act 1937 - 7.2.1983 at 9:02 am (Affects Lot 29 DP 497629)

313797 Compensation Certificate pursuant to Section 19 of the Public Works Act 1981 by New Plymouth District Council - 20.9.1984 at 10:18 am (Affects Lot 28 DP 497629 & Lot 29 DP 497629 formerly part Sections 14 and 30 Oakura District)

Subject to a right to pump, move, convey and transport natural gas products, petroleum products, water, other liquids and gases and mixtures of any of the foregoing rights (in gross) over part Lot 29 marked AH, AI & AJ on DP 497629 in favour of Liquigas Limited created by Transfer 328362 - 4.2.1986 at 9:07 am

Subject to a right to pump, move, convey, transport and carry petroleum (as defined in the Crown Minerals Act 1991), water and other liquids over part Lot 29 marked V on DP 497629 in favour of The Natural Gas Corporation of New Zealand Limited created by Transfer 401438.2 - 10.6.1993 at 10:54 am

Subject to a right of way and a right to transmit electricity and electronic communications over part Lot 29 marked O & Q and a right to convey water over part Lot 29 marked U, AB, AD & AE on DP 497629 and over part Lot 1 marked AE on DP 482991 created by Transfer 460007.5 - 27.4.1999 at 9:45 am

The easements created by Transfer 460007.5 are subject to Section 243 (a) Resource Management Act 1991

9591823.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by New Plymouth District Council - 5.12.2013 at 7:00 am

Identifier**736913**

9696907.4 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 9.6.2014 at 2:36 pm (Affects Lots 28 & 29 DP 497629)

Subject to a right to convey sewage over part Lot 28 marked C on DP 497629 created by Easement Instrument 9696907.5 - 9.6.2014 at 2:36 pm

The easements created by Easement Instrument 9696907.5 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right of way (pedestrian access) (in gross) over part Lot 28 marked B & C and a right to convey water (in gross) over part Lot 29 marked X and a right to drain water (in gross) over parts Lot 28 marked D and a right to drain sewage (in gross) over part Lot 29 marked F on DP 497629 in favour of the New Plymouth District Council created by Easement Instrument 9696907.6 - 9.6.2014 at 2:36 pm

The easements created by Easement Instrument 9696907.6 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right to convey and discharge water (in gross) over part Lot 29 marked Z, AF & AG on DP 497629 in favour of the New Plymouth District Council created by Easement Instrument 9696907.8 - 9.6.2014 at 2:36 pm

9696907.9 Esplanade Strip Instrument pursuant to Section 232 Resource Management Act 1991 - 9.6.2014 at 2:36 pm (Affects Lot 29 DP 497629)

9696907.10 Open Space Covenant pursuant to Section 22 Queen Elizabeth The Second National Trust Act 1977 - 9.6.2014 at 2:36 pm (Affects Lots 28 & 29 DP 497629)

9775748.2 Mortgage to ASB Bank Limited - 4.7.2014 at 2:59 pm

Subject to a right to convey water (in gross) over part Lot 29 marked O, P & Q and a right to convey electricity, telecommunications and computer media (in gross) over part Lot 29 marked P on DP 497629 in favour of the New Plymouth District Council created by Easement Instrument 10207742.3 - 29.10.2015 at 11:40 am

The easements created by Easement Instrument 10207742.3 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right to convey water (in gross) over part Lot 29 marked R & S and a right to convey electricity (in gross) over part Lot 29 marked T on DP 497629 in favour of the New Plymouth District Council created by Easement Instrument 10286990.1 - 1.2.2016 at 3:20 pm

Subject to Section 241(2) Resource Management Act 1991 (affects DP 497629)

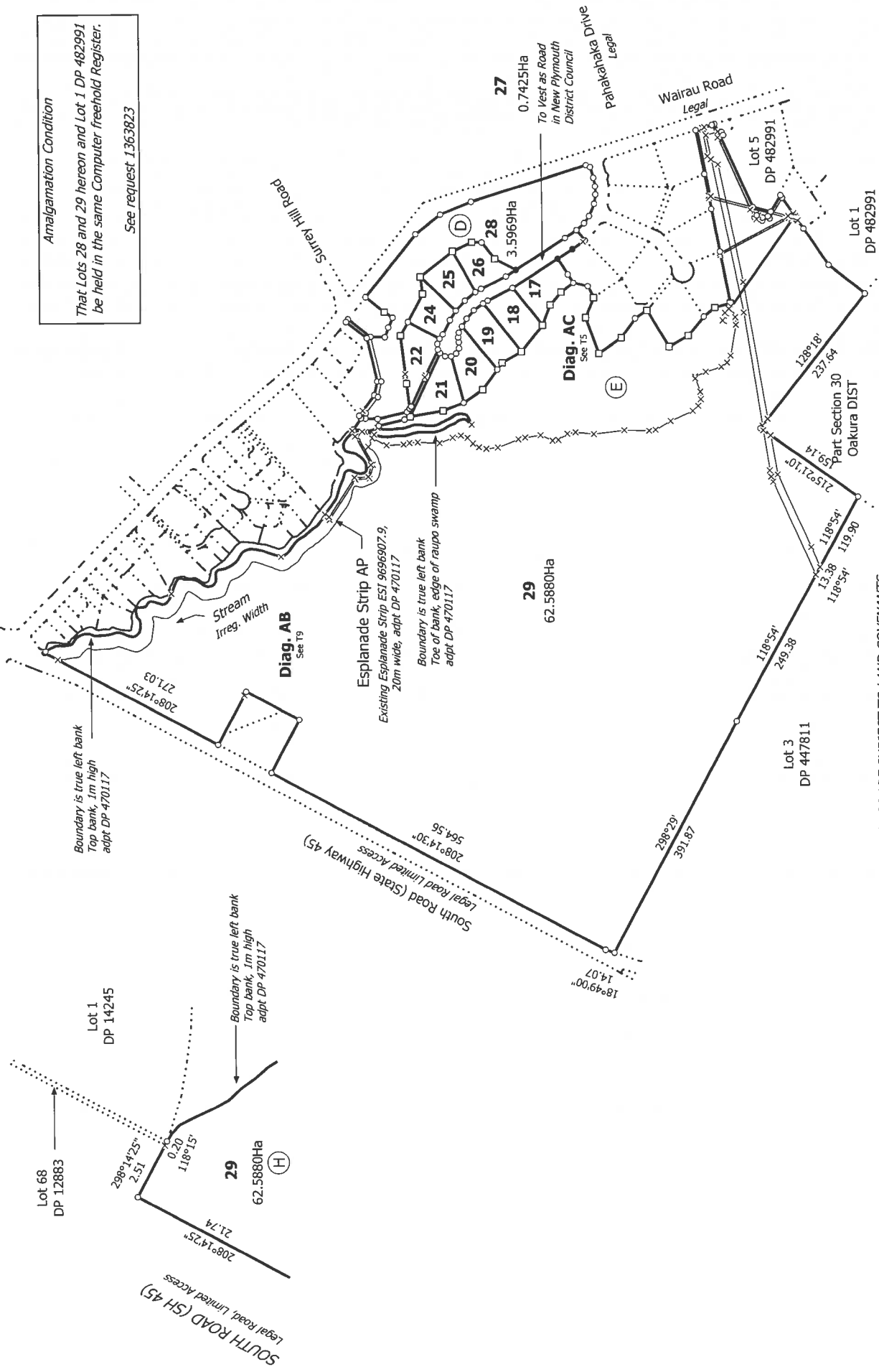


Amalgamation Condition
 That Lots 28 and 29 hereon and Lot 1 DP 482991
 be held in the same Computer freehold Register.
 See request 1363823

Diag. AA
 See 110

Diag. A

Diag. AAA



T 1/10

LOTS 17 - 22 AND 24 - 26 ARE SUBJECT TO LAND COVENANTS

LOTS 17- 22 AND 24 - 29 BEING A SUBDIVISION OF LOT 31 DP 481737 AND LOT 29 DP 482991

Title Plan
 LT 497629
 Approved on: 27/05/2016

Surveyor: Alan Leonard Doy
 Firm: McKinlay Surveyors 2010 Limited (Nz)

Land District: Taranaki

Digitally Generated Plan
 Generated on: 27/05/2016 3:19pm Page 5 of 14



**COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952**



Search Copy


R. W. Muir
Registrar-General
of Land

Identifier **TNL3/336**
Land Registration District **Taranaki**
Date Issued 27 November 2001

Prior References

TNJ2/426

Estate Fee Simple
Area 1.3090 hectares more or less
Legal Description Lot 3 Deposited Plan 21111

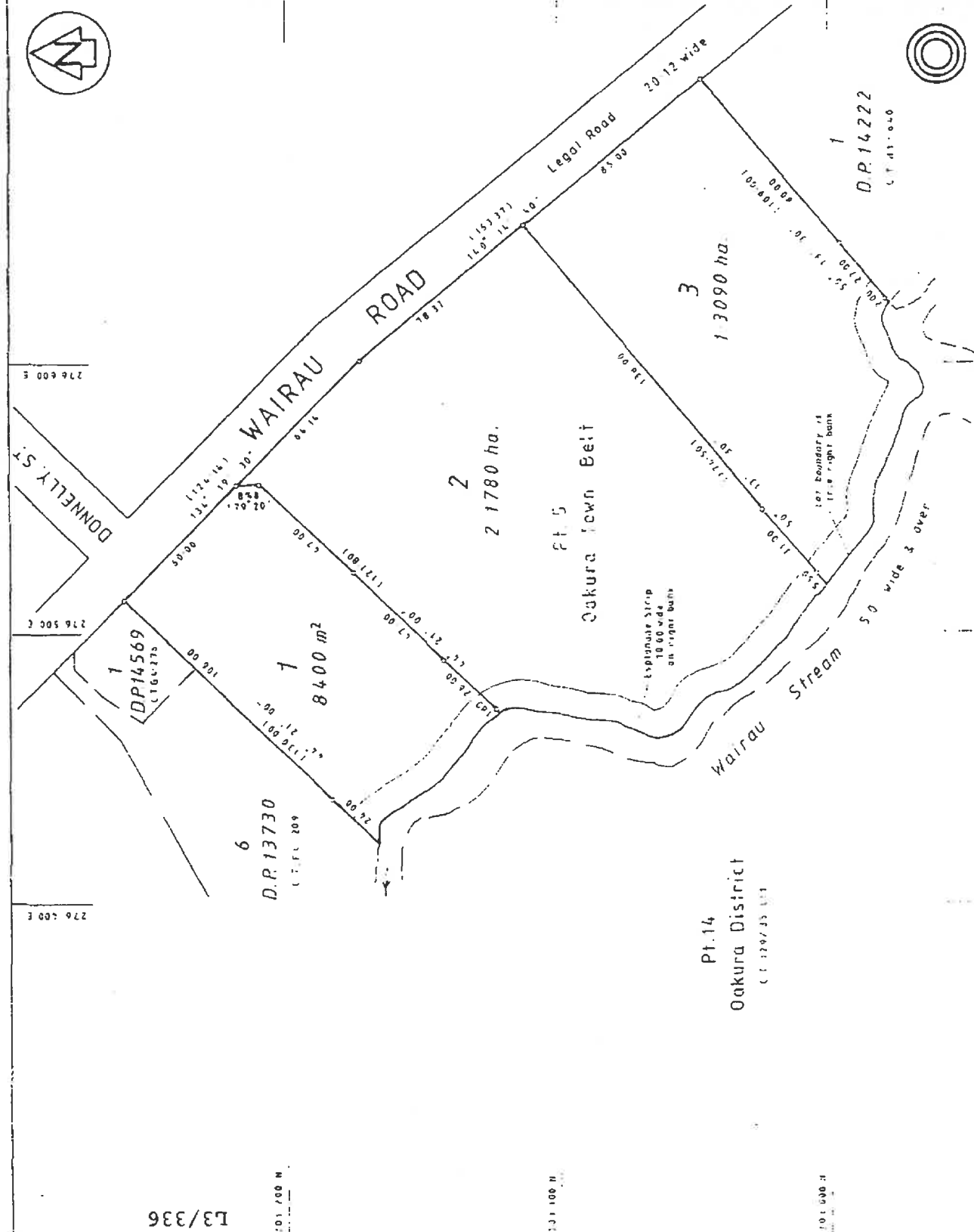
Proprietors

Lindsay Michael Thurman as to a 1/2 share
Judith Patricia Williams as to a 1/2 share

Interests

483973.1 Esplanade Strip Instrument pursuant to Section 232 Resource Management Act 1991 - 27.11.2001 at 11.41 am
10280222.2 Mortgage to Bank of New Zealand - 10.12.2015 at 4:46 pm

Approvals Approved: *[Signature]*
 Registered Proprietors
 I hereby certify that this plan was approved by the New Plymouth District Council pursuant to Section 223 of the Resource Management Act 1991 on the 10th day of October 2001 for the purposes of Section 224(c) of the Resource Management Act 1991. All the conditions of the subdivision consent have been complied with to the satisfaction of the said Council.
[Signature]
 Authorised Officer
 This survey is to Class 1 standards
 New C.T. Allotment
 Lot 1 43|336
 Lot 2 43|375
 Lot 3 43|336
 Total Area 4,3270 ha
 Comprised in C.T. 22/426.Ltd
 RICHARD ROBERT MAY
 I am entitled to practice as a registered surveyor, certify that the survey in which this plan is contained was carried out in accordance with the Survey Act 1980 and the Survey Regulations 1980.
 My registration number is 9370
 My office is at 100, Wairoa Street, Wairoa
 My telephone number is 03 2081 0000
 My fax number is 03 2081 0000
 My e-mail address is rmay@wairau.co.nz
 Field Book 2170 of 21-37, Reserve Bank, 23-37, Reserve Bank, 03 2081 1280, 1333, 1378
 Reference Plans 03 1249, 1280, 1333, 1378
 Examined *[Signature]* Correct
 Approved as to Survey 2/11/01 Chief Surveyor
 Deposited this 27th day of Nov 2001
 for Registrar-General of Land
 DP 21111



TERRITORIAL AUTHORITY New Plymouth Dist.
 Surveyed by Anthony Robert Wey
 Scale *[Signature]* Date May 2001
 LAND DISTRICT Taranaki
 SURVEY BLK. & DIST. LT Wairau
 NZMS 261 SH 19 RECORD MAP No. 53
 LOTS 1 TO 3 BEING A SUBDIVISION OF
 PART SECTION 5 OAKURA TOWN BELT
 Pt. 14
 Oakura District
 C.T. 129/33 L.T.1
 D.P. 14222
 C.T. 411-0-0



COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952




R. W. Muir
Registrar-General
of Land

Search Copy

Identifier **TNB3/66**
Land Registration District **Taranaki**
Date Issued 25 February 1969

Prior References

GN 165183 TN129/83 TN129/85

Estate Fee Simple
Area 8094 square metres more or less
Legal Description Part Section 14 Oakura District and Part
Section 14 Oakura District

Proprietors

Powerco Limited

Interests

Appurtenant hereto is a right to transmit electrical energy created by Transfer 178241 - 7.8.1970 at 10.45 am
257835 Certificate declaring State Highway 45 adjoining the within land to be a Limited Access Road - 7.5.1979 at
1.51 pm

Pt 14

SOUTH Rd

447.2

Pt 14

1.1.30.3

447.2

Pt 14

0.2.09.7

447.2

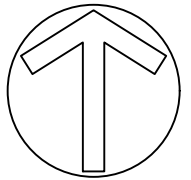
447.2

Total Area:

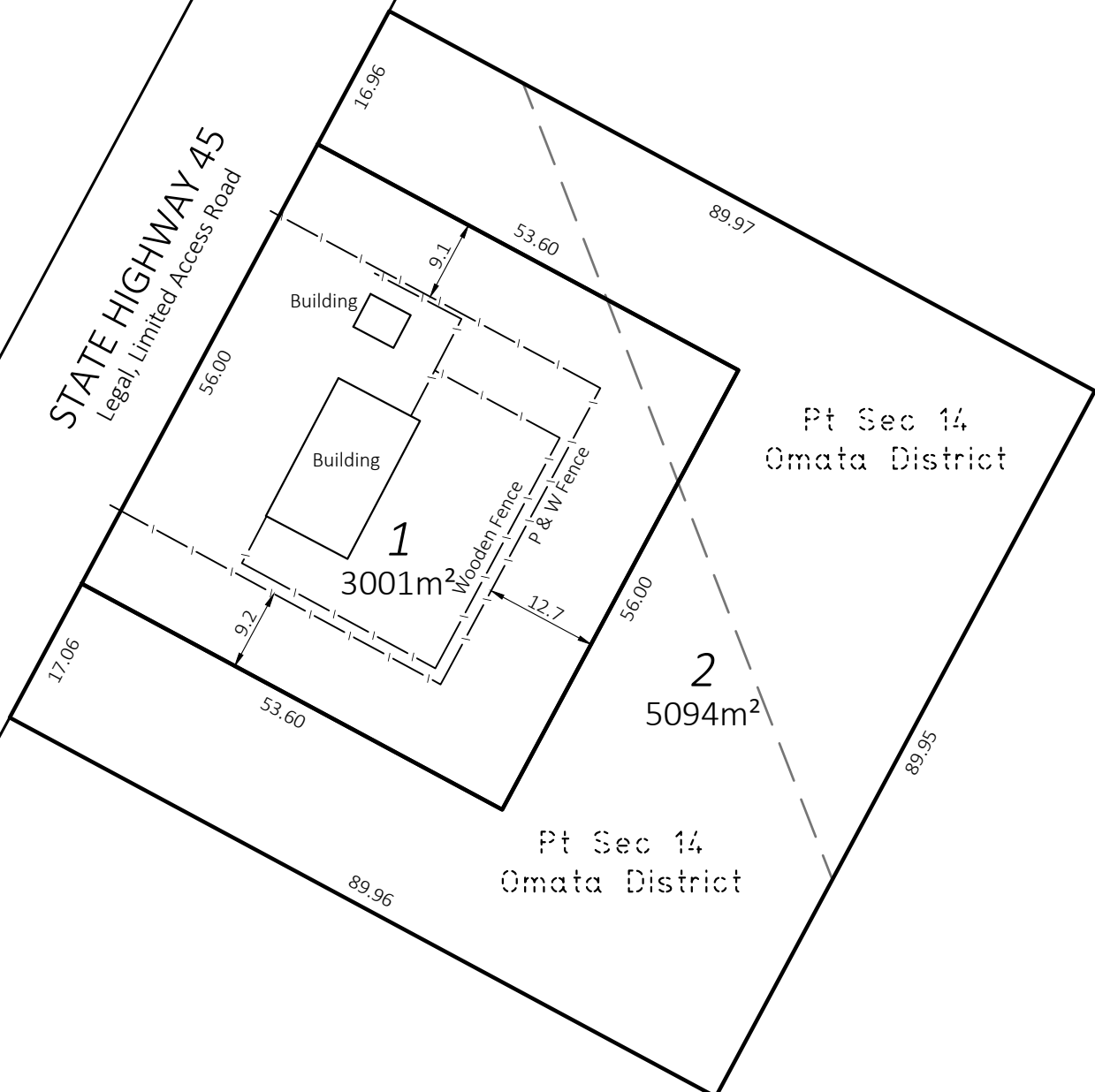
2.0.00.

J

EQUIN
AREA



Amalgamation Condition
 That Lot 2, hereon be transferred to the owners of Lot 29 DP 497629 and once certificate of title be issued to include both parcels.



29
 DP 497629
 CT 736913

3 Young Street, PO Box 116
 New Plymouth 4340
 North Taranaki 06 758 5342
 South Taranaki 06 278 4456
 mckinlaysurveyors.co.nz

TITLE	PROPOSED SUBDIVISION OF PART SECTIONS 14, OAKURA DISTRICT State Highway 45, Oakura
<i>This plan is prepared only for the purpose of obtaining a Resource Consent under the Resource Management Act 1991. It should not be used for any other purpose. Areas and dimensions are approximate and are subject to change on final field survey.</i>	

COMPRISED IN	CT TNB3/66	AREA	0.8094ha	JOB	O-171002
TERRITORIAL AUTHORITY	New Plymouth District Council	DATE	19/10/17	DRAWING	RC-01
PREPARED FOR	Oakura Farm Park Limited	SCALE	1:750 @ A3	SHEET	1
				OF	1



View Instrument Details

Instrument No. 9696907.4
Status Registered
Date & Time Lodged 09 Jun 2014 14:36
Lodged By Haw, Colleen Margaret
Instrument Type Consent Notice under s221(4)(a) Resource Management Act 1991



Affected Computer Registers	Land District
-----------------------------	---------------

634306	Taranaki
639200	Taranaki
639201	Taranaki
639202	Taranaki
639203	Taranaki
639204	Taranaki
639205	Taranaki
639206	Taranaki
639207	Taranaki
639208	Taranaki
639209	Taranaki
639210	Taranaki

Annexure Schedule: Contains 2 Pages.

Signature

Signed by Paul Follett Carrington as Territorial Authority Representative on 19/06/2014 02:33 PM

***** End of Report *****

**CONSENT NOTICE PURSUANT TO SECTION 221
OF THE RESOURCE MANAGEMENT ACT 1991**

IN THE MATTER of Lots 3 and 4 DP 336578, Lot 2 DP 400540, Part Sections 13 and 14 Oakura District and Part Section 30 Oakura District

AND

IN THE MATTER of Subdivision Consent pursuant to Sections 105, 108, 220 and 221 of the Resource Management Act 1991

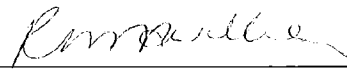
Pursuant to Section 221 of the Resource Management Act 1991 the New Plymouth District Council by resolution passed under delegated authority on 8 July 2013 imposed the following condition on the consent for subdivision of Lots 3 and 4 DP 336578, Lot 2 DP 400540, Part Sections 13 and 14 Oakura District and Part Section 30 Oakura District being LT470117

1. *'Lots 6-15 and Lot 23 shall contain 10% site coverage of native tree plantings.'*
2. *'All reasonable steps shall be taken to ensure the established vegetation on Lots 6-15 and Lots 23 and 29 shall be maintained, preserved and protected in a good and healthy condition. In the event of loss or destruction of vegetation for any reason, replacement plants shall be planted in accordance with the approved planting plan to the satisfaction of the Council.'*
3. *'No cats or mustelids shall be kept on Lots 6-15 and Lot 23.'*
4. *'Lot 29 shall not be further subdivided while the land remains in the Rural Environment Area.'*
5. *'The number of habitable buildings on Lots 6-15 and Lot 23 shall be limited to one (1) per lot.'*
6. *'The maximum height of a habitable building on Lots 6-15 and Lot 23 shall be limited to single storey i.e. 4.9m from existing ground level.'*
7. *'The fencing materials of boundary fences on Lots 6-15 and Lot 23 shall be limited to materials and design that is rural in character, have reflectivity values less than 35% and be finished in naturally recessive colours.'*

8. *'No solid fences or concrete structures/ pillars shall be used as boundary fencing on Lots 6-15 and Lot 23.'*
9. *'The exterior surfaces, including roof and walls, of any building constructed on Lots 6-15 and Lot 23 shall be recessive (shades rather than tints) colours with reflectivity values between 0 and 35%. Building materials used shall be compatible with the rural environment.'*
10. *'Any building constructed on Lots 6-15 and Lot 23 shall be setback a minimum 20 metres from any new road boundary and 10metres from side boundaries.'*
11. *'Driveways serving Lots 6-15 and Lot 23 shall be tar sealed, metalled or black concrete with 4% oxide.'*
12. *'Lots 6-15 and Lot 23 shall not be further subdivided.'*

DATED at New Plymouth this 26th day of May 2014

Signed by the said)
ROWAN MARGARET ANNE WILLIAMS)
Principal Administrative Officer)
of the New Plymouth District Council)



Document Number: 1551201
Property ID: 5781
Resource Consent: SUB10/45196.04

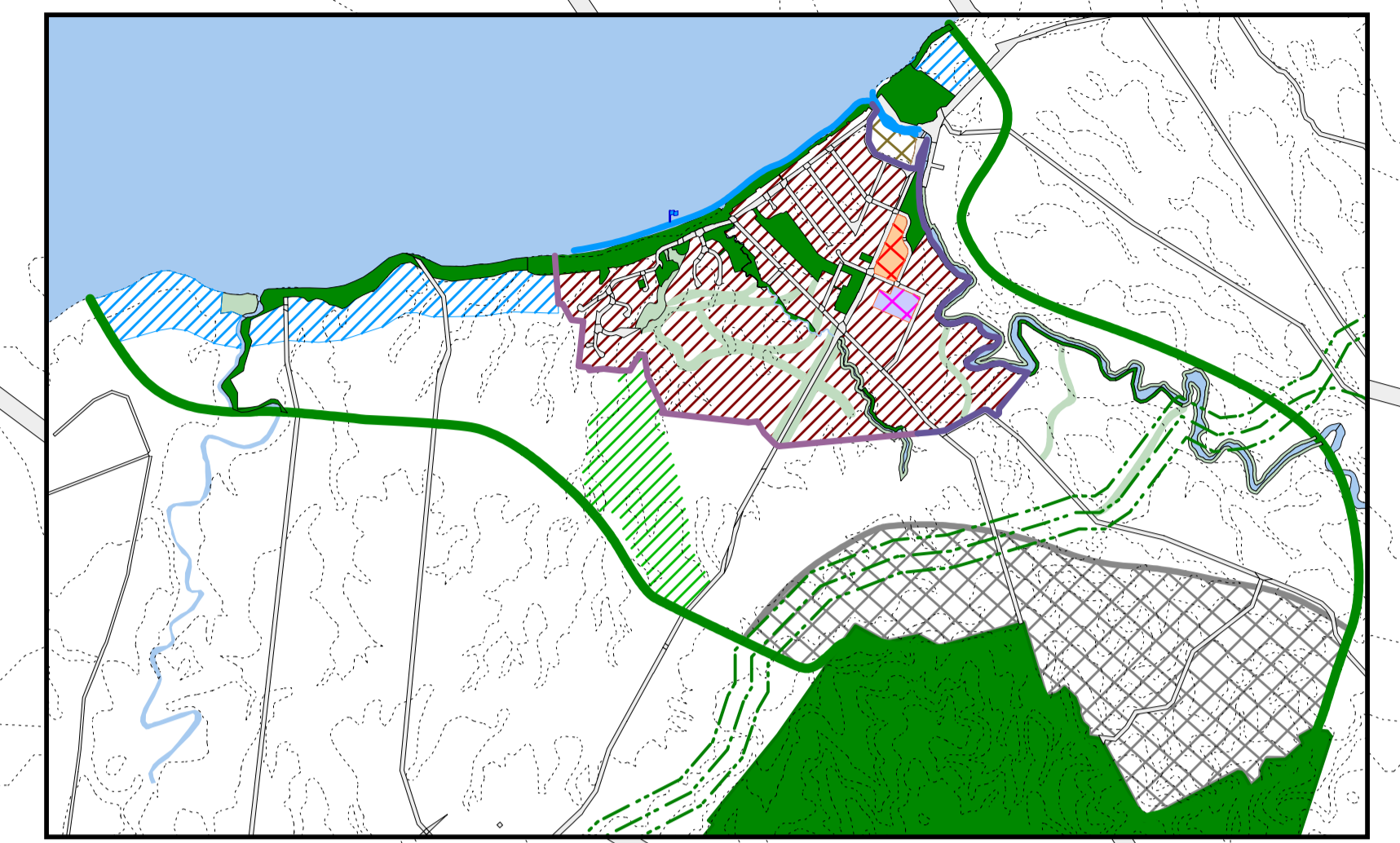
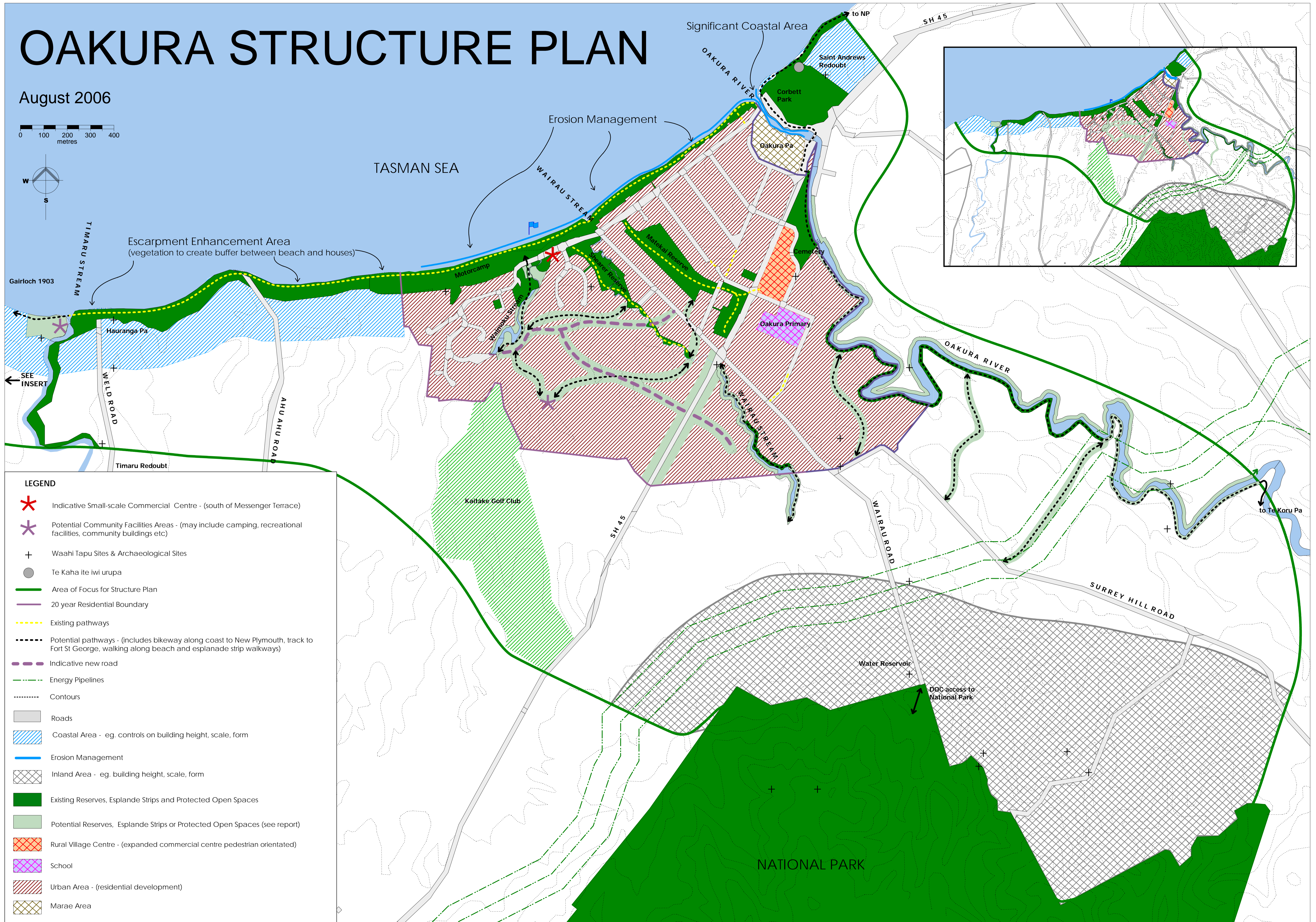
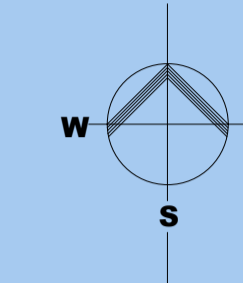
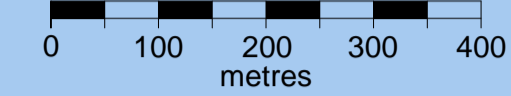
Appendix 2 Mapping

Appendix 2.1 Oakura Structure Plan 2006 - Map

Appendix 2.2 Operative District Plan – Maps A60, A61, E 2 & E 3

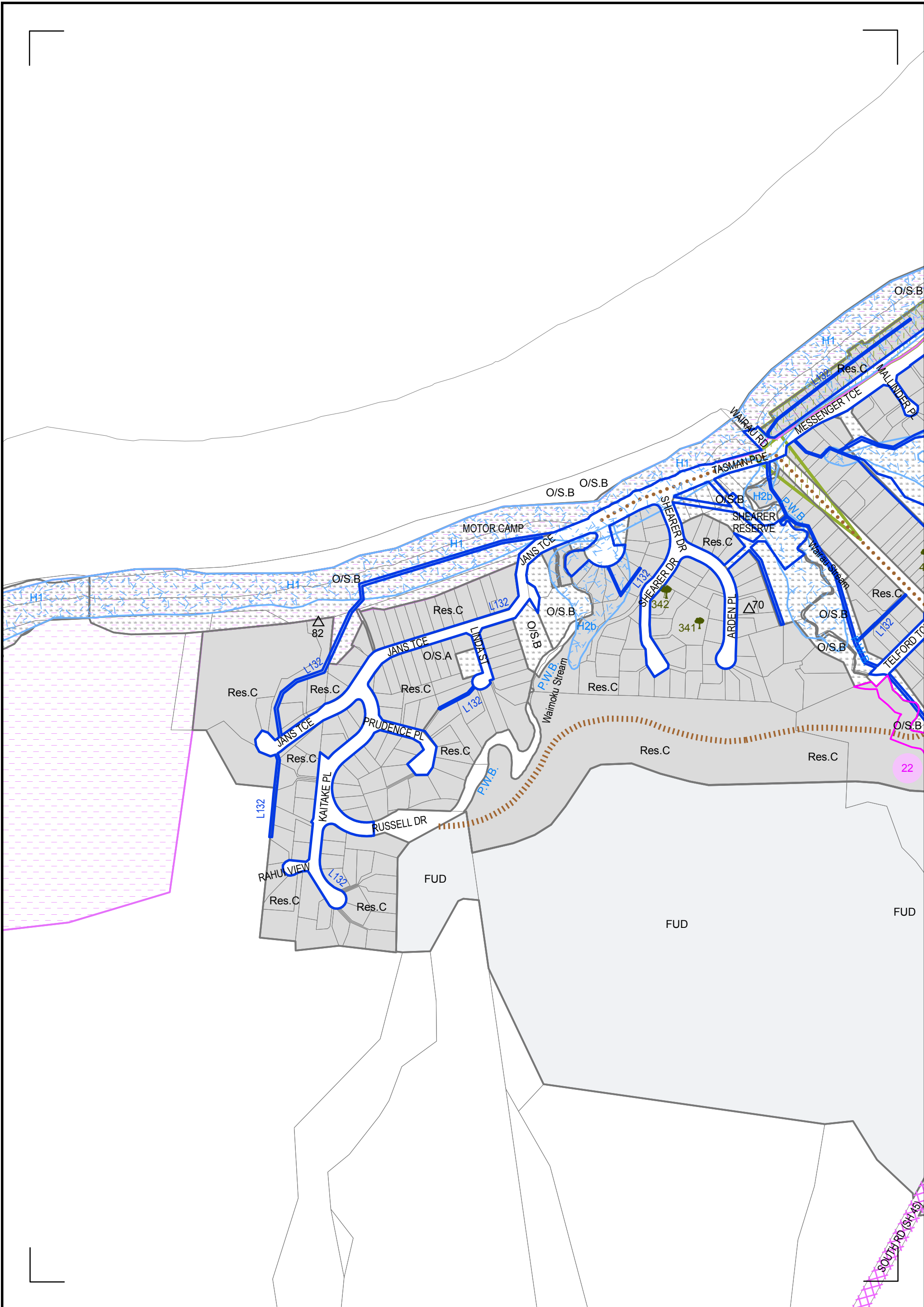
OAKURA STRUCTURE PLAN

August 2006



LEGEND

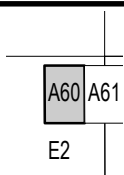
- Indicative Small-scale Commercial Centre - (south of Messenger Terrace)
- Potential Community Facilities Areas - (may include camping, recreational facilities, community buildings etc)
- Waahi Tapu Sites & Archaeological Sites
- Te Kaha i te iwi urupa
- Area of Focus for Structure Plan
- 20 year Residential Boundary
- Existing pathways
- Potential pathways - (includes bikeway along coast to New Plymouth, track to Fort St George, walking along beach and esplanade strip walkways)
- Indicative new road
- Energy Pipelines
- Contours
- Roads
- Coastal Area - eg. controls on building height, scale, form
- Erosion Management
- Inland Area - eg. building height, scale, form
- Existing Reserves, Esplanade Strips and Protected Open Spaces
- Potential Reserves, Esplanade Strips or Protected Open Spaces (see report)
- Rural Village Centre - (expanded commercial centre pedestrian orientated)
- School
- Urban Area - (residential development)
- Marae Area



Cadastral Information sourced from Land Information New Zealand data. Crown Copyright Reserved.

PLANNING MAP
A 60
OAKIRA

Location Code: A7649662
 Version: 7, Version Date: 16/04/2018



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 newplymouthnz.com

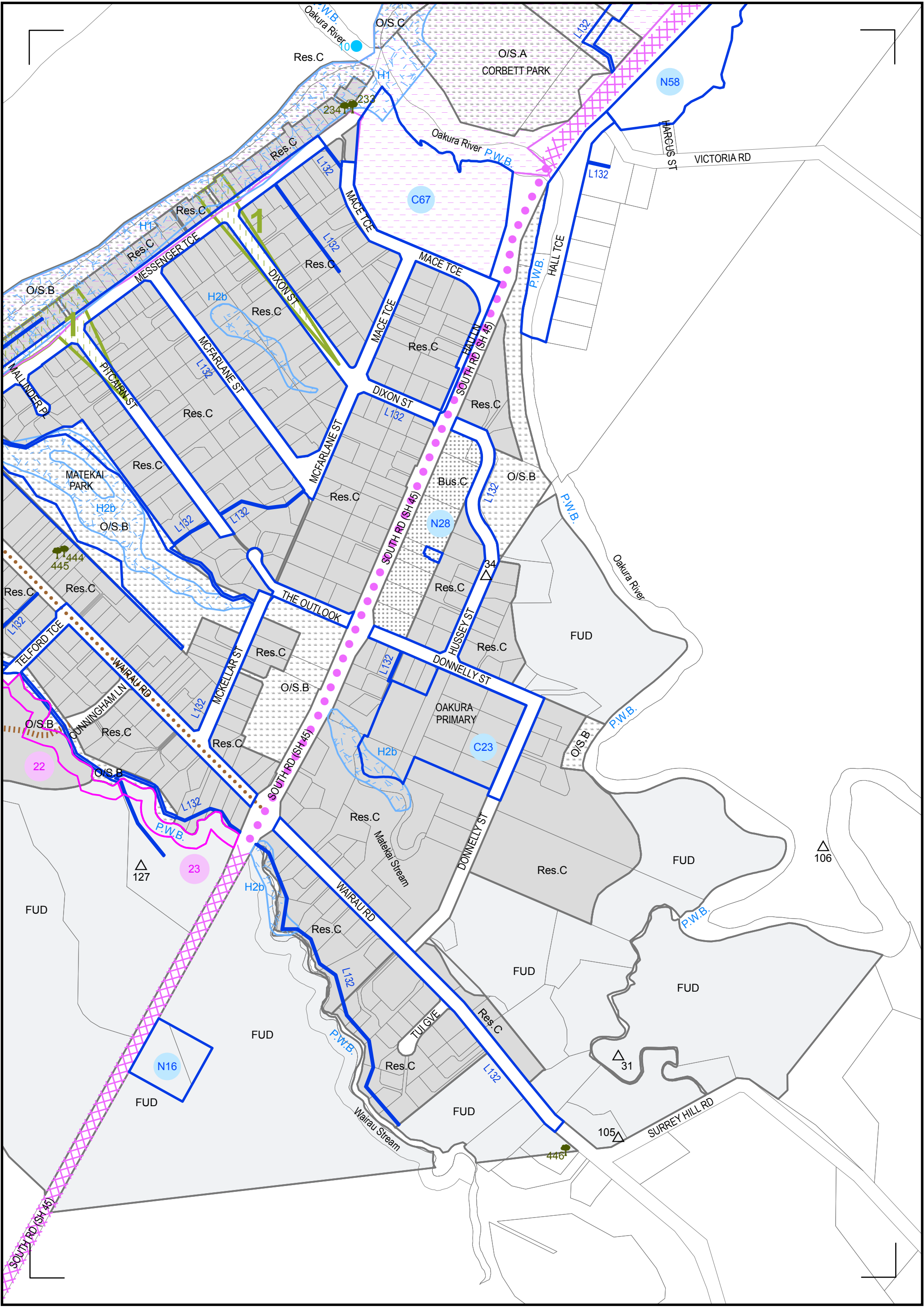
NEW PLYMOUTH DISTRICT PLAN

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Scale 1:5,000

Amended October 2013 (Update 8h & 8g) and July 2014 (Update 8x)
 LINZ Base Map August 2014

On any State Highway the Designation is to provide for the control of access to State Highways and all functions, powers and operations of Transit New Zealand in accordance with the Transit New Zealand Act 1989



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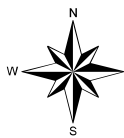
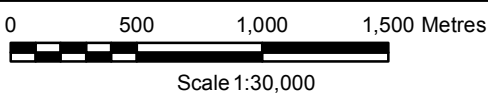
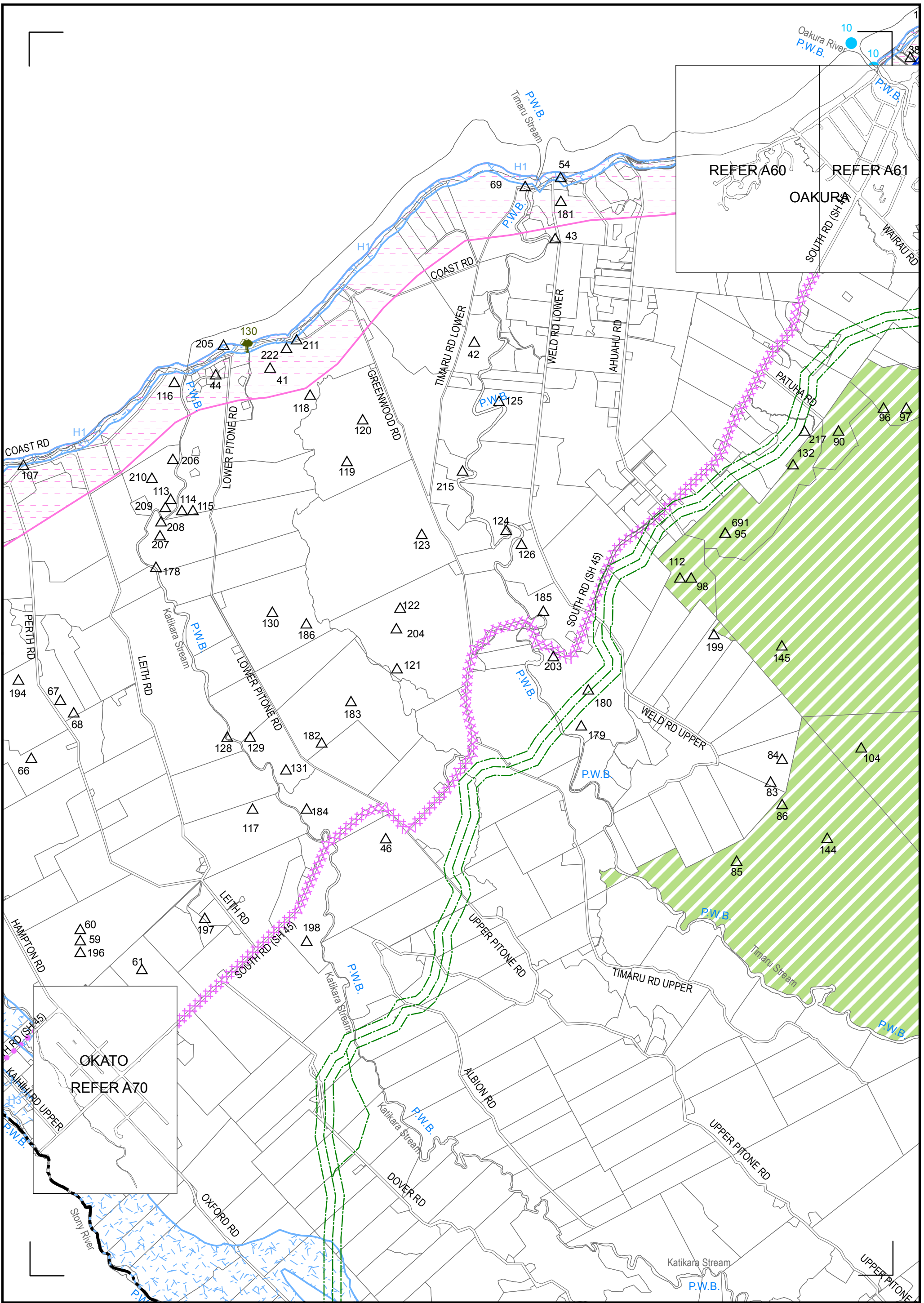


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PLANNING MAP
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OAKURA



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NEW PLYMOUTH DISTRICT PLAN

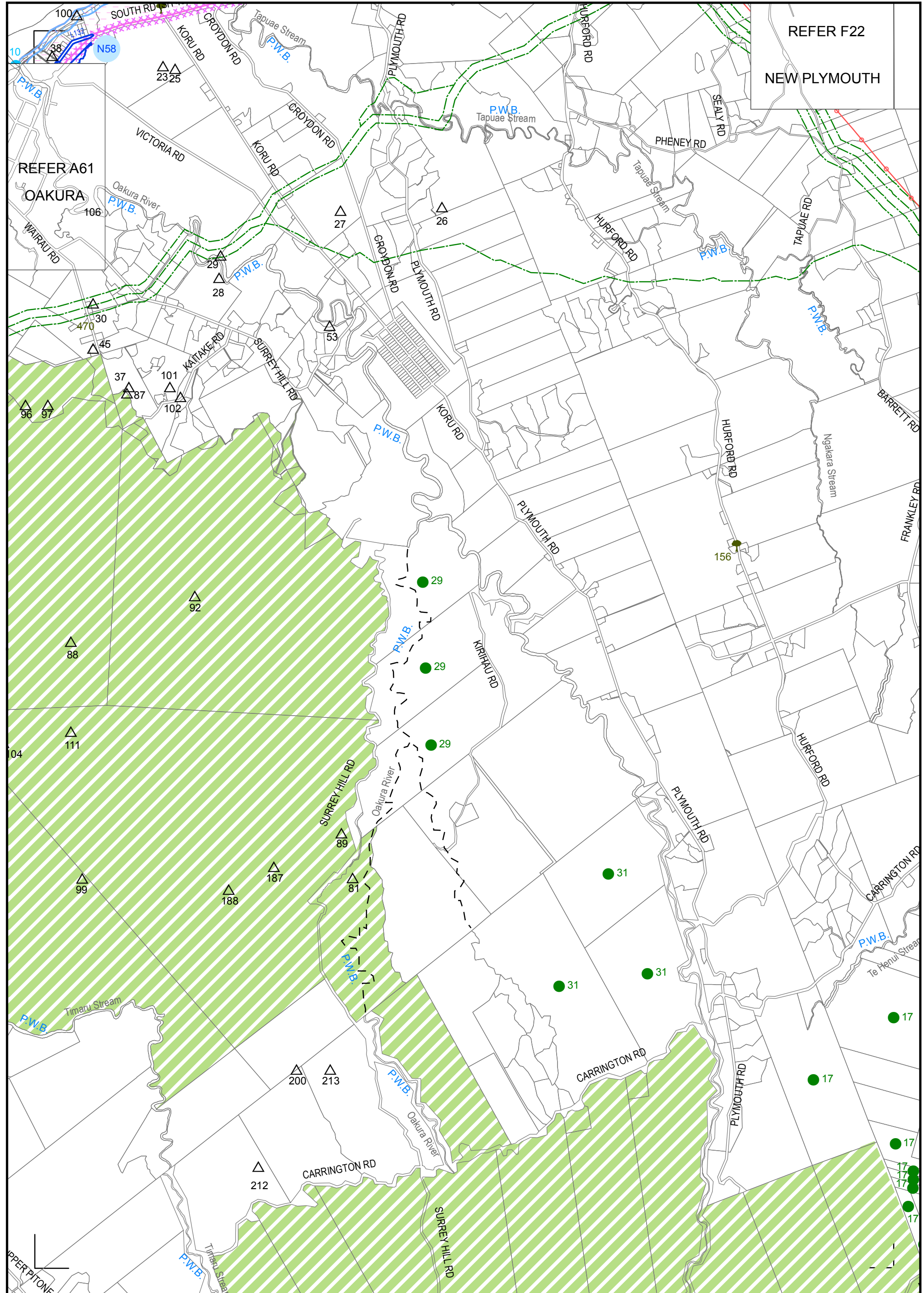
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PLANNING MAP

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RURAL

Amended May 2013 (Update 8g)
 LINZ Base Map April 2013



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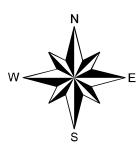
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OAKURA

PLANNING MAP
E 3
RURAL

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 **NEW PLYMOUTH DISTRICT COUNCIL**
newplymouthnz.com
NEW PLYMOUTH DISTRICT PLAN

0 500 1,000 1,500 Metres
Scale 1:30,000
Amended April 2014 (Update 8e, 8g & 8q)
LINZ Base Map March 2014



Appendix 3 Vision, Structure and Staging

Appendix 3.1 Vision and Structure Plan

Appendix 3.2 Staging Concept Plan

Wairau Estate

The future of Oakura.... NOW!

www.wairauestate.co.nz

PREPARED BY:

COMBER CONSULTANCY
RMA & ENVIRONMENTAL PLANNING



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Contents

Oakura Farm Park is a tract of rural land at Oakura nestled beneath the Kaitake Ranges, lying to the south of Wairau Road and with Surf Highway SH 45 on its western boundary.

In 2010 Oakura Farm Park Ltd sought and obtained Council consent for the subdivision and development of a portion of the Farm Park land holding for rural-residential lifestyle. This development, known as The Paddocks' is accessed from Upper Wairau Road via Pahakahaka Drive and Ekuarangi Place. A hallmark of the development is the retention of the natural land features, and the maintenance and enhancement of the natural vegetation. All of the original vegetation, including the natural water courses, has been protected as Open Space for future generations under Queen Elizabeth II (QEII) Trust Covenant.

Oakura Farm Park Ltd now believes the time is right to proceed with the development of the remaining land in the company's ownership.

A portion of the remaining property was identified as far back as 2006 by the Oakura community and the New Plymouth District Council for the future urban expansion of Oakura to meet predicted future growth. Ref: NPDC Oakura Structure Plan 2006.

The land now being proposed for urban development gently rises from west to east with a warm and sunny northerly aspect. As with The Paddocks, this land has native vegetation and natural water courses within it. It is again intended these natural features will be retained and reserved to ensure a high-quality environment is accessible to the future residents of the new development.

The name 'Wairau Estate' has been chosen as this area of future urban development will have its primary access off Wairau Road and has the Wairau Stream and its tributaries as an integral natural feature within the site.

The company's vision for the area is that of well-planned area of urban expansion with a high quality urban environment consistent with the unique environmental and community values that is Oakura.

Comments about the project are invited and can be given through project website. www.wairauestate.co.nz

Introduction

The planning for Wairau Estate recognises the longstanding concerns of the Oakura community relating to the speed environment on Surf Highway SH45 through the Village.

To assist with traffic calming through the heart of the Village and to promote ease of traffic movement through the Wairau Road/SH45 intersection, a roundabout is proposed as an integral component of the development. Given the increase in traffic on Upper Wairau Road in recent years and the additional traffic that will be contributed by Wairau Estate, it is considered a roundabout will help to ensure the safe and efficient movement of traffic between Wairau Estate and the State Highway. Initial discussions with the New Zealand Transport Agency have been encouraging.

In planning for Wairua Estate, it is also acknowledged that in time the northern side of the highway will be developed for residential settlement. A roundabout at the Wairau Road/SH45 intersection will also serve in the longer-term, either in whole or in part, the additional traffic that development in this area will contribute via Cunningham Lane to Lower Wairau Road moving onto and off Surf Highway.

Oakura Farm Park Ltd have engaged the services of traffic management consultant, AMTANZ Ltd, to prepare an independent technical report so as to satisfy the planning and roading authorities and the community that the roundabout concept is viable, appropriate and in the long-term interests of the Oakura community.

A copy of the traffic impact assessment prepared by AMTANZ Ltd can be viewed at www.wairauestate.co.nz



NEW ROUNDABOUT



Connected

Wairau Estate will be accessed off Upper Wairau Road by a new local road approximately 500m from the intersection with Surf Highway/SH45. There is good visibility for vehicles entering and leaving Wairau Road at the proposed intersection point.

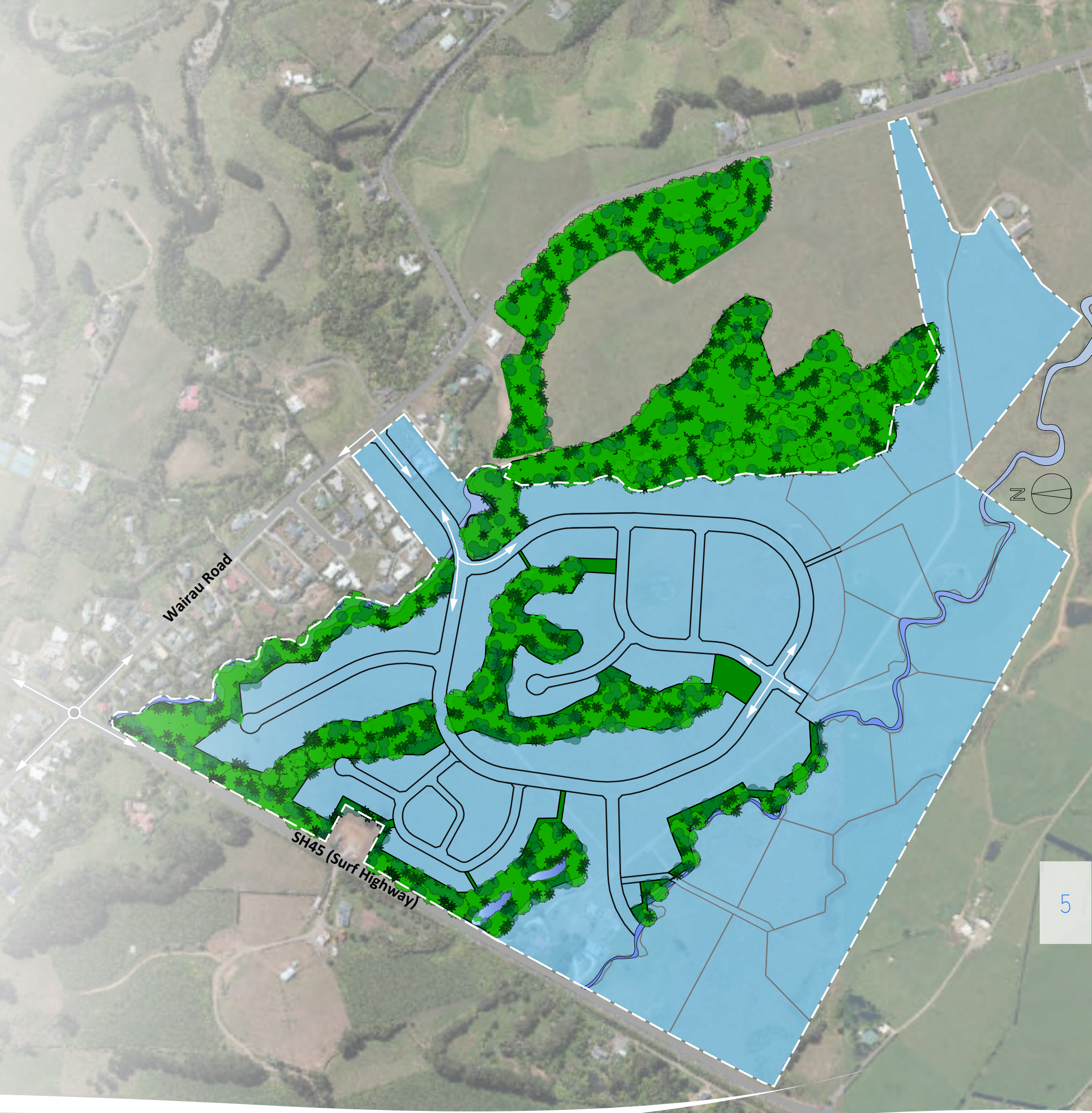
The roading network within the Estate will essentially be a loop providing for the easy circulation of traffic.

Cul-de-sac's will only be used where topography and proposed natural areas limit the options for through roads.

The width of carriageways will be in accord with modern development standards consistent with the slower, and thereby safer, movement of traffic in residential areas.

It should be noted that a road connection from the Estate directly to SH45 is not proposed. This is considered to be in the best interests of the future residents of the Estate, the Oakura community generally, and the safety of state highway users.

A copy of the traffic impact assessment prepared by AMTANZ Ltd can be viewed at www.wairauestate.co.nz



Accessible

The design concept for Wairau Estate places an emphasis on active lifestyles. It is proposed that the area will be able to be easily walkable.

Footpaths will be integral to the local roading network and will link to walkways through the natural areas.

Walking tracks will traverse the natural areas and will link to the already existing esplanade walkway up the Wairau Stream from near the intersection of Wairau Road and Surf Highway SH45. Walking access to natural areas from cul-de-sac heads will also feature in the design.

It will also be possible to walk between Wairau Estate and The Paddocks lifestyle area (closer to the Kaitake Ranges) on walking tracks within the natural areas connecting the two localities.

It is proposed that all of the walking tracks within Wairau Estate will be designed to accommodate off-road cycling.

Wairau Estate is within easy walking distance of a several key Oakura destinations. From the Wairau Road entry to the Estate to the grounds the Oakura Primary School via Donnelly is a walking distance of some 500m. A further 500m puts you in the centre of the Oakura Village business area. And walking along Lower Wairau Road, the Estate is some 750m from the Oakura shoreline, surf club and coastal reserves.

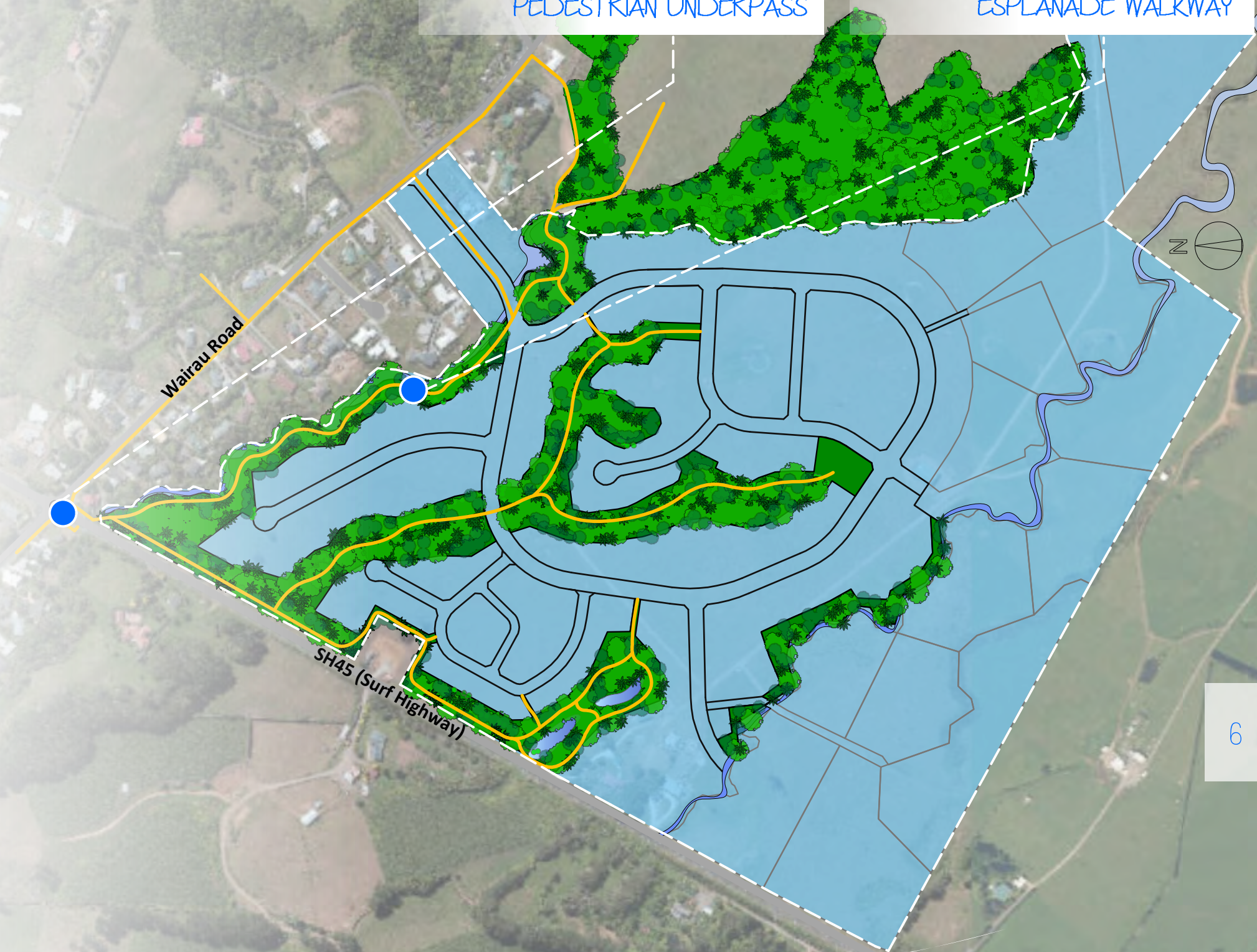
Oakura Farm Park Ltd is also promoting the concept of a pedestrian underpass under Surf Highway SH45 on the south side of Wairau Road. This would enable those wanting to walk (or cycle) from Wairau Rd/The Village down to the beach at Messenger Tce to do so without having to contend with the traffic on SH45 and Wairau Road. Conversely those wanting to cross the highway at Wairau Road to get to the school and Village business area would find an underpass a much safer prospect than having to cross Surf Highway SH45. The costs of a pedestrian underpass will be able to be offset/shared in part with the installation of utilities, e.g. sewerage main that will need to cross the highway to service the Estate.



PEDESTRIAN UNDERPASS



ESPLANADE WALKWAY



Walkable

Wairau Estate will be fully serviced.

Water supply will be reticulated to each lot from the available New Plymouth District Council treated mains water supply. This supply is also of adequate capacity for and meets modern day urban-firefighting standards. Hydrants for this purpose will be provided through the Estate.

Sewage disposal will be available to each household within each lot by way of connection to the New Plymouth District Council mains sewerage disposal system. Sewage from Oakura is piped through to the New Plymouth Sewage Treatment Plant.

Stormwater disposal from house roofs and outbuildings will be to underground soakaway systems within each lot.

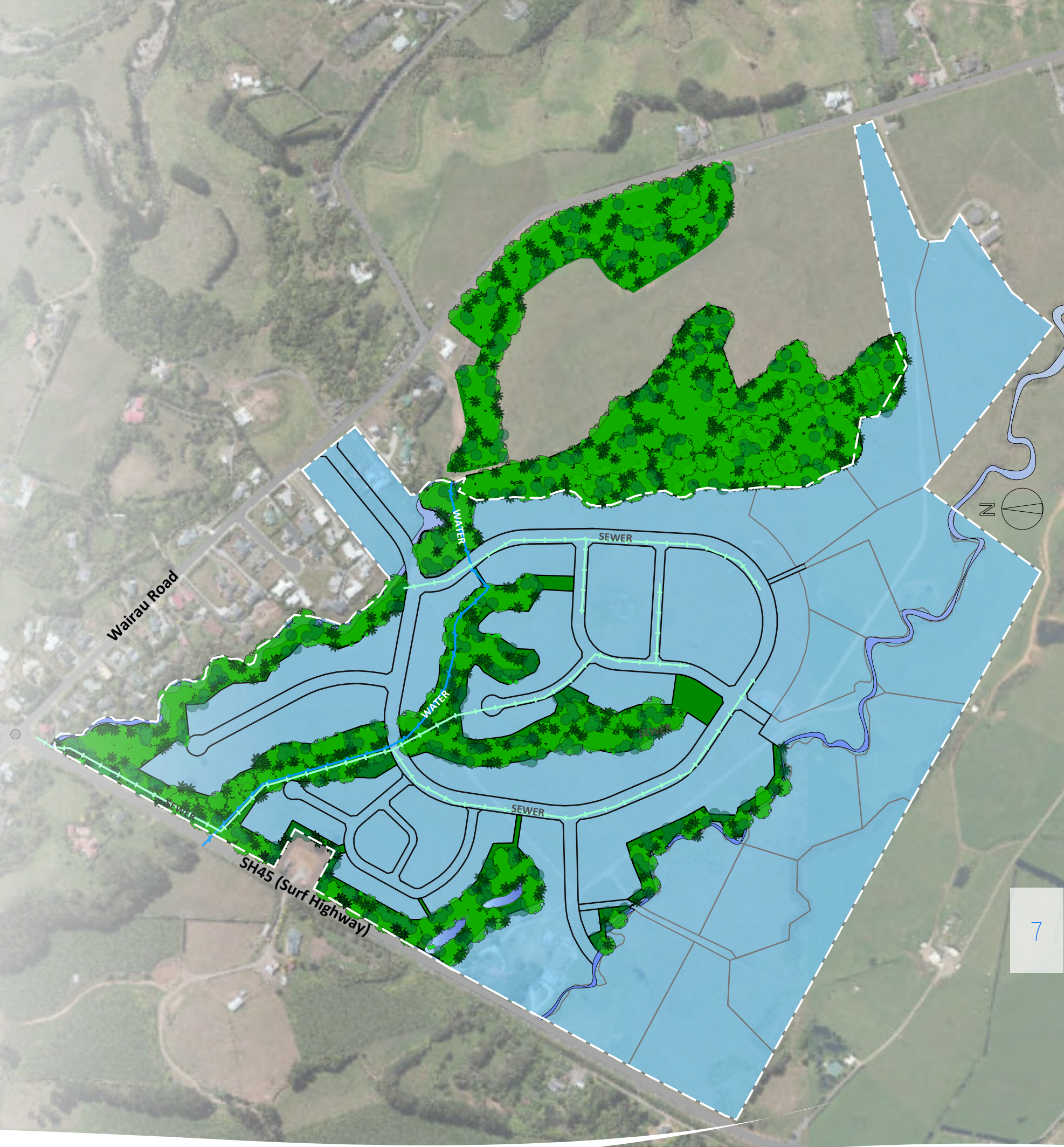
Stormwater from the common impervious areas such as roads will be collected at the roadside and piped via detention areas and other means of low-impact design to the water courses within the natural areas. The overall stormwater management for the Estate will be designed to be hydraulically neutral.

All lots will have available to them the underground reticulated electricity and natural gas supplies available in the area.

All lots will also have available to them underground networked fibre optic cable for voice and data.

The area of the Oakura within which Wairua Estate is located also has good cellular phone coverage.

A civil engineering feasibility report has been prepared by Red Jacket Limited. This can be viewed at www.wairauestate.co.nz



Serviced

The Wairau Estate is well-endowed with natural areas.

The Wairau Stream and associated esplanade reserve is already in place along the northern margin and running more or less parallel with Wairau Road.

Further to the south a Wairau Stream tributary with mature vegetation runs from west to east toward the Kaitake Ranges commencing about midway across the Estate's western edge at the State Highway. From the SH45 this extends for approx. 300m and then forks into two smaller vegetated tributaries, one being approx 300m in length, the other being approx. 250m. These natural areas will be conserved and enhanced and will be accessible to all residents and the wider community as Council reserves or as covenanted Queen Elizabeth II Open Space.

On the southern margin of the Estate running east from the edge of the Surf Highway is a small lake with adjoining wetland of some 5,000sqm. This water feature will also be conserved and enhanced as reserve/public open space. The Oakura side of this feature will form part of the northern margin of the area that has been identified for a small lot residential subdivision providing an attractive outlook for residents, and just a short walk from a site for a potential café on the south side of the lake/wetland.

An ecological values and impact assessment has been prepared by Oecologico Limited. This can be viewed at www.wairauestate.co.nz



Natural

Oakura has a strong equestrian fraternity, evidenced by the Pony Club located near the centre of the township and the horse population grazed on various private holdings about the environs of the village.

For many years the equestrian community have lobbied the community board and district council for bridle paths that provide for recreational horse riding away from public roads. The equestrian needs of the Oakura community have most recently been expressed through a significant number of submissions to the Focus Group managing the Oakura Community Engagement Project 2014/16.

In recognition of this strong community interest in things equestrian it is proposed an area of some 25 hectares with frontages to both Wairau Road and Surf Highway SH45 along the western aspect of the Oakura Farm Park Ltd property will be zoned Equestrian Lifestyle.'

Approximately twelve lots of 1-2 hectares, sufficient in area to keep 1-2 horses, are proposed. Each of these lots will have a suitable building platform and sufficient area for equestrian-type buildings and yards necessary for the equestrian lifestyle.

An equestrian arena near to and readily assessable from the equestrian lifestyle lots is also proposed.

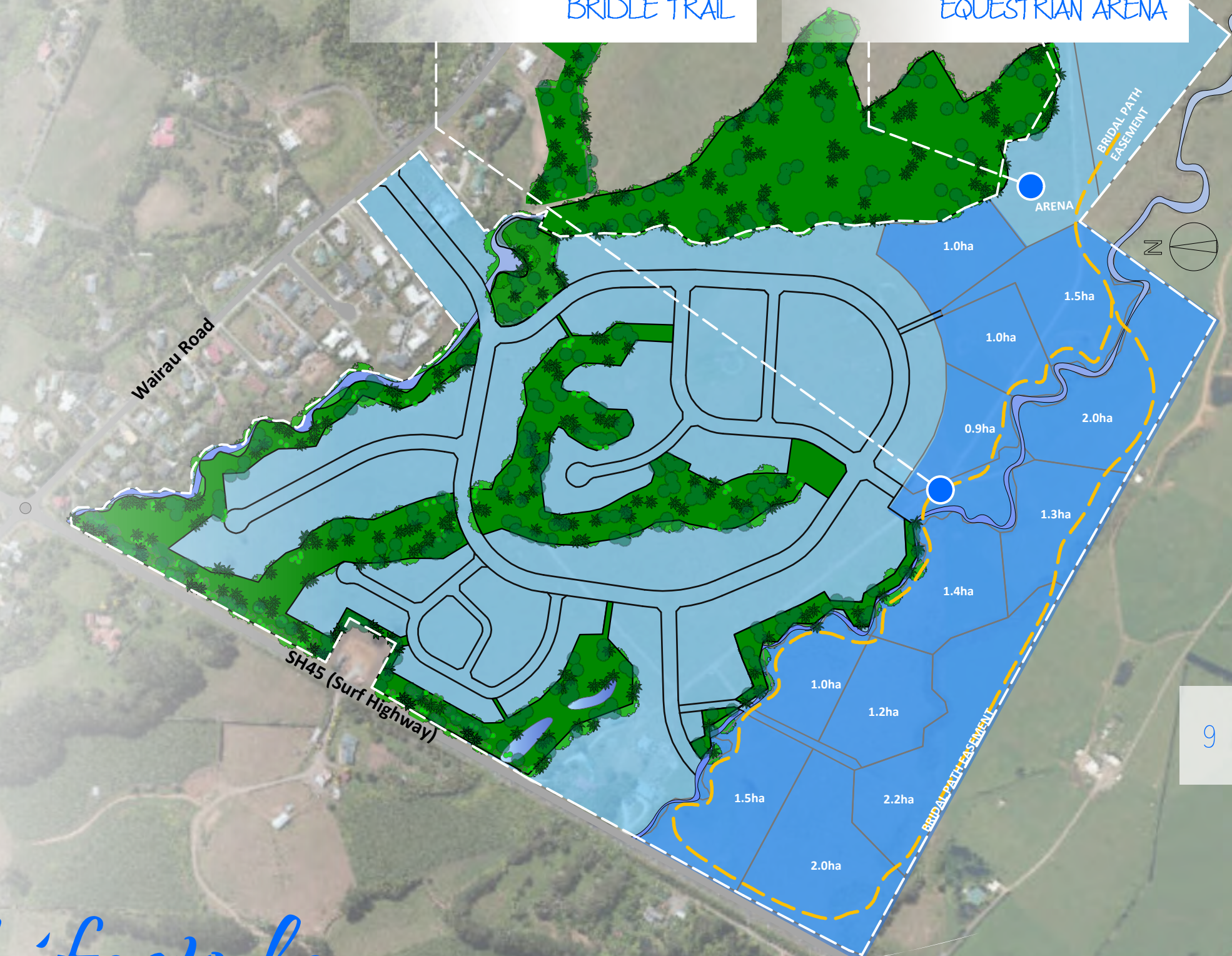
It is also proposed that a bridle path will be incorporated to traverse each of the equestrian lots, including the arena lot.' The bridle path will be for the use of the equestrian lot owners with access through the lot properties being formalised by reciprocal rights of way. The total length of the bridle path will be approximately one kilometre. The design concept is that any equestrian lot owner will be able to saddle their horse within their own lot and ride the bridle trail traversing the other lots. The bridle trial will also be the route by which they will get from their respective lots to and from the arena.



BRIDLE TRAIL



EQUESTRIAN ARENA



Equestrian Lifestyle

It is intended that the Wairau Estate will provide a living environment of high urban quality while maintaining a close connection with the natural environment through the retention and enhancement of the abundance of natural features present in the locality. Approximately fifteen percent (15%) of the total site will be set aside as open space.

The residential area will have lot sizes that will be typically urban, e.g. 500-800sqm, for those requiring 3-4 bedroom homes. It is also envisaged that a about 10 percent of the lots will be around 300sqm, providing a lifestyle choice for those wanting smaller households of 1-2 bedrooms.

All lots will, as far as practical, be orientated to allow for the design of individual dwellings that can optimise sunlight exposure from the northerly aspect.

Limits on site coverage, and bulk, height and location are proposed to ensure there is an optimal sense of spaciousness maintained between individual lots/dwellings within the Estate consistent with contemporary urban living. Controls on the colour of roofs and claddings are also proposed consistent with maintaining a built environment sensitive to the overall local landscape setting.

The larger equestrian lots will act as a spatial transition area being located between the urban area to the north and the established adjoining rural area located to the south. Ordinances appropriate to the equestrian lifestyle zone will control site coverage, and bulk, height and location of both dwellings and outbuildings.

The emphasis on Wairau Estate being well connected with the Village and beyond, readily accessible and easy to move around and within both by motor vehicle, on foot and by bicycle, will all contribute to the liveability of the area for residents.

The integration of the natural areas with the urban form will also promote quality of life. A flat grassed informal play and kick a ball' area of some 2400sqm toward the centre of the Estate will also be provided. This will be a space for active recreation for children and families and an informal meeting place for members of the community of all ages.

Conceptually, a Farm House Café' is proposed on the southern margin of the Estate overlooking the lake/wetland area at what will be the new interface of the urban/rural boundary at Oakura. It is envisaged this will provide a common convivial social space for all residents who want to take time out for a coffee (perhaps a meal) but within a short walking distance of the home. It is possible that locally grown organic farm produce e.g. vegetables, eggs, milk etc., might be available through this outlet.



LAKESIDE CAFE



OPEN SPACE



Liveable

While part of the area proposed for Wairau Estate has been identified for further urban development (FUD) within the New Plymouth District Plan (Ref: Planning Map A61) the land is currently zoned as Rural Environment Area.

Following informal meetings with community interests, Mana Whenua, and officers of the New Plymouth District Council, it is proposed that the Oakura Farm Park Ltd will apply for a Private District Plan Change Request (a publicly notified statutory consent process) to enable the Wairau Estate proposal to proceed to development.

Informal feedback from the community will be invited during November 2017.

Informal feedback will be able to be made through the project website, www.wairauestate.co.nz.

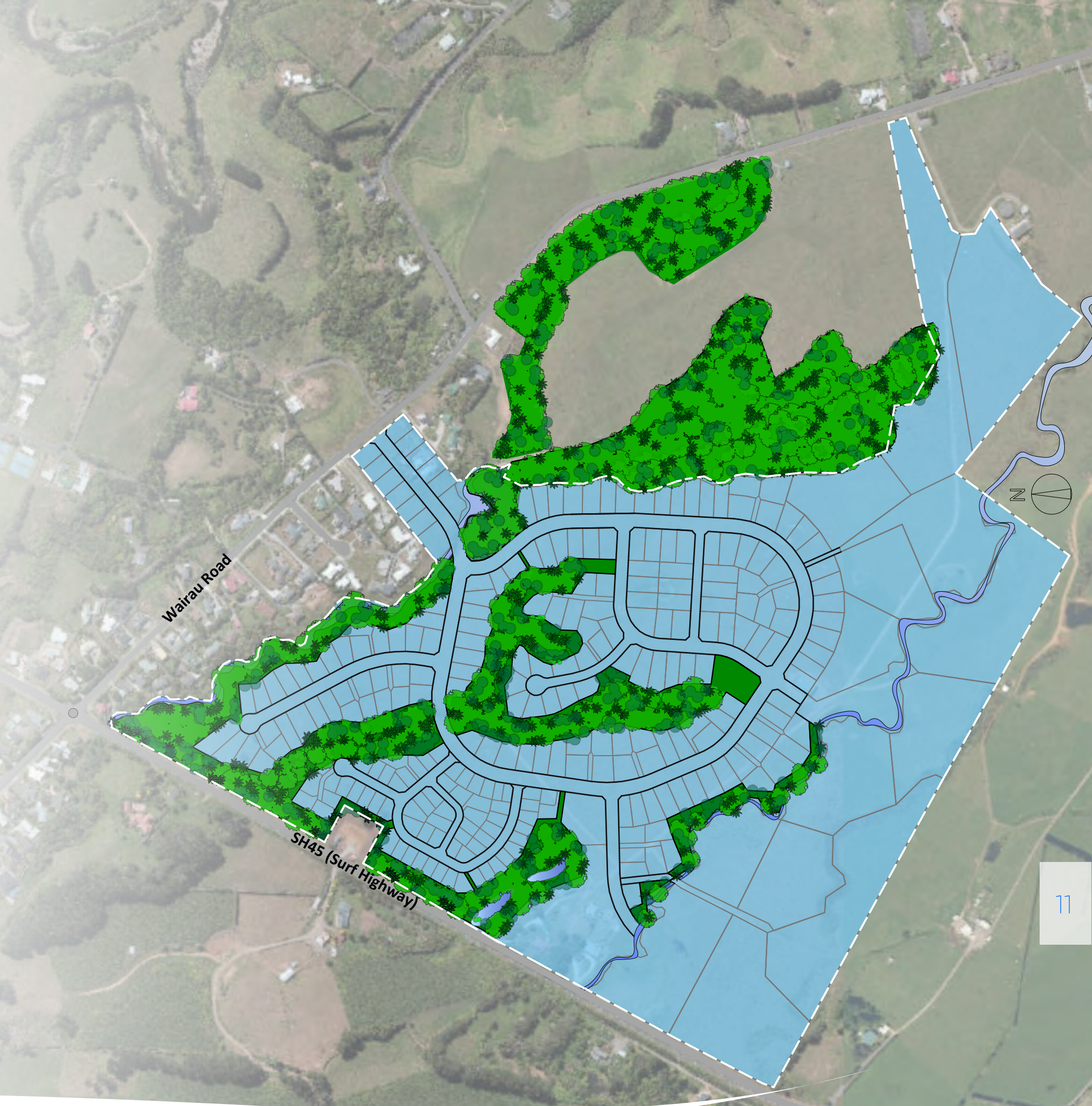
Information displays will also be in place at the Oakura Public Library and the Hi Tide Café, Oakura during November with feedback forms being available for completion and return to Oakura Farm Park Ltd.

On dates and times to be specified, representatives from Oakura Farm Park Ltd will be available at the public information displays to answer questions.

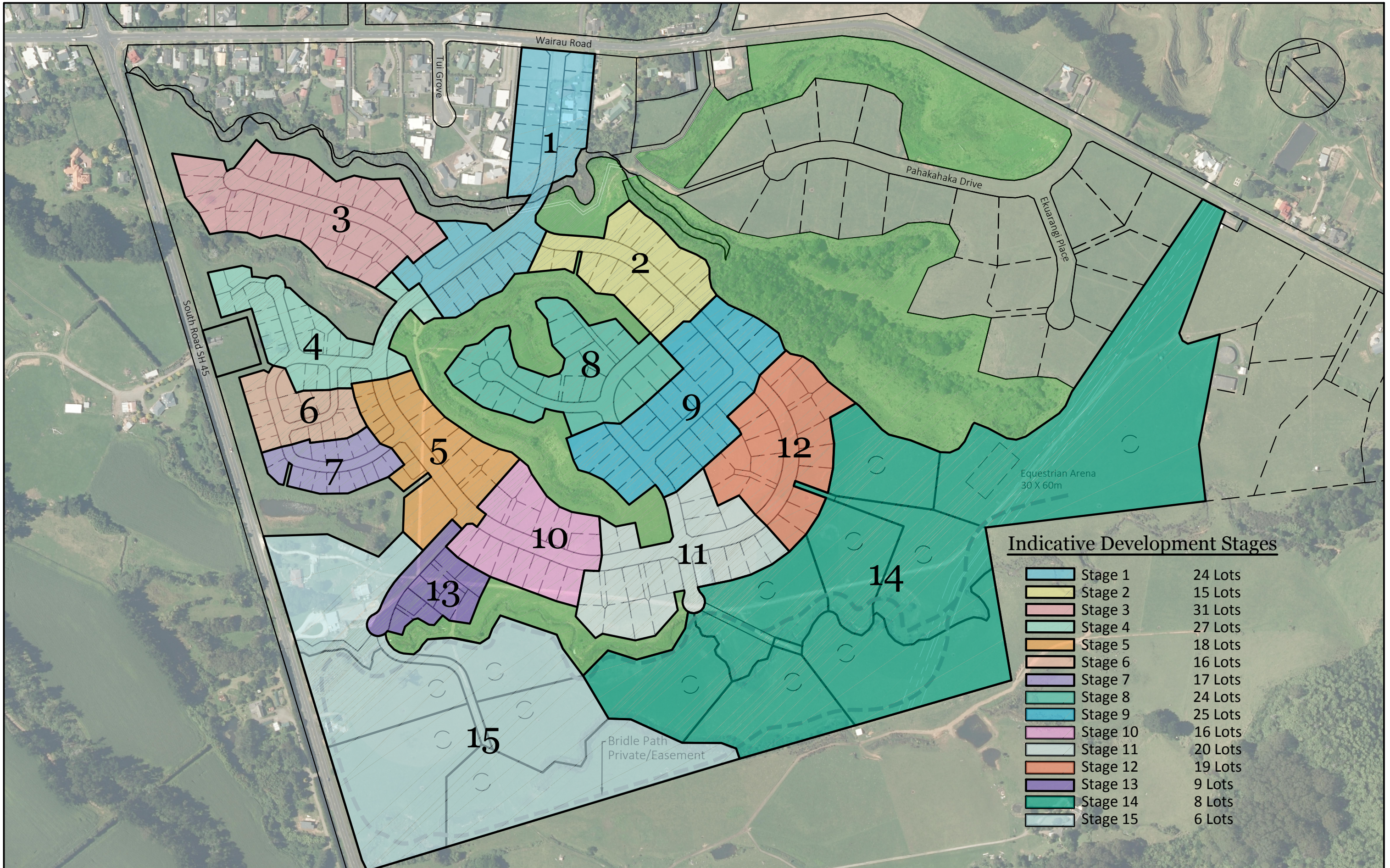
It is intended the District Plan Change Request will be lodged by Oakura Farm Park Ltd with the District Council in mid-December 2017.

It is envisaged the Council will formally publicly notify the Private Plan Change request in the first quarter of 2018. When this occurs any persons who consider themselves affected by the proposal will have the opportunity to make a formal submission to the Council.

A preliminary pattern of subdivision is indicated on the accompanying illustration.



Next Steps



Indicative Development Stages

	Stage 1	24 Lots
	Stage 2	15 Lots
	Stage 3	31 Lots
	Stage 4	27 Lots
	Stage 5	18 Lots
	Stage 6	16 Lots
	Stage 7	17 Lots
	Stage 8	24 Lots
	Stage 9	25 Lots
	Stage 10	16 Lots
	Stage 11	20 Lots
	Stage 12	19 Lots
	Stage 13	9 Lots
	Stage 14	8 Lots
	Stage 15	6 Lots


 3 Young Street, PO Box 116
 New Plymouth 4340
 North Taranaki 06 758 5342
 South Taranaki 06 278 4456
mckinlaysurveyors.co.nz

TITLE
STAGED CONCEPT PLAN - Wairau Estate, Oakura

This plan is prepared only for the purpose of obtaining a Resource Consent under the Resource Management Act 1991. It should not be used for any other purpose. Areas and dimensions are approximate and are subject to change on final field survey.

COMPRISED IN Lot 29 DP 482991	AREA 66.3389ha	JOB O-160109
TERRITORIAL AUTHORITY New Plymouth District Council	DATE 24/01/18	DRAWING C-07
PREPARED FOR Oakura Farm Park Ltd	SCALE 1:4000 @ A3	SHEET OF 1 1

Appendix 4 Mana Whenua Consultation

Record of Consultation – Oakura Farm Park Ltd with Ngati Tairi Hapu

The following is a record of the consultation undertaken by Oakura Farm Park Ltd with Ngati Tairi Hapu in relation to the proposal to rezone rural land at Oakura for urban development.

Date	Present	Venue	Purpose	Outcome
6 May 2016	Mike Ure, Ngati Tairi Mike McKie, Oakura Farm Park Ltd Colin Comber, Comber Consultancy Apology: Keith Manukonga, Ngati Tairi – work commitments	The Paddocks Site Office, Wairau Road, Oakura	To acquaint the Hapu with the company's intent to develop the company's land for urban use.	Mike Ure confirmed that he and Keith Manukonga were the RMA and environmental representatives for Ngati Tairi and Nga Mahanga and that the Oakura Farm Park Ltd property was within the Rohe of Ngati Tairi. CC outlined the company's proposals by reference to a document - preliminary Vision and Structure document titled 'Wairau Estate – the future of Oakura, Now!' General agreement that there were no known Waahi Tapu/Archaeological sites within the area to be rezoned. MM confirmed that Ivan Bruce would be re-engaged to provide an archaeological assessment as he had done for The Paddocks development. MU given a copy of the vision statement and planning maps for consideration and passing on to Keith Manukonga, MM undertook to provide further information to MU as the proposals firmed up.
18 June 2017	Keith Manukonga and Mike Ure, Ngati Tairi	Butler's Reef, Oakura	To update the Hapu with the company's progress in develop the company's land for urban use and to present the finding of the findings of	CC updated the Hapu reps with the company's proposals by reference to a document - preliminary Vision and Structure document titled 'Wairau Estate – the future of Oakura, Now!' Copies of Vision statement given to KM and MU.

Date	Present	Venue	Purpose	Outcome
	<p>Ivan Bruce, Archaeological Resource Management</p> <p>Colin Comber, Comber Consultancy</p> <p>Apology: Mike McKie, Oakura Farm Park Ltd (OFPL) – overseas.</p>		<p>the recent archaeological assessment of the development site.</p>	<p>Ivan Bruce discussed his recent assessment of the subject site and the findings. In summary research and field assessment had indicated there were no sites of archaeological significance to mana whenua. It was possible there was evidence of pre-European settlement subsurface; hence the recommendation in IB's assessment for any development earthworks to be undertaken pursuant to a NZHPT archaeological authority prior to any site works being commenced.</p> <p>Hapu issues noted:</p> <ul style="list-style-type: none"> • That disposal of storm water within the proposed development area did not adversely impact instream values. • Hapu be given opportunity to recommend the name for the Wairau Estate loop road; this would be reflective of the early (mana whenua) history of the locality. • Any earthworks to be subject to archaeological supervision (pursuant to an NZHPT archaeological authority) with Hapu participation. • MOU to be developed to record understandings and undertakings of OFPL and the Hapu in respect of matters of cultural importance relating to the Wairau Estate project with MOU being lodged as part of the Plan Change Request to NPDC.

Date	Present	Venue	Purpose	Outcome
				<p>Action Points:</p> <ul style="list-style-type: none"> • CC to forward copies of recent Archaeological Resource Management assessment to KM and MU. • IB to send CC copy of 'The Paddocks' Pa Management Plan • CC to follow-up with Mike McKie re stone sculpture for The Paddocks entrance, as previously verbally agreed with MM. • CC to draft MOU and arrange a further meeting with Hapu Reps KM and MU to consider draft MOU.
20 Nov 2017	<p>Mike Ure & Sharon Steen, Ngati Tairi</p> <p>Mike McKie, Oakura Farm Park Ltd</p> <p>Colin Comber, Comber Consultancy</p> <p>Apology: Keith Manukonga, Ngati Tairi – work commitments</p>	Butler's Reef, Oakura	The meeting was called at the request of the Hapu to discuss matters relating to 'The Paddocks' and also 'Wairau Estate'	<p>Matters discussed:</p> <p>The Hapu wishes to progress the stone sculpture to be located at the 'The Paddocks'. MU outlined the process which would include design (to be arranged by hapu); sourcing suitable rock/s (MM offered to source rock from one of his properties); commissioning a carver (hapu to arrange) and agreeing costs and funding.</p> <p>MU spoke of possible assistance for hapu with funding from NPDC heritage/cultural projects allocation. CC to assist with funding application.</p> <p>Hapu concerned at keeping residents off the pa site/QE II area to show respect for waahi tapu and also avoid damage to vegetation/habitat. Hapu would like to see appropriate signage erected. MM agreed and would work with hapu to see signage put in place.</p>

Date	Present	Venue	Purpose	Outcome
				<p>MU requested on behalf of the hapu the naming rights to the main loop road of the Wairau Estate and indicated that was the only road they had an interest in naming. MM indicated he was relaxed about this and that Ngati Taire could have the naming rights.</p> <p>MU advised he had spent 1.5 days with Ivan Bruce during the archaeological assessment of the Wairau Estate site. He advised MM his fees were \$150.00. MM arranged with MU to get a cheque to him in the next day or so.</p> <p>At the conclusion of the meeting a visit was made to a layby area on 'The Paddocks' property on Upper Wairau Rd almost opposite the Surrey Hill Rd intersection. It was agreed the site would be suitable to locate a stone carving.</p>

Appendix 5 Landscape and Visual Impact Assessment

Appendix 5.1 L& VI Assessment – Bluemarble – September 2017

Appendix 5.2 Addendum – Bluemarble – February 2018



LANDSCAPE & VISUAL IMPACT ASSESSMENT

WAIRAU ESTATE STRUCTURE PLAN AREA

Wairau Road
Lot 29 DP 497629

Oakura

Written By: Richard Bain
September 2017 Revision A

bluemarble
A world of difference



CONTENTS

- 1.0 Introduction
- 2.0 Proposal
- 3.0 Site Context And Character
 - Fig. 1: Site Location*
 - Fig. 2: Structure Plan Area*
 - Fig. 3. 2010 Subdivision Scheme Plan*
- 6.0 Statutory Context
 - Table 1: Npdc Policies & Objectives - Assessment*
 - Fig. 4: District Plan Map A61*
- 5.0 Amenity
- 6.0 Assessment Of Landscape Effects
- 7.0 Assessment Of Visual Effects
 - Table 2: Visual Sensitivity & Effects Matrix*
- 8.0 Mitigation Recommendations
- 9.0 Summary Of Effects

APPENDICES

- i Viewpoint Location Plan
- ii Landscape Effects Assessment - Methodology
- iii Visual Effects Assessment - Methodology

1. INTRODUCTION

This report details a Landscape & Visual Impact Assessment undertaken by blue**mar**ble for the Wairau Estate Structure Plan Area, Oakura.

The location of the application site is shown in **Figure 1**.



Figure 1: Site Location

A description of the Structure Plan area is contained within Section 1.1.

The purpose of this report is to identify and assess the significance of, and the effects of change resulting from development on both the landscape as an environmental resource in its own right, and on people's views and visual amenity.

This report also addresses matters pertaining to character and amenity as outlined in the New Plymouth District Plan, and the Resource Management Act (RMA).

Where effects are considered significant, recommendations are provided to avoid, remedy or mitigate these effects in Chapter 8.

Key Definitions used in this report:

Landscape and Visual Impact Assessment (LVIA)

A tool used to identify and assess the likely significant effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.

Landscape

An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.

Landscape character

A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

Landscape effects

Effects on the landscape as resource in its own right.

Visual effects

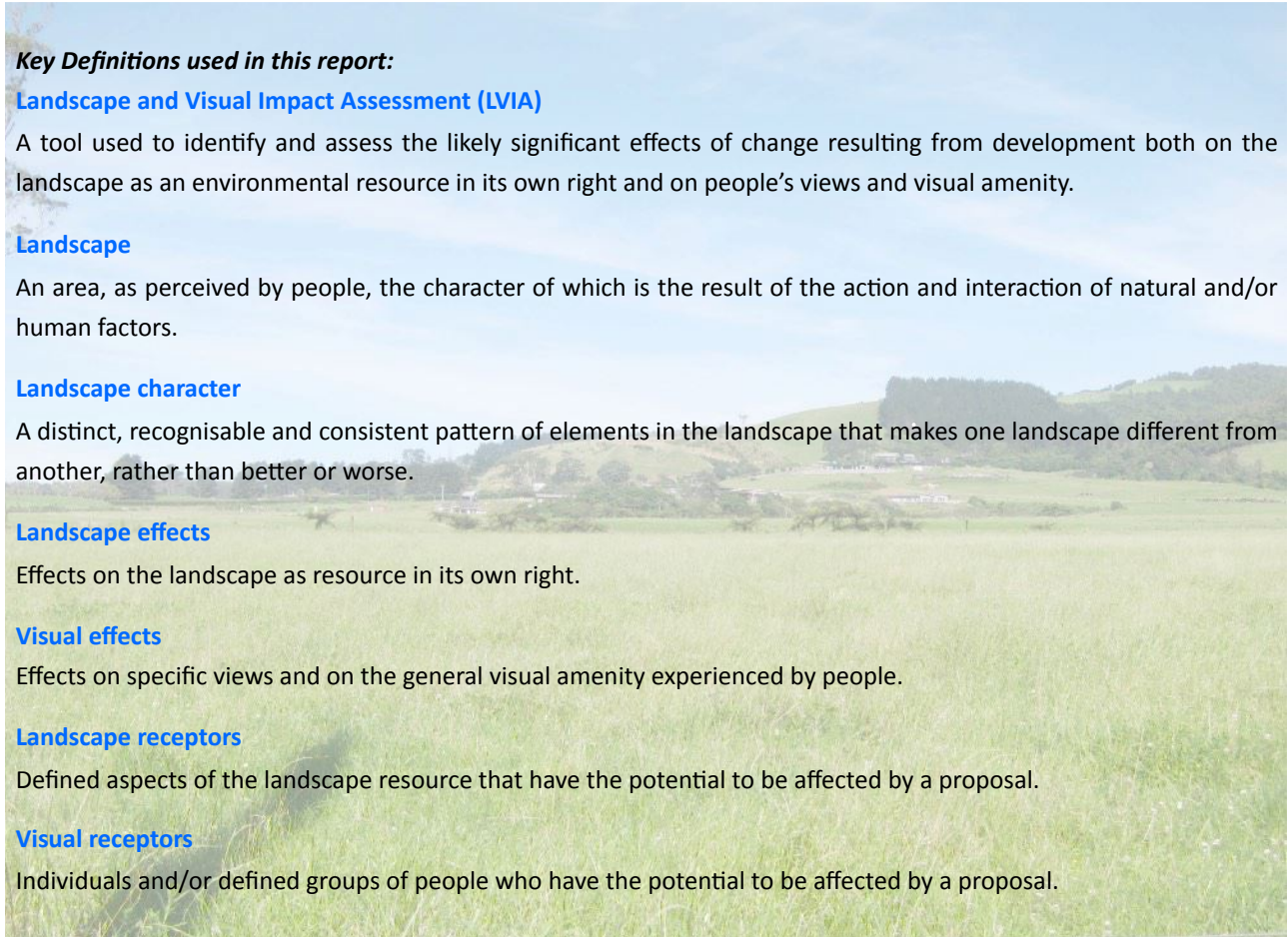
Effects on specific views and on the general visual amenity experienced by people.

Landscape receptors

Defined aspects of the landscape resource that have the potential to be affected by a proposal.

Visual receptors

Individuals and/or defined groups of people who have the potential to be affected by a proposal.



2. PROPOSAL

The proposal is to create a Structure Plan area within a 66.3 hectare area of land that is currently 'zoned' Rural Environment Area. However, approximately 21% of the Structure Plan area (12 hectares) is a triangle of land that is subject to a Future Urban Development overlay, as shown in District Plan Map A61, (see **Figure 4**).

The Structure Plan includes four main character types:

- Residential A Environment Character Area 8.67 ha
- Residential C Environment Character Area 4.53 ha
- Residential D Environment Character Area 5.85 ha
- Rural E Environment Character Area 25.53 ha

In addition there are the following areas of land use:

- Open Space B 0.24 ha
- Open Space C 8.73 ha
- Business C 0.45 ha
- Roads (estimated) 4.20 ha

Each character area is described in detail within the consent application.

The Structure Plan shows the location of each Environment Character Area. (refer **Figure 2**).

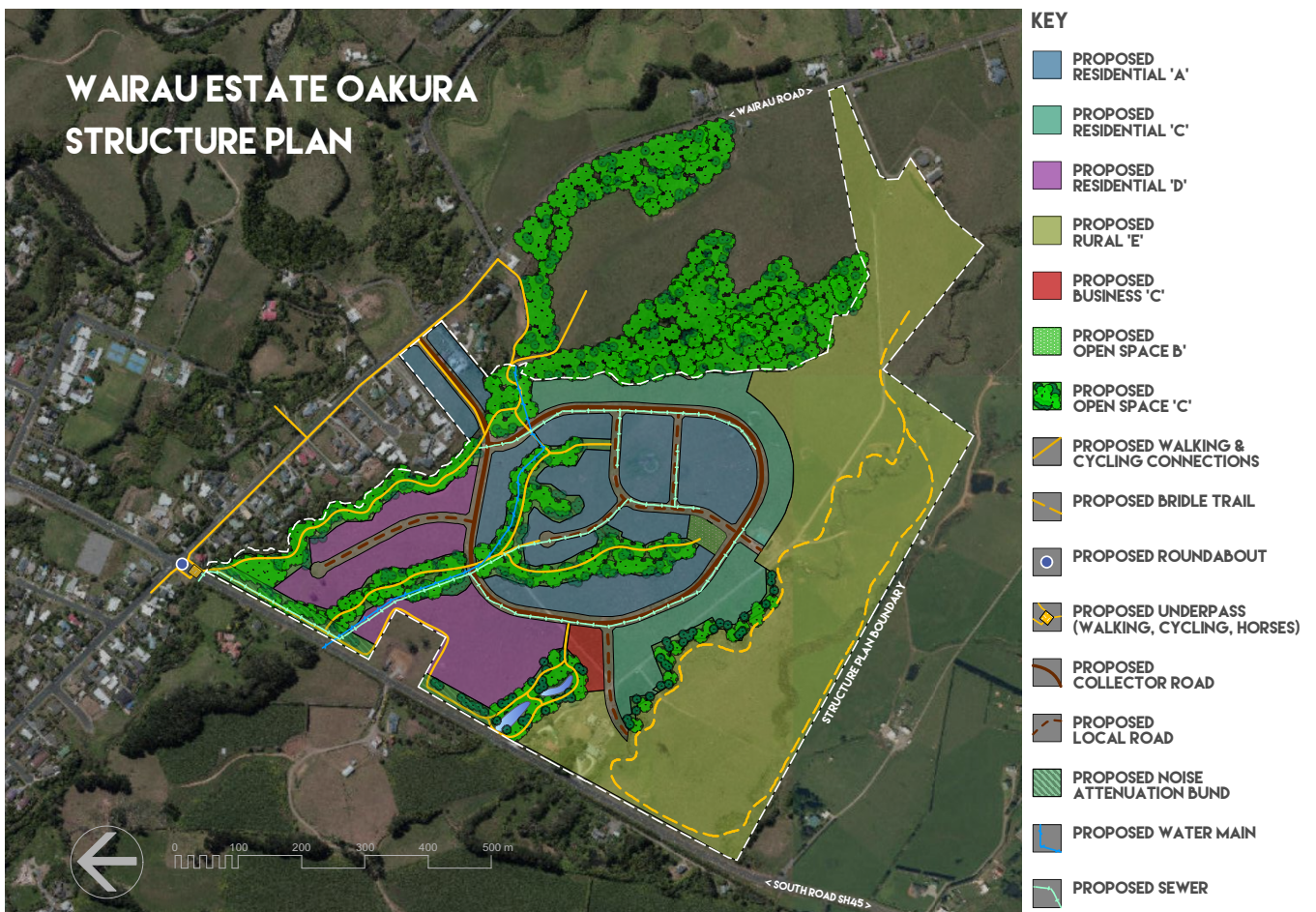


Figure 2: Structure Plan Area

The site is located on the southern fringe of Oakura, east of SH45 and south of Wairau Road and is currently farmed as an organic dairy operation. As such, it appears as typical Taranaki pastoral landscape. The property is part of a what was a larger piece of land that extends up to the National Park boundary, which was subdivided in 2010 (see **Figure 3**) to create two clusters of large lot residential allotments.

This Structure Plan area proposal is on the balance land of the 2010 subdivision.



Figure 3: 2010 Subdivision Scheme Plan

The previous subdivision resulted from an extensive resource consent process that included a through description of the site and its context. Rather than repeating work previously undertaken regarding site description, this assessment includes the 2010 Hearing description of site character. As follows, the description covers the salient aspects of site context and character that are important to the site generally, and also apply to this Structure Plan area proposal. Namely; the proximity to the Kaitake Ranges (an Outstanding Natural Landscape), relationship with Oakura township, and presence of incised waterways.

The most significant difference in character of the Structure Plan area from the of larger parcel subdivided in 2010, is that the Structure Plan area is flatter and more broad.

3. SITE CONTEXT AND CHARACTER

From Hearing Decision 2010

The site is an 82.1162ha rural property that gently rises from the north to the south. It is bounded to the northwest by State Highway 45 (State Highway), neighbouring farms to the west, and a portion of the southern boundary borders the Kaitake Ranges which is identified as an Outstanding Natural Landscape (ONL) under the New Plymouth District Plan. The remainder of the southern boundary borders an adjacent dairy farm, which forms a wedge between the site and the Kaitake Ranges. The north-eastern boundary is partly bounded by the Wairau Stream which is a Priority Water Body (PWB) in the District Plan and further south is bordered by the upper section of Wairau Road.

The land form of the site is undulating to rolling in nature. A tributary of the Wairau Stream forms the north-eastern boundary in the lower portion of the property, before splitting forming two gullies which dissect a portion of the property. There are a number of other smaller gullies within the property.

The main branch of this Wairau Stream tributary is well vegetated in predominantly native bush whilst the tributary which runs from near Wairau Road is swampy land. There is also a small area of bush located near the southern boundary of the property. Throughout the remainder of the site there are isolated patches of trees and bush. Through archaeological investigation a pa has been identified by the applicant in the main gully of the site. This pa site is not identified in the District Plan.

There are two existing dwellings located on the property (the farm house and a vacant second dwelling) as well as a number of farm sheds and buildings. Both dwellings are accessed from State Highway 45, which is a limited access road in this locality.

A NPDC lease area for the purposes of water supply to the Oakura urban area and land leased by Telecom for a cell tower are located at the southern end of Upper Wairau Road and adjoin the southern cluster. These areas are located within the proposed balance allotment.

There are a number of easements affecting the property including three pipeline easements for gas and petroleum products, right of ways serving the NPDC and Telecom lease areas and easements associated with water supply. These easements are all located within the balance allotment.

Immediate environment

The immediate environment varies in form given the proximity of the site to the Oakura Township and the Kaitake Ranges.

A large portion of the land to the south of the site forms part of the Kaitake Ranges. These share a common boundary of approximately 75m with the subject site. There are two existing rural residential sites located in close proximity, legally described as Lots 1 and 2 DP 336578 which adjoin proposed Lots 1 to 4. These two allotments were formerly part of the subject land but were subdivided from the parent title in 2004.

The Kaitake Ranges are part of the Egmont National Park; they are bush clad ranges that rise up from the site to approximately 682m above sea level. Mount Taranaki is located south east of the site and the peak is visible behind the Kaitake Ranges. The Kaitake Ranges are a dominant feature in the immediate environment and the site is located at the foothills of the ranges.

The land south east of the proposed site on the opposite side of Upper Wairau Road comprises rural residential allotments and rural farm land used for agricultural purposes. There are seven dwellings located on this eastern side of Upper Wairau Road.

North east of the site (along the lower portion of Upper Wairau Road) is the fringe of the Oakura township, which has residential zoning. Residential zoned land extends from the intersection of State Highway 45 and Wairau Road southwards by approximately 500m, this ends before the Surrey Hill Road, Wairau Road intersection. This residential land is located on the east side of the Wairau Stream.

West of the site is open spaced rural land used for agricultural purposes, primarily dairy farming. Similarly further north of the site, on the opposite side of State Highway 45 is large rural open spaced land.

Council has received an application for a 33 lot residential subdivision located on Lot 2 DP 16742 and Part Section 3 Oakura District located on the opposite side of State Highway 45 from the subject site. The subdivision crosses the residential/rural zoned boundary and was therefore assessed as a non-complying activity. The application is on hold (section 92 of RMA) for further information. A notification decision has not been made on this application and because it has not been approved it cannot be considered as part of the future environment (Queenstown Lakes District Council v Hawthorn Estate Limited (CA45/05)). This application therefore has been disregarded when considering effects on the environment of the proposed subdivision.

Wider environment

The wider environment is defined to the north by the township of Oakura and to the west and east by rural farm land.

To the east of the site Wairau Road intersects with Surrey Hill Road. Surrey Hill Road contains a number of rural residential sites interspersed with open spaces. Wairau Road and Surrey Hill Road both rise towards the Kaitake Ranges. These rural roads form the rural fringe of the Oakura Township. On the eastern side of Surrey Hill Road is the Oakura River.

To the north east of the site is the Oakura Township. The Oakura Township population is approximately 1400 people and is located fifteen minutes south west of New Plymouth. It is well renowned for its close proximity to the Tasman Sea (Oakura Beach), a well recognised surf beach and the mountains (Kaitake Ranges). Because the land is elevated and rises toward the ranges, there are expansive views of the coastline from the subject site, especially at the higher levels.

State Highway 45 runs from New Plymouth heading towards Oakura along the coast. The land is undulating and given the elevation of the subject site the site is visible from various points along the State Highway, from Plymouth Road in the east and through to Ahu Ahu Road on the west side of Oakura.

4. **Statutory Context (landscape matters) - New Plymouth District Plan Issues 1, 4 and 5.**

CHARACTER AREAS

Objective 1: To ensure that activities do not adversely affect the environmental and amenity values of areas within the district or adversely affect other activities.

Policy 1.1: Activities should be located in areas where their effects are compatible with the character of the area.

Policy 1.2: Activities within an areas should not have adverse effects that diminish the amenity of neighbouring areas, having regard to the character of the receiving environment and cumulative effects.

RURAL CHARACTER

Objective 4: To ensure that subdivision, use and development of land does not adversely affect those elements that define the rural character while recognising the diverse nature of rural land and land uses.

Policy 4.1: Subdivision within the rural environment should not adversely affect the open space or visual elements of rural character.

Policy 4.2: Activities should be designed, located and/or of such a density that the visual and open space characteristics of rural character is maintained.

Policy 4.3: Vegetation should be retained and planted to maintain and enhance rural character.

URBAN ENVIRONMENTS

Objective 5: To maintain and enhance the character and coherence of the urban areas so the New Plymouth District.

Policy 5.3: The positive contribution vegetation makes to urban amenity should be recognised maintained and where possible, enhance.

Table 1

RELEVANT POLICIES AND OBJECTIVES - NEW PLYMOUTH DISTRICT PLAN	
CHARACTER AREAS	ASSESSMENT SUMMARY
<i>Objective 1: To ensure that activities do not adversely affect the environmental and amenity values of areas within the district or adversely affect other activities.</i>	The Structure Plan area will maintain and enhance visual amenity in the immediate vicinity of the site and wider environment. The Structure Plan area contains site specific mitigation that will manage the adverse effects of activities on the receiving environment.
<i>Policy 1.1: Activities should be located in areas where their effects are compatible with the character of the area.</i>	The Structure Plan area is located adjacent to an existing residential area therefore effects on character and amenity are appropriate. Effects on rural and opens spaces areas can be managed with recommended mitigation.
<i>Policy 1.2: Activities within an area should not have adverse effects that diminish the amenity of neighbouring areas, having regard to the character of the receiving environment and cumulative effects.</i>	Potentially adverse effects on the amenity of neighbouring areas is limited to a small number of properties within the adjacent rural environment area. Effects on these areas can be managed with recommended mitigation.
RURAL CHARACTER	ASSESSMENT
<i>Objective 4: To ensure that subdivision, use and development of land does not adversely affect those elements that define the rural character while recognising the diverse nature of rural land and land uses.</i>	The Structure Plan area will maintain and enhance visual amenity in the immediate vicinity of the site and wider environment, albeit that the character of the site itself will change.
<i>Policy 4.1: Subdivision within the rural environment should not adversely affect the open space or visual elements of rural character.</i>	The Structure Plan area area will become a residential subdivision with a special Rural E character area. The effects on its rural character are limited due to the qualities and nature of the site.
<i>Policy 4.2: Activities should be designed, located and/or of such a density that the visual and open space characteristics of rural character is maintained.</i>	The effect of the Structure Plan area on visual and open space characteristics of the surrounding rural environment are largely avoided by the location of the site. Recommended mitigation measures will assist in softening the effects of the residential subdivision at the rural interface.
<i>Policy 4.3: Vegetation should be retained and planted to maintain and enhance rural character.</i>	Vegetation along the riparian areas will provide a transition from residential to rural areas.
URBAN CHARACTER	ASSESSMENT
<i>Objective 5: To maintain and enhance the character and coherence of the urban areas so the New Plymouth District.</i>	The Structure Plan area represents a contiguous and logical extension to the existing Oakura Residential Environment Area. The location of the site being in close proximity to the Wairau Road urban area represents a coherence of urban form.
<i>Policy 5.3: The positive contribution vegetation makes to urban amenity should be recognised maintained and where possible, enhanced.</i>	The Structure Plan area contains landscape provisions that will soften the urban/rural interface.

The Structure Plan area is essentially seeking to convert open and rural farmland to residential land-use, and an area of rural equestrian sized allotments. Contextually, this is a logical expansion of urban Oakura to which the site abuts. This change in land-use was anticipated by council with the FUD overlay, albeit the FUD does not apply to the whole Structure Plan area. However, it is self evident that the southern edge of the FUD is an arbitrary line that follows no natural or cadastral features.

In assessing the landscape and visual impacts of the Structure Plan area, effects are considered within the context of the local receiving environment, which in this case includes residential, open space, and rural land.

It is assumed that the character and amenity impacts of the Structure Plan on the existing Oakura urban area, particularly that portion along Wairau Road, are largely self evident, albeit consideration is given to the potential that some residential properties bounding the Wairau stream enjoy a predetermined rural outlook. It is also assumed that the effect of urbanising the FUD (Future Urban Development - see **Figure 4**) overlay area is anticipated.

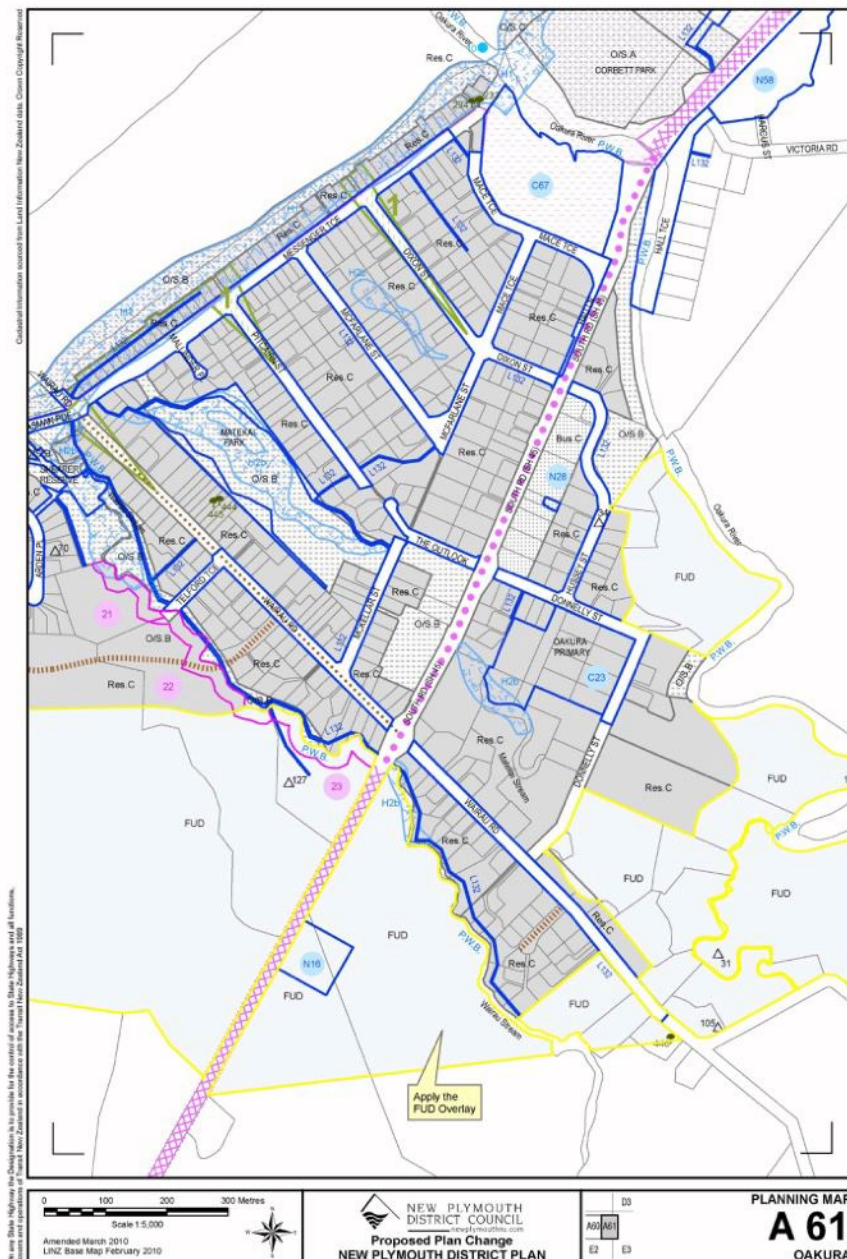


Figure 4: District Plan Map

Significant effects are more likely to occur from the proposal on the neighbouring rural environment, including the 'lifestyle' area named The Paddocks, as well as users of SH45. Therefore, this assessment primary considers effects of the Structure Plan on these areas.

5. AMENITY

The changing use of land frequently creates effects which cross property boundaries. These effects may be beneficial or detract from the use and enjoyment (amenity) of neighbouring properties. Common cross-boundary amenity effects include changes to privacy, outlook, views, landscape character, landscape coherence and spaciousness.

Section 7 of the Resource Management Act sets out matters which the Council must have particular regard to in preparing District Plans.

This includes:

- (c) The maintenance and enhancement of amenity values, and
- (f) Maintenance and enhancement of the quality of the environment.

The Act defines amenity as *“those natural and physical qualities and characteristics of an area that contribute to the people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes”* (RMA 1991).

The following assessment of both landscape and visual effects inform the overarching assessment of the effects of the proposed Structure Plan on amenity values.

6. ASSESSMENT OF LANDSCAPE EFFECTS

Effects on the landscape as a resource in its own right.

Landscape effects derive from changes to the physical landscape which in turn affects its underlying character and how this is experienced. The description and analysis of effects on a landscape resource relies on the analysis of whether changes are positive (beneficial) or negative (adverse). A landscape's 'resilience', or ability to adapt to change whilst retaining its particular character and values depends on its 'capacity' to absorb change without substantially altering or compromising its existing character or values. A landscape's resilience and capacity will vary with:-

- existing land use;
- degree of naturalness and topography;
- the pattern and scale of the landscape;
- visual enclosure / openness of views, and distribution of visual receptors;
- the scope and opportunity for mitigation which is in keeping with the existing landscape;

For the methodology of assessing landscape effects see Appendix iii.

The landscape effects created by the Structure Plan Area are two fold:

- There will be a change in landscape character as the site changes from rural to predominately residential. Whereas the landscape is currently dominated by open green pastoral farmland, this will change to a landscape predominantly occupied by residential land-use. These effects will be permanent.
- There will also be a change to landscape character through land modification. Earthworks will occur with the creation of roads and allotments, although these are anticipated to be minimal give the flat nature of the land, and the maintenance of the existing gully system for stormwater retention and walkway. Any changes in topography will, with time, not be recognisable as houses are built and sections modified. Amenity and riparian vegetation will also soften and re-render the modified landscape.

While the overall landscape change is significant, the effect of this change is appropriate and justifiable, given the site's proximity to Oakura. Urban Oakura needs land to expand into, and this site presents a logical and necessary resource for that purpose. However, careful consideration must be given to how the Structure Plan area integrates with its receiving environment, in particular in order that the urban/rural interface is commensurate with existing landscape qualities. The proposed development will have little influence on the wider landscape. Due to the location and nature of the area, the landscape effects are predominately limited to the site itself. Constituent elements of the broader landscape, both aesthetic and perceptual, will experience little change. Presently, urban Oakura interfaces with its rural periphery and this proposal simply shifts the rural/urban interface. Urban Oakura will be perceived as larger, but the much broader and more expansive rural landscape will appear only marginally impacted upon. While landscape effects are permanent, they are not significant given their scale and location.

7. ASSESSMENT OF VISUAL EFFECTS

Effects on the specific views and on the general visual amenity experienced by people.

Representative viewpoints have been identified by on-site investigation as being views that represent various receptors. I.e. people who may experience that view (or broadly similar). The **Viewpoint Location Plan (Appendix A)** shows the location of each viewpoint with respect to the site.

Effects on viewpoints/receptors are examined using “worst case” scenarios and take account of the uncontrolled elements of the proposal and their flow-on effect on landscape character. These activities include, but are not exclusive to, building location, building form, earthworks, roads, driveways, and fences. Table 2 summarises the assessment of visual effects with respect to the visual effects methodology outlined in Appendix ii.

The Structure Plan proposal affects four groups of receptors These are:

1. Residents of the Paddocks subdivision
2. Rural landowners south and east of the site
3. Urban residents west of the site
4. Users of SH45

The views from these four groups are illustrated in the **Viewpoint Location Plan (Appendix A)**, by identifying six Viewpoints

VP1: View from the Upper portions of Wairau Road - elevated views over the subject site

VP2: Entrance to ‘The Paddocks’ - elevated views over the subject site

VP3: Residences within upper portions ‘The Paddocks - elevated views over the subject site

VP4: Residences within lower portions of the ‘The Paddocks - elevated views over the subject site

VP5: SH3 users - views across farmland up to the Kaitake Ranges

Vp 6: Rural landowners south and east of the site - Open views into farmland

Table 2: Visual Sensitivity & Effects Matrix

Receptor Number/ Address	Location	Description of View	Degree of Visibility Existing	Visual Sensitivity	Effect of Change (no mitigation)	Overall Effect of Change (with mitigation)	Post Mitigation and Design Controls
VP1.	View from the Upper portions of Wairau Road	Elevated views over the site.	High degree of visibility	Medium	Medium Adverse	Low Adverse	Mitigation Discussion: Height controls. Recessive exterior colours schemes on roofs to minimise visibility. Planting of gullies to reduce dominance of built form.
VP2	Entrance to 'The Paddocks'	elevated views over the subject site	Medium degree of visibility	High	High Adverse	Medium Adverse	Mitigation Discussion: Height controls. Recessive exterior colours schemes on roofs to minimise visibility. Planting of gullies to reduce dominance of built form.
VP3	Residents of 'The Paddocks'	elevated views over the subject site	Varies with location but generally a high degree of visibility	High	High Adverse	Medium Adverse	Mitigation Discussion: Height controls. Recessive exterior colours schemes on roofs to minimise visibility. Planting of gullies to reduce dominance of built form.
VP4	Residences within lower portions of the 'The Paddocks'	elevated views over the subject site	Varies with location but generally a high degree of visibility	Medium	Medium Adverse	Medium Adverse	Mitigation Discussion: Height controls. Recessive exterior colours schemes on roofs to minimise visibility. Planting of gullies to reduce dominance of built form.
VP5	SH3 users	views across farmland up to the Kaitake Ranges	High degree of visibility, but transient view	Medium	Medium Adverse	Low Adverse	Mitigation Discussion: Height controls. Bund and planting will reduce views of buildings and provide a 'green screen'. View of the Kaitake Ranges will still be available.
Receptor Number/ Address	Location	Description of View	Degree of Visibility Existing	Visual Sensitivity	Effect of Change (no mitigation)	Overall Effect of Change (with mitigation)	Post Mitigation and Design Controls

VP6	Rural landowners south and east of the site	Open views into farmland	High degree of visibility from farmland	Medium	Medium Adverse	Medium Adverse	Mitigation Discussion: Height controls. Buffer equestrian zone will create visual graduation to the residential area and avoid harsh urban/rural interface.
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Summary of Visual Effects

The receptors most likely to experience change in visual amenity are the properties that look across the site from the Paddocks subdivision. This is because their view of the site at present contains virtually no built form. Furthermore, structures within the Structure Plan area will be visible within their primary line of sight and may appear dominant against the skyline. The existing bush within the QEII reserves soften these effects, particularly for views from properties closest to these reserves. With mitigation, the effects of structures along the edges of the subdivision can be managed to ensure that the character of the landscape interface is integrated harmoniously. Planting of native trees and shrubs along the gullies of the Structure Plan area will soften views for rural receptors, integrating subject site into the broader area landscape. Building height control, recessive roof colours, and controls on fencing location and heights will assist with visual integration, as these structures will appear less dominant than otherwise without these controls.

From other viewpoints, the site sits within a residential context. Residential dwellings on Wairau Road will view the Structure Plan area as an extension of their existing environment. Those who experience an open rural outlook across the Wairau Stream will experience a loss of rural outlook.

8. MITIGATION

The purpose of these recommendations is to mitigate any likely, or potential, adverse effects created by the Structure Plan area. The previous sections have analysed and outlined the likely effects the proposal will create on the receiving environment's amenity. Mitigation recommendations have been developed in response to these effects and aim to ensure the development can occur with no more than a minor effect.

The rules for each character area are described in detail within the consent application. In summary, they are as follows:

Residential A: As per the Operative District Plan for Residential A Environment Areas.

Residential C: As per the Operative District Plan for Residential C Environment Areas.

Residential D: As per the Operative District Plan for Residential A Environment Areas with 50% permitted site coverage.

Rural E: As per the Operative District Plan for Rural Environment Areas.

Business C: As per the Operative District Plan for Business C Environment Areas.

Open Space B: As per the Operative District Plan for Open Space B Environment Areas.

Open Space C: As per the Operative District Plan for Open Space C Environment Areas.

The following mitigation address measures that are recommended to ameliorate the effects of the proposal in their respective character areas.

Subdivision

To allow for small lot sizes suitable for older residents, the Residential D character area has a minimum subdivision area of 250m². To enable spaciousness within these lots, it is recommended that the front yard requirement be 1.5m.

Habitable Buildings

To avoid visual clutter and maintain a sense of openness commensurate with the Oakura Residential Area, the maximum number of habitable buildings able to be located on any site is one. This applies to all environment areas.

Building Height

In order to reduce visual impacts from the Paddocks subdivision, houses on elevated portions of Wairau Road, and views from SH45, height controls are recommended for all Character Areas shown on the Structure Plan. The Structure Plan locates the various character areas in positions where, with these proposed heights limits, visual impact will be reduced.

Residential A Environment

Maximum permitted height of 6m.

Residential C Environment

Maximum permitted height of 6m.

Residential D Environment

Maximum permitted height of 5m.

Rural E Environment

Maximum permitted height of 6m.

Business C Environment

Maximum permitted height of 6m.

Roof Colour

The Paddocks area and properties that lie above the subject site are likely to have open views into large portions of the Structure Plan area. In order to reduce the effects of glare on these rural properties, it is recommended that colour controls be placed on roof colours for dwellings that are visible to these receptors. This report recommends a maximum light reflectivity value (LRV) of 25% for all roofs.

This applies to all environment areas.

Cladding Colour

The Paddocks area and properties that lie above the subject site are likely to have open views into large portions of the Structure Plan area. In order to reduce the effects of glare on these rural properties, it is recommended that colour controls be placed on cladding for dwellings that are visible to these receptors. This report recommends a maximum light reflectivity value (LRV) of 40% for all exterior cladding materials.

This applies to all environment areas.

Fencing

Tall solid fencing has the potential to create an unacceptably harsh boundary between residential and rural environment areas, particularly when viewed across the site from rural properties immediately south and east of the site. Therefore it is recommended that solid fencing taller than 1.2m should not be allowed on any properties. In addition, no fencing should be located on any property between the street and front elevation of its associated dwellings, or commercial buildings. This will provide an open streetscape and reduce urban clutter.

This applies to all environment areas.

Planting

In order to ensure that the Structure Plan Area integrates harmoniously with its neighbouring rural environment by screening and filtering views of structures, it is recommended that planting of trees and shrubs should be established along all streams and gullies using predominantly native species representative of the local area.

This applies to all open space environment areas.

Landform

In order to ensure that likely changes in topography appear natural over time, it is recommended that cut and fill batters, where visible from rural environment areas, should be battered at a gradient to match gently and smoothly into existing contours.

This applies to all environment areas.

Buffer Zone

In order to avoid a harsh urban/rural interface and spaciousness, the eastern flank of the site adjacent to the neighbouring rural land comprises the Rural E Character Area (equestrian). This area should not be used for any residential or commercial development.

This applies to the Rural E environment areas.

Walkways

In order to maximise a sense of rural context, walkways should be included within all riparian planted areas and gullies.

This applies to all open space environment areas.

Amenity Vegetation within Lots

In order to reduce a dominance of built form over the receiving environment, there should be no restrictions on amenity planting (type or height) within lots. Amenity vegetation is encouraged and a design guide could be developed to assist landowners with appropriate landscape guidelines.

This applies to all open space environment areas.

Within the Business C character area it is desirable that there be high quality landscape treatment along the main road frontage to integrate business activity with street amenity. Traffic should enter/exit Business C sites from a side road, and carparking areas should be screened from adjoining residential views.

SH45 Bund

In order to reduce visual impacts for highway users, a visual mitigation bund no less than 2.4m in height should be located along the SH45 boundary to prevent views into the site. This bund should be planted with native vegetation to provide a visual reference to the nearby National Park.

Mitigation Summary

The Structure Plan area has been developed to avoid effects. The location, size, and orientation of the various character areas have been carefully considered and designed to create varied but integrated development. This approach reduces the need for a long raft of mitigation measures, as amelioration of effects is built into the Structure Plan layout. The mitigation measures described above cover those matters not able to be expressed either through the Structure Plan layout or where Operative Plan rules for each area require amendment.

9. SUMMARY OF EFFECTS

The assessment of both Landscape and Visual Effects inform the overarching assessment of Amenity Effects.

The creation of a Structure Plan area will convert open farmland to residential land-use, and an area of rural equestrian sized allotments. This will create effects for the receiving environment; namely, a change in landscape character. These effects will be permanent but are appropriate given the site's context. The current boundary between the rural zone and the adjacent land uses in this location do not represent a definitive edge to the greater rural environment. Furthermore, the Structure Plan area possesses few defining characteristics of rural character. While the site is overtly pastoral, it is nonetheless separated in character from the broader rural environment by its close proximity to residential development, the presence of 'The Paddocks' subdivision, and adjoining rural land. The FUD over part of the site anticipates residential use with its boundary arbitrarily defined.

However, despite the site's suitability for residential development, (particularly in terms of proximity to Oakura's urban area), the site will undergo landscape change. This includes modifications to landform and the addition of buildings and associated infrastructure into an otherwise open and spacious landscape. These changes are consistent with the site's neighbouring residential character.

The change in landscape character is greatest on properties within the Paddocks 'lifestyle' area as the change in will be significantly noticeable. However, in general, these effects are limited given site distance and the intervening QEII bush areas. Identified effects associated with the conversion of farmland to urban subdivision can be mitigated. Controls on building's reflectivity (particularly roofs) and fencing, in combination with amenity and riparian planting will reduce the potential for the Structure Plan Area to appear overly abrupt where it interfaces with differing land uses. Chapter 8 describes specific mitigation measures that seek to integrate the amenity values that are characteristic of the surrounding area with the use and development of the site.

In conclusion, using a Structure Plan to guide the site's development avoids potential adverse landscape and visual effects as the Structure Plan creates and locates various Character Areas. The combination of these areas, in conjunction with amenity facilities such as walkways, ecological enhancements, and infrastructure avoids a haphazard and or uniform approach to development. The creation of Character Areas provides variety, and the provision of design controls (such as a budging height) on each provides amelioration of effects for the receiving environment.

There is significant benefit in using this site for urban development as it abuts an existing residential area and therefore offers a logical and coherent extension to Oakura. The landscape effects of the proposal, both within the site itself and its receiving environment, are limited in scale and intensity. With mitigation, the essential character of this urban/rural landscape will be retained.

Richard Bain
Landscape Architect

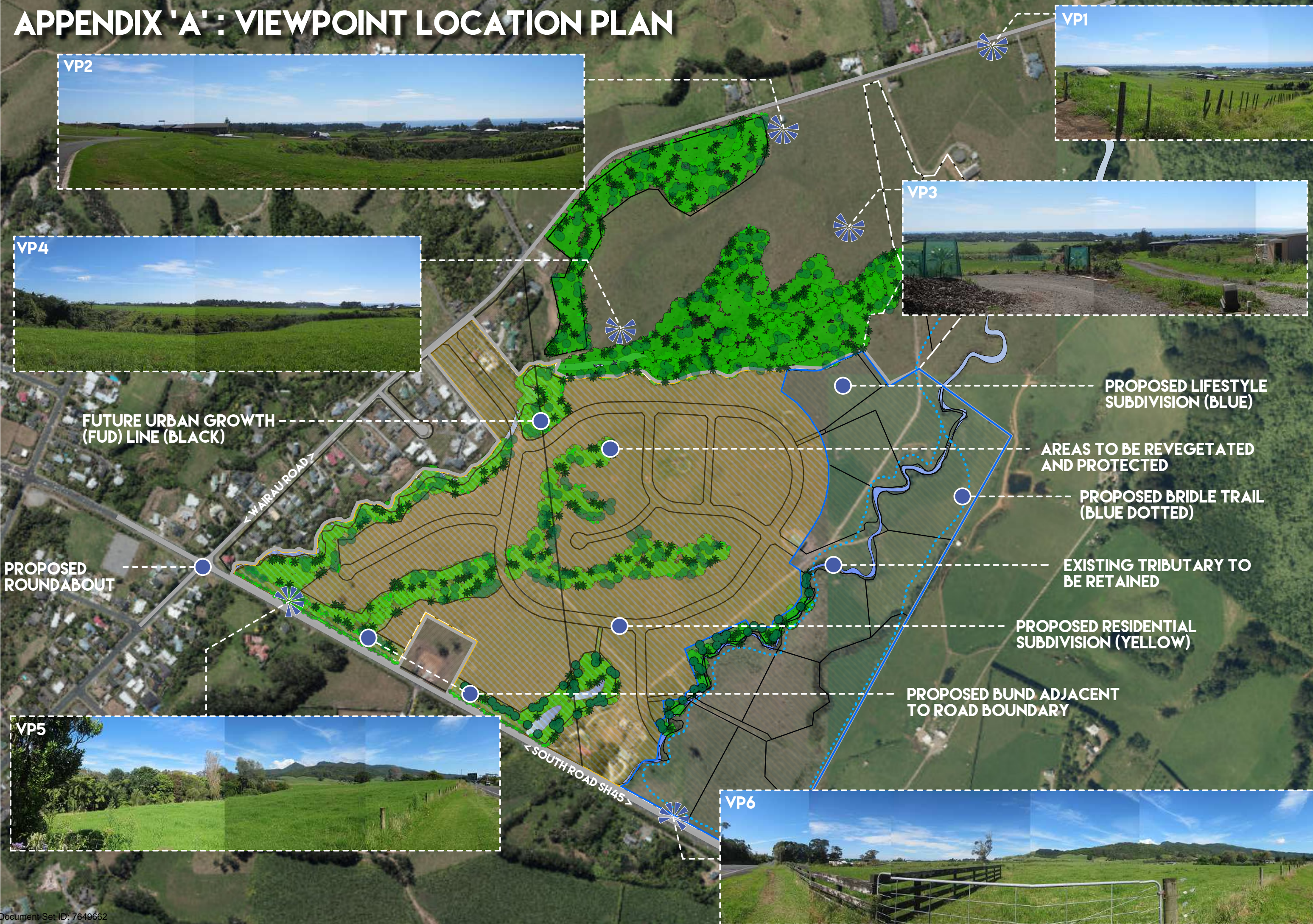


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APPENDICES

- i Viewpoint Location Plan
- ii Landscape Effects Assessment - Methodology
- iii Visual Effects Assessment - Methodology

APPENDIX 'A' : VIEWPOINT LOCATION PLAN



Appendix ii - Landscape Effects - Methodology

What is Landscape?:

‘Landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’ (Council of Europe,2000).

Landscape is about the relationship between people and place, providing the setting for day-to-day lives. Landscape is everywhere and may comprise natural landscape, rural landscape, urban landscape (or townscape), peri-urban landscape, coastal landscape, seascape , etc. However, human perceptions of place also include things that cannot be seen but which add to the appreciation of places; these are:

- feelings generated by other senses – touch, hearing, smell, taste,
- feelings generated by a knowledge of the place (its cultural & historical associations with people, events, etc.),
- feelings generated by past experience of the place, or similar places – life experience.

These combine to give an experience of landscape perceived by all the senses – sight, sound, smell, touch, taste – and by knowledge. What is experienced is influenced by:

- the current use and management of the land by humans,
- the result of the historical use and management of the land,
- cultural associations,
- human activity,
- natural character.

Nature of Effects:

There is no standard methodology for the quantification of the magnitude of effects. However, it is generally based on the scale and/or degree of change to the landscape resource, the nature of the effect, and its duration. The following categories outline the scale with which we assess the proposed subdivision and its effect on the receiving landscape resource.

Landscape Effect – Nature or Capacity

<u>High</u>	Landscape areas with particularly distinctive or positive characteristics or with valued landscape features. The areas may be sensitive to relatively small changes.
<u>Medium</u>	Landscape areas with reasonably positive character, but with evidence of alteration or degradation of the character or features. Potentially tolerant of some change.
<u>Low</u>	Landscape areas with a weak character or relatively few features of value, potentially tolerant of significant change.

Nature of Landscape Change

<u>High adverse</u>	Total loss of, or major alteration to the key characteristics or features of the landscape area.
<u>Medium adverse</u>	Partial loss of, or alteration to, the key characteristics or features of the landscape area.
<u>Low Adverse</u>	Minor loss of, or alteration to the key characteristics or features of the landscape area.
<u>No change</u>	Very minor loss or change to the landscape characteristics or features of the area, compensated by landscape improvements or enhancements.
<u>Low beneficial</u>	Minor improvements to the key characteristics or features that outweigh any adverse landscape effects of the proposal. Removal of minor incongruous features
<u>Medium beneficial</u>	Notable improvements to the key landscape characteristics or features, or improvements resulting from removal of inappropriate land uses or features.
<u>High beneficial</u>	Major landscape improvements, through the creation of a new landscape structure, or the removal of large-scale inappropriate features.

Appendix iii - Visual Effects - Methodology

Nature Of Visual Receptors:

The Nature Of Visual Receptors And Views Is Dependent On:

- the location and context of the viewpoints;
- the expectations and occupation or activity of the receptor;

The extent to which the subject site is visible is based on a grading of the degree of visibility from an identified receptor. The continuum of the degrees of visibility ranges from no view, through partial views to full open views:

- a) No View: no view of the site or the site is difficult to perceive;
- b) Partial View: a view of part of the site, or a filtered view of the site, or a distant view where the site is perceived as a small part of the view;
- c) Open View: a clear view of a significant proportion of the site within the wider landscape.

Nature of Visual Effect

In the evaluation of the effects on views and the visual amenity of the identified receptors, the magnitude or scale of visual change is described by reference to:

- the scale of change in the view with respect to the loss or addition of features in the view and changes in its composition including the proportion of the view occupied by the proposed development;
- the degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale, mass, line, height, colour and texture;
- the duration and nature of the effect, whether temporary or permanent, intermittent or continuous, etc;
- the angle of view in relation to the main activity or orientation of the receptor;
- the distance of the viewpoint from the proposed development;
- the extent of the area over which the changes would be visible.

Visual Sensitivity

For this aspect of the assessment the following criteria apply:

High	Occupiers of residential properties with views affected by the development. Users of outdoor recreational facilities including pathways where interest may be focused on the landscape.
Medium	People travelling through the area with sustained periods of view; Users of outdoor recreational facilities where the view is less important to the activities being undertaken; People at places of work - including neighbouring farms; Occupiers of residential properties with obscured views of the property.
Low	People travelling through the area; people at places of work (including neighbouring farms); Occupiers of residential properties with distant and limited views of the development.

Magnitude of Change

High Adverse	Where the scheme would cause a significant deterioration in the view.
Medium Adverse	Where the scheme would cause a noticeable deterioration in the view.
Low Adverse	Where the scheme would cause a minor deterioration in the view.
No Change	Where the scheme overall would not form a noticeable deterioration or improvement in the view.
Low Beneficial	Where the scheme would cause a minor improvement in the view.
Medium Beneficial	Where the scheme would cause a noticeable improvement in the view.
High Beneficial	Where the scheme would cause a significant improvement in the view.

Visual Significance of Change

Visual Significance of Change refers to the overarching visual effect created as a result of the proposal. It is determined by combining the outcome of the receptor's 'sensitivity' to change and the 'magnitude' by which the change will occur. Professional judgment is used to determine the overall significance of change. Significance is classified as either **substantial**, **moderate**, **minor** or **negligible**, and the effects can be **adverse** or **beneficial**.



LANDSCAPE & VISUAL IMPACT ASSESSMENT - **ADDENDUM**

WAIRAU ESTATE STRUCTURE PLAN AREA

Wairau Road
Lot 29 DP 497629

Oakura

Written By: Richard Bain

This addendum dated 24.2.18

bluemarble
A world of difference



Wairau Estate Structure Plan Area

This addendum to the Bluemarble Landscape and Visual Impact Assessment, dated September 2017 Revision A, responds to council's s92 request regarding an existing Consent Notice registered on the site.

s92 Request

General/Planning

- 1. A Consent Notice is registered on Lot 29 DP 497629 which states "Lot 29 shall not be further subdivided while the land remains in the Rural Environment Area". I understand this Consent Notice was imposed to maintain the rural character and environment on this land (which is the subject of the plan change request) in granting consent to 'The Paddocks' development. Can you please provide further assessment of effects of the proposed plan change request on rural character and amenity of Lot 29, particularly with reference to the assessment and basis for granting consent to 'The Paddocks' development. This further assessment may include additional assessment by the applicant's landscape architect.*
- 2. The plan change request seeks to introduce a new Rural 'E' Environment Area to enable the subdivision of 12 rural lifestyle lots. The wording of the Consent Notice restricts further subdivision of the Rural Environment Area. Can you please explain how the applicant will reconcile the outcome sought by the new Rural 'E' Environment Area and the restriction in the Consent Notice.*

The Consent Notice on Lot 29 DP497629 was placed on the 'The Paddocks' as a Condition of Consent (Item 24 - Limitations to Further Subdivision) subsequent to the Council Hearing in 2010.

I have reviewed the Hearing Decision with a view to understanding the purpose of the Consent Notice, noting that I gave landscape evidence on behalf of the applicant at the Hearing.

Within the Decision, reference is made to the evidence of a number of experts who cover the matter of the balance lot (Lot 29) and its role is protecting rural character. Generally, discussion occurred around two aspects of this.

1. Maintaining Lot 29 as a 'farm lot' would maintain rural character, particularly with regard to spaciousness.
2. Maintaining Lot 29 as a 'farm lot' would maintain views from SH45 up to the Kaitake Ranges, an Outstanding Natural Landscape (ONL).

The importance of maintaining rural character was in the context of a receiving/surrounding environment that was described as complex, or as the commissioner described as 'busy'. This was due to a number of landsuse types in the area, including residential and rural-residential.

The importance of maintaining views up to the ONL was in the context of the site's proximity to the Kaitake Ranges as a dominant feature within the landscape. The layout of the proposal was intended (and accepted) to avoid effects on the ONL by maintaining an open green foreground when viewed from SH45.

This is encapsulated on page 58 of the Decision where the Commissioner states:

Mr Twigley, in his discussion of Landscape Effects, also discusses effects in the context of the total development and notes the proposed mitigation measures. He says (para 40); "The proposed covenants on the balance lot and the QEII/private covenanted area will protect the foreground/setting of the Kaitake Ranges, avoiding adverse effects of subdivision on that land and achieving long term benefits for the ONL and for the southern gateway to Oakura. The scale of the development in relation to the much larger and dominant ONL, along with the mitigation measures proposed, will ensure the proposed subdivision will not result in adverse visual effects on the ONL."

Further, the Commissioner on page 92 of her Decision states:

The main part of the existing site, the balance lot (Lot 29) will be retained as a 'protected farm' unit, anticipated to remain as a dairy unit. Generally the balance lot lies to the north and west of the site adjacent to SH45. The residential cluster developments are generally to the south and east of the site. Included in the balance lot, and generally surrounding the main cluster development is an area intended to be placed in a QEII covenant for bush regeneration and revegetation strategy. This area covers two gullies of ecological value, and includes a previously unknown pa site deemed to be of considerable archaeological values.

In my opinion, it is clear that the Hearing Decision intended that the Consent Notice on Lot 29 was to ensure spaciousness in order to maintain rural character, and maintain views of the ONL from SH45. At the same time, the preservation and enhancement of ecological values was to be established within lot 29 through QEII covenants on bush gully areas, and previously unknown pa site.

Wairau Estate Structure Plan Area

The proposal to rezone a portion of lot 29, does not alter the protected status of the QEII areas. However, the proposal does propose to change most of the 'farm lot' area of Lot 29 to residential landuse and equestrian lifestyle area landuse (referred to in the application as Rural E). It is implicit in my assessment that the intention of the Consent Notice (as described above) cannot be achieved upon re-zoning.

In the summary of effects in my main landscape assessment, I state that the *creation of a Structure Plan area will convert open farmland to residential land-use*, which creates a change in landscape character. I also state that these effects will be permanent. I place emphasis on the appropriateness of this landscape change given its proximity to the neighbouring residential Oakura.

In assessing the proposal and stated in my assessment, I describe that the greatest effect created by the change from rural to residential is on the current properties within the 'Paddocks' subdivision. My assessment of the significance of the 'farm lot' (Lot 29) is not the same as when this land was discussed in the 2010 'Paddocks' application. At that time, the role of Lot 29 was considered important for maintaining rural spaciousness for the area generally, and the view from SH45 specifically. Rural spaciousness generally, is now to some extent altered by the inclusion of the Paddocks development, albeit in my assessment they are the greatest beneficiaries of Lot 29's spaciousness, and therefore are potentially most affected by its change. In terms of the Consent Notice, I consider that with regard to rural character its role has changed from that intended.

With regard to the views from SH45, the intent of the Consent Notice remains relevant, as the views from SH45 to the ONL exist as anticipated. On page 16 of my assessment under VP7 (where SH3 should read SH45), I assess the effect of

change on the view from the highway (without mitigation) as 'Medium Adverse', and 'Low Adverse' with mitigation. I also note that the degree of visibility is high but transient. In my assessment, I do not suggest that these views are now not important, but I do make that point that it is a transient view experienced from mostly vehicles (not to exclude cyclists - walkers are rare due to the busy nature of the road) travelling at 100km for a distance of 500 metres (excluding a 55 metre section where an existing Powerco building is located adjacent to the highway). Furthermore, the context of this stretch of highway is its proximity to Oakura. Those who will experience this view are either immediately leaving Oakura or about to enter it - a 'gateway'. This represents a transitional landscape whereby user perceptions of landscape will change. The proposal (unmitigated) moves this experience further south. The ONL is still visible, its foreground changes. With mitigation, the obvious presence of urban development will be removed as a planted elevated bund is proposed along this length of highway. It is anticipated that this will ease the transition from urban to rural. The proposed Rural E zone that will not have a bund further reinforces this transition, as its semi-rural typology should maintain some of the intentions implicit in the Consent Notice by having a degree of openness that affords views of the ONL.

A positive landscape and visual effect of the re-zoning proposal is the preservation of the natural gully system and the visual impact they will have over the longer term, particularly for receptors that have elevated views over the site, and the community in which they are integral.

Overall, notwithstanding the intention of the Consent Notice, the most significant visual effects created by the re-zoning proposal are limited to residents of the Paddocks. Landscape effects are limited in scale and extent to Lot 29 where open farmland will change to predominantly urban character, noting that the QEII ecological areas remain unchanged and the natural gully systems will be enhanced.

With regard to the Consent Notice - it applies to the current zoning. Needless to say that with the proposal the current zoning is proposed to change. As described above, the proposal creates a whole new set of landscape and visual effects, which I consider can be mitigated when considered within the framework of urban growth.

With regard to item 2 of the s92

- 2. The plan change request seeks to introduce a new Rural 'E' Environment Area to enable the subdivision of 12 rural lifestyle lots. The wording of the Consent Notice restricts further subdivision of the Rural Environment Area. Can you please explain how the applicant will reconcile the outcome sought by the new Rural 'E' Environment Area and the restriction in the Consent Notice.*

With regard to the Rural E environment, it is created to include lot sizes sufficiently large whereby built form does not dominate open space. In other words it would be perceived as rural. Therefore, the intention of the Consent Notice to provide spaciousness and afford views of the ONL, can to some extent be maintained by the proposal, albeit I have assumed that the Consent Notice would have to be lifted as the Rural E zone includes subdivision.

Richard Bain
Landscape Architect



Appendix 6 Archaeological Assessment

ARCHAEOLOGICAL RESOURCE MANAGEMENT

Proposed Wairau Estate Archaeological Assessment

Ivan Bruce



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Archaeological Assessment of Affects

Location: Oakura, New Plymouth

Project Title: Proposed Wairau Estate

Proposed Works: Plan Change

NZAA Site number: Q19/340

Assessment Commissioned by: Oakura Farm Park Ltd

Ivan Bruce, Archaeological Resource Management, March 2017



View of the proposed Wairau Estate, looking south across the Wairau Stream to the Kaitake Ranges.

Executive Summary

Oakura Farm Park Ltd is proposing a plan change for an area of currently zoned Rural Environment Area, to allow for future residential and rural residential development. This assessment was undertaken in order to advise Oakura Farm Park Ltd of any likelihood that this project will affect archaeological sites and to advise this client of their responsibilities under the Heritage New Zealand Pouhere Taonga Act 2014(HNZPT). This assessment finds that although no archaeological sites have been recorded within the area of the proposed development to date there are reasonable grounds to expect that earthworks associated with this project may encounter archaeological evidence. Consequently it is recommended that any earthworks are carried out under an archaeological authority granted by HNZPT. This report is intended to accompany an application for such an authority.

The Proposed Wairau Estate - Oakura

Archaeological Survey and Assessment

Ivan Bruce, Archaeological Resource Management, March 2017

1. Report Brief

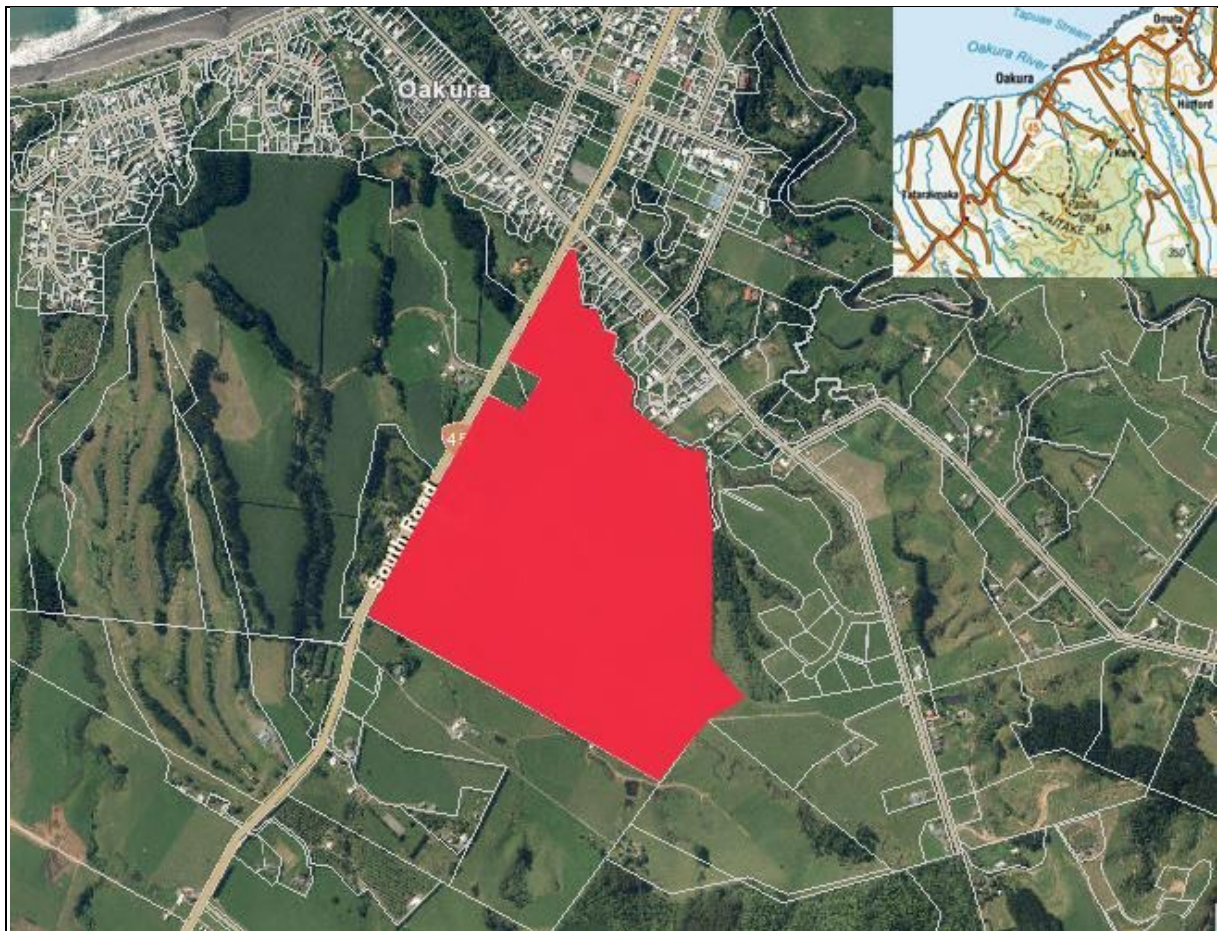


Figure 1: The location of the proposed Wairau Estate shown in red. Image: (Aerial image: Taranaki regional explorer, accessed 2017). Inset: Oakura district.

1.1 The following report outlines the results of an archaeological assessment of the proposed Wairau Estate, inland from SH45, south of Oakura, New Plymouth. The proposed Wairau Estate is an urban residential development containing a mix of relatively high density residential lots and larger sized equestrian friendly lots. The company which seeks to develop the estate is the Oakura Farm Park Limited, who are in the process of seeking a plan change to allow this development to progress.

1.2 The assessment is based on desktop research of the wider Oakura District, and a pedestrian survey within the area of the proposed subdivision. Archaeological sites in the immediate vicinity were also inspected to provide context.

1.3 The area of the proposed Wairau Estate is situated on an established dairy farm comprising Lots 28 and 29 DP 497629 and Lot 1 DP 482991 comprised in certificate of title 736913. The land subject to the proposed plan change is Lot 29 DP 497629 (62.5880ha) and is currently zoned as Rural Environment Area.

1.4 The development of the Wairau Estate will involve the construction of a road access; pedestrian underpass; walkways; services and amenities, including reticulated water, storm water and sewerage; re-vegetation and planting. Ultimately the subdivision will result in a mix of residential and rural/ residential housing. A preliminary overview of the proposed estate is included in the appendix to this report.

1.5 Preparatory earthworks involved in this development will require the removal of topsoil and underlying sub soils by earthmoving machinery and mechanical diggers.

1.6 The area of the proposed Wairau Estate has not yet been the subject of archaeological investigations, however archaeological surveys and excavations have been undertaken in "The Paddocks" subdivision, situated immediately to the east of the proposed estate (Bruce 2010).

1.7 This survey, background research and report production was undertaken by Ivan Bruce in March 2017. This report outlines the results.

2. Statutory requirements

2.1 There are two pieces of legislation in New Zealand that control work affecting archaeological sites. These are the *Heritage New Zealand Pouhere Taonga Act 2014* (HNZPTA) and the *Resource Management Act 1991* (RMA)

2.2 HNZPT administers the HNZPTA. It contains a consent (authority) process for any work affecting archaeological sites, where an archaeological site is defined as:

Any place in New Zealand, including any building or structure (or part of a building or structure), that;

a. *Was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and*

- b. *Provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and*
- c. *Includes a site for which a declaration is made under section 43(1)*

2.3 Any person who intends carrying out work that may modify or destroy an archaeological site, must first obtain an authority from HNZPT. The process applies to sites on land of all tenure including public, private and designated land. The HNZPTA contains penalties for unauthorised site damage or destruction.

2.4 The archaeological authority process applies to all archaeological sites, regardless of whether:

- *The site is recorded in the New Zealand Archaeological Association Site Recording Scheme or included in the Heritage New Zealand List.*
- *The site only becomes known about as a result of ground disturbance, and/ or*
- *The activity is permitted under a district or regional plan, or a resource or building consent has been granted*

2.5 The heritage places reviewed in this report are prehistoric and historic archaeological sites as defined under the HNZPTA.

2.6 The RMA requires City, District and Regional Councils to manage the use, development, and protection of natural and physical resources in a way that provides for the wellbeing of today's communities while safeguarding the options of future generations. The protection of historic heritage from inappropriate subdivision, use, and development is identified as a matter of national importance (Section 6f).

3. Assessment methodology

3.1 As part of this assessment a review of the archaeological record and archaeological literature pertaining to the proposed Wairau Estate subdivision was undertaken. Aerial and historic photographic records; historic land plans; surveyors notebooks; campaign maps; and geological maps were examined for relevant information. The assessment also involved a pedestrian survey of the Wairau estate property and archaeological sites in the vicinity were also inspected to provide context to this assessment.

4. Physical environment and setting

4.1 The proposed Wairau Estate is situated on the inland side of SH 45, and west of Wairau Road. The property comprises gently rising farmland bisected by tributaries of the Wairau Stream.

4.2 The property is in pasture and is grazed by a dairy herd, presenting good surface visibility for field survey. However the grazed tablelands have been ploughed flat during the past 150 years of European farming, and present a relatively uniform grassed appearance and could potentially contain unrecorded archaeological evidence.

4.3 Native vegetation has been replanted along the riparian strips. This vegetation is now becoming well established obscuring surface visibility and limiting pedestrian investigation in these areas.

4.4 The underlying geology of the subdivision is volcanic breccias and laharic mudstone overlain by a mantle of volcanic tephra from the Pouakai volcanic eruptions, laid down during the mid to late Pleistocene (Neall 1974). The pedology is dominated by a 20 – 40 cm dark brown topsoil loam superimposed over yellow brown “Taranaki ash” clays.

5. Maori Traditional Accounts

5.1 Manawhenua in the Oakura District is held by the Ngati Tairi hapu of the Taranaki iwi.

5.2 Taranaki iwi claim descent from ancestors that predated the arrival of the waka migration to the western seaboard. They were known as the Kahui Ao, Kahui Rangi, Kahui Po and Kahui Atua, collectively called Te Kahui Maunga. They occupied Mimi Maunganui (the mountain preceding Taranaki), Ruatupua (Pouakai), and Ruatawhito (Kaitake) ranges. Their principal village was Karakatonga, situated high up in the heart of the Waiwhakaiho river valley. When the new mountain Pukeonaki surfaced the people temporarily evacuated the site with many also perishing.

"The tribe emanated from the celestial and spiritual trees of the gods, down from the legion of spirits who were not seen but heard, through the generations of Te Kahui Rere and the genealogies to Rauru the man. Rauru was a man of one mind. There was no going back on his word, hence he was called Rauru Kiitahi (Rauru of the one word). Ngaa Rauru Kiitahi existed prior to the arrival of the Aotea waka"

5.3 The arrival of the Kurahaupo kin from Hawaiki signalled a new period of occupation and interaction between the Kahui Maunga and Hawaiki people. This era was known as 'nga uruwaka'. During its voyage to Aotearoa Kurahaupo suffered damage and some of its passengers, led by Te Moungaroa, transferred to the Mataatua canoe for the last part of the journey to Aotearoa. When the Kurahaupo people arrived they brought with them the sacred kura (knowledge), marriages soon produced a mix of Kahui and Kurahaupo descendants. The influx of the new migrants also created tension and the Kahui people were forced to relocate into various places along the western seaboard.

5.4 Taranaki Iwi are the descendants of these two kin groups and since time immemorial have occupied the lands which extend along the coastal and mountain area between Ouri and the Rawa o Turi stream in the south and Onukutaipari in the north. This whakapapa, is set out in the Taranaki Iwi Deed of settlement (2015), from which this sections 5.2, 5.3 and 5.4 of this report are derived.

5.5 While I am unaware of traditional accounts that refer specifically to events or places located within the area of the Wairau Estate prior to European arrival, most ethnographies point to an initial settlement date in the Oakura District prior to the time of the great fleet (circa 1350). As such, the area has a long history of Maori settlement and there may be unpublished traditional oral histories pertaining to pre historic Maori land use of the proposed Wairau Estate. Representatives from the Ngati Tairi hapu and the Taranaki iwi should be consulted in this matter.

5.6 The 19th and early 20th C land plans of the Oakura District provide a wealth of information pertaining to the locations of Maori Pa, Kainga and Reserves in this district. One of these early plans SO 45/4 records the names *Te Wahine Taweu* on the south side of the SH 45, within the northeast corner of the proposed Wairau Estate. The land plan does not make it clear as to what this name refers. Elsewhere on this plan, Maori names for rivers and streams are named on this plan, as are some Maori settlements. Pa are specifically described on the same land plan as pa, or accompanied by a sketch of the site outline, which *Te Wahine Taweu* is not. I am not aware of any historic document in which *Te Wahine Taweu* is referred to as pa sites or kainga. It is possible that this name may be a traditional place name referring to an event that occurred here during prehistory passed on to the original surveyor by local informants, but this is only speculation on my part.¹

¹ For instance, *Elsdon Best (1924) describes Taweu as a form of ceremonial hair-cutting observed in mourning for the dead, in which the practice was to cut off all the hair in mourning save one long lock, termed reureu, or taweu, left on one side of the head. Any*

Representatives from Ngati Tairi should be asked about the relevance of these places during the consultation process.

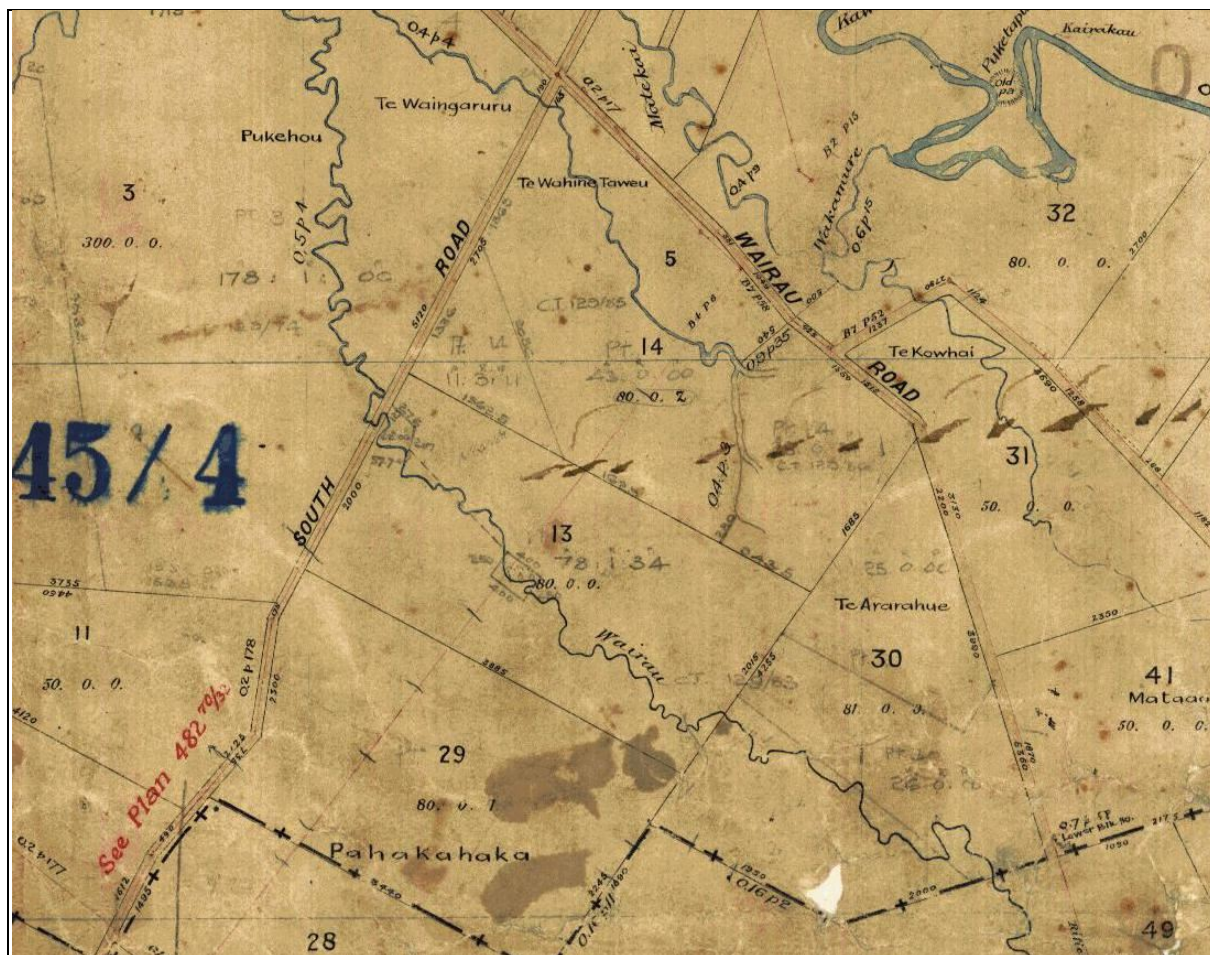


Figure 2: Extract from SO 45/4, on which the name SO45/4 is written on the northeast corner of section 14, near the intersection of SH45 and Wairau Road.

6. Early European Occupation.

6.1 European occupation started in the Oakura District following the cessation of hostilities following the second phase of the Taranaki wars after 1866. Prior to this the area was occupied exclusively by Maori, with European occupation limited to the Tataraimaka Block, south of Oakura and the Omata District to the North.

relevance of such practice to the name Te Wahine Taweu name has not been confirmed to me by iwi sources.

6.2 The area between Omata and Tataraimaka was not surveyed into land parcels until 1866, subsequent to the confiscation of lands in the Oakura District. Prior to this comprehensive land survey, general maps were compiled for the New Plymouth Company, the Colonial Government and British Military. Often these early plans indicate Maori settlements and kainga in the Oakura District and give some insight into Maori occupation in the district circa 1860 – 1868.



Figure 3: Detail from “Map of the Taranaki Coast circa 1863” (Maker unknown), showing British positions and Maori pa and kainga between the Tataraimaka and Omata Blocks during the 2nd phase of the Taranaki wars.

6.3 One such document is a map of the Taranaki coast produced circa 1863 (Maker Unknown, 1863). The plan includes Maori pa and settlements, Maori flour mills, named waterways and British redoubts. Another such plan is the “Province of Taranaki from Waitara to Oeo”, produced for the British Government by Octavius Carrington in 1862; which again shows Maori villages, British redoubts and blockhouses, and also the burned homes of European settlers. Neither plan indicates Maori Settlement or European settlement on the area of the Wairau Estate at that time, the nearest Maori settlements and military positions are identified at

Kaitake, in the Kaitake ranges; Hauranga (South of Ahu Ahu Road) and at Poutoko, north of the Tapuae Stream.



Figure 4: Detail from Carrington's "Province of Taranaki from Waitara to Oeo" map, 1862. The Maori Kainga of Hauranga and Poutoko are shown, as a Maori position near Te Ahu Ahu or Kaitake. The Wairau District is represented as otherwise devoid of settlement at this time.

6.4 It is possible that these early plans indicate only those kainga occupied during the land wars period; or may depict only those Maori settlements either known to be friendly to the European troops; and Maori positions engaged by British troops. Later plans such as the Cape and Wairau Block Sheet (1885, revised 1898) provides the location of a far greater number of prehistoric and historic Maori pa, kainga, and tauranga waka (canoe landings) throughout the districts. Much of this information is repeated in greater detail in later subdivision plans of the district (SO 45/4, SO 9481, Town of Oakura Plan).

7. *The second phase of the Taranaki wars, 1863 - 1866*

7.1 The area was between New Plymouth and Tataraimaka heavily contested during the Taranaki Wars, with a number of European redoubts and Blockhouses constructed in Oakura District as a result (Cowan 1923, Prickett 1996). Maori forces also occupied a number of positions throughout the district and dug extensive rifle trenches.

7.2 The upper part of the Wairau Stream, to the east of the proposed Wairau Estate, was the focus of a series of important battles during the second phase of the Taranaki Wars. By June 1863 Maori forces erected two palisaded pa on the ridgeline above the true right bank of the Wairau Stream, near the trig station today. A stockade was erected across the main ridge (now occupied by the Wairau Road) leading to the redoubts and the Wairau Stream and the ridgeline above the proposed Wairau Estate was defended by rifle pits. British forces made two attempts to take the pa, the first failed attempt occurring on the 11th of March 1864 resulting in the death of Private Kennedy and the wounding of one other (TH 1864: March 12). The Kaitake pa were finally taken on the 25th of March 1864, one soldier, Sergeant Appleby, died later of tetanus from wounds received in taking the pa. A redoubt was constructed at the site of the Kaitake Pa (P19/37) and a blockhouse (P19/45) constructed at the end of Wairau Road. Two days after taking the Kaitake pa three soldiers were ambushed retrieving water from the Wairau Stream. One soldier escaped while another soldier was wounded in the back attempting escape. Stewart, an artillery soldier was killed (TH, 1864: April 2). Over the following month British forces burnt cultivations and pa in and around the Kaitake ranges. These cultivations and the locations of a number of pa sites were situated in the ranges overlooking the proposed Wairau Estate; their locations are recorded during an early survey of the Kaitake range (1900) and detailed in plans and notebooks belonging to W.H Skinner. Maori forces effected a reprisal for the destruction of their livelihoods with a successful ambush at Te Ahuahu on the 6th of April 1864. Here, Captain Lloyd and eleven others were killed (TH 1864: April 9).

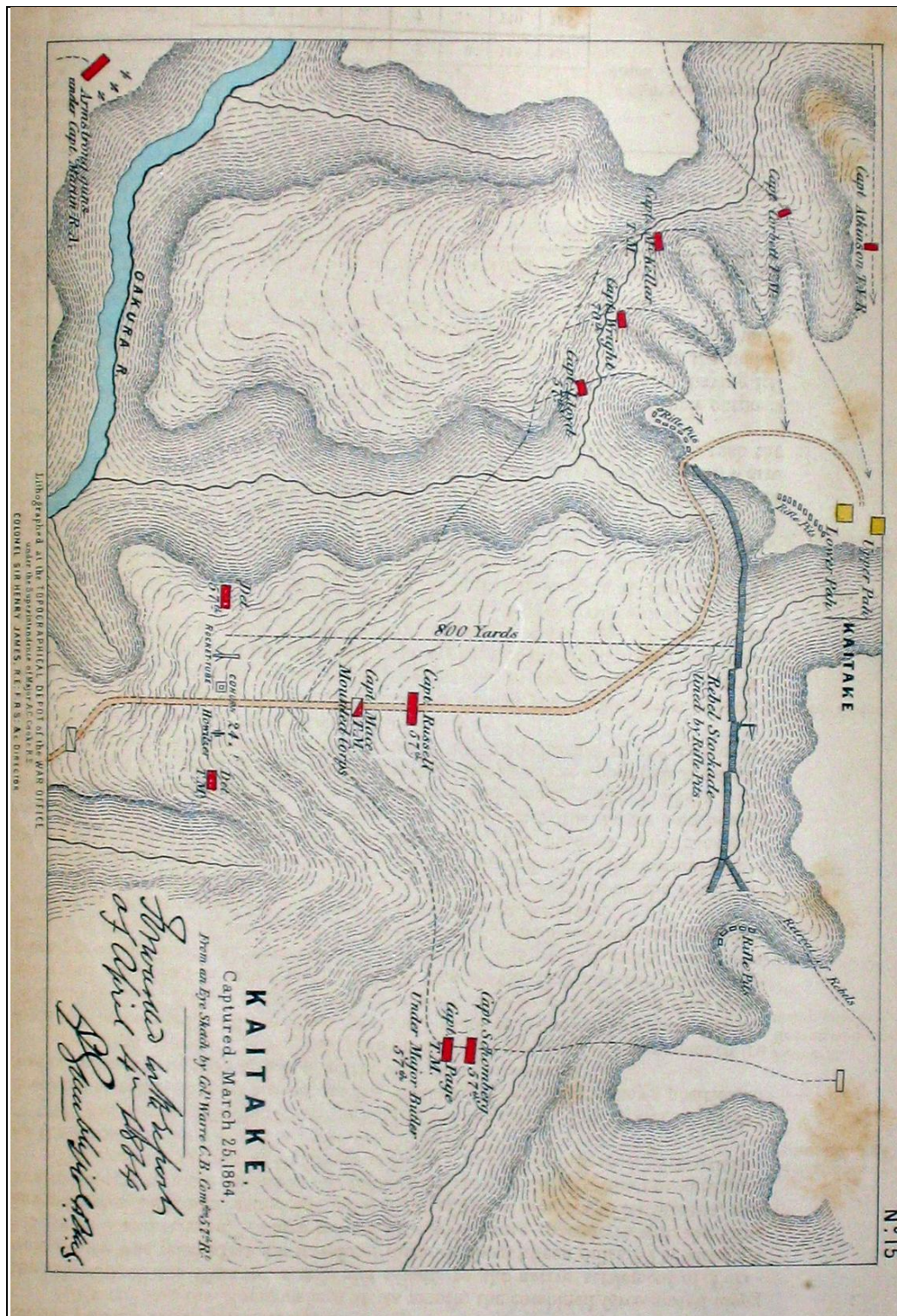


Figure 5: Plan of the attack on Kaitake Pa 1864. Schomberg, Page and Butler's positions as indicated are slightly south east of the southern boundary of the proposed Wairau Estate.

8. Late 19th C European agriculture and industry

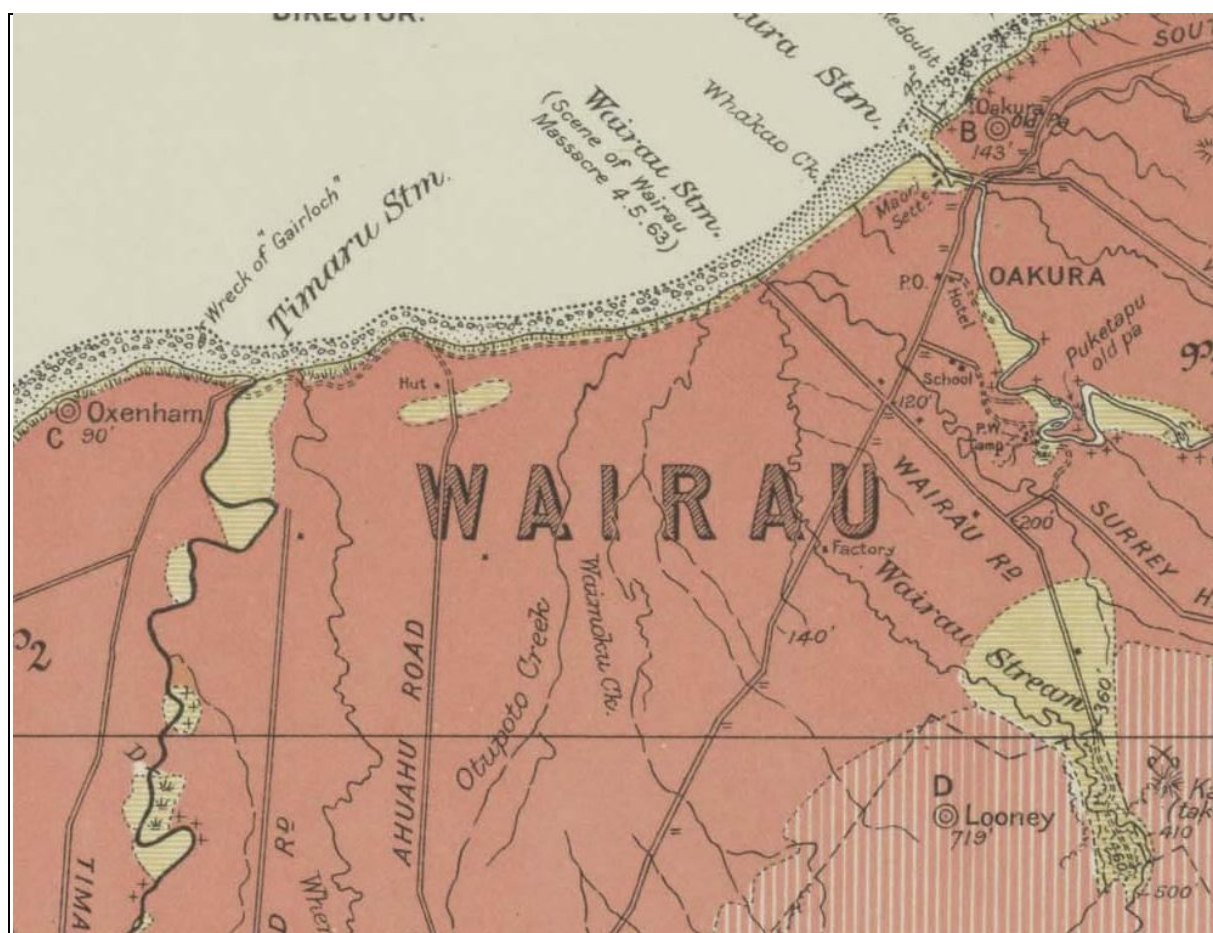


Figure 6: Detail from the Geological Survey of the Wairau and Cape District (1926) showing the location of the Oakura Co-op dairy factory.

8.1 The Cape and Wairau Block Sheet (1885, revised 1898) and geological map (Harris 1926) indicates that little development by Europeans, other than agriculture, had occurred on the Wairau Estate property by the early 19th C. The only structure noted on this plan is a factory, situated on the right bank of the Wairau Stream tributary south of SH 45. This is the site of the Oakura Co-operative Dairy Company factory, established in 1898. A separate title for a water reservoir and an easement from the Wairau stream to the site of the factory is sketched in SO45/4, which I assume secured the water supply to power the water wheel for the factory.

8.2 The Oakura Co-operative Dairy Company between 1898 and 1915, before being taken over by the Omata Co-operative Company. I am unsure as to when the factory ceased operation altogether. Details on the operation are also vague, however it has been reported that the churn was initially powered by water wheel (Richards 1995). Historic images indicate that the enterprise comprised a wooden factory building alongside which was a small cottage and outbuildings. No clear trace of these building remains on the site today, which is now the

site of the farm milking shed. Concrete footings and abutments surrounding the existing shed and incorporated into the outbuildings may relate to the earlier use of the site as a dairy factory.



Figure 7: Site of the current milking shed, some of the older concrete may be part of the earlier dairy factory (Image: Ivan Bruce 2017).



Figure 8: The current milking shed as seen from the main road and similar viewpoint to the historic photo following (Figure 9).



Figure 9: The Oakura Cooperative Dairy Company Ltd circa 1900.

9. Review of aerial photography



Figure 10: 1956 aerial photograph of the area of the proposed Wairau Estate.

9.1 A review of early photographic runs was undertaken as part of the background research for this project. The earliest photographic runs taken between 1942 and 1956 are of the most value for archaeological purposes as they predate the more significant earthworks that have taken place in the district since the expansion of subdivision during the 1970s and 80s. In many cases, sites now destroyed or entirely subsurface can be relocated by reviewing these aerials. However, no archaeological features are noted on the area of the proposed Wairau Estate in the historic aerials reviewed for this report.

10. Archaeological Record

10.1 No historic buildings or archaeological sites recorded on the HNZPT list are situated within the proposed Wairau Estate.

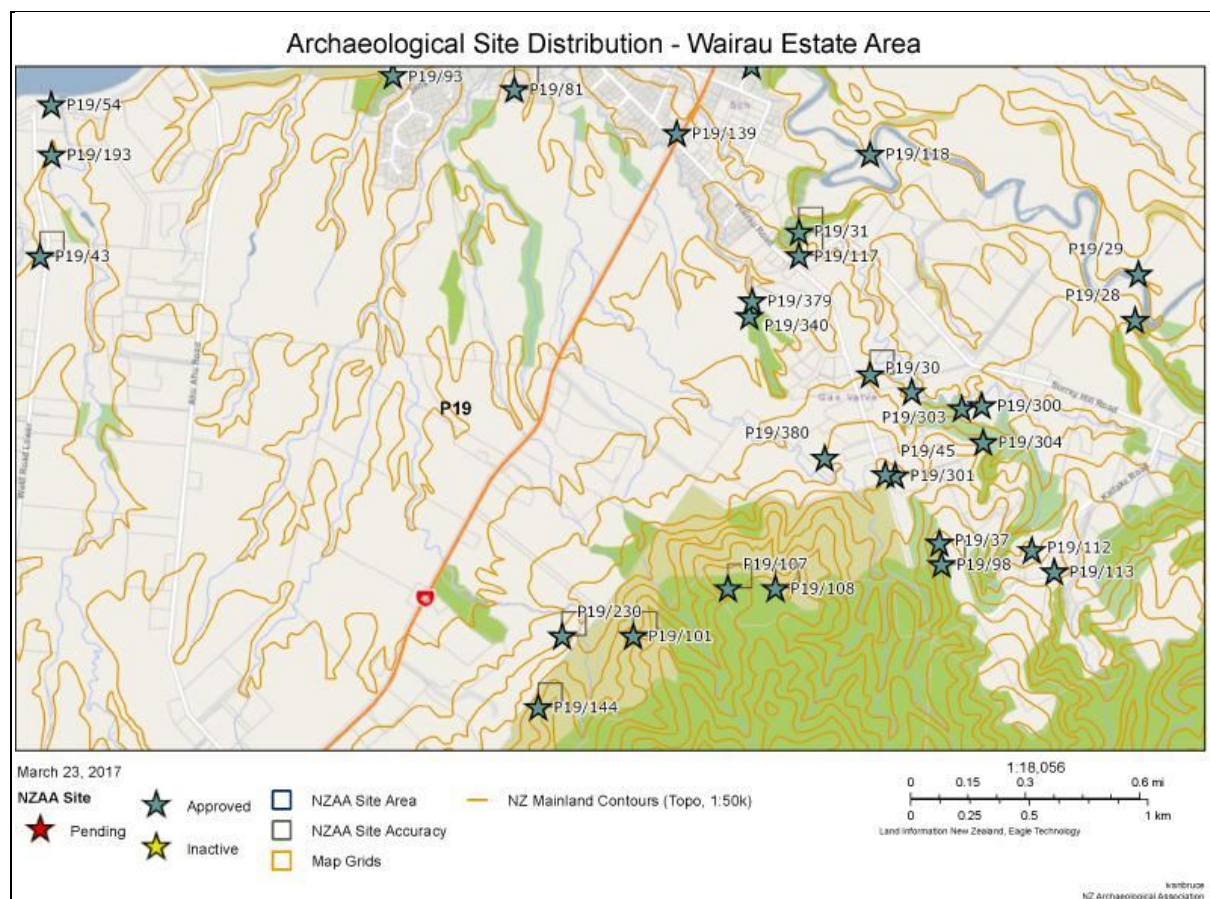


Figure 11: Recorded NZAA sites in the vicinity of the proposed Wairau Estate.

10.2 The New Zealand Archaeological Association Site Recording Scheme records no archaeological sites within the proposed Wairau Estate. There are however a number of archaeological sites recorded in close proximity:

P19/45 - The Lower Kaitake Blockhouse, occupied in conjunction with the 'Kaitake Redoubt' in 1864. Situated on the eastern side of the Wairau Road end.

P19/107 - Ekuarangi, a ring ditch pa situated within the Mt Egmont National Park Boundary.

P19/108 - Tamarau te rere, Ridge top pa. Destroyed by British troops March/April 1864. Situated within the Mt Egmont National Park Boundary.

P19/139 – Storage Pits. Two pits were exposed in road cutting on the seaward side of Wairau Road/ SH 45 intersection and currently under subdivision. This site is listed on the NPDC District Plan as a Waahi tapu/ archaeological Site No 127.

P19/340 – Unnamed Pa. Recorded in 2010. Large pa, double unit ring ditch containing open storage pits and house features. Contained within “The Paddocks”

Subdivision on Wairau road and protected by an Archaeological Site Management Plan.

P19/379 – Storage pits. Three storage pits, excavated by this author under archaeological authority in 2010. Associated with pa site P19/340.

P19/380 - A single archaeological feature, consisting of an isolated scoop oven, was excavated during test excavations at this location. Excavated by this author under archaeological authority in 2010.

11. Archaeological Investigation at "The Paddocks" Subdivision

11.1 A number of systematic archaeological excavations were undertaken in the immediate vicinity of the Wairau estate during the development of "The Paddocks" subdivision. Prior to the development of the subdivision, test excavations were undertaken under authority 2010/443 to determine whether archaeological evidence may exist subsurface within the subdivision. The archaeological investigation involved the excavation of 14 short transects approximately 1.2 m and up to 20m long. These investigations resulted in the recovery of storage pits below the plough zone on level paddocks adjacent to the pa site P19/340; these were recorded as site P19/379. The excavations also uncovered an isolated umu/ oven was recorded as site P19/380. A radio carbon date were derived from midden contained within a pit feature dates the abandonment of the pits feature to sometime during the mid 16th to mid 17th C (Bruce 2010).

11.2 As a result of these finds, "The Paddocks" subdivision was completed under an archaeological authority, requiring archaeological monitoring of road and amenity installation and the archaeological investigation of house sites footprints prior to the development of each site. This work is ongoing and at this time there are still seven lots awaiting development that have yet to be investigated. No in- situ archaeological evidence has been encountered to date and a final report will be compiled following the completion of earthworks.

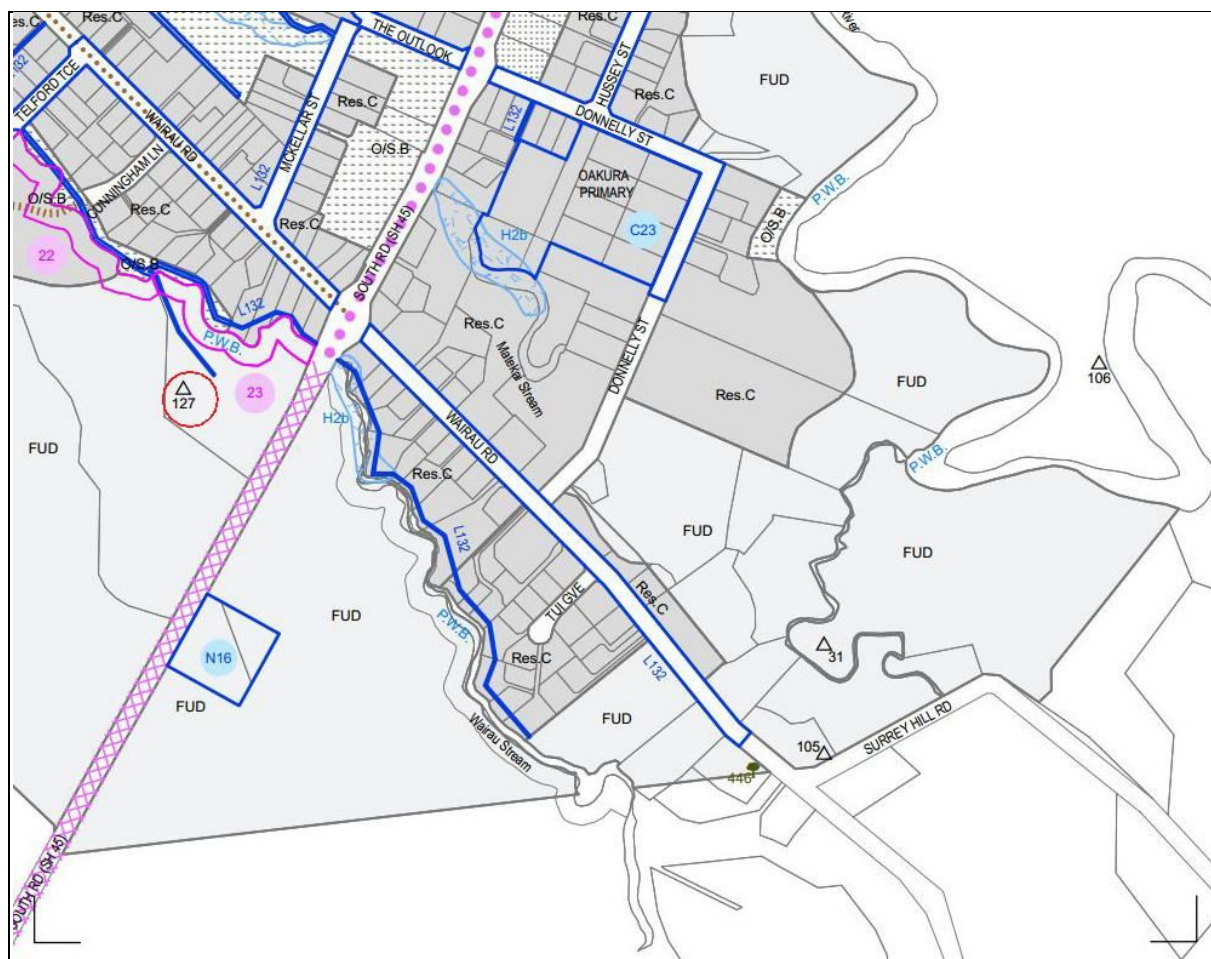


Figure 12: NPDC district plan A61, showing Waahi tapu Site ID 127 in the incorrect location on the southwest side of the Wairau Road/ SH 3 intersection (See NZAA site record form in appendix for evidence and correct location).

11.3 The New Plymouth District Plan records two Waahi Tapu/ Archaeological sites in the vicinity of the proposed works. The location of these sites as indicated on the NPDC district plan is based on the NZAA site data from 1998 and does not take into account updated site record location now available. These are:

Waahi tapu/ archaeological Site No 127 - Corresponds to NZAA site P19/139, location incorrect in district plan.

Waahi tapu/ archaeological Site No 105 - Corresponds to NZAA site P19/45, location approximate.

Waahi tapu/ archaeological Site No 96 - Corresponds to NZAA site P19/107, location approximate.

Waahi tapu/ archaeological Site No 97 - Corresponds to NZAA site P19/108, location approximate.

11.4 One of these sites, Waahi tapu 127, is situated within 250m of the proposed Wairau Estate.

12 Pedestrian Assessment



Figure 13: Typical surface visibility across the area of the proposed Wairau Estate. looking south to the Kaitake ranges (Image: Ivan Bruce 2017)

12.1 No surface indications of unrecorded archaeological sites were noted during a pedestrian survey of the entirety of the proposed Wairau Estate.

12.2 A key limitation for the identification and assessment of archaeological sites is that potential affected subsurface archaeological evidence may display limited or nil surface visibility as a result of European agricultural activities over the past 150 years, especially ploughing. Ploughing was commonly performed as part of normal farming practice to establish and maintain pasture throughout the Taranaki region in the 19th and early 20th Century. The effect of ploughing, or work undertaken in preparation for ploughing, is that area containing archaeological pits, terraces and earthworks are levelled and transformed into flat paddocks with relatively featureless surfaces. As a result there remains the possibility that unrecorded archaeological features may exist subsurface within the project

area, despite not being visible in the earliest land plans and aerial images, or encountered during this field survey.



Figure 14: Wetland areas at the head of small tributary to the Wairau Stream (Image: Ivan Bruce 2017).

12.3 As evidenced by the results from the test excavations at "The Paddocks" subdivision prehistoric Maori food storage and cooking activities can result in deeply cut archaeological features that exist below the plough line and will only become apparent following the removal of the overlying topsoil.

13. Assessment of effects

13.1 Comprehensive subsurface testing of the proposed Wairau Estate has not been undertaken at this time. However, as a result of the findings of the archaeological excavations undertaken to date at "The Paddocks" subdivision, it is reasonable to infer that similar archaeological features will also occur at the Wairau Estate, particularly in the vicinity of the recorded pas site P19/340. Archaeological features relating to Maori horticulture and isolated evidence of day to day prehistoric Maori occupation peripheral to the pa site P19/340, such as umu/ovens or possible garden soils, may also exist elsewhere on the property. Due to the uniform surface appearance of the grazed paddocks at present, only intrusive archaeological investigation will reveal such features should they exist.



Figure 15: Paddocks west of pa site P19/340, grassed and level, showing no surface indication of archaeological site (Image: Ivan Bruce 2017).

13.2 There is no historic record pertaining to unrecorded kainga, pa, or extensive Maori cultivations within the area of the proposed Wairau Estate of which I am aware and no redoubts or blockhouses were constructed on the property during the British and Colonial military occupation. Unless consultation with representatives from the Ngati hapu Tairi or the Taranaki iwi results in information to the contrary, unrecorded archaeological evidence will be most likely be limited in scale and distribution, comparable to those sites (P19/379 and P19/380) recorded on "The Paddocks " subdivision to date.

14. Recommendations

14.1 All earthworks involved with the area of the Wairau Estate should be undertaken under an archaeological authority granted by HNZPT.

14.2 At this time no archaeological sites are recorded within the area of the proposed Wairau Estate and an application for a general archaeological authority would be made on a precautionary basis.

14.3 A general authority, granted by HNZPT will allow for any activity that will or may modify or destroy the whole or any part of any archaeological site or sites within a specified area of land, whether or not a site is a recorded archaeological site or is entered on the New Zealand Heritage List.

14.4 It can be expected that such an authority would contain monitoring conditions and require a management plan outlining the specific roles and responsibilities of the developer, contractors, project archaeologist and iwi.

14.5 The application for such an authority will require finalised plans outlining the nature and extent of earthworks prior to making the application.

14.6 This application will also require consultation with the representatives from the Ngati Tairi hapu and the Taranaki iwi before the authority application proceeds.

14.7 Preliminary pre application consultation between the developer of Wairau Estate and the HNZPT Central regional archaeologist should be undertaken following the issuing of this report.

15. Conclusions

15.1 Archaeological Resource Management was commissioned by Oakura Farm Park Ltd to undertake an assessment of the proposed Wairau Estate, at Oakura, New Plymouth. No archaeological sites have previously been recorded within the proposed development and no archaeological evidence was noted during the pedestrian survey. However, as it is reasonable to expect unrecorded archaeological evidence may exist subsurface within the proposed estate, this report recommends that all earthworks are undertaken under a general authority granted by the HNZPT. It is my considered opinion that if the HNZPT archaeological authority process is followed, Oakura Farm Park Ltd will have recognised and provided for the protection of historic heritage from inappropriate use and development as outlined in section 6f of the RMA.

16. References

16.1 *Written sources consulted*

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Bruce, I. 2010. *Archaeological Excavations at Wairau Road, Oakura*. NZHPT Authority 2010/443. Unpublished report to the NZHPT

Cowan, J. 1922. *The New Zealand Wars, Volume 1*. Govt Printer. Wellington

Prickett, N. 1996. *British army and Colonial Fortifications in north Taranaki, 1863-1864*.

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Taranaki Iwi And Te Kahui O Taranaki Trust And The Crown. Deed Of Settlement Of Historical Claims. 5 September 2015

16.2 *Web sources*

www.archsite.org.nz

<http://natlib.govt.nz/>

<http://pukeariki.com/>

16.3 *Photography consulted*

Black and white aerial photograph. 1950. Run No 1789/9

NZ Mosaic Map series, Sheet N.108/6 " *Omata*" 1956

PHO2002-518 Ben Murgatroyd, Ōākura Co-Op Dairy Factory Co. (unknown date), collection of Puke Ariki, New Plymouth

16.4 *Land plans consulted*

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----- *1907. Town of Oakura, Wairau Survey District*

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SO 45/ 5

SO 2361

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Warre, H. J. 1864. Kaitake, Captured, March 25, 1864, from Eye Sketch by Col' Warre C.B.
Com 57th Rgt

Newspapers

Taranaki Herald 1864: March 12

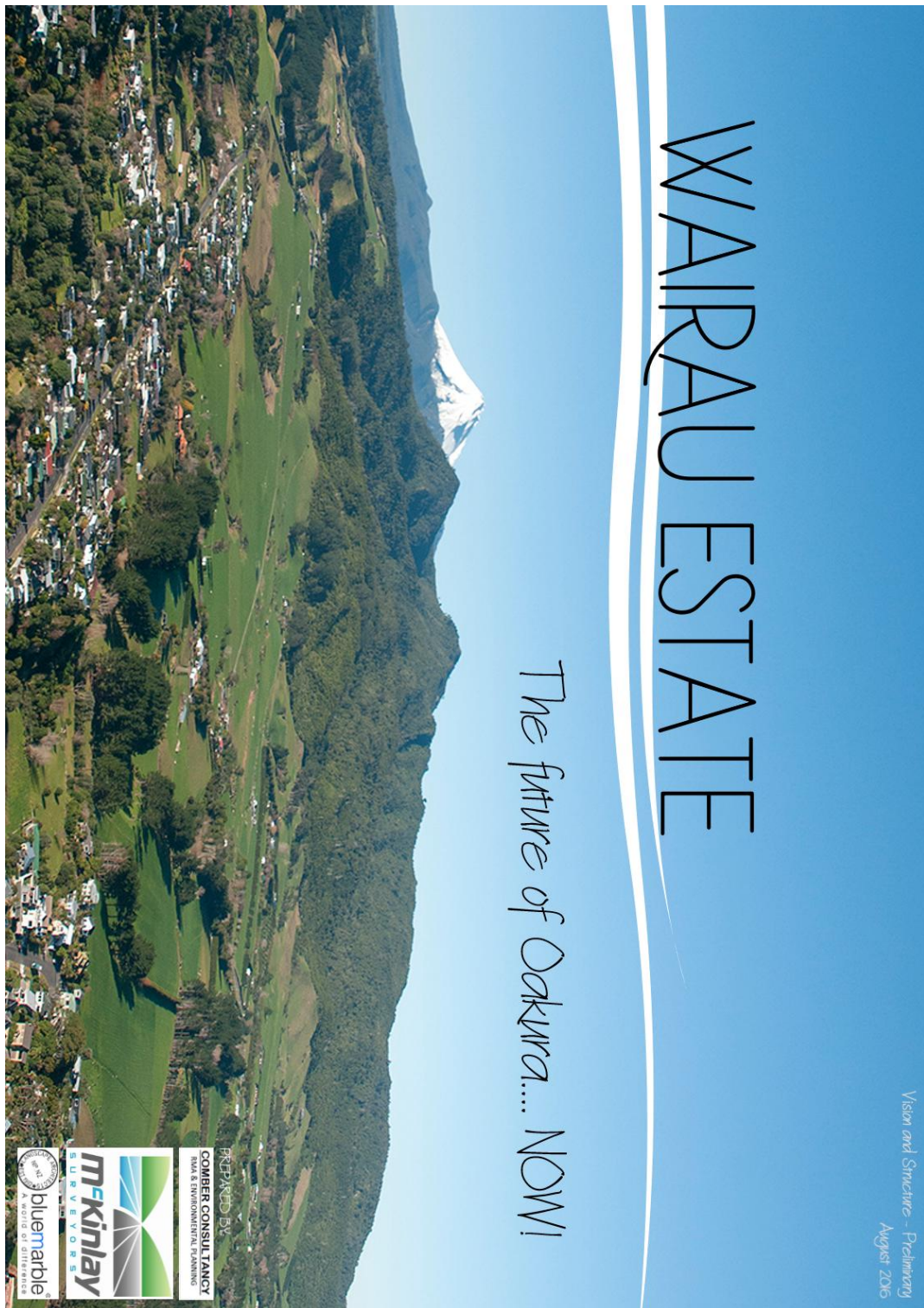
Taranaki Herald, 1864: March 26

Taranaki Herald 1864: April 2

Taranaki Herald 1864: April 9

17. Appendix

17.1 Wairau Estate - Preliminary overview





Oakura Farm Park is a tract of rural land at Oakura nestled beneath the Kaitake Ranges, lying to the south of Wairau Road and with Surf Highway SH 45 on its western boundary.

In 2010 Oakura Farm Park Ltd sought and obtained Council consent for the subdivision and development of a portion of the Farm Park land holding for rural-residential lifestyle. This development, known as The Paddock's is accessed from Upper Wairau Road via Pahakaha Drive and Ekanarangi Place. A hallmark of the development is the retention of the natural land features, and the maintenance and enhancement of the natural vegetation. All of the original vegetation, including the natural water courses, has been protected as Open Space for future generations under Queen Elizabeth II (QEII) Trust Covenant.

Oakura Farm Park Ltd now believes the time is right to proceed with the development of the remaining land in the company's ownership.

A portion of the remaining property was identified as far back as 2006 by the Oakura community and the New Plymouth District Council for the future urban expansion of Oakura to meet predicted future growth. Ref: NPDC Oakura Structure Plan 2006.

The land now being proposed for urban development gently rises from west to east with a warm and sunny northerly aspect. As with The Paddocks, this land has native vegetation and natural water courses within it. It is again intended these natural features will be retained and reserved to ensure a high quality environment is accessible to the future residents of the new development.

The name 'Wairau Estate' has been chosen as this area of future urban development will have its primary access off Wairau Road and has the Wairau Stream and its tributaries as an integral natural feature within the site.

The company's vision for the area is that of well-planned area of urban expansion with a high quality urban environment consistent with the unique environmental and community values that is Oakura.



The planning for Wairau Estate recognises the longstanding concerns of the Oakura community relating to the speed environment on Surf Highway SH45 through the Village.

To assist with traffic calming through the heart of the Village and to promote ease of traffic movement through the Wairau Road/SH45 intersection, a roundabout is proposed as an integral component of the development. Given the increase in traffic on Upper Wairau Road in recent years and the additional traffic that will be contributed by Wairau Estate, it is considered a roundabout will help to ensure the safe and efficient movement of traffic between Wairau Estate and the State Highway. Initial discussions with the New Zealand Transport Agency have been encouraging.

In planning for Wairau Estate it is also acknowledged that in time the northern side of the highway will be developed for residential settlement. A roundabout at the Wairau Road/SH45 intersection will also serve in the longer-term, either in whole or in part, the additional traffic that development in this area will contribute via Cunningham Lane to Lower Wairau Road moving onto and off Surf Highway.

Oakura Farm Park Ltd propose to engage the services of traffic management consultant to prepare an independent technical report so as to satisfy the planning and roading authorities and the community that the roundabout concept is viable, appropriate and in the long-term interests of the Oakura community.

Most recent traffic counts in the vicinity of SH45: Upper Wairau Rd 8789pd 2010; Lower Wairau Rd 1,349pd (Source: NPPDC)

Most recent vehicle count of SH45 adjacent to proposed Wairau Estate - 3,506 - 7% heavy vehicles - 2016 (Source: NZTA)

CONNECTED





Wairau Estate will be accessed off Upper Wairau Road by a new local road approximately 500m from the intersection with Surf Highway/SH45. There is good visibility for vehicles entering and leaving Wairau Road at the proposed intersection point.

The roading network within the Estate will essentially be a loop providing for the easy circulation of traffic. Cut-de-sacs will only be used where topography and proposed natural areas limit the options for through roads. The width of carriageways will be in accord with modern development standards consistent with the slower, and thereby safer, movement of traffic in residential areas.

It should be noted that a road connection from the Estate directly to SH45 is not proposed. This is considered to be in the best interests of the future residents of the Estate and Otago community generally, and the safety of state highway users.

ACCESSIBLE

5

The design concept for Wairau Estate places an emphasis on active lifestyles. It is proposed that the area will be able to be easily walkable. Footpaths will be integral to the local road network and will link to walkways through the natural areas.

Walking tracks will traverse the natural areas and will link to the already existing esplanade walkway up the Wairau Stream from near the intersection of Wairau Road and Surf Highway SH45. Walking access to natural areas from cul-de-sac heads will also feature in the design.

It will also be possible to walk between Wairau Estate and The Paddock lifestyle area (closer to the Karitake Ranges) on walking tracks within the natural areas connecting the two localities.

It is also proposed that a walkway be created along the top of a wide earth bund parallel with Surf Highway SH45 running the full width of the development, commencing at a pond at the southern (Okaro) end and terminating at Wairau Road. Conceptually this bund will be 3-4 metres above ground level and 3-4 metres wide on the top providing a generous walking and cycling corridor. The sloping sides of the bund will be vegetated with low growing native species. It is envisaged the bund will be of sufficient height to afford views from various vantage points across the Estate back to the Karitake Ranges.

It is proposed that all of the walking tracks within Wairau Estate will be designed to accommodate off-road cycling.

From the Wairau Road entry to the Estate to the grounds the Okara Primary School via Donnelly is a walking distance of some 500m. A further 500m puts you in the centre of the Okara Village business area.

Okara Farm Park Ltd is also keen to promote the concept of a pedestrian underpass under Surf Highway SH45 on the south side of Wairau Road. This would enable those wanting to walk (or cycle) from Wairau Rd/The Village down to the beach at Messenger Tce, some 750m distant, to do so without having to contend with the traffic on SH45 and Wairau Road. Conversely those wanting to cross the highway at Wairau Road to get to the school and Village business area would find an underpass a much safer prospect than having to cross Surf Highway SH45 on grade. The costs of a pedestrian underpass will be able to be offset/shared in part with the installation of utilities, e.g. sewerage main that will need to cross the highway to service the Estate.

WALKABLE



PEDESTRIAN UNDERPASS



BUND WALKWAY



ESPLANADE WALKWAY

Wairau Estate will be fully serviced.

Water supply will be reticulated to each lot from the available New Plymouth District Council treated mains water supply. This supply is also of adequate capacity for and meets modern day urban-firefighting standards. Hydrants for this purpose will be provided through the Estate.

Sewage disposal will be available to each household within each lot by way of connection to the New Plymouth District Council mains sewerage disposal system. Sewerage from Oakura is piped through to the New Plymouth Sewerage Treatment Plant.

Stormwater disposal from house roofs and outbuildings will be to underground soakaway systems within each lot. Stormwater from the common impervious areas such as roads will be collected at the roadside and piped via detention areas and other means of low-impact design to the water courses within the natural areas. The overall stormwater design for the Estate will aim to be hydraulically neutral.

All lots will have available to them the underground reticulated electricity and natural gas supplies available in the area.

All lots will also have available to them underground networked fibre optic cable for voice and data. The area of Oakura within which Wairau Estate is located also has good cellular phone coverage.



SERVICED

NATURAL

The Wairau Estate is well-endowed with natural areas. The Wairau Stream and associated esplanade reserve is already in place along the northern margin and running more or less parallel with Wairau Road. Further to the south a Wairau Stream tributary with mature vegetation runs from west to east toward the Kaitake Ranges commencing about midway across the Estate's western edge at the State Highway. From the SH45 this extends for approx. 300m and then forks into two smaller vegetated tributaries, one being approx 300m in length, the other being approx. 250m. These natural areas will be conserved and enhanced and will be accessible to all residents and the wider community as Council reserves or as covenanted Queen Elizabeth II Open Space.

On the southern margin of the Estate running east from the edge of the Surf Highway is a small lake with adjoining wetland of some 5000sqm. This water feature will also be conserved and enhanced as reserve/public open space. The Okara side of this feature will form part of the northern margin of the area that has been identified for a Retirement Village providing an attractive outlook for retirement village residents, and just a short walk from a site for a potential café and farm produce shop on the south side of the lake/wetland.



Oakura has a strong equestrian fraternity, evidenced by the Pony Club located near the centre of the township and the horse population grazed on various private holdings about the environs of the village.

For many years the equestrian community have lobbied the community board and district council for bridle paths that provide for recreational horse riding away from public roads. The equestrian needs of the Oakura community have most recently been expressed through a significant number of submissions to the Focus Group managing the Oakura Community Engagement Project 2014/16.

In recognition of this strong community interest in things equestrian it is proposed an area of some 25 hectares with frontages to both Wairau Road and Surf Highway SH45 along the western aspect of the Oakura Farm Park Ltd property will be zoned Equestrian Lifestyle.

Approximately twelve lots of 1-2 hectares, sufficient in area to keep 1-2 horses, are proposed. Each of these lots will have a suitable dwelling platform and an area for equestrian-type buildings and yards necessary for the equestrian lifestyle.

Each lot will have an undivided interest or share of ownership in a further lot which will have an equestrian arena of approx. 60m x 30m. The arena lot will be managed by the lot owners through a body corporate committee or similar entity.

It is also proposed that a bridle path will be incorporated to traverse each of the equestrian lots, including the arena lot. The bridle path will be for the use of the equestrian lot owners with access through the lot properties being formalised by right of way. The total length of the bridle path will be approximately one kilometre. The design concept is that any equestrian lot owner will be able to saddle their horse within their own lot and ride the bridle trail traversing the other lots. The bridle trail will also be the route by which they will get from their respective lots to and from the arena.

EQUESTRIAN LIFESTYLE



TREKKING



ARENA

It is intended that the Wairau Estate will provide a living environment of high urban quality while maintaining a close connection with the natural environment through the recreation and enhancement of the abundance of natural features present in the locality.

Lot sizes will be typically urban, e.g. 600-700sqm, for those requiring 3-4 bedroom homes. It is also envisaged that a portion of the lots, particularly those in proximity to the area set aside for the retirement village, will be in the 300-400sqm, so as to provide for smaller households of 1-2 bedrooms.

Sections will, as far as practical, be orientated to allow for the design of individual dwellings that can optimise sunlight exposure from the northerly aspect.

The ordinances for the Estate will, among other considerations, also promote the requirement for outdoor living spaces consistent with indoor/outdoor flow' thus promoting quality of life for individual households. Site coverage, and bulk, height and location ordinances will also be designed to ensure there is an optimal sense of spaciousness maintained between individual lots/dwellings within the Estate consistent with contemporary urban living.

The emphasis on Wairau Estate being well connected with the Village and beyond, readily accessible and easy to move around and within both by motor vehicle, on foot and by bicycle, will all contribute to the liveability of the area for residents.

The integration of the natural areas with the urban form will also promote quality of life. A flat grassed informal play and kick a ball' area of some 2000sqm toward the centre of the Estate will also be provided. This will be a space for active recreation for children and families and an informal meeting place for members of the community of all ages.

Conceptually, a Farm House Café is proposed on the southern margin of the Estate overlooking the lake/wetland area at what will be the new interface of the urban/rural boundary at Okara. It is envisaged this will provide a common convivial social space for all residents who want to take time out for a coffee (perhaps a meal) but within a short walking distance of the area set aside for the retirement village. It is possible that locally grown organic farm produce e.g. vegetables, eggs, milk etc., might be available through this outlet.

LIVEABLE





NEXT STEPS

While part of the area proposed for Wairau Estate has been identified for further urban development (FUD) within the New Plymouth District Plan (Ref: Planning Map A61) the land is currently zoned as Rural Environment Area.


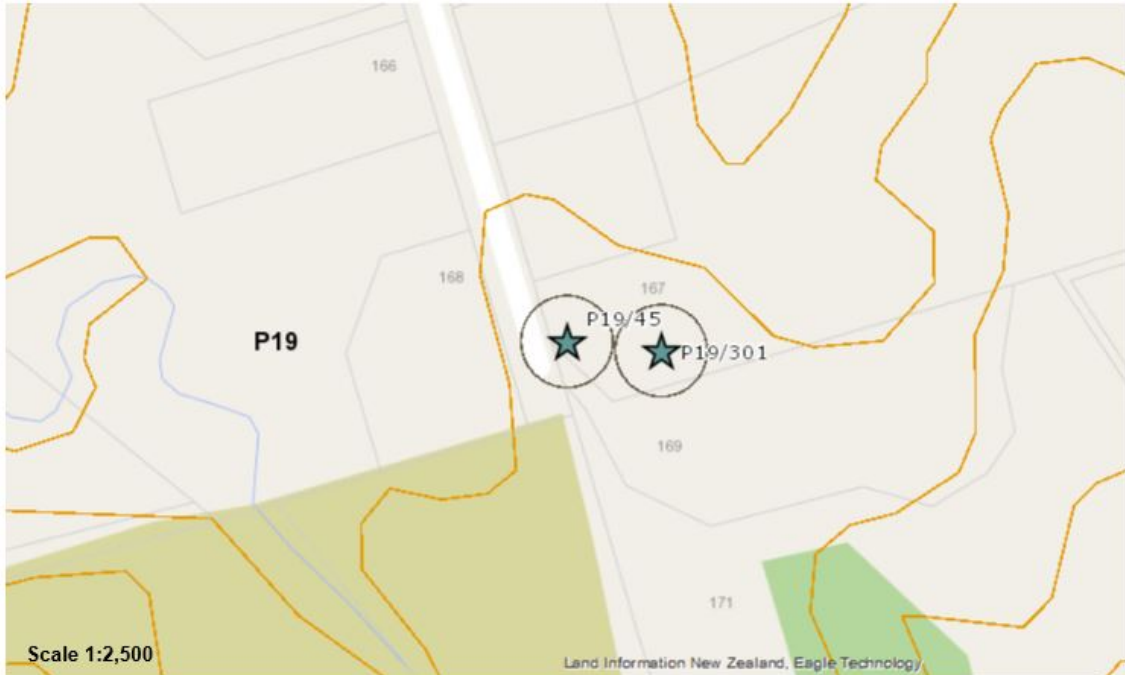
Following informal meetings with community and Mana Whenua, Oakura Farm Park Ltd will enter into discussions with the New Plymouth District Council planning policy and consent officers to determine the appropriate statutory planning processes that will need to be followed to enable the Wairau Estate proposal to proceed to development.

It is anticipated that some publicly notified statutory consent process will need to be followed, either as a land use and subdivision consent, a private plan change or as a component of the District Plan Review that has recently been commenced.

A preliminary pattern of subdivision is indicated on the accompanying illustration.

17.2 NZAA Site records mentioned referred to in text

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

 <p>Site Record Form</p>	<p>NZAA SITE NUMBER: P19/45</p> <p>SITE TYPE: Military (non-Maori)</p> <p>SITE NAME(s): Lower Kaitake Blockhouse</p> <p>DATE RECORDED:</p>
<p>SITE COORDINATES (NZTM) Easting: 1683386 Northing: 5668020 Source: Handheld GPS</p>	
<p>IMPERIAL SITE NUMBER: N108/49 METRIC SITE NUMBER: P19/45</p>	
 <p>Scale 1:2,500</p> <p>Land Information New Zealand, Eagle Technology</p>	
<p>Finding aids to the location of the site</p> <p>The site is recorded as being located "halfway between the end of the Wairau Road and the corner of the boundary of the Oakura waterworks reserve".</p>	
<p>Brief description</p> <p>The Lower Kaitake Blockhouse was occupied in conjunction with the 'Kaitake Redoubt' in 1864, probably by Taranaki Military Settlers.</p>	
<p>Recorded features</p> <p>Building - block house</p>	
<p>Other sites associated with this site</p>	

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: P19/45
<p>Site description</p> <p>Condition of the site It appears much of the site has been bulldozed, especially at the eastern end. Part of the western side has been damaged by the road cutting. (2005)</p> <p>Statement of condition</p> <p>Current land use:</p> <p>Threats:</p>	

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: P19/45
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Supporting documentation held in ArchSite

EA BC ACCOARGW

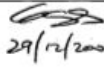
NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION SITE RECORD FORM		SITE NUMBER N108/49
Map number N108 Map name New Plymouth Map edition 3rd ed. (1970) Grid Reference 548 825	SITE NAME: MAORI Lower Kaitake OTHER Blockhouse.	
SITE TYPE Blockhouse (& redoubt ?).		
1. Aids to relocation of site	Halfway between the end of the Wairau Road and the corner of the boundary of the Oakura waterworks reserve. On the high point in the paddock. <i>E 154800 N 382500</i>	
2. State of site; possibility of damage or destruction	Completely destroyed.	
3. Description of site <i>(NOTE: This section is to be completed ONLY if no separate Site Description Form is to be prepared.)</i> <p>There is no convincing sign left of the presence of the site. One or two dips in the paddock may be related. The Lower Kaitake Blockhouse was occupied in conjunction with the 'Kaitake Redoubt' (on the hill above) about August (?), September (?) 1864. It was probably occupied by Taranaki Military Settlers. It is always referred in Garrison Order Books as 'Lower Kaitake Blockhouse', but the corner of a redoubt is shown drawn in on the site by W.Carrington in his fieldbook (10.7:page58) which dates from about 1865. (And see also the Wairau II blocksheet (45/4).</p>		
4. Owner Address	L. Mounsey, Wairau Rd, Oakura.	Tenant/Manager Address
Attitude	interested	Attitude
5. Methods and equipment used - Photographs taken: Yes/No (Describe on Photograph Record Form) Date recorded 8/6/1975		
6. Aerial photograph or mosaic No. 1788/7	Site shows: Clearly visible not at all	
7. Reported by Address	N.Prickett c/o Taranaki Museum, New Plymouth.	Filekeeper <i>29.10.75</i>
Date	8/8/1975	Date

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION		NZAA METRIC SITE NUMBER P19/45	
SITE RECORD FORM (NZMS 260)		DATE VISITED 17 June 2003	
Map number P19	Map name New Plymouth	SITE TYPE Blockhouse	SITE NAME: MAORI
Map edition 1		OTHER Lower Kaitake Blockhouse	
Grid Reference	Easting	<input type="text" value="9"/> <input type="text" value="3"/> <input type="text" value="4"/>	Northing
		<input type="text" value="2"/> <input type="text" value="9"/> <input type="text" value="7"/>	
1. Aids to relocation <i>attach a sketch map</i> : Upgraded map ref. and obtained GPS reading (see below)			
2. State of site and possible future damage: Invisible in cultivated paddock as recorded in 1975.			
3. Description of site <i>(supply full details, history, local environment, references, sketches, etc. If extra sheets are attached include a summary here)</i> :			
4. Owner Address		Tenant/Manager Address	
5. Nature of information <i>(hearsay, brief or extended visit, etc)</i> : Brief visit to upgrade record of location and condition Photographs <i>(reference numbers)</i> : Aerial photographs <i>(reference numbers and clarity of site)</i> :			
6. Reported by: Nigel Prickett Address Auckland Museum Private Bag 92018 AUCKLAND		Filekeeper Date  29/12/2003	
7. Keywords: Taranaki; New Zealand Wars; redoubt; militia			
8. New Zealand Register of Archaeological Sites <i>(for office use)</i> NZHPT Site Field Code			
Latitude S 39 07 53.7		Longitude E 173 57 53.3	
<input type="text"/>	Type of site	<input type="text"/>	Present condition and future danger of destruction
<input type="text"/>	Local Environment today	<input type="text"/>	Security code
<input type="text"/>	Land Classification	<input type="text"/>	Local body

2017

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION SITE RECORD FORM (NZMS260) NZMS 260 map number P19 NZMS 260 map name NZMS 260 map edition		NZAA METRIC SITE NUMBER P19/45 DATE VISITED 15.03.05 SITE TYPE Blockhouse SITE NAME: MAORI OTHER Lower Kaitake Blockhouse	
Grid Reference Easting 2593464 Northing 6229779			
1. Aids to relocation of site (attach a sketch map) The location of the lower Kaitake Blockhouse has not been confirmed by archaeological survey. A 'spaghetti' survey using a fluxgate radiometer in the vicinity of the historically known position revealed two elongated anomalies, which are interpreted as likely filled in ditches from the earthworks associated with the Blockhouse. A slumped area along the road cuttings for Wairau Road confirmed this interpretation. After cleaning off a section it became obvious that the slumping occurred in an area of a filled-in corner of a ditch. Taranaki 2000 coordinates are E 377260 N 800250.			
2. State of site and possible future damage It appears much of the site has been bulldozed especially at the eastern side. Part of the western side has been damaged by the road cutting			
3. Description of site (full details, history, local environment, references, sketches) The lower Kaitake Blockhouse was occupied during 1864-5. Further archaeological features include a shallow filled-in pit close by and a pit, which is possibly a rubbish pit connected to the Blockhouse. Small uneven features on the ground, together with reading irregular anomalies on the gradiometer suggest the probable extent of the site is about 50 meters downhill from the filled-in ditch. Tent platforms, whare, rubbish pits and rifle pits can be expected in this part of the site outside the earthworks of the blockhouse. Part of the ditch was observed by a land surveyor and noted in his fieldbook sometime during the 1880s.			
4. Owner Address Pt Lot 2 DP 12103 JL Tompkins		Tenant/Manager Address	
5. Nature of information Walk over and geophysical survey Photographs Aerial photographs			
6. Reported by Address Geometria 111 Newton Rd, Newton, Auckland		Filekeeper Date	
7. Keywords			
8. New Zealand Register of Archaeological Sites (for office use) NZHPT Site Field Code			
Latitude S		Longitude E	
<input type="checkbox"/> Type of site		<input type="checkbox"/> Present condition & future danger of destruction	
<input type="checkbox"/> Local environment today		<input type="checkbox"/> Security code	
<input type="checkbox"/> Land classification		<input type="checkbox"/> Local body	

2/18/16

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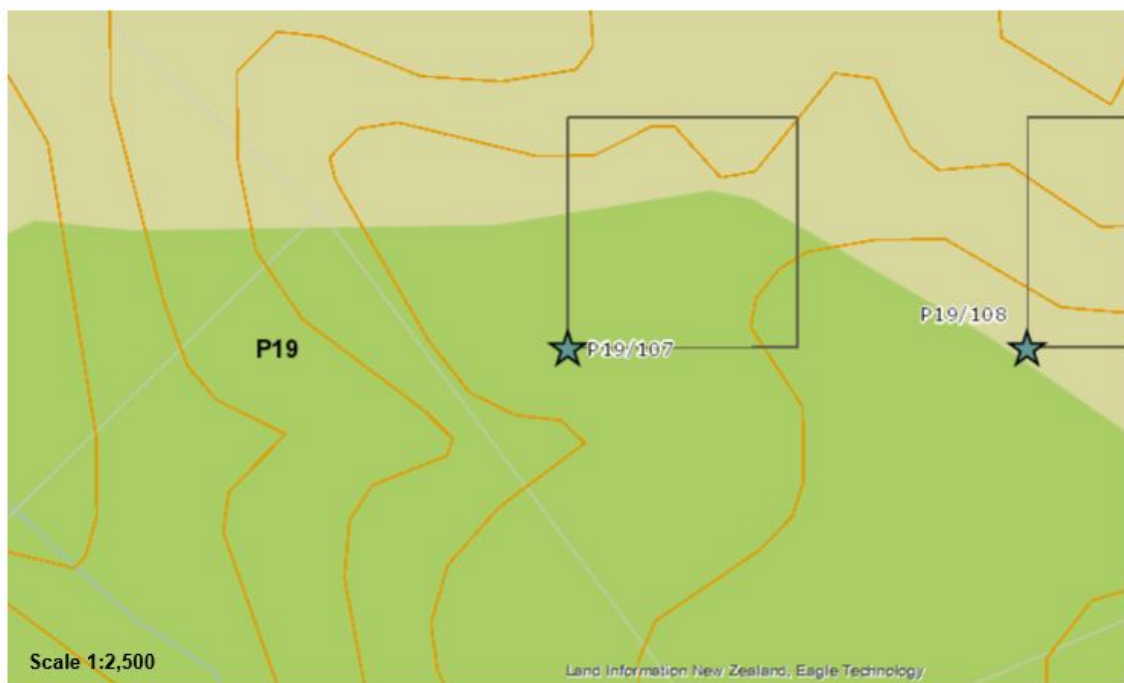
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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

 <p>Site Record Form</p>	<p>NZAA SITE NUMBER: P19/107</p>
	<p>SITE TYPE: Pa</p> <p>SITE NAME(s):</p> <p>DATE RECORDED:</p>

SITE COORDINATES (NZTM) Easting: 1682723 **Northing:** 5667540 **Source:** CINZAS

IMPERIAL SITE NUMBER: N108/140 **METRIC SITE NUMBER:** P19/107



<p>Finding aids to the location of the site</p>
<p>Brief description</p>
<p>Recorded features</p>
<p>Other sites associated with this site</p>

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: P19/107
<p>Site description</p> <p>Condition of the site</p> <p>Statement of condition</p> <p>Current land use:</p> <p>Threats:</p>	

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: P19/107
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Supporting documentation held in ArchSite

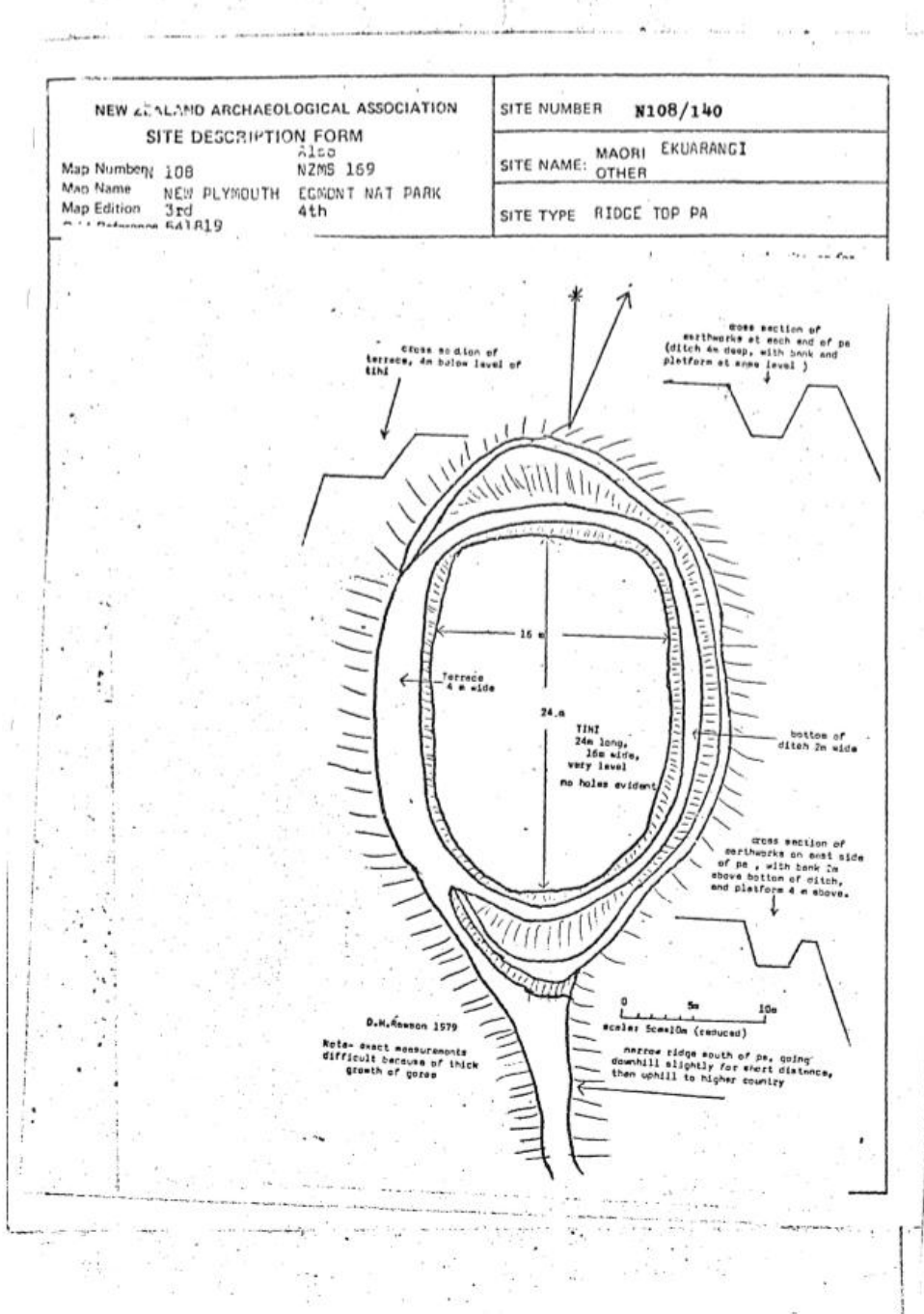
NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION SITE RECORD FORM (NZMS1) NZMS 1 map number N 108 NZMS 1 map name NEW PLYMOUTH EGDMONT NAT PARK NZMS 1 map edition 3rd Also NZMS 169 4th	NZAA NZMS 1 SITE NUMBER N108/140 DATE VISITED 28 August 1979 SITE TYPE RIDGE TOP PA SITE NAME: MAORI EKURANGI OTHER												
Grid Reference Easting <u>1 5 4 1 0 0</u> Northing <u>3 8 1 9 0 0</u>													
1. Aids to relocation of site (<i>attach a sketch map</i>) From end of WAIRAU road, follow fence line on Egmont National Park boundary to west, then climb up second ridge. This is about 200m west of water intake on WAIRAU stream. A slash should be taken.													
2. State of site and possible future damage Site is well preserved. No probable future damage by human activity. However, site will eventually be smothered in regenerating native bush and possibly exotic pines self sown, unless kept clear. Any holes filled in by leaf mould etc.													
3. Description of site (<i>Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here</i>) No history known. Noted on WAIRAU AND CAPE S.D. Cadestral map 1940, at TRIG LODNEY 719 feet (approx 216m). Area was originally clear since very early days. In 1932 planted with exotics. Killed 1960s-1970s. Great care obviously taken to preserve site. Pines planted on tihī and on ramparts, but absolutely no damage from milling or bulldozers. Site is densely covered with gorse, plus some young seeded pines, with indigenous growth emerging. Some shattered fire stones in evidence. Whole surrounding area down to park boundary covered thickly with gorse, fallen pines, some young pines, and emerging indigenous growth. I feel the pa site should be kept clear of growth, to prevent large trees eventually breaking slopes and banks. Survey peg not seen on visit - probably buried in pine needles and other debris. Site is on ridge with steep sides, on a knoll, with a narrow ridge sloping downhill to south for short distance, and then climbing to generally higher country. Pa is semicircumvallated with fosse and rampart, with terrace on west side.													
4. Owner Egmont National Park Board, Address P.O. Box 43, New Plymouth	Tenant/Manager Address												
5. Nature of information (<i>hearsay, brief or extended visit, etc.</i>) C adastral map WAIRAU AND CAPE S.D. plus personal visit. Photographs (<i>reference numbers, and where they are held</i>) Aerial photographs (<i>reference numbers, and clarity of site</i>) not visible on air photographs, which show area covered with exotic pines.													
6. Reported by D.H. Rawson Address B Woodleigh Street, New Plymouth	Filekeeper Date <i>Phu</i> 13.10.79												
7. Key words RAMPART FOSSE TERRACE													
8. New Zealand Register of Archaeological Sites (<i>for office use</i>) NZHPT Site Field Code													
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>A</td><td>D</td></tr> <tr><td>-</td><td>-</td></tr> <tr><td>P</td><td>S</td></tr> </table> Type of site Local environment today Land classification	A	D	-	-	P	S	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>H</td><td>A</td></tr> <tr><td>A</td><td>A</td></tr> <tr><td>G</td><td>W</td></tr> </table> Present condition and future danger of destruction Security code Local body	H	A	A	A	G	W
A	D												
-	-												
P	S												
H	A												
A	A												
G	W												

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION



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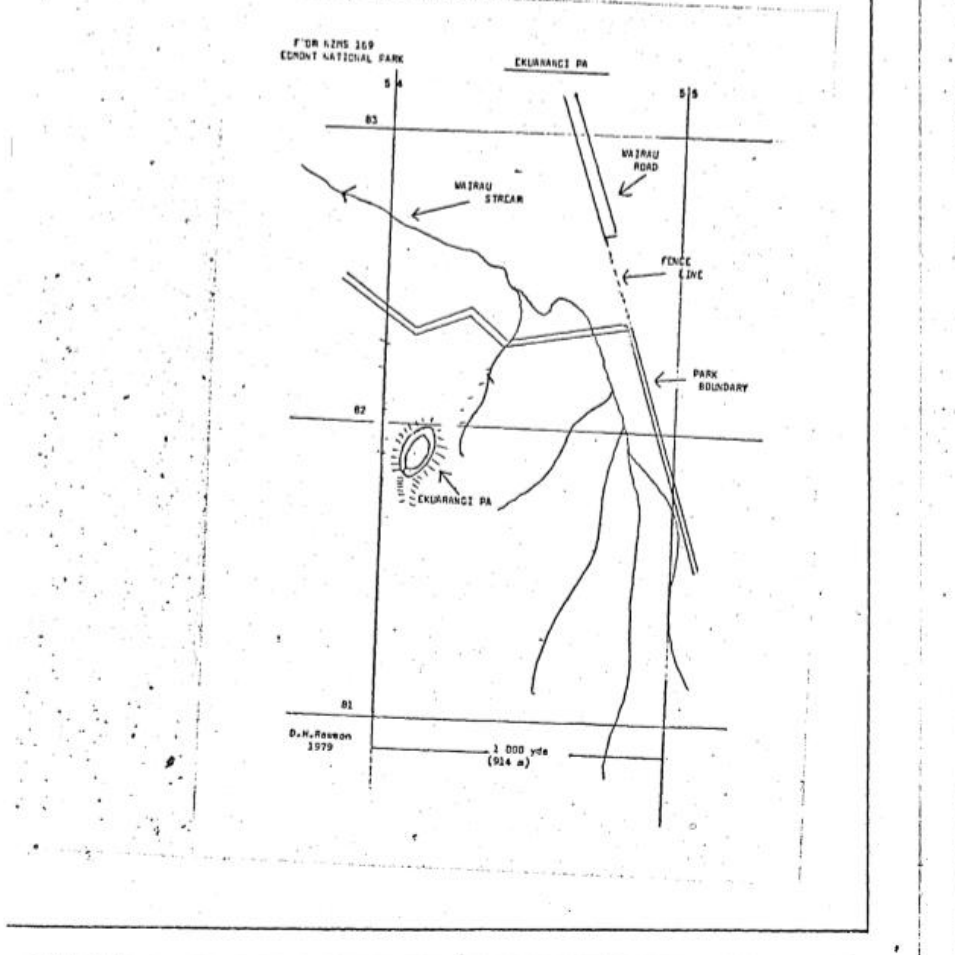
22/03/2017

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION		SITE NUMBER	N108/140
SITE DESCRIPTION FORM		SITE NAME:	MAORI EKURANGI OTHER
Map Number	108	Also NZMS	169
Map Name	NEW PLYMOUTH	EGMONT NAT PARK	
Map Edition	3rd	4th	
Grid Reference	541819		
		SITE TYPE	RIDGE TOP PA

(This form may be used for recording any descriptive information or other supplementary information on the site, or for maps)

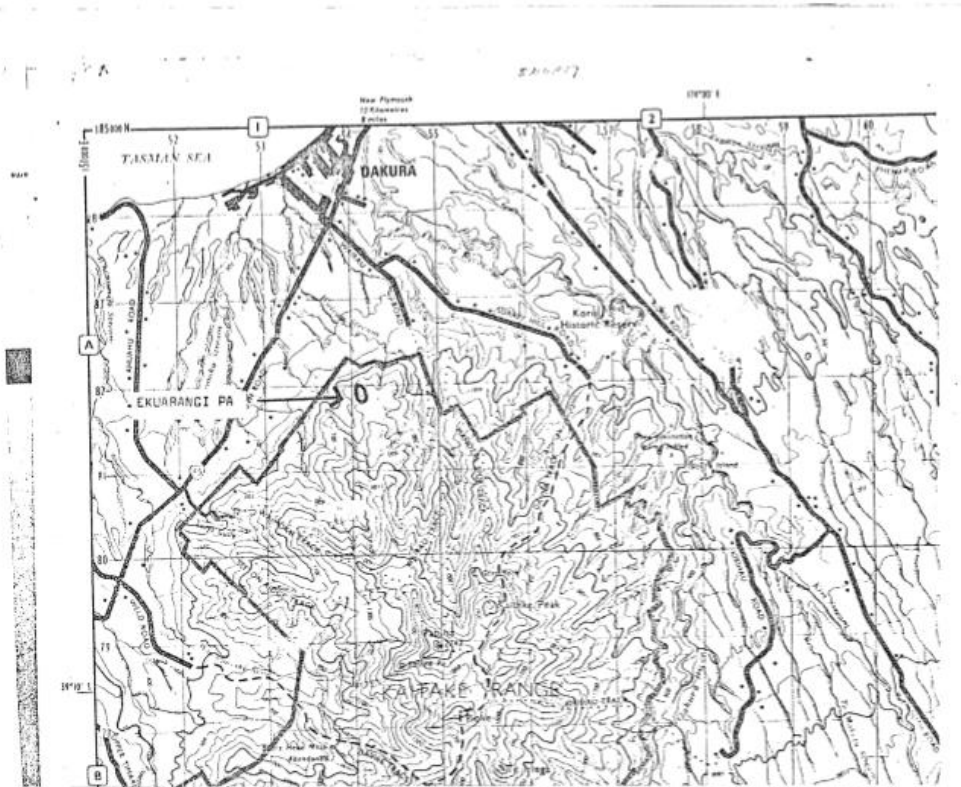


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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION


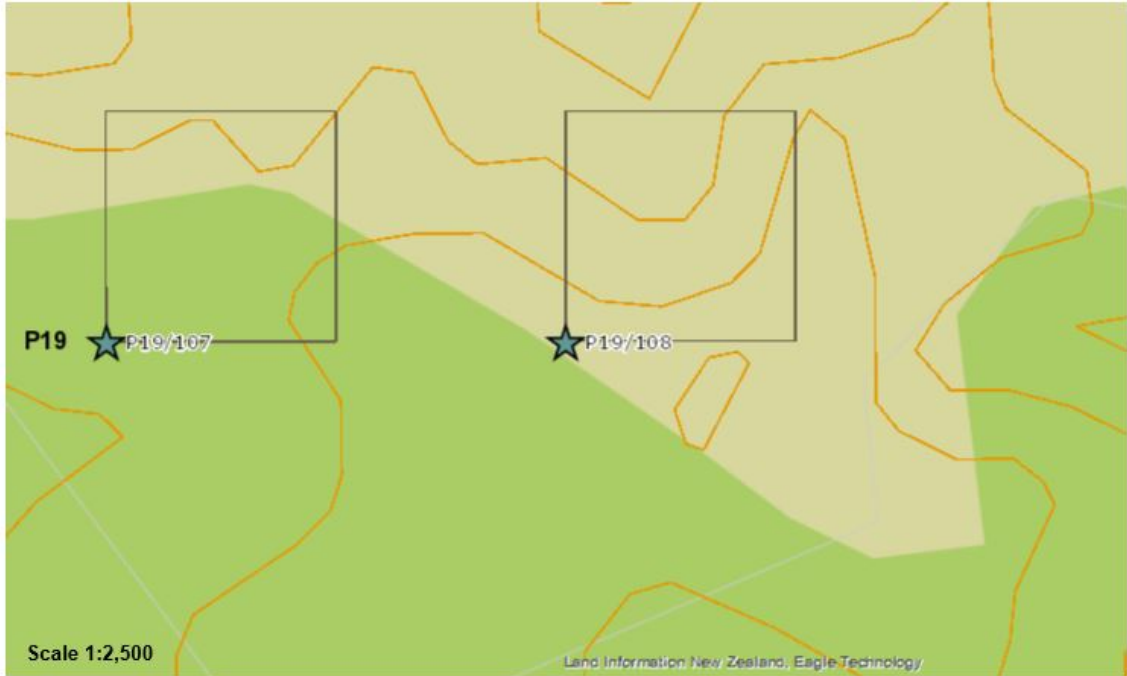


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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

 <p>Site Record Form</p>	<p>NZAA SITE NUMBER: P19/108</p> <p>SITE TYPE: Pa</p> <p>SITE NAME(s): Tamarau Te Reri</p> <p>DATE RECORDED:</p>
<p>SITE COORDINATES (NZTM) Easting: 1682923 Northing: 5667541 Source: CINZAS</p>	
<p>IMPERIAL SITE NUMBER: N108/141 METRIC SITE NUMBER: P19/108</p>	
 <p>Scale 1:2,500</p> <p>Land Information New Zealand, Eagle Technology</p>	
<p>Finding aids to the location of the site</p> <p>From top of Wairau Rd follow fence line to Egmont National Park boundary; follow fence line around boundary over Wairau stream by Oakura water supply intake. Follow up ridge for 200m.</p>	
<p>Brief description</p> <p>Ridge top pa. Destroyed by British troops March/April 1864.</p>	
<p>Recorded features</p>	
<p>Other sites associated with this site</p>	

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1 of 5

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: P19/108
Site description Condition of the site Statement of condition Current land use: Threats:	

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: P19/108
------------------------------	----------------------------------

Supporting documentation held in ArchSite

<p>NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION</p> <p>SITE RECORD FORM (NZMS1)</p> <p>NZMS 1 map number N 108 NZMS 1 map name NEW PLYMOUTH NZMS 1 map edition 3rd</p> <p style="font-size: small;">Also NZMS 169 EGDMONT NAT PARK 4th</p>	<p>NZAA NZMS 1 SITE NUMBER N108/141</p> <p>DATE VISITED 19 August 1979</p> <p>SITE TYPE RIDGE TOP PA</p> <p>SITE NAME: MAORI *TAPARAU-TE-RERI OTHER *As spelt by W.H.Skinner (Not TAMARAU-TE-RERE)</p>												
<p>Grid Reference Easting <u>1 5 4 4 0 0</u> Northing <u>3 8 1 9 0 0</u></p>													
<p>1. Aids to relocation of site (attach a sketch map) From top of Wairau road, follow fence line to Egmont National Park boundary; follow fence line around boundary over Wairau stream by Oskure water supply intake. Follow up ridge for 200 metres.</p>													
<p>2. State of site and possible future damage Site of pa completely ruined by planting of exotic pines in 1932, followed by milling (with bulldozers) in 1950s, 1960s and early 1970s. Site of associated kainga (GR 545824) mainly destroyed by farming activities.</p>													
<p>3. Description of site (Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here) Pa site completely unrecognisable. A few unnatural looking earth disturbances but nothing definite. (Form deposited for record purposes only). Pa is on ridge with steep sides and steep frontage facing flat land to north, (Ridge rises abruptly from flat land). Pa site covered with thick growth of gorse, indigenous regrowth and fallen exotic pines. Associated kainga on flat land immediately below ridge on double bend of stream consists of grove of karaka trees, with numerous shattered oven stones lying on shallow banks. Earthworks on adjacent higher ground 5-10 metres above stream almost completely erased by farming activities. Kainga is just outside park boundary.</p> <p>In 1860s large area below this section of park boundary covered with Maori grown maize crops. Destroyed by British troops. (Some still in maize)</p> <p style="font-size: small;">(Maori Apr 1864)</p> <p>Height of pa above sea level is approximately 170m.</p>													
<p>4. Owner Egmont National Park Board Tenant/Manager Address P.O. Box 43, Address New Plymouth Plus lessee of kainga area- J.K.Parrish, 851, Main South Road, Oskure</p>													
<p>5. Nature of information (hearsay, brief or extended visit, etc.) Cedestral map WAIRAU plus field survey book of W.H.Skinner Field Book 374, page 48 Photographs (reference numbers, and where they are held) Plus personal visit Aerial photographs (reference numbers, and clarity of site) Plus Taranaki Herald Mar-Apr 1864 Keraka grove clear on 1789/9 and 4339/7</p>													
<p>6. Reported by D.H.Rewson Filekeeper Address 8 Woodleigh Street Date New Plymouth</p>													
<p>7. Key words Pa site- irregular ground disturbances kainga- keraka grove and fire stones</p> <p style="text-align: right; margin-right: 50px;"><i>Photo 13.10.79</i></p>													
<p>8. New Zealand Register of Archaeological Sites (for office use) NZHPT Site Field Code</p>													
<table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; padding: 2px;">B A</td> <td style="padding: 2px;">Type of site</td> <td style="border: 1px solid black; padding: 2px;">C D</td> <td style="padding: 2px;">Present condition and future danger of destruction</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">- -</td> <td style="padding: 2px;">Local environment today</td> <td style="border: 1px solid black; padding: 2px;">A A</td> <td style="padding: 2px;">Security code</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">A S</td> <td style="padding: 2px;">Land classification</td> <td style="border: 1px solid black; padding: 2px;">G W</td> <td style="padding: 2px;">Local body</td> </tr> </table>		B A	Type of site	C D	Present condition and future danger of destruction	- -	Local environment today	A A	Security code	A S	Land classification	G W	Local body
B A	Type of site	C D	Present condition and future danger of destruction										
- -	Local environment today	A A	Security code										
A S	Land classification	G W	Local body										

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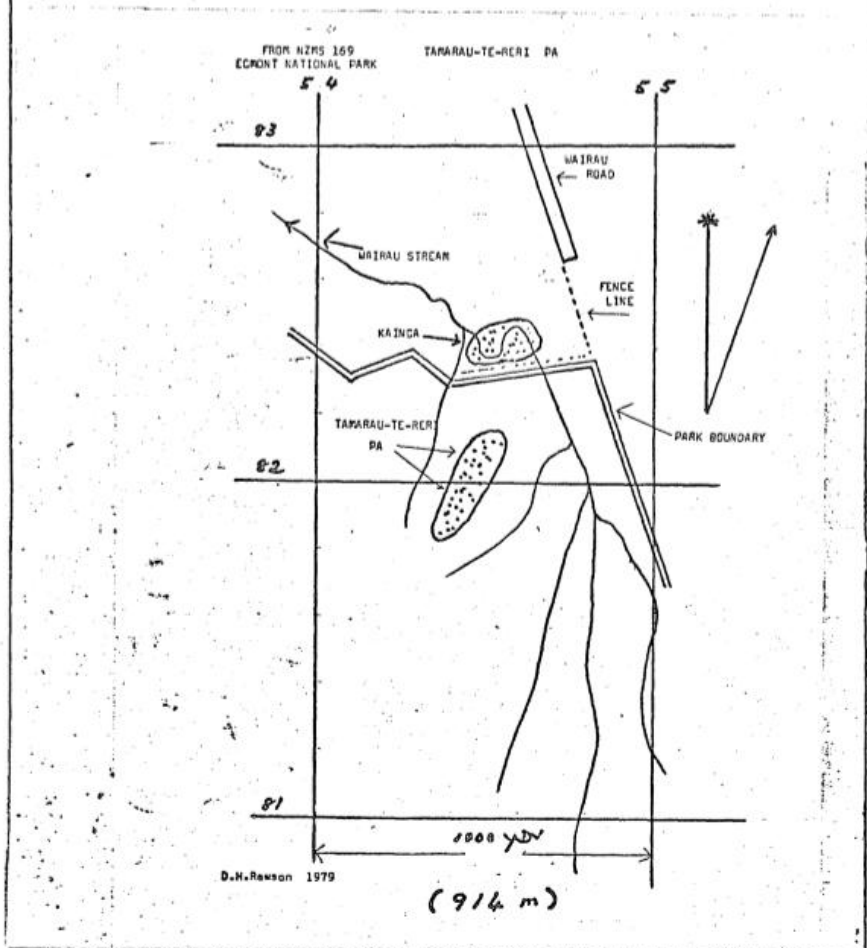
22/03/2017

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION SITE DESCRIPTION FORM Also Map Number N 108 Map Name NEW PLYMOUTH Map Edition 3rd Grid Reference 544019	NZMS 169 EGMONT NAT PARK 4th	SITE NUMBER N108/141
		SITE NAME: MAORI TAMARAU-TE-RERI OTHER
		SITE TYPE RIDGE TOP PA (and associated kainga)

(This form may be used for recording any descriptive information or other supplementary information on the site, or for maps and drawings.)

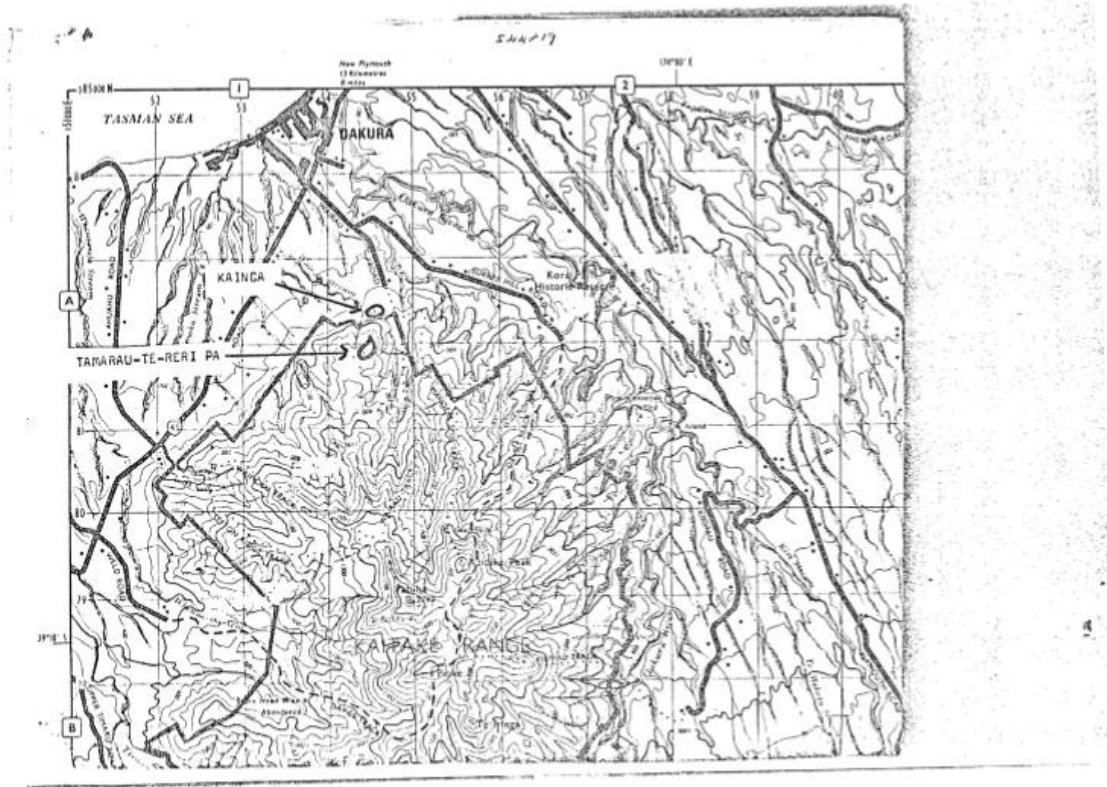


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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

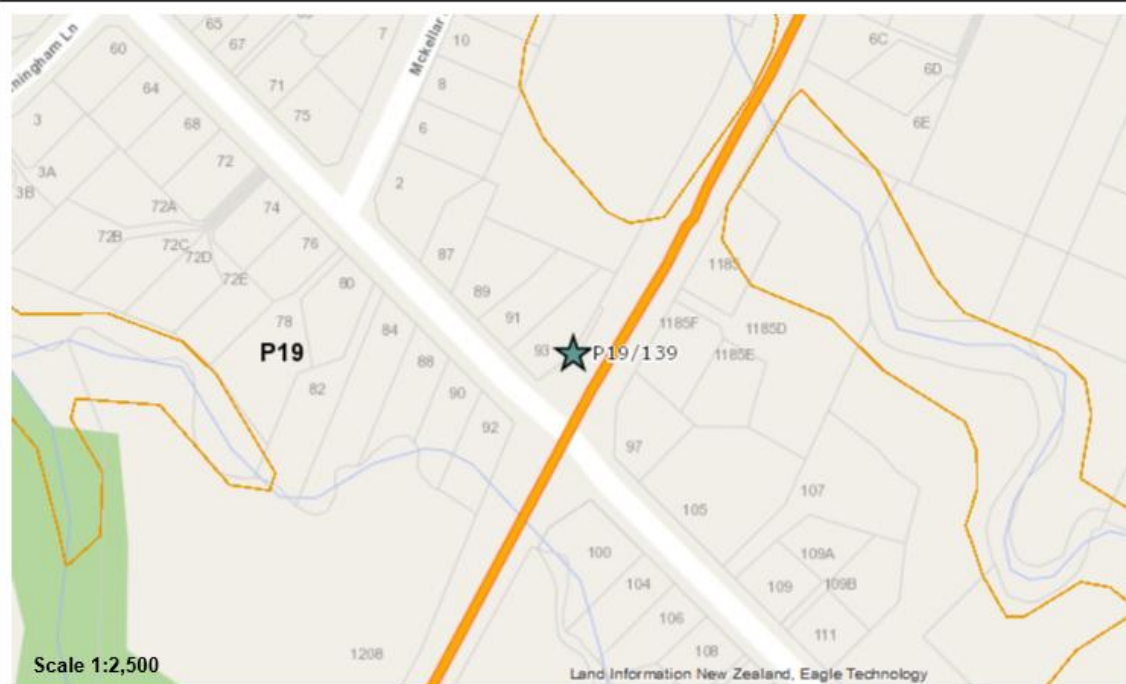


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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

**Site Record Form****NZAA SITE NUMBER:** P19/139**SITE TYPE:** Pit/Terrace**SITE NAME(s):****DATE RECORDED:****SITE COORDINATES (NZTM) Easting:** 1682507**Northing:** 5669454**Source:** On Screen**IMPERIAL SITE NUMBER:** N108/174**METRIC SITE NUMBER:** P19/139**Finding aids to the location of the site**

Recorded in 1981 in road section about 20m from Wairau Road/Main South Road corner.
Located on the seaward side of the SH 45 to the north east of the intersection.

Brief description

Two rua visible in road section.

Recorded features

Pit - bell

Other sites associated with this site

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY

NZAA SITE NUMBER: P19/139

Site description

Updated 16/02/2015 (Field visit), submitted by ivanbruce, visited 16/02/2015 by Bruce, Ivan
Grid reference (E1682507 / N5669454)

The two rua were originally exposed in the section caused by the road cutting. This has now grassed over, but the pits will remain in similar condition under the grass cover. Original and modern photographs of the site are included in the attached document

Condition of the site

Updated 16/02/2015 (Field visit), submitted by ivanbruce, visited 16/02/2015 by Bruce, Ivan

Grassed over and not visible to surface inspection. likely in same condition as recorded under the grass cover, further features cannot be discounted under the current housing.

The two rua were not found, although vegetation could be obscuring these features. The GPS location was taken from the general roadside area. Erosion or possibly road-side maintenance/modification may have affected the area in question

Statement of condition

Updated: 22/05/2016, Visited: 16/02/2015 - Fair - Some intact features, but others may be unclear or damaged

Current land use:

Updated: 22/05/2016, Visited: 16/02/2015 - Road reserve

Threats:

Updated: 22/05/2016, Visited: 16/02/2015 - Road/ track formation or maintenance

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29/03/2017

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: P19/139
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Supporting documentation held in ArchSite

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION SITE RECORD FORM (NZMS1)		NZAA NZMS 1 SITE NUMBER N108/174. DATE VISITED December 1980 SITE TYPE RUAS SITE NAME: MAORI OTHER
NZMS 1 map number N108 NZMS 1 map name NEW PLYMOUTH NZMS 1 map edition 3rd, 1970		
Grid Reference Easting 1 5 3 7 0 0	Northing 3 8 3 9 0 0	
1. Aids to relocation of site (<i>attach a sketch map</i>) Oakura. Corner South Road and Wairua Road. Exposed in section.		
2. State of site and possible future damage Exposed in road cutting. House on site.		
3. Description of site (<i>Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here</i>) Two rua. One slightly wider at the base than at the neck; the other with a marked bell shape. See attached photo.		
4. Owner Address	Tenant/Manager Address	
5. Nature of information (<i>hearsay, brief or extended visit, etc.</i>) Photographs (<i>reference numbers, and where they are held</i>) Aerial photographs (<i>reference numbers, and clarity of site</i>)		
6. Reported by Address	A. Walton	Filekeeper Date [Signature] 28-1-81
7. Key words		
8. New Zealand Register of Archaeological Sites (<i>for office use</i>) NZHPT Site Field Code		

C	P	Type of site
A	T	Local environment today

B	B	Present condition and future danger of destruction
A	A	Security code
G	W	



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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY

NZAA SITE NUMBER: P19/139

Site description

Updated 16/02/2015 (Field visit), submitted by ivanbruce, visited 16/02/2015 by Bruce, Ivan
Grid reference (E1682507 / N5669454)

The two rua were originally exposed in the section caused by the road cutting. This has now grassed over, but the pits will remain in similar condition under the grass cover. Original and modern photographs of the site are included in the attached document

Condition of the site

Updated 16/02/2015 (Field visit), submitted by ivanbruce, visited 16/02/2015 by Bruce, Ivan

Grassed over and not visible to surface inspection. likely in same condition as recorded under the grass cover, further features cannot be discounted under the current housing.

The two rua were not found, although vegetation could be obscuring these features. The GPS location was taken from the general roadside area. Erosion or possibly road-side maintenance/modification may have affected the area in question

Statement of condition

Updated: 22/05/2016, Visited: 16/02/2015 - Fair - Some intact features, but others may be unclear or damaged

Current land use:

Updated: 22/05/2016, Visited: 16/02/2015 - Road reserve

Threats:

Updated: 22/05/2016, Visited: 16/02/2015 - Road/ track formation or maintenance

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NZAA – Archsite – Site Upgrade

Additional Information – P19/139

Ivan Bruce, Archaeological Resource Management, November 2014


<p>3. Description of site (Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here)</p> <p>Two rua. One slightly wider at the base than at the neck; the other with a marked bell shape. See attached photo.</p>	
	
<p>4. Owner Address</p>	<p>Tenant/Manager Address</p> <p>COPY</p>

Figure 1: Extract from a paper copy of the NZAA SRF in my own files of P19/139 showing a sketch map of the location of the recorded pits. The sketch map is not included in the central file. Possibly this was a later addition to the SRF made by the Taranaki file keeper to the local file (A. Buist) to clarify Walton's location that was not passed on to the central file.



Figure 2: Scanned paper copy of Tony Walton's photograph of the location of the site P19/139 taken circa 1981.



Plate 1: Same location in 2015, same house still in place with roadside cutting containing the storage pits now fenced.





Plate 2: Same location in 2015, Photographed from north east of the Wairau Road Intersection



Plate 3: Same location in 2015, Photographed from south east side of the Wairau Road Intersection

33 SCOTT ST, MOTUROA, NEW PLYMOUTH
(0274) 888 215
(06) 75110645
itmustbesointeresting@xtra.co.nz

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION		
	Site Record Form	
	NZAA SITE NUMBER: P19/340 SITE TYPE: Pa SITE NAME(s): DATE RECORDED: 13/05/2010	
SITE COORDINATES (NZTM) Easting: 1682812 Northing: 5668686 Source: On Screen		
IMPERIAL SITE NUMBER: METRIC SITE NUMBER:		
		
Finding aids to the location of the site Site is located in a bush clad gully surrounded by farmlands and residential subdivision on the western side of Wairau Road and north of the council water tanks.		
Brief description A double unit ring ditch pa, defended by encircling ditch and bank, and three transverse terraces. Contains house platforms and open storage pits.		
Recorded features Ditch - ring, House floor/ site, Pit, Platform, Terrace		
Other sites associated with this site N/A		
Printed by: ivanbruce		29/03/2017 1 of 3

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY

NZAA SITE NUMBER: P19/340

Site description

Updated: 13/05/2010, Visited: 11/05/2010 - NZTM E1682812 / N5668686 (On Screen).

Situated on a narrow spur terminating at the intersection of a number of tributaries of the Wairau Stream. The pa is naturally defended on three flanks by steep gullies and swampy streams. Additional defences have been constructed in the form of encircling earthworks and deep transverse ditches.

Beside the defensive earthworks, the platforms of the pa contain obvious house terraces and numerous infilled and open storage pits. Cooking stones are abound across the site.

Inspected by: Bruce, Ivan.

Condition of the site

Updated: 13/05/2010, Visited: 11/05/2010 - The area of the pa under canopy is in excellent condition; ditch walls remain vertical and internal layout is clear. Open rua pits exist in rank grass on the headland south of the defenses; it is possible that further earthworks exist here under long grass.

Statement of condition

Updated: 12/11/2010, Visited: 11/05/2010 - Excellent – Visible features are intact and clearly defined

Current land use:**Threats:**

Updated: 12/11/2010, Visited: 11/05/2010 - Subdivision, Residential activities, Tree planting (other than forestry), Property development, Visitor impacts/ vandalism

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29/03/2017

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION



Site Record Form

NZAA SITE NUMBER: P19/379

SITE TYPE: Maori horticulture

SITE NAME(s):

DATE RECORDED: 08/11/2010

SITE COORDINATES (NZTM) Easting: 1682825 Northing: 5668750 Source: On Screen

IMPERIAL SITE NUMBER:

METRIC SITE NUMBER:



Finding aids to the location of the site

In paddock between Wairau Road and site P19/340.

Brief description

One large kumara pit and two smaller pits.

Recorded features

Pit

Other sites associated with this site

P19/340

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29/03/2017

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY

NZAA SITE NUMBER: P19/379

Site description

Updated: 08/11/2010, Visited: 27/10/2010 - NZTM E1682825 / N5668750 (On Screen).

Discovered following an investigation under authority.

Features were sampled after being exposed at surface. Exact dimensions could not be recorded. No visible surface features.

See NZHPT Authority Report 2010/443.

Inspected by: Bruce, Ivan.

Condition of the site

Updated: 08/11/2010, Visited: 27/10/2010 - Good condition subsurface. Infilled pit features. No surface visibility. Area has been ploughed.

Statement of condition

Updated: 12/11/2010, Visited: 27/10/2010 - Below surface - Surface evidence has been obliterated, however, there is likely to be subsurface material present. Note that this is different from a destroyed site.

Current land use:**Threats:**

Updated: 12/11/2010, Visited: 27/10/2010 - Subdivision

Updated: 12/11/2010, Visited: 27/10/2010 - Subdivision, Subdivision

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29/03/2017

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION



Site Record Form

NZAA SITE NUMBER: P19/380

SITE TYPE: Midden/Oven

SITE NAME(s):

DATE RECORDED: 18/11/2010

SITE COORDINATES (NZTM) Easting: 1683130

Northing: 5668089

Source: On Screen

IMPERIAL SITE NUMBER:

METRIC SITE NUMBER:



Finding aids to the location of the site

Site is located on western side of Wairau Road, below and north of the cell phone tower. Above and south west of the Kaitake Water Reservoir

Brief description

A single archaeological feature, consisting of an isolated scoop oven, was excavated during test excavations at this location.

Recorded features

Oven (intact), Ovenstones

Other sites associated with this site

P19/108, P19/340, P19/379

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27/03/2017

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: P19/380
<p>Site description Updated: 18/11/2010, Visited: 27/10/2010 - NZTM E1683130 / N5668089 (On Screen).</p> <p>The oval oven feature is shallow and broad measuring 2 long by 1m wide and had a maximum depth of 20cm. When exposed in half section a shallow, but near vertical scarp was revealed on the up slope side of the feature and it appears the oven was formed by excavating a shallow scoop into the flank of the hill. A quantity of fire cracked rock was encountered in secondary context at the location during topsoil stripping.</p> <p>Inspected by: Bruce, Ivan.</p> <p>Condition of the site Updated: 18/11/2010, Visited: 27/10/2010 - This feature has now been completely removed as a result of the excavation.</p> <p>Statement of condition Updated: 24/11/2010, Visited: 27/10/2010 - Destroyed - Evidence must be providedThe area appears to have been heavily ploughed in the past and only the base of this feature has survived.</p> <p>Current land use:</p> <p>Threats: Updated: 24/11/2010, Visited: 27/10/2010 - Subdivision</p>	

Appendix 7 Ecological Assessment

Ecological Values and Impact Assessment: Wairau Stream, Wairau Estate subdivision, Oakura.



July 2017



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Ecological Values and Impact Assessment: Wairau Stream, Wairau Estate subdivision, Oakura.

July 2017

Document version history

Date	Version	Approval
21 July 2017	Draft v1	Cees Bevers
26 July 2017	Final v2	Cees Bevers

This report may be cited as:

Oecologico. 2017. Ecological Values and Impact Assessment: Wairau Stream, Wairau Estate subdivision, Oakura. July 2017. New Plymouth, New Zealand.

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Prepared for:

Oakura Farm Park Ltd

Prepared by:
Oecologico Ltd
Cees Bevers
Ecologist



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1. Background

It is proposed that the balance 58ha of the Oakura Farm Park Ltd dairy farm located between South Rd (State Highway 45), Wairau Rd and the Kaitake Ranges, immediately south of Oakura township be developed for residential and equestrian lifestyle use, after a publicly notified statutory private plan change process (Comber Consultancy *et. al.* 2016).

The current proposal, to be known as “Wairau Estate”, outlines subdivision of the approximately 58ha balance area into approximately 300 residential and 12 to 14 equestrian lifestyle lots of varying size, with protected riparian zones around the central and southern tributaries of the Wairau Stream, and additional enhancement planting with native plants.

In 2010 Oakura Farm Park Ltd sought and obtained consent for the “The Paddocks” subdivision and development of a portion of the then 84ha Oakura Farm Park Ltd. land holding for rural-residential lifestyle, which has been carried out. This initial phase of development included a 26 lot “cluster style” subdivision of rural/residential lots, an 8.5ha covenanted area of bush and revegetation strategy area, a 20m wide esplanade strip along the south side of the northern most tributary of the Wairau Stream on the property, approximately 1.5ha in size. This left a balance area of 58ha, which has remained in use as a dairy farm in the interim.

As part of this first phase of subdivision, Oecologico Ltd. carried out extensive ecological work to identify ecological values, and asses any potential ecological impacts. This work is extensively reported on in Oecologico 2010a, 2010b, and 2010c.

2. Scope of this report

Under Part 2 of the Resource Management Act (1991), the “preservation of the natural character of.....wetlands,...., and rivers and their margins, and the protection of them from inappropriate subdivision, use and development” is a matter of national importance (Section 6(a) RMA 1991). Accordingly, this report by Oecologico Ltd. assesses the ecological values and asses any potential ecological impacts of the remaining tributaries central and southern tributaries of the Wairau Stream on the 58ha Oakura Farm Park Ltd dairy farm between South Rd (SH 45) and Wairau Rd, Oakura.

Specifically, this work includes:

- i) Wetland bird survey of the central tributary of the Wairau Stream.
- ii) Fish spotlight survey of the central and southern tributaries of the Wairau Stream.
- iii) An assessment of the potential ecological impacts associated with development of the proposed subdivision.
- iv) Input on the planting strategy from an ecological perspective.

3. Site visits

For site orientation, please refer to the concept drawings in Comber Consultancy *et. al.* (2016).

A site visit was made on Wednesday 15th of March 2017 by Oecologico's ecologist Cees Bevers for. A "walk-through" ecological assessment was carried out visually, and took approximately 3 hours on-site. Both the central and southern tributaries of the Wairau Stream on the property were followed and observed. A wetland bird call playback survey was also carried out on the central tributary of the Wairau Stream, where suitable habitat for wetland birds was found.

A second site visit was carried out on the evening of Tuesday 21st of March 2017, in order to carry out a fish spot-light survey on both the central and southern tributaries of the Wairau Stream.

A final third site visit, with members of the project team, was carried out on Friday 12th of May, 2017, for a site meeting to assess potential stormwater retention areas. The large pond and associated re-vegetation plantings near South Road, and between the two tributaries of the Wairau Stream was also viewed.

4. Ecological Values

Vegetation, birdlife, and freshwater fish are dealt with in this section. No targeted invertebrate, or herpetological survey work was carried, being beyond the scope of this ecological assessment.

4.1. Vegetation

Central tributary of the Wairau Stream

The central tributary of the Wairau Stream contains remnant native vegetation and a variety of exotic weed species, which is restricted to the narrow gullies within which it is located, and is surrounded by farmland pasture. The native vegetation is generally of scattered trees and young plants, and wetland plants. Dominant species include mamaku tree fern (*Cyathea medullaris*), mahoe (*Meliclytus ramiflorus*), kamahi (*Weinmannia racemosa*), karo (*Pittosporum crassifolium*), a single rimu (*Dacrydium cupressinum*), karma (*Coprosma robusta*), kawakawa (*Macropiper excelsum*), raupō (*Typha orientalis*), flax (*Phormium tenax*), cutty grass (*Carex geminata*), pūkiō (*Carex secta*), kiokio fern (*Blechnum novae zelandiae*), and the common rush wiwi (*Juncus edgariae*).

Exotic plants found in, or adjacent to the central tributary of the Wairau Stream include gorse (*Ulex europaeus*), crack willow (*Salix fragilis*), cherry tree (*Prunus serrulata*), Scotch thistle (*Cirsium vulgare*), convolvulus (*Convolvulus arvensis*), woolly nightshade (*Solanum mauritianum*), Tasmanian blackwood (*Acacia melanoxylon*), ragwort, an unidentified *Eucalyptus sp.* tree, bamboo, wandering willie (*Tradescantia fluminensis*), sweetgum (*Liquidambar styraciflua*), kahili ginger

(*Hedychium gardnerianum*), sycamore (*Acer pseudoplatanus*), Chilean rhubarb (*Gunnera tinctoria*), and inkweed (*Phytolacca octandra*).

Significant areas of habitat in the central tributary include several reasonably large raupō beds, in both arms of the stream, and lower down (Fig.'s 1-3). The upper two arms are in rushes and gorse, and are currently grazed by dairy cows (Fig.'s 4 & 5).



Figure 1: Mamaku (tree fern) and raupō bed in the lower section central tributary of the Wairau Stream.



Figure 2: Upper section of the central tributary of the Wairau Stream with gorse, mamaku and a raupō bed.



Figure 3: Large raupō bed with some gorse in upper section of the central tributary of the Wairau Stream.



Fig. 4: Top-most section of the central tributary of the Wairau Stream with a large rush bed and some gorse, under grazing.



Fig. 5: Southern arm of the central tributary of the Wairau Stream with a large rush bed and some gorse, under grazing.

Southern tributary of the Wairau Stream

The southern tributary of the Wairau Stream has a narrow incised channel, and is a fast flowing stream with a rocky bed. This stream is fenced off from farm stock, and has had its riparian edges planted out with native vegetation, with some species having also naturally colonised the area. The species include; akeake (*Dodonaea viscosa*), flax, mountain flax (*Phormium cookianum* subsp. *hookeri*), toe toe (*Austroderia* sp.; there are several similar looking species), pampas (*Cortaderia selloana*), cabbage tree (*Cordyline australis*), broadleaf (*Grisolinea littoralis*), taupata (*Coprosma repens*), koromiko (*Veronica stricta*), kohuhu (*Pittosporum tenuifolium*), lemonwood (*Pittosporum eugenioides*), five-finger (*Pseudopanax arboreus*), pohutukawa (*Metrosideros excelsa*), mamaku, and ribbonwood (*Plagianthus regius*).

Exotic plants found in, or adjacent to the southern tributary of the Wairau Stream include; gorse, montbretia (*Crocsmia x crocosmiiflora*), chilean rhubarb, and brush wattle (*Paraserianthes lophantha*).



Figure 6: Lower reach of the southern tributary of the Wairau Stream, showing rocky stream bed and swift flow.



Figure 7: Southern tributary of the Wairau Stream with some plantings, rank grass, and scattered gorse.



Figure 9: Middle reach of the southern tributary of the Wairau Stream with extensive native plantings and gorse.



Figure 9: Upper reach of the southern tributary of the Wairau Stream with extensive native plantings and gorse.

Pond between tributaries

A man-made pond is found adjacent to the South Road (SH 45) boundary, between the two tributaries of the Wairau Stream. This is surrounded by plantings of flax, cabbage trees and pohutukawa (Fig. 10). Some weeds such as gorse and woolly nightshade are also present.



Figure 10: The man-made pond adjacent to South Road (SH 45), between the two tributaries of the Wairau Stream, planted with flax and cabbage trees.

4.2. Birds

A wetland bird call playback survey was carried out on Wednesday 15th of March 2017 by Cees Bevers. Playback call surveys are useful for monitoring bird species in dense wetlands, and where the species is shy and secretive (Bibby *et. al.* 2005).

Wetland bird survey methods

The survey was carried out along the entire central tributary of the Wairau Stream, which was walked for its entire length in an upstream direction, as this was the only suitable habitat.

An Apple iPod MP3 player, connected to a small amplified 10W 8OHM outdoor weatherproof speaker with a 12V battery, was used to play short (20 to 40 seconds) calls of spotless crake (*Porzana tabuensis*), marsh crake (*Porzana pusilla*), Australasian bittern (*Botaurus poiciloptilus*) and fernbird (*Bowdleria punctata*). Based on the local knowledge of Cees Bevers, bird distribution maps and distribution descriptions in Heather and Robertson (1996), these species were thought to be potentially present on-site in the raupō beds. Occasionally the calls of other species can also illicit a response from birds.

The four bird calls were played consecutively, with a silent period of at least one minute between each call. Calls were played whilst standing still quietly, approximately every 100m to 150m, depending on the topography within the gullies, distances between stream bends, and ability to see open areas of habitat these birds were likely to use. The observer generally stood as close as practicable to suitable habitat, where vegetation density and terrain allowed access. This habitat included beds of raupō (*Typha orientalis*), the common native sedge pūkio (*Carex secta*), the native common rush (*Juncus gregiflorus*), or wiwi.

Playback calls were played between approximately 11:00am and 12:00pm, from a total of six vantage points along the survey route. Care was taken to walk between suitable vantage points quietly.

Results

None of the target species of the wetland bird species were recorded during the wetland bird survey. Several pukeko (*Porphyrio porphyrio*) responded to the playback calls.

Other native birds heard and/or seen during the wetland bird call playback survey include, Australasian harrier (*Circus approximans*), fantail (*Rhipidura fuliginosa*), grey warbler (*Gerygone igata*), and kingfisher (*Halcyon sancta*). None of these species are classified as threatened in the New Zealand Threat Classification System (de Lange *et. al.* 2009).

Exotic birds heard and/or seen during the site visit include chaffinch (*Fringilla coelebs*), starling (*Sturnus vulgaris*), song thrush (*Turdus philomelos*), greenfinch (*Carduelis chloris*), goldfinch (*Carduelis carduelis*), and blackbird (*Turdus merula*).

It is likely that spotless crane (Fig. 11) occasionally use the larger raupō beds within the central tributary of the Wairau Stream, as they are known to be present in the northern tributary, only 200m away (Oecologico 2010b). Spotless crane are not classified as threatened in the New Zealand Threat Classification System (de Lange *et. al.* 2009).



Figure 11: Spotless crane (Source: Wikimedia Commons, photographer: Aviceda)

4.3. Native fish

A native fish spotlight survey was carried out in both the central and southern tributaries of the Wairau Stream in areas of open waters that were easily visible, in order to ascertain whether native are present here, and which species. Spotlighting is a standard method of surveying native fish in New Zealand.

Native fish spotlight survey methods

Both tributaries were followed, and where areas of open water were able to be safely accessed, these were spotlighted. The central tributary was surveyed from its lower reach near South Road, to its upper reaches where water was forming pools, even if shallow. The southern tributary was surveyed from its lower reach near the dairy milling shed near South Road, up until the upper reach becomes closed in under the plantings. Wherever vegetation density and slope of the stream banks allowed easy and safe access to stretches of open water, the streams were viewed using a strong spotlight. A 12V 30W handheld spotlight was used as a light source.

Native fish spotlight survey results

Throughout the central tributary of the Wairau Stream, banded kokopu (*Galaxias fasciatus*) were found in reasonable numbers. Meaningful estimates of abundance were not possible, as the number of open pool areas were very limited and small, often with a lot of overhanging vegetation, making

fish surveying challenging. Banded kokopu (Fig.'s 12 & 13) were found in the lower reach by the central track culvert crossing, and further down at the next culvert in very small pools. At the topmost reach of the central tributary, and larger shallow pool contained several banded kokopu, at the bottom of where the large rush bed in Fig. 4 is. No eels were seen in the central tributary, although they are likely to be present, as they are present in the nearby northern tributary (Oecologico 2010b). The central tributary of the Wairau Stream is characterised by a muddy bottom, shallow water depth, and slow flow at the time of the survey, which is presumed to be average flows, as there had been recent rainfall in the preceding days (C. Bevers *pers. obs.*).

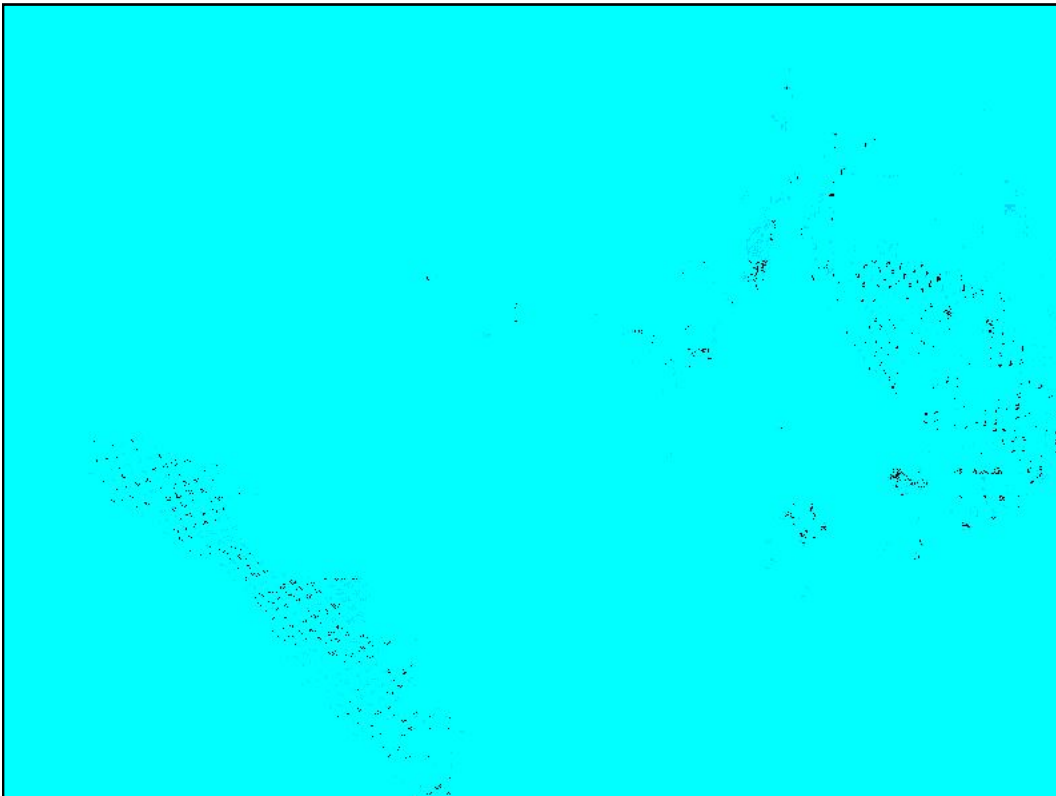


Figure 12: Banded kokopu, caught and released in the central tributary of the Wairau Stream.

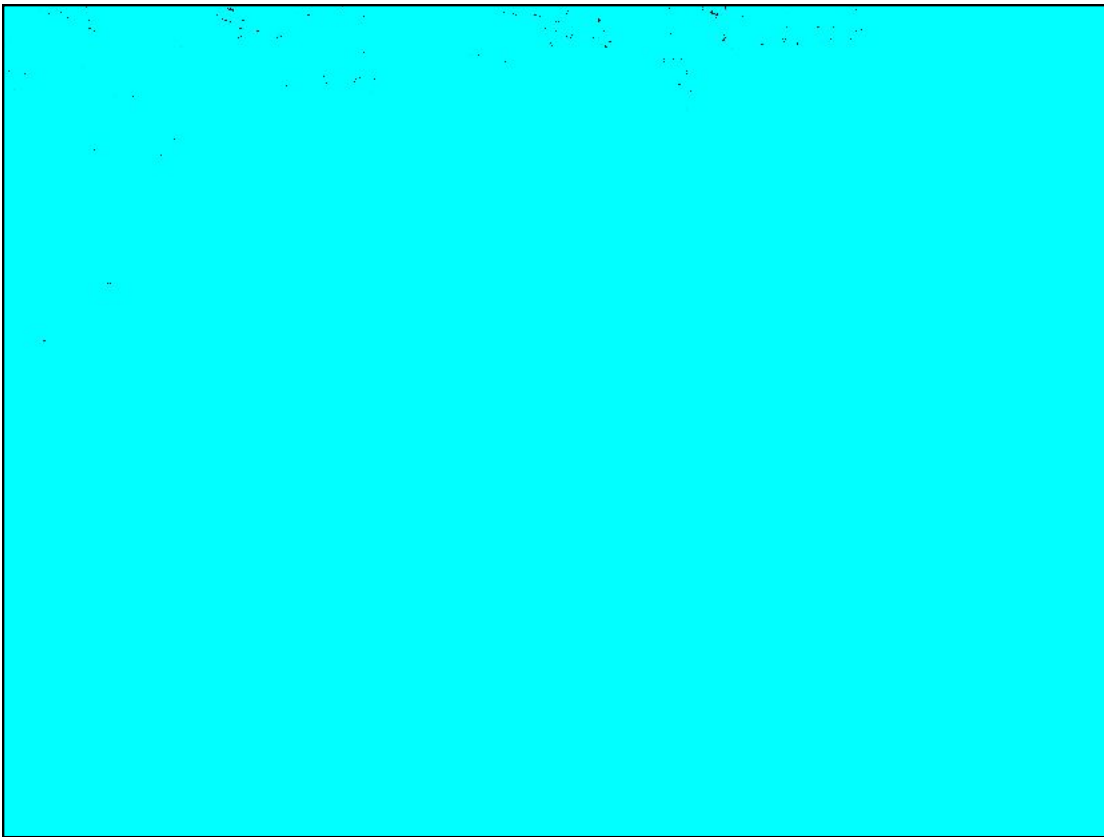


Figure 13: Banded kokopu seen in the upper arch of the central tributary of the Wairau Stream, in a shallow pool below the large rush bed. The stream bed is muddy, with slow water flow.

A long-finned eel (*Anguilla dieffenbachii*) was seen in the southern tributary (Fig. 14). No banded kokopu or other native galaxid fish were seen in the southern tributary, possibly due to the difficulty of seeing any smaller fish in this fast flowing rocky stream, with a lot of surface ripples, making for difficult spotlight survey conditions. This stream is more suited to the electric fishing fish survey method, where a non-lethal electrical current is passed through the water using specialised electric fishing equipment used by certified personnel.

No koura, or freshwater crayfish, were seen in either tributary, although they are likely to be present, as they were found in the survey of the northern tributary of the Wairau Stream in 2010 (Oecologico 2010b). The lack of koura seen is not surprising, as only two were seen in the northern tributary in 2010, where a reasonably large estimated area of 248m² of open water was surveyed, whereas it is likely that less than 10 m² was able to surveyed in the central tributary in this survey (C. Bevers *pers. obs.*).

4.4. Native lizards

No native lizards were seen incidentally during the fish survey, as likely areas of lizard habitat in the form of the numerous flax present in the stream gullies were scanned by spotlight. It is likely that goldstripe gecko (*Hoplodactylus chrysosireticus*) (Fig. 15) are present within the gullies of central and southern tributaries of the Wairau Stream, as they have been recorded on-site in the past

near the northern tributary of the Wairau Stream (Oecologico 2010c), and in Oakura township (Oecologico 2007).

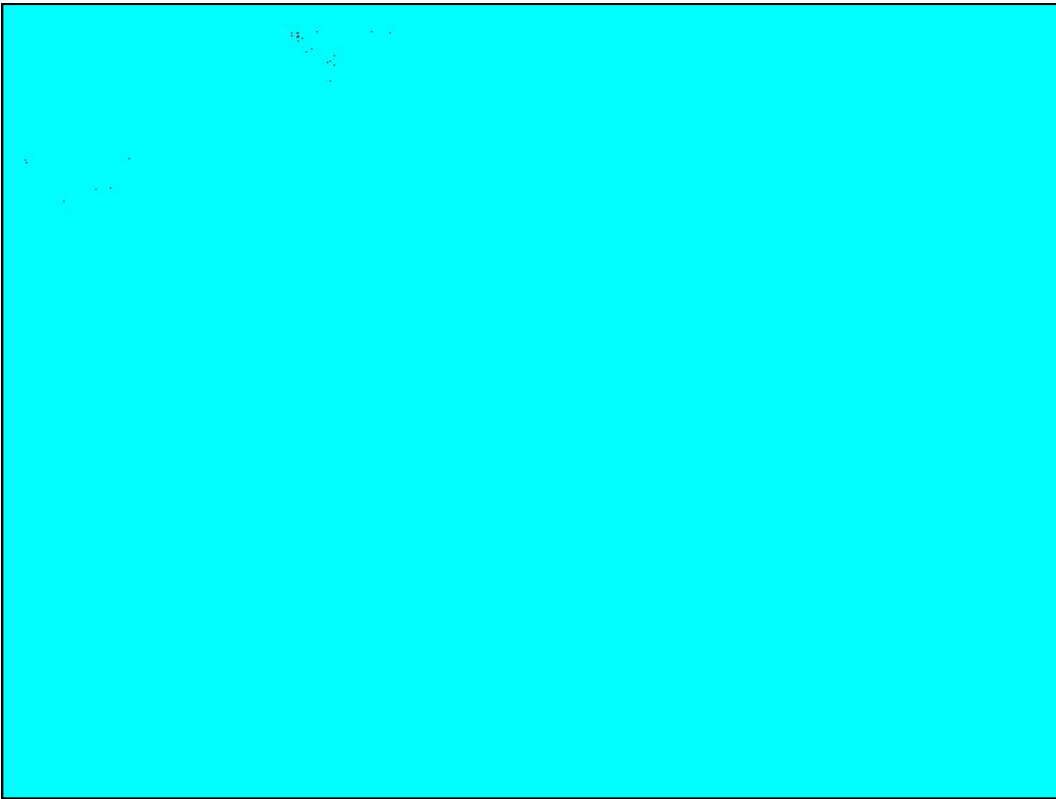


Figure 14: A long-finned eel seen in the southern tributary of the Wairau Stream.



Figure 15: Goldstriped gecko (Rod Morris/DOC)

4.5. Revegetation – landscape planting strategy

Maintaining the presence of raupō

The raupō beds in the wetlands in the central tributary of the Wairau Stream likely provide habitat for spotless crake recorded 200m away in the northern tributary (Oecologico 2010b), which use only this kind of habitat in the North Island (Heather and Robertson 1996).

It is recommended that the raupō beds remain in full sunlight, and are not shaded by any of the proposed native revegetation plantings, even when mature. Raupō requires full sunlight to grow well and thrive, as it is a high light demanding species. Its leaves die-back over winter and re-sprout in the spring. In areas where the gullies narrow, and regenerating shrubs and tree ferns have established, the raupō here is diminished in density and stature (C. Bevers *pers. obs.*). Adjacent to large raupō beds, especially on their northern aspect (ie. south facing stream bank slopes), low stature plants that do not shade out the raupo should be planted. Such plants include flax (*Phormium tenax*) and toetoe (*Cortaderia fulvida*). Careful planning is therefore required to ensure that the revegetation plantings do not shade the raupō in the long-term, so as to maintain this important habitat type.

Creating lizard habitat

It is recommended that consideration should also be given to creating large patches of flax and toetoe to provide habitat for native lizards, such as the goldstripe gecko. These plants provide important refugia from predators. These patches could be planted adjacent to the raupō beds, on the gully slopes, especially where there are good sunny aspects year round, where cold blooded lizards can gain the maximum amount of warmth for physical activity. Patches can be any shape, but should be relatively large where possible (circa $\geq 100\text{m}^2$).

Mountain flax

Another species for consideration for inclusion into the planting strategy could be mountain flax (*Phormium cookianum* subsp. *hookeri*), which grows on the high points of the Kaitake Ranges nearby (Clarkson 1985). Maori grew mountain flax as a source of fibre, and it is suspected that Māori planted mountain flax on the Kaitake Range (Clarkson 1985), where many pa sites are recorded to exist on the peaks (Bruce 2010a). That Māori planted mountain flax on the Kaitake Range is speculative however, and is questioned by archeologist Mr Ivan Bruce (*pers. comm*), as local Māori had several good quality cultivars of flax (*Phormium tenax*) which they grew for fibre. Aspects of this debate around the potential ethnobotanical importance of mountain flax locally is discussed in Oecologico (2010b), but is assumed here that it is important. Mountain flax grows well at a range of altitudes, and does not grow as large as flax (*Phormium tenax*). It could provide some diversity in species, colour and plant form in the plantings.

Encouraging native birds

Consideration should also be given to encouraging birds such as kereru and tui by planting vegetation on which they are known to feed. In Oecologico (2010b), section 4.5 on revegetation covers in more depth the use of potential species with a local ecological basis.

In summary from Oecologico (2010b), it is recommended that the following species are included in revegetation plantings to encourage native birdlife; mountain flax (*Phormium cookianum* subsp. *hookeri*), flax (*Phormium tenax*), kowhai (*Sophora microphylla*), puriri (*Vitex lucens*), tawa (*Beilschmiedia tawa*), kawakawa (*Macropiper excelsum*), pigeonwood (*Hedycarya arborea*), cabbage tree (*Cordyline australis*), miro (*Prumnopitys ferruginea*), rewarewa (*Knightia excelsa*), kahikatea (*Dacrycarpus dacrydioides*), kohekohe (*Dysoxylum spectabile*) and totara (*Podocarpus totara*).

5. Description of Proposed Activities

It is proposed that the balance 58ha of the Oakura Farm Park Ltd dairy farm located between South Rd (State Highway 45), Wairau Rd and the Kaitake Ranges, immediately south of Oakura township be developed for residential and equestrian lifestyle use, after a publicly notified statutory private plan change process. The current proposal outlines a potential of approximately 300 urban and 12 to 14 equestrian lifestyle lots of varying size (Comber Consultancy *et. al.* 2016).

Other important elements of the proposed urban development include a roading network to access all lots, urban water reticulation, a sewerage system connected to the Oakura township sewerage network, walkways through the gullies through native revegetation plantings, and 3-4m high and wide earth bund with a walkway/cycleway adjacent to South Road. The natural areas in the gullies of the central and southern tributaries of the Wairau Stream will be utilised to receive stormwater from the common areas (e.g. roadways), and will be protected either as Council reserves or as Queen Elizabeth II Trust Open Space covenants.

6. Potential Ecological Impacts

The potential adverse environmental impacts of the proposed subdivision and mitigation plans are discussed below.

6.1. Effects – Stormwater discharge and sediment from excavation

Ineffective stormwater control could cause erosion and scouring of river banks and earthworks areas, which can destabilise banks and further contribute to sediment loading in streams. The overall stormwater design for the development will aim to be hydraulically neutral (Comber Consultancy *et. al.* 2016, Red Jacket 2017). Stormwater disposal from house rooves and outbuildings will be to underground soakage systems within each lot.

A engineering feasibility study by Red Jacket (2017) has assessed the potential for the collection of stormwater from the road network. Stormwater can be collected at the roadside and either piped or drained to retention areas within the central and southern tributaries of the Wairau Stream (Red Jacket 2017). A maximum of five bunds up to a maximum of 3m high could be constructed, allowing the gullies to store the water and allowing the water to be discharges through a pipe in each bund that is “throttled” by sizing the outflow pipe to allow no more than the undeveloped discharge rate to pass downstream (Red Jacket 2017). This number and size of the retention areas is considered to be more than adequate, and feasible. A total of 12,200 m³ storage is calculated to be available over the 5 retention ponds, whereas only 1,700 m³ of storage is estimated to be required (Red Jacket 2017), translating to an overcapacity of approximately seven times over, demonstrating scope to either reduce the number of retention areas, or the height of the bunds.

The retention time of the ponding water behind the bunds in these retention areas is estimated to be of only short a duration of 3 to 5 hours for a 1% AEP storm event (Red Jacket 2017).

6.2. Mitigation – Stormwater discharge

It is recommended that stormwater ponding in the retention areas provides for drainage of the excess stormwater within 24 hours of going over normal water levels there, which is proven as feasible by Red Jacket (2017), with retention times of 3 to 5 hours. This is to ensure the survival of the raupō, which if inundated for several days will die back. Frequent and large fluctuations in the water levels will prevent raupō re-establishing.

It is recommended that if any new culverts are installed, that these enable effective passage of migratory native fish upstream and downstream, which Red Jacket (2017) have also recommended.

6.3. Effects – Excavation

After lots in the subdivision are purchased by future residents, the subsequent creation of building platforms for housing will require excavation. Excavation will also need to be undertaken for creation of roading, stormwater management structures, and other infrastructure. A potential effect of the excavation is sediment contamination of the stream tributaries via site run-off. The potential for this will be increased in areas which are in close proximity to the wetland or streams. Sediment can become entrained in overland stormwater flows and, if left unabated, the natural path of the stormwater will carry this into the wetlands and tributaries of the Wairau Stream.

The adverse environmental effects caused by sediment entering waterways include smothering of in-stream flora and fauna, in particular benthic organisms, as well as the potential for the degradation of water quality and rocky habitat where present. The presence of sediment in the water can affect water supplies, and damage pumps for other water users.

With any earthworks using machinery, the possibility always exists for the potential introduction of additional weed species, through seeds or vegetative material that is caught on earthmoving machinery.

6.4. Mitigation – Excavation

Care will need to be taken to ensure the runoff from disturbed areas is directed through adequate silt control structures prior to discharging to land and or water. Silt control devices must be installed at all discharge points.

Hay or straw bales are one example of mitigation methods that may be employed by the contractors, with these being used to restrict, direct and slow stormwater flow, and filter sediment.

Implementation of the measures detailed below will ensure that the effects of associated earthworks, on the wetlands and stream tributaries located near any earthworks are able to be avoided, remedied or mitigated to an extent whereby they will be short term, localised and no more than minor:

- i) Minimising the extent and duration of land disturbance will avoid the potential for sediment to become entrained in stormwater as much as possible.
- ii) As far as practicable, sediment control measures should be undertaken in accordance with the “Guidelines for Earthworks in the Taranaki Region” (TRC 1999). This will involve implementing erosion protection methods such as cut-off drains, placement of hay bales in drains to act as sediment filters, and other methods identified in the guidelines.
- iii) Avoiding (where possible) areas of highly erodable soils and steep slopes.

- iv) Revegetating the exposed areas as soon as practicable with appropriate plantings or re-grassing.
- v) Monitoring the ongoing effectiveness of the erosion protection measures after heavy rainfall.
- vi) Leaving the erosion protection measures in place until such time as the vegetative cover has established over the earthworks sites. This may take up to 6 months, depending on the climatic and plant growth conditions after the earthworks are completed.
- vii) All earthmoving machinery should be steam cleaned off site and inspected to ensure it is free of soil, mud and conspicuous plant debris before being transported and used on-site.
- viii) All earthworks are to be undertaken under a site erosion and sediment control management plan.

6.5. Effects – Vegetation Clearance

The future building sites within the proposed lots are largely covered in exotic pasture grass, as it is farmland, the loss of which will be ecologically insignificant.

6.6. Mitigation – Vegetation Clearance

Housing sites are usually re-grassed and/or planted out as gardens relatively quickly after building completion. It is recommended that any areas excavated in respect of the subdivision generally (e.g. roading or stormwater) are re-grassed or built over as soon as practicable after earthworks are complete.

It is recommended that revegetation of the gullies is carried out before house site and roading earthworks are begun. This allows a greater amount of vegetation to establish to control overland sediment flows into the tributaries of the Wairau Stream, and the wetlands. Sediment is then able to settle out, as vegetation provides a natural filter in this way. The riparian plantings and esplanade area will ensure earthworks do not occur right up to the stream banks, and the vegetation (especially grass) will slow stormwater flows.

The general positive effects of such riparian plantings include:

- i) Improved water quality by filtering any sediment from surface runoff.
- ii) The removal of any excess nutrients in emerging groundwater.
- iii) Maintaining cooler stream water temperatures which restricts algal growth.

- iv) Controlling stream bank erosion.
- v) Improvement of habitats for waterfowl, fish, crustaceans and insects.

Consideration could be given to using locally eco-sourced seed to grow seedlings for the revegetation plantings where practicable.

6.7. Effects – domestic pets (cats and dogs)

Both cats and dogs are well known to negatively affect wildlife populations in New Zealand. Feral cats and stray dogs on conservation land have received a lot of research and media attention historically. Yet it is domestic cats and dogs that also pose significant risks to wildlife in the places where people live.

Resident domestic cats and dogs

Residents taking up occupancy in the proposed “Wairau Estate” may potentially bring domestic pets such as cats and dogs. Ownership rates of domestic cats in New Zealand range from 35% to 41% of households, which are some of the highest rates internationally (Jones 2010). No peer reviewed figures for the rate of dog ownership in New Zealand were found, but can it be assumed to be slightly less than that for cats.

The diet of domestic cats in urban and urban/forest fringe habitats in Auckland has been investigated. In the urban/forest fringe domestic cats main prey items were rodents, whereas the urban cats caught invertebrates most (Gillies & Clout 2003). Birds were the second most common prey item for cats in both habitat types (Gillies & Clout 2003). More birds were caught in the urban/forest fringe habitat, relative to the fully urban dwelling cats. Lizards were the third most common prey item for both groups of cats (Gillies and Clout 2003). Prey items vary between habitat types, even urban habitats. In Dunedin the most common prey item of domestic cats in an urban area were birds, followed by rodents (van Heezik *et. al.* 2010). Van Heezik *et. al.* (2010) also found that cats do use forest fragments within the urban area, yet they did not catch more birds than cats exclusively using the urban habitat. Gardens were the preferred habitat of domestic cats, suggesting predation pressure may be reduced in the urban forest fragment (van Heezik *et. al.* 2010).

Cats in particular cause damage to native bird and lizard populations, as they tend to roam more widely than domestic dogs, which in New Zealand are generally speaking well controlled in terms of roaming behaviour.

Domestic cats are already well established in the area, and many likely live in Oakura township. In Dunedin, it has been estimated that the density of owned free ranging and stray cats is 223 cats per

square kilometre. The home ranges of domestic cats in urban areas are generally small, at ≤ 5 ha (Jones 2010). Cats living in rural-urban fringe areas have home ranges ranging from 0.2-19ha, whereas rural domestic cats had even larger home ranges, between 0.3-69ha (Metsers 2010). Feral cat home ranges can be about 50ha, right up to 1100ha (King 2005). Given these figures, it is without doubt that a large amount of cats already use the proposed esplanade and covenant areas; both domestic, and feral cats.

Dogs, either as predators, or as a disturbance stimulus (e.g. noise, scent), also pose problems for wildlife. When dogs are free to roam regularly, an unusual occurrence in New Zealand, they are able to range widely. In an Australian study, free roaming domestic dogs were radio tracked wandering through an average home range size of 927 ha and traveling 8-30km per foray (Meek 1999). All forays began at night, and on average lasted 26 hours (Meek 1999). Half of the dogs studied roamed these long distances, whereas the other half were relatively sedentary, and confined their roaming to the community, and had an average home range size of 2.6 ha (Meek 1999).

The effect of domestic dogs in remnant habitats in New Zealand has not been studied.

6.8. Mitigation – domestic pets (cats and dogs)

It is recommended that domestic cats are prohibited in “Wairau Estate”, as the fewer cats in the local cat population, the better. This would result in a lower predation pressure, as the current cat population density would not increase. The wildlife currently found on-site are already experiencing predation pressure, and appear to be coping.

It is recommended that where the lots have a boundary in common to a proposed covenant area that the common boundary be fully fenced with standard 8-wire post and batten farm fence, or a 5-rail wooden fence, to a height of between 1.1-1.2m, which will effectively control most dogs. It is also recommended that the proposed walking track in the esplanade is fenced off from the wetlands using a 8-wire post and batten fence, or a 5-rail wooden fence. These fences will prevent most dogs accessing the gully areas and the associated wetlands, where spotless crane and pukeko live.

It is recommended that within the esplanade walkway that all dogs are kept on a leash at all times, and that the New Plymouth District Council adds this walkway to the “Leashed control areas for dogs” under the NPDC Dog Control Bylaw (NPDC 2010).

7. Conclusions

1. The central and southern tributaries of the Wairau Stream have existing riparian vegetation and a significant number of raupō beds of good ecological value, which will be enhanced by the proposed planting of native plants within the stream gullies.
2. Native species seen on the site in this survey include pukeko, Australasian harrier, fantail, grey warbler, kingfisher, banded kokopu, and long-finned eel. Other species likely to be present, found in previous surveys on the Oakura Farm Park Ltd. property, include spotless crake, gold-stripe gecko, and koura.
3. It is likely that spotless crake use the larger raupō beds within the central tributary of the Wairau Stream, as they are known to be present in the northern tributary 200m away.
4. Additional exotic species seen on site in this survey include chaffinch, starling, song thrush, greenfinch, goldfinch, and blackbird.
5. None of the species seen in the balance area of the property proposed for the “Wairau Estate” development are considered threatened under the New Zealand Threat Classification System.
6. The raupō beds within the tributaries of the Wairau Stream are important habitat for spotless crake.
7. The revegetation plantings proposed provide good opportunities to create important habitat for goldstripe gecko, as well as a significant food source for native birds such as tui and kereru.
8. Control of stormwater run-off from the roading network can be easily achieved in the gully system of the central tributary of the Wairau Stream by the formation of five stormwater retention ponds, with an estimated overcapacity of approximately seven times if 3m high bunds are used.
9. The water retention time of the ponding water behind the bunds is estimated to be of only short a duration of 3 to 5 hours for a 1% AEP storm event, which is unlikely to negatively affect the raupō and flax beds in the gullies.
10. Silt run-off from excavation works can negatively impact streams and wetlands, if left uncontrolled. Silt control measures are easily implemented to mitigate this risk.
11. Clearance of pasture grass, with any associated earthworks in the subdivision is a minor ecological impact.

12. The revegetation plantings and re-grassing will aid in the control of silt laden run-off from earthworks.
13. Domestic cats can have a significant impact on populations of birds, invertebrates, lizards and rodents. Roaming and hunting behaviour in cats is not easily controllable.
14. Domestic cats are already established in the area.
15. Domestic dogs disturb and kill wildlife. The roaming and hunting behaviour of dogs is relatively easily controlled compared to cats.
16. The potential ecological effects of the development of the Oakura Farm Park Ltd. balance area, to be known as “Wairau Estate”, carried out in accordance with all mitigation measures and recommendations being adopted, will be no more than minor.

8. Recommendations

It is recommended that:

1. The raupō beds remain in full sunlight, and are not shaded by any of the revegetation plantings, even when mature.
2. Consideration should also be given to creating large patches of flax and toetoe (greater than approximately 100m²) within the revegetation plantings to provide habitat for native lizards, such as the goldstripe gecko.
3. That the following species are included in revegetation plantings to encourage native birdlife; mountain flax, flax, kowhai, puriri, tawa, kawakawa, pigeonwood, cabbage tree, miro, rewarewa, kahikatea, kohekohe and totara.
4. That the stormwater retention ponds are designed to allow for any excess stormwater to drain away within 24 hours at normal flow rates.
5. That the stormwater retention ponds bunds are no greater in height than 3m, and where stormwater management design allows, are designed to as low a height as practicable, so as to minimise raising the water levels.
6. That any new culverts installed enable effective passage of migratory native fish upstream and downstream, e.g by the use of mussels sprat ropes draped through them.
7. Any areas excavated associated with the proposed development (e.g. roading or stormwater) are re-grassed or built over (e.g. road), as soon as practicable after earthworks are complete.

8. That revegetation planting of the gullies is carried out before house site and roading earthworks are begun.
9. Domestic cats are prohibited in the subdivision.
10. That where lots have a boundary in common to a proposed covenant area, that the common boundary be fully fenced with standard 8-wire post and batten farm fence, or a 5-rail wooden fence, to a height of between 1.1-1.2m, which will effectively control most dogs.
11. The proposed walking track in the esplanade is fenced off from the wetlands using a 8-wire post and batten farm fence, or a 5-rail fence, to a height of between 1.1-1.2m, to effectively control most dogs.
12. Within the esplanade strip all dogs are to be kept on a leash at all times, and that the New Plymouth District Council adds the proposed Wairau Stream Esplanade Strip to the “Leashed control areas for dogs” under the NPDC Dog Control Bylaw 2010.
13. That follow up monitoring of wetland birds, especially spotless crane, is undertaken after the proposed subdivision works and residential development has taken place, and into the future.

9. Acknowledgements

Thanks to the following people with valuable information, assistance and feedback for this ecological assessment; Colin Comber, Comber Consultancy; Ivan Bruce, Archaeological Resource Management; Alan Doy, McKinlay Surveyors, and Kim Jansen, Red Jacket Ltd.

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Appendix 8 Civil Engineering Assessment



FEASIBILITY REPORT
on the
PROPOSED SUBDIVISION
of
LOT 29 DP 497629
WAIRAU ROAD OAKURA
for
OAKURA FARM PARK LIMITED

CLIENT : Oakura Farm Park Limited

PROJECT TITLE : Wairau Estate Subdivision
Wairau Road
Oakura
NEW PLYMOUTH

DOCUMENT NUMBER : DISTRICT RPT-2351-01-D

Issue	Description	Date	Prepared By	Checked By	Approved
A	Issued for Review	Signature	N Siffleet	K Jansen	A Fraser
		Date	Feb 2017	Feb 2017	Feb 2017
B	Issued for Review	Signature	N Siffleet	K Jansen	A Fraser
		Date	Apr 2017	Apr 2017	Apr 2017
C	Final Issue	Signature	N Siffleet	K Jansen	A Fraser
		Date	May 2017	May 2017	May 2017
D	Revision with NPDC Population Growth projections and water/waste water capacity	Signature	K Jansen	K Jansen	A Fraser
		Date	Jan 2018	Jan 2018	Jan 2018

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1.0 EXECUTIVE SUMMARY

The existing site at Lot 29 DP 497629 is partly outside of the area allocated for Future Urban Development in the current NPDC district plan. To apply for a District Plan change, this feasibility study has been commissioned to evaluate that:

1. The **Engineering Provisions** for the subdivision necessary to comply with the District Plan requirements of the New Plymouth District Councils are possible.
2. The site has the necessary **Stability** to support residential development and associated infrastructure.
3. The existing potable **Water Supply** in Oakura has sufficient capacity
4. The sub-soil conditions and topography are suited to the on-site management of **Stormwater** with hydraulic neutrality.
5. The existing **Wastewater** reticulation leading to the Shearer Reserve Pump Station has sufficient capacity.

2.0 INTRODUCTION

The purpose of this report is to assess the feasibility of the proposed residential/equestrian lifestyle development to achieve the Engineering Provisions of the District Plan of the New Plymouth District Council, NPDC.

The scope of the proposal is documented in the “Vision and Infrastructure Plan – Preliminary” development plan prepared by Comber Consultancy, McKinlay Surveyors and Blue Marble dated August 2016.

The site is legally described as Lot 29 DP 497629 and is situated to the South of the intersection between State Highway 45 and Wairau Road in Oakura.

The site is approximately 58 Hectares and is currently used for dairy farming operations. The land is ‘zoned’ Rural Environment Area. Approximately 20 percent of the site, A triangular section of some 12 ha on the north-western aspect, is subject to a Future Urban Development (FUD) overlay.

The topography of the site is essentially flat but rises west to east more or less evenly as an inclined plane away from the State Highway. The site features several shallow gullies and streams running generally east to west toward the State Highway. These natural features, have been interrupted by the long established arterial road route, and carry beyond the State Highway to the west and typically terminate at the coastal edge.

The proposed development has **two key areas**;

1. Twelve Equestrian Lifestyle Blocks to the South-West of the site comprising approximately 24 ha, and,
2. Some 34 Hectares is to be divided into approximately 399 Residential Lots ranging in area from 300 to 800m².

The specific engineering requirements comprise;

- A. Building Platforms for supporting Residential Buildings,
- B. Subgrade conditions for Road Pavements;
- C. Water Supply to the subdivision,

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D. Stormwater requirements for both the residential Lots and the roadways,

E. Waste Water requirements for the subdivision, and

This is a preliminary feasibility study and further assessment will be required at the time of applying for a resource consent.

3.0 GEOTECHNICAL ASSESSMENT

An initial geotechnical assessment was completed to determine the suitability of the Site for the stability requirements of the proposed land development.

A full geotechnical assessment and report will be required to complete the Resource Consent application in accordance with NZS 4404, specifically Section 2.

3.1 HISTORICAL GEOLOGICAL CONDITIONS

This area is within the sub zone C2: Pleistocene Deposits as outlined by Tonkin and Taylor in their report on geological conditions for the Taranaki Regional Council Ref. 85537.

The site is immediately below the Kaitake Ranges which are within Sub-Zone C1:Holocene Deposits and consist of gravels and sand with a thin covering of silt and clay ash.

The Sub Zone C1 typically consists of relatively thick layers of silt and clay ash deposits, which is consistent with our findings as outlined below.

3.2 RED JACKET SOIL TESTING RESULTS

The sub-soil conditions were assessed via bore holes, shear vane testing and scala penetrometer testing between 16 February 2017 and 1 March 2017.

The sub-soils typically comprise a 200mm layer of top soil overlying Taranaki Volcanic Ash material to at least 5.0m depth which is consistent with the Sub Zone C2:Pleistocene Deposits of the area.

There were minor variances in the volcanic ash material, with coarse sand inclusions frequently encountered at 1.8m depth and isolated lenses of a grey silts in some holes.

The soil shear strength results across all test locations were greater than 100kPa as assessed from the shear vane and scala penetrometer tests.

The volcanic ash directly below the top soil layer, In some shallow test locations had less than 100kPa strength when tested with the shear vane which may be due to the agricultural processes in this area and possible ploughing of paddocks in the past.

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The water table was not encountered during any of the test holes, however iron staining and slight gleying of some material suggests some ground water movement and moisture permeability.

The consistency across the ten test locations suggest the sub-soil conditions are expected to be reasonably uniform across the site.

The site at 65 Ha is very large where conditions could vary, so more extensive soil testing on individual Lots will be required to support the final Resource Consent application.



PHOTO OF TYPICAL VOLCANIC ASH SUB-SOILS



**PHOTO OF VOLCANIC ASH SUB-SOILS WITH IRON STAINING AND TRACES OF COARSE SAND
TYPICALLY > 1.8m DEEP**

4.0 BUILDING PLATFORMS

The preliminary soil testing indicates that the site is suitable for supporting residential buildings subject to the following conditions.

The strength and nature of the sub-soils meets the requirements of “Good Ground” as defined by NZS 3604 and the site requirements of NZS 4229.

The sites within the subdivision are therefore likely to be suitable for supporting residential buildings with foundations that do not require specific engineering design.

The general foundation types may include concrete slab-on-grade floors and timber floor on timber piles all which are excavated into original firm ground subject to confirmation at the time of a Building Consent.

There are alternative foundation systems including proprietary “rib-raft” floors with blocks of insulation between concrete ribs, or plastic domes, which will require specific engineering design.

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5.0 WATER SUPPLY

5.1 OAKURA WATER SUPPLY

Oakura's water supply is served by two ground water bores and has a backup take from a dam on the the Wairau Stream. The treatment capacity for the bore takes is 3.7×10^6 L/day (42.82L/sec) with peak flow measured in 2016 of 25L/sec.

Council was approached by Coomber Consultancy and Redjacket to provide population projections for the existing Residential and Future Urban Development Areas of Oakura to assist with determining overall capacity requirements for this Feasibility Report. Council was also asked to provide existing water/wastewater infrastructure capacity.

The information provided consisted of two tables, one based on available "zoned land and minimum lot size of 700 m² with average occupancy of 2.67 people/dwelling with a potential population of 1826 as at 2017. The second table was a Long Term Plan projection to 2048 based on assumed trends with a potential population of 2030.

The area under consideration for Private Plan Change has the potential to add an additional 248 lots or 662 people, bringing a total potential population of 2488. This falls within the Equivalent Population Water supply cited by Council of 3480 people.

5.2 WATER SUPPLY TO RESIDENTIAL LOTS

The preliminary calculations require an average water flow demand of 3.88L/sec for the proposed 399 residential Lots.

The calculation is based on 840L/Lot/day with 2.67 people per Lot as advised by Council. Peak Demand factor of 5 gives a gross peak demand of approx. 19.40L/sec. Refer attached tables supplied by Council.

The proposed subdivision development will be served by a loop feed from both the existing 150 mm dia. reticulation on Wairau Road and existing 200 mm dia. reticulation on Pahakahaka Drive. This will provide resilience of supply pressure during periods of high draw.

The existing Pahakahaka Drive 200 mm dia. water main has a capacity of 80.7 L/sec.

5.3 FIRE FIGHTING WATER SUPPLY

The proposed development will require the installation of a water supply complying with SNZ PAS 4509:2008 for firefighting purposes.

The existing water main has a capacity of 80.7 litres per second which will provide sufficient capacity to satisfy the following firefighting water supply requirements.

The residential areas of the subdivision will have a water supply classification of FW2 as determined by SNZ PAS 4509 for “non-sprinklered family dwelling”.

These areas will therefore require one hydrant within 135m of each dwelling with a flow rate of 750L/min(12.5L/sec) and an additional hydrant within 270m also with a flow rate of 750L/min(12.5L/sec) .

The larger lifestyle Lots may alternatively be serviced with a water volume of 45m³ within 90m of a dwelling.

It is noted that the reservoirs are located at approximate ground level of 94 metres AMSL and the proposed development is between 35 – 60 metres AMSL. It is considered that this head through the existing 200 mm and 150 mm dia water mains will provide sufficient pressure for all supply requirements and that energy losses due to valves and fittings can be considered negligible.

6.0 STORMWATER

6.1 STORMWATER GENERATED FROM RESIDENTIAL LOTS

The sub-soils are principally volcanic ash with traces of sand which have proven good permeability in similar conditions in the Taranaki Region.

The actual permeability can be confirmed by Percolation testing.

The Lots within this subdivision will be suitable for onsite disposal of Stormwater by conventional soakholes of up to 5.0m depth.

The stormwater from roof's can be piped to storage tanks for residential use with overflow directed to soakage.

The soakholes would be drilled into original ground with the number and proportions of the soakholes sized to the requirements of NZBC E1 to suit the required run-off.

6.2 STORMWATER GENERATED FROM ROAD WAYS

The intention is to maintain hydraulic neutrality with stormwater management in the design and development of this site.

The proposal is to provide a combination of rain gardens for immediate subsurface stormwater storage/soakage with the overflow going into the gully systems via attenuated low impact discharges and detention areas.

The rain gardens would be formed using plastic crates to create a trench which would be located in the centre of the carriage way and lined with filter fabric.

The top of the trench would consist of free draining aggregates and selected vegetation allowing for a planted road median.

An indicative detail and photograph of a rain garden is appended.

The rain garden trench would provide storage and soakage for the stormwater generated from the roadway, and an overflow pipe will allow the rain gardens to drain into the existing gully network during periods of prolonged and/or high intensity rainfall.

In summary, the development's stormwater management system will be designed to be low impact and in conformance with the Council's Land Development and Subdivision

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Infrastructure standard (as based on NZS4404:2010 and incorporating local amendment).

The gullies will be used for storage of stormwater before it is discharged through a pipe which is sized to allow no more than the undeveloped discharge rate to pass downstream.

The attached stormwater calculations for our preliminary catchment analysis for this development and gully storage capacity based on 3 metre high bunds within the 4 – 5 metre deep channels.

Our analysis has shown that 3 metre high bunds as shown in the Appendices can accommodate 12,200 m³ storage whereas 1700 m³ storage is required to achieve hydraulic neutrality. Therefore storage potential is much greater than need. Final bund dimensions and design will occur at a later date.

The storage requirements have been calculated with full flow of a 1% AEP storm event being “throttled” through bunds with pipes sized to restrict discharge to pre-development flows along the length of the gully system.

Pipes discharging through retention bunds will incorporate techniques to enhance fish passage such as installing spat rope.

The ponding that will occur at these retention areas during a storm event will be of a relatively short duration in the order of 3 - 5 hours maximum. It is considered that this temporary inundation will not cause any detriment to flora and fauna which inhabits these gully environments.

The pipe sizing for road culverts has also been undertaken (Please see attached).

7.0 WASTE WATER

7.1 ON-SITE DISPOSAL OF WASTEWATER FOR LIFESTYLE LOTS

It is proposed that the waste water generated from the 12 Larger Lifestyle Lots will be connected to reticulated sewer.

The proposed lots are of sufficient area and dimension to dispose of wastewater by convention effluent fields. The sub-soil conditions are suited to an effluent system designed to the requirements given in AS/NZS 1547 for the on-site disposal of wastewater using trenches or beds.

If adopted, the effluent field is to be located in original volcanic ash and is to be 25m from any water course or wet land areas and 50m from any well or bore.

7.2 WASTE WATER RETICULATION

The waste water generated from all the residential Lots is to be discharged to a wastewater reticulation system, which in turn will be connected to the available Council public sewerage system..

Based on the proposed 248 residential Lots subject to a Private Plan Change, we have calculated a total average demand of 1.92L/sec for this portion of the development. Refer attached calculations.

There is an existing wastewater main which runs from Pahakahaka Drive north following the alignment of an unnamed tributary of the Wairau Stream to a pump station at Shearer Reserve which pumps waste water to New Plymouth.

The existing 150 mm dia main currently serves a flow of 0.4L/sec and has a capacity of between 16.7 – 30 l/sec depending on grade of individual sewer main sections. Refer attached calculations.

Discharge for the entire existing Residential and Future Urban Development Areas of Oakura at a minimum Lot size of 700 m², (inclusive of this proposed development) has been carried out to determine maximum possible load on the existing Shearer Reserve pump station.

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Calculations were based on the following criteria:

Average Dry Weather Flow ADWF = 250l/person/day (NPDC Local Amendments)

Number of People/Dwelling = 2.67 (NPDC Advice)

Dry Weather Diurnal Peak Factor = 2.5 (NZS 4404: 2010)

Wet Weather Infiltration Rate = 2 (NZS 4404: 2010)

The calculated discharge for the entire Oakura Network at the 700 m² Lot size inclusive of the Wairau Estate development equates to an ADWF flow of 7.2 L/sec and Peak Wet Weather Flow (PWWF) of 36L/sec. Refer attached calculations.

The Shearer Reserve pump station has a pump capacity of 25L/sec and storage of 597 m³. Refer attached exert from design report.

It is noted that Council LTP population predictions require augmenting of the sewer pumps, associated pipework and power supply at 2025. It is likely that Wairau Estate Developments will not contribute to wastewater demand until 2020 at the earliest and once planned additional capacity is added to the Shearer Reserve pump station, sufficient capacity will exist to accommodate all Residential Zoned infill, Future Urban Development Areas and the Wairau Estate Development.

Council advises that the Ultimate Capacity of the Shearer Reserve Pump Station with 3 pumps available equates to a population of 5530 which is greater than the combined LTP population projection to 2048 of 2030 and the 662 additional population this Private Plan Change request will add. Refer attached tables supplied by Council.

8.0 SITE DEVELOPMENT AND ROADING

8.1 EARTHWORKS

The topography will be mostly unchanged in developing the site meaning that the earthworks required are expected to be minimal in relation to the total site area.

The earthworks will be designed, supervised and certified by an engineer in accordance with NZS 4404 and NZS 4431.

The Earthworks will generally consist of minor levelling of residential lots, cut to fill earthworks for road crossings of the existing stream network and construction of the proposed stream bunds to facilitate hydraulic neutrality through onsite attenuation of stormwater.

8.2 CULVERTS

The existing watercourses in the gullies that are shaped through the site will be utilised to provide the necessary stormwater attenuation with several bunds with small culverts designed for the attenuation and flow of the stormwater and surface water. The structures will be constructed to allow unimpeded fish passage.

The road culverts will be designed to take a minimum 10% AEP storm flow with no heading up. The gully channels allow for storage of excess stormwater during peak storm events which will not pose any adverse effect on resident flora and fauna.

These culverts should also be designed and certified by an engineer to comply with local authority requirements.

8.3 ROADING

The preliminary soil testing indicates that the volcanic ash material has a CBR of approximately six within the top 600mm.

These conditions will provide a suitable sub-grade for the roading network within the development.

The pavement design for the roads shall be carried out in accordance with NPDC's code of practice with further assessment required at the exact road locations prior to construction.

9.0 LOCAL AUTHORITY REQUIREMENTS

NPDC

NPDC will be responsible for administering the resource consents for the project.

NPDC will have intimate involvement in the design and construction of all services and roads as they will own these assets at the completion of each stage of the development.

TRC

TRC will be involved in administering resource consents for any bulk earth works, stormwater retention structures and culvert installations.

They will also be involved in monitoring environmental factors which result from the construction and development of the site.

This includes but is not limited to dust control, sediment control, noise control, pollution and preservation of habitat.

NZTA

A roundabout is proposed for the intersection between Wairau Round and South Road.

An underpass is also intended to provide a safe path for foot traffic traveling to and from the Western side of South Road.

NZTA will play an integral role in the planning and consenting of these works.

These components are to be reported by others.

10.0 CONCLUSION

Through a combination of site investigations and a review of available data, we have arrived at the following conclusions in respect of the proposed Wairau Estate development:

1. The subject site of approx. 66 ha is generally considered suitable, from a civil engineering perspective, for the combination of residential and equestrian lifestyle development as proposed by the developer in the preliminary Vision and Structure Plan (August 2016).
2. The proposed approx. 399 Lot subdivision with 12 Lifestyle blocks is a viable option given the site conditions and existing infrastructure.
3. The sub-soil conditions are appropriate for supporting residential buildings, road pavements and have properties appropriate for disposal of stormwater by soakage.
4. There is appropriate storage available in the natural gully systems to attenuate post development flows without causing a detriment to fish passage or existing habitat.
5. The existing water mains on Pahakahaka Drive and Wairau Road have sufficient capacity to support the residential development.
6. The existing wastewater main following the unnamed tributary of the Wairau Stream has sufficient capacity to support the residential development.
7. The Shearer Reserve pump station will require pump and power supply augmentation which is consistent with Council's LTP population projections. It is noted that available storage is for emergency use only and is not available for buffering of normal daily use.

It should be noted this is a preliminary feasibility study and further assessment and engineering design will be required, as is usual practice in land development, throughout the development process.

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11.0 LIMITATION

This report is prepared for the use of Oakura Farm Parks Limited for assessing the overall feasibility of the proposed subdivision.

This report cannot be used for any other purpose or by others unless authority is given by Red Jacket Ltd.

APPENDIX I

SITE PLANS



INDICATIVE LAYOUT FOR PROPOSED SUBDIVISION

**APPENDIX II
PHOTOGRAPHS**



**VIEW OF SITE LOOKING NORTH-WEST
FROM THE EASTERN SIDE OF THE SITE**



**VIEW OF SITE LOOKING NORTH
FROM THE SOUTH-WESTERN SIDE OF THE SITE**

Feasibility Study – Subdivision of Wairau Road OAKURA



**VIEW OF SITE LOOKING SOUTH-WEST
FROM THE CENTER OF THE SITE**



**VIEW OF SITE LOOKING EAST
FROM THE SOUTH-WESTERN SIDE OF THE SITE**

Feasibility Study – Subdivision of Wairau Road OAKURA



**VIEW OF SITE LOOKING NORTH-WEST
FROM THE CENTER OF THE SITE**



**VIEW OF SITE LOOKING NORTH-WEST
FROM THE SOUTH-EASTERN SIDE OF THE SITE**

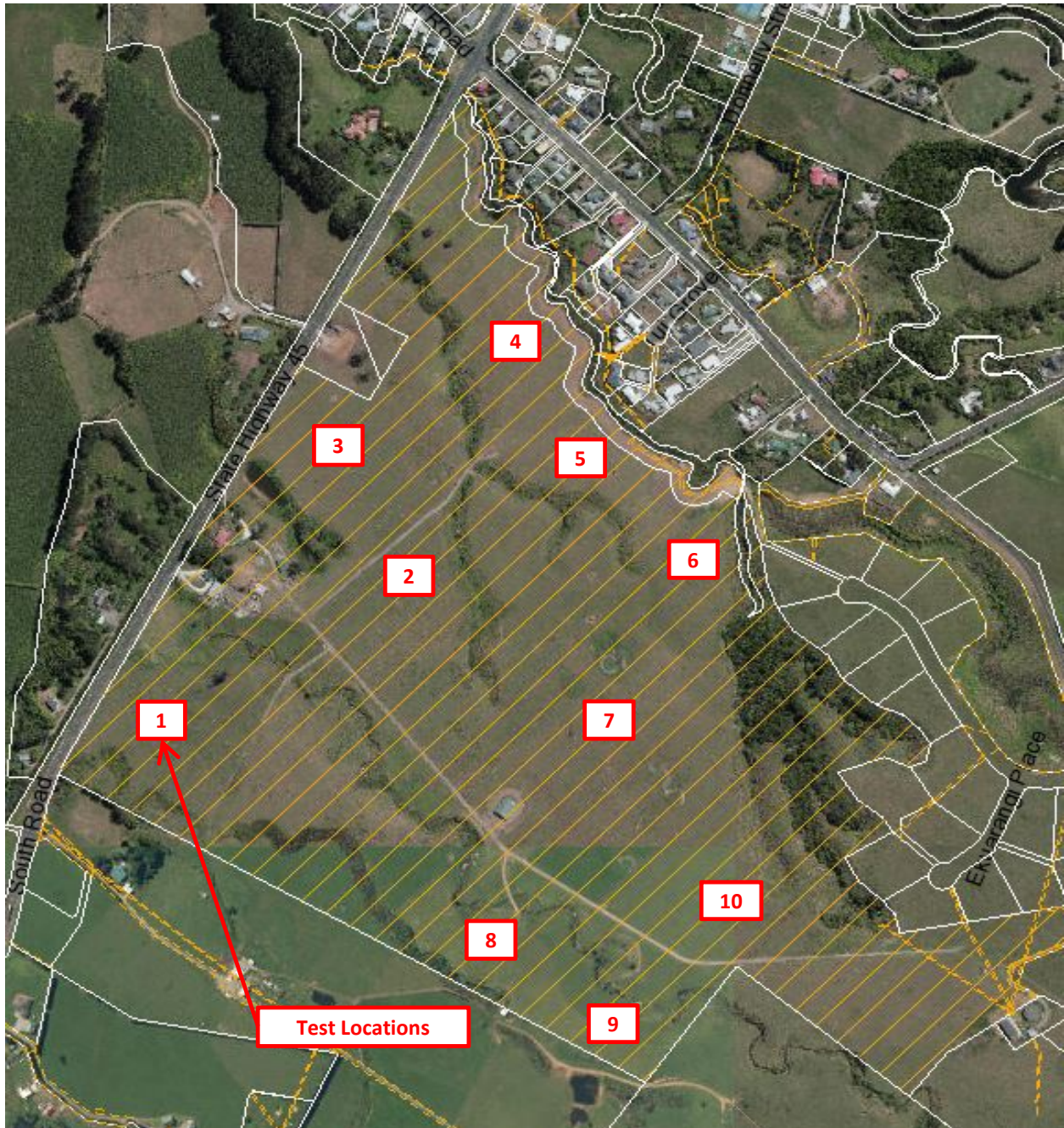
APPENDIX III

SOIL TESTING RESULTS

Date	16-02-2017; 22-02-2017 & 01-03-17	Job No.	2351
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SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



Location Plan
(N.T.S)

Disclaimer:

These Soil Testing Results are prepared for the client of Red Jacket for the stated purpose, and cannot be used for any other purpose or by others unless authority is given by Red Jacket Consulting Engineers Ltd.

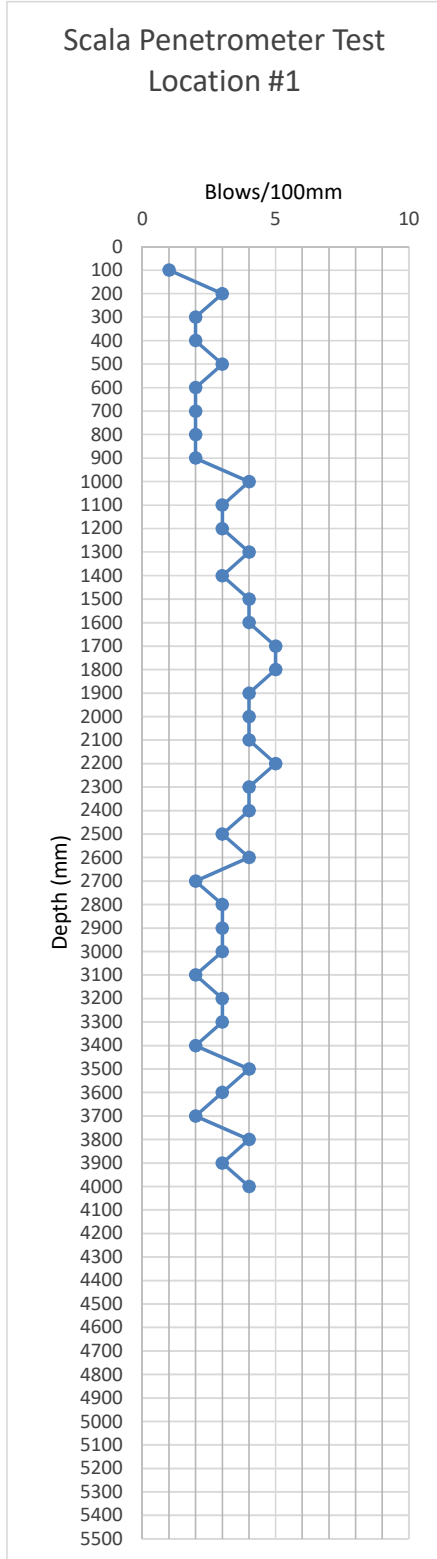
Red Jacket Limited - 3 Davidson Street, New Plymouth 4312, NZ
P.06 759 0999 - M. 027 257 0999 - info@redjacket.co.nz - www.redjacket.co.nz



Date	16-02-17	Job No.	2351
By	NS / KJ	Page No.	2 of 11
Doc No.	TST-2351-01		

SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



NOTES:

Shear Vane Used: Serial Number 1564

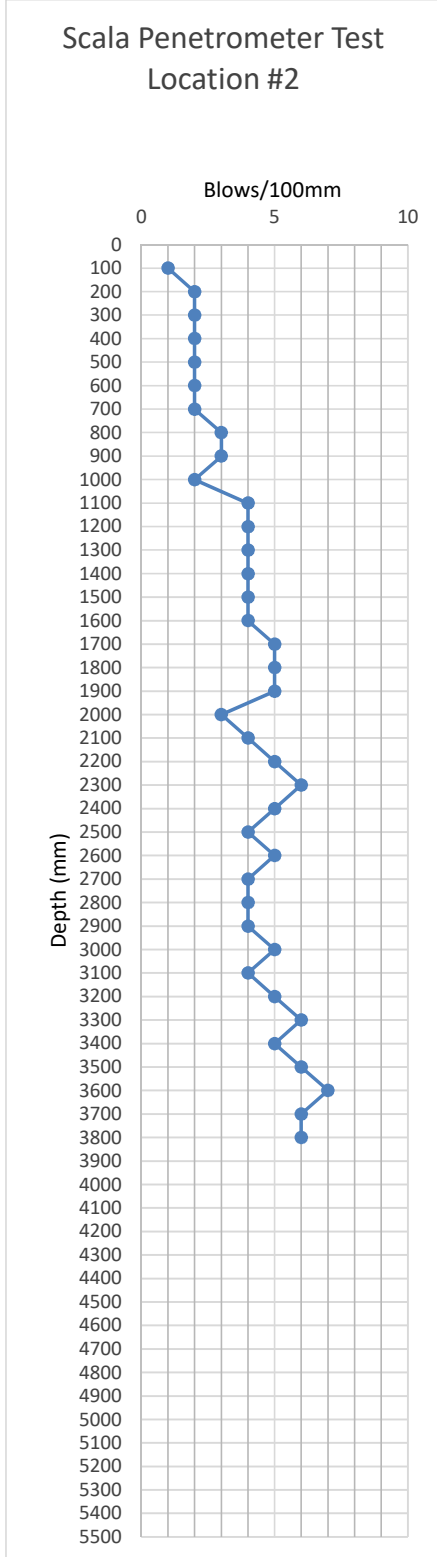
Shear Strength (kPa)	Soil Class.	Soil Type
	 OH	Top Soil
103 / 30	 CH	Volcanic Ash, Mid Tan, Firm, Moist
159 / 47		
150 / 44		
118 / 27		
>210		
195 / 44		
165 / 30		
177 / 44		
133 / 35		
>210		
	CH	Silty Volcanic Ash, Moist, Plastic
	CH	Volcanic Ash with Coarse Sand and Iron Staining Throughout, Firm, Moist
		End of Hole



Date	16-02-17	Job No.	2351
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Doc No.	TST-2351-01		

SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



NOTES:

Shear Vane Used: Serial Number 1564

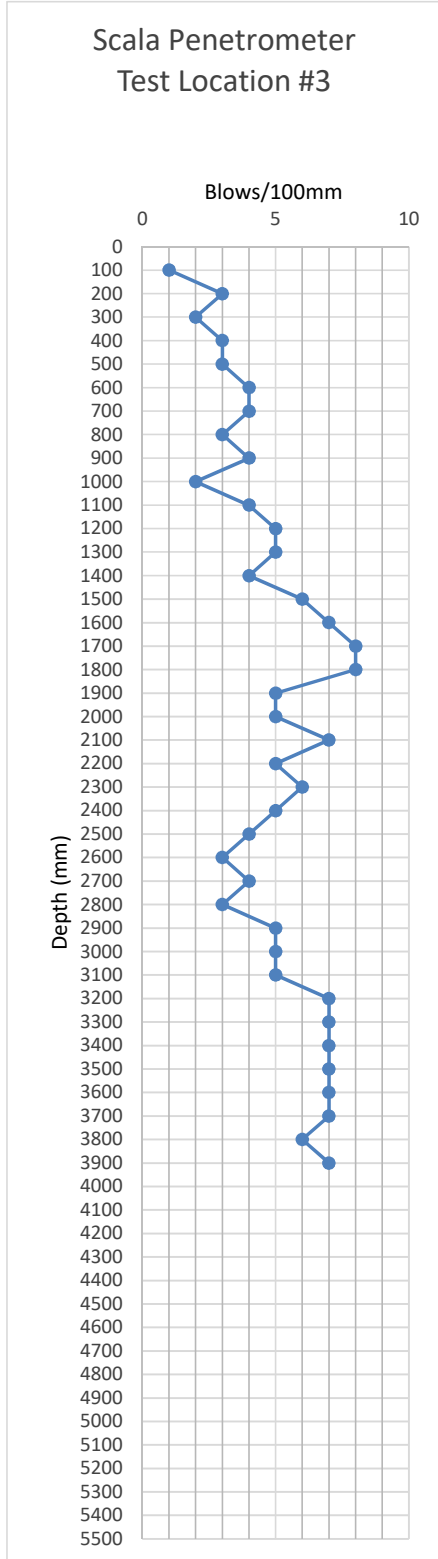
Shear Strength (kPa)	Soil Class.	Soil Type
		OH
65 / 24		Top Soil
153 / 47		CH
165 / 62		
165 / 41		
>210		
162 / 35		CH
180 / 30		
124 / 53		CH
168 / 44		
195 / 59		
>210		
>210		CH
		End of Hole



Date	22-02-17	Job No.	2351
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SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



NOTES:

Shear Vane Used: Serial Number 1564

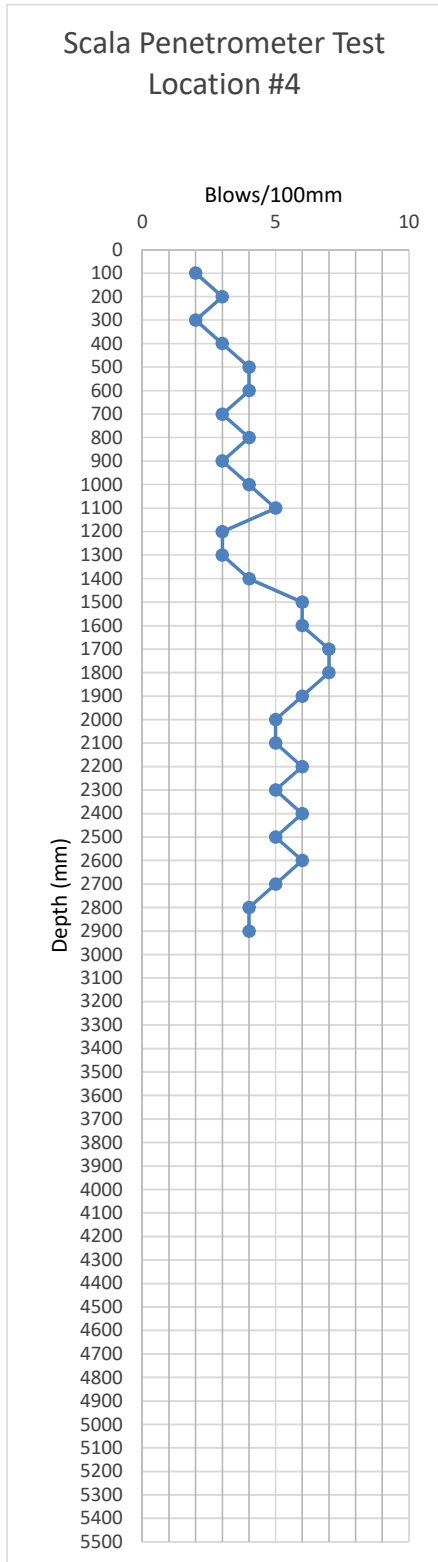
Shear Strength (kPa)	Soil Class.	Soil Type
	 OH	Top Soil
68 / 30	 CH	Volcanic Ash, Mid Tan, Firm, Moist
133 / 38		
165 / 59		
189 / 59		
195 / 68		
>210		
171 / 32	CH	Volcanic Ash with Coarse Sand and Iron Staining Throughout, Firm, Moist
189 / 44	CH	Volcanic Ash, Mid Tan, Firm, Moist
201 / 50		End of Hole



Date	16-02-17	Job No.	2351
By	NS / KJ	Page No.	5 of 11
Doc No.	TST-2351-01		

SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



NOTES:

Shear Vane Used: Serial Number 1564

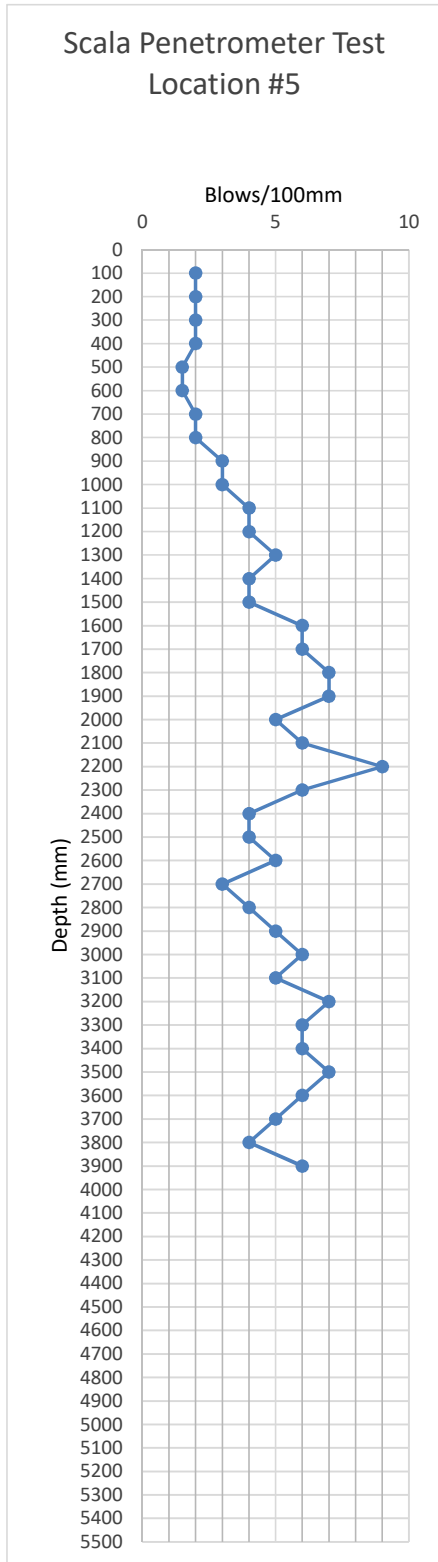
Shear Strength (kPa)	Soil Class.	Soil Type	
		OH	
121 / 44		Top Soil	
186 / 68		CH	
159 / 59			Volcanic Ash, Mid Tan, Firm, Moist
165 / 47			>210
>210			>210
153 / 53		CH	
>210			Volcanic Ash with Coarse Sand and Iron Staining Throughout, Firm, Moist
>210			>210
139 / 56		End of Hole	



Date	16-02-17	Job No.	2351
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SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



NOTES:

Shear Vane Used: Serial Number 1564

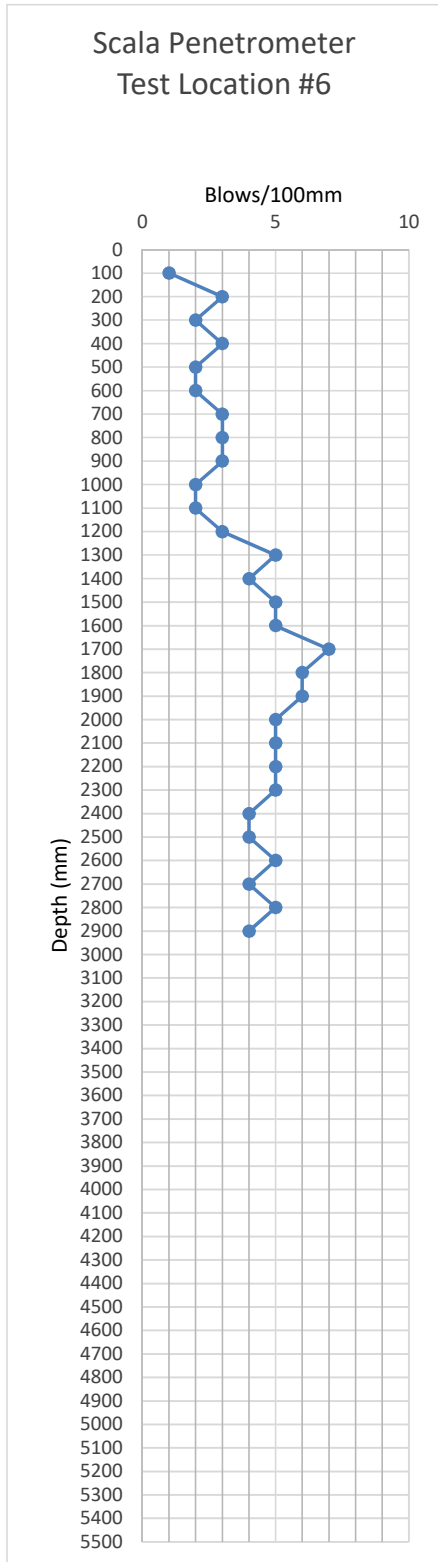
Shear Strength (kPa)	Soil Class.	Soil Type
		OH
		Top Soil
139 / 41		CH
183 / 59		
177 / 62		
168 / 50		
177 / 59		
>210		
174 / 15		CH
201 / 41		
>210		
>210		
>210		
>210		
		End of Hole



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SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



NOTES:

Shear Vane Used: Serial Number 1564

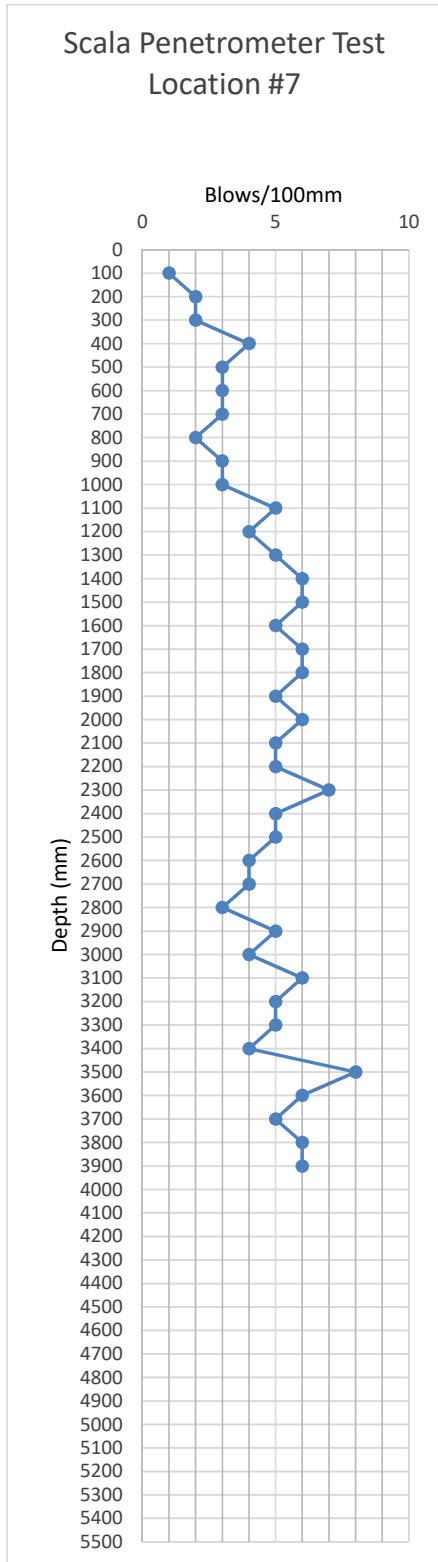
Shear Strength (kPa)	Soil Class.	Soil Type
		OH
136 / 35		Top Soil
>210		CH
177 / 56		
177 / 44		
>210		
>210		CH
162 / 38		
124 / 59		
>210		End of Hole



Date	16-02-17	Job No.	2351
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SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



NOTES:

Shear Vane Used: Serial Number 1564

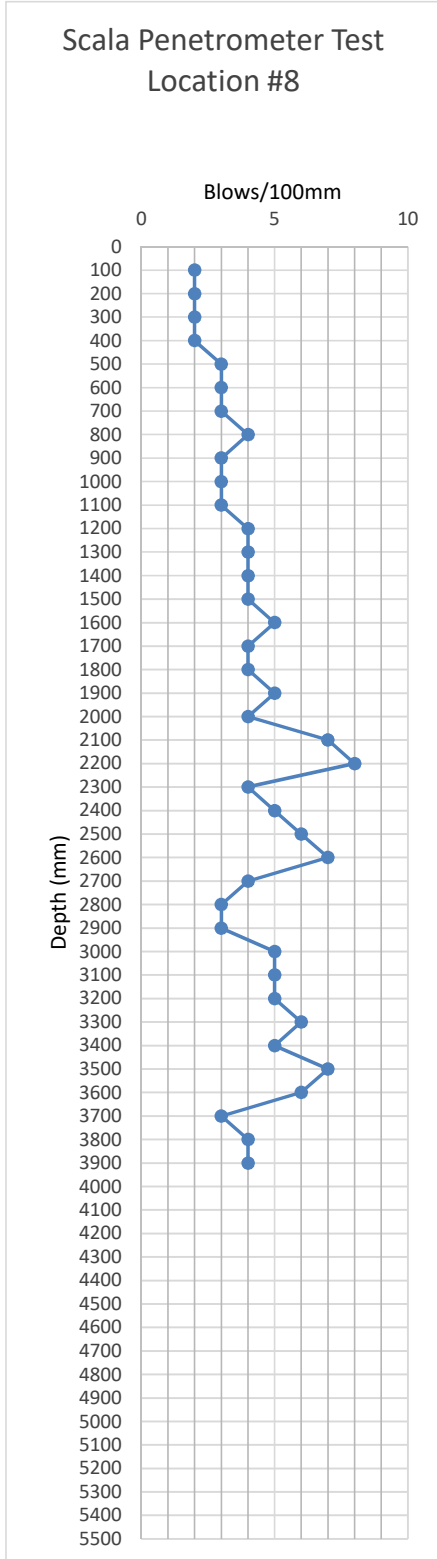
Shear Strength (kPa)	Soil Class.	Soil Type
		OH
103 / 30		Top Soil
159 / 50		CH Volcanic Ash, Mid Tan, Firm, Moist
>210		
>210		
>210		
>210		CH Volcanic Ash with Coarse Sand and Iron Staining Throughout, Firm, Moist
>210		
>210		
>210		
189 / 74		CH Volcanic Ash, Mid Tan, Firm, Moist and becoming Plastic
192 / 44		
>210		
>210		
>210		
>210		
>210		
103 / 44		
		End of Hole



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SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



NOTES: Large obstruction encountered at 2.0m depth in borehole

Shear Vane Used: Serial Number 1564

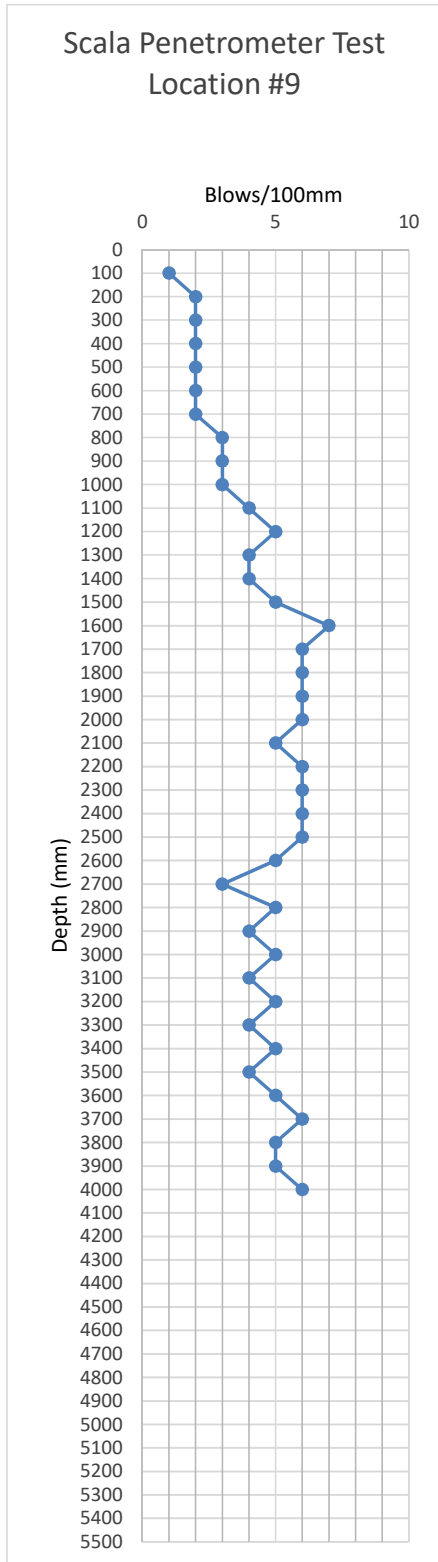
Shear Strength (kPa)	Soil Class.	Soil Type
		OH Top Soil
71 / 21		CH Volcanic Ash, Mid Tan, Firm, Moist
168 / 44		
195 / 56		
159 / 44		
>210	CH	Volcanic Ash with Coarse Sand and Iron Staining Throughout, Firm, Moist
>210	SM	Sily, Sandy, Volcanic Ash, Moist, Firm, Traces of Gravel
End of Hole (Due to Refusal)		



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SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



NOTES:

Shear Vane Used: Serial Number 1564

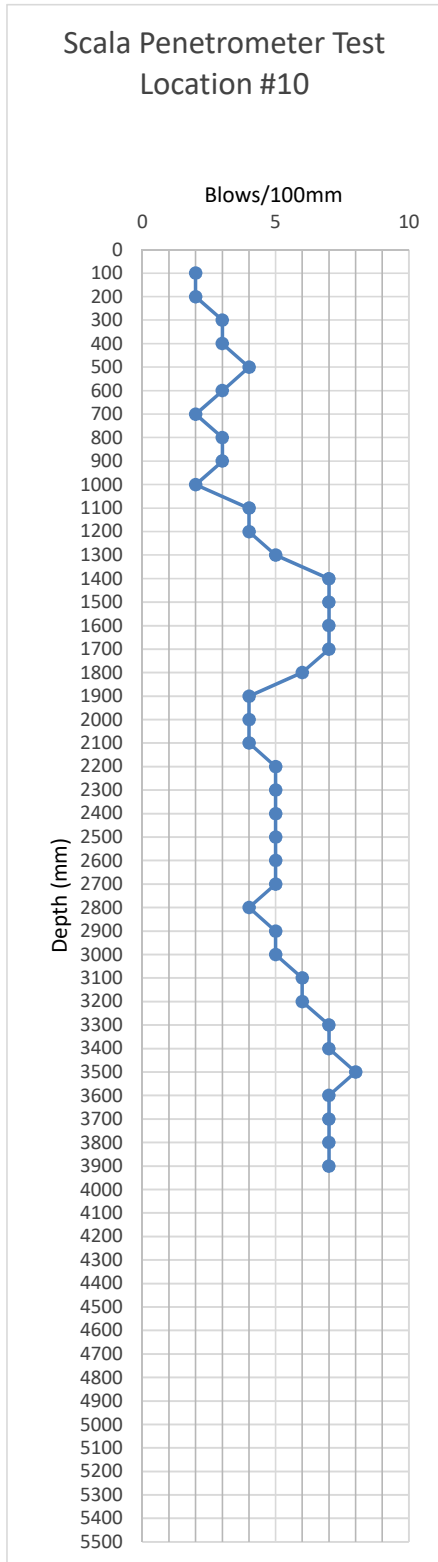
Shear Strength (kPa)	Soil Class.	Soil Type
	 OH	Top Soil
91 / 21	 CH	Volcanic Ash, Mid Tan, Firm, Moist
159 / 41		
121 / 50		
156 / 53		
>210		
>210	CH	Volcanic Ash with Coarse Sand and Iron Staining Throughout, Firm, Moist
195 / 30		
201 / 59	CH	Volcanic Ash, Mid Tan, Firm, Moist
168 / 89		
150 / 74		
177 / 74	CH	Volcanic Ash, Wet, Plastic, Silty, Isolated Lense of Grey Sandy Silt
100 / 53		
End of Hole		



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SOIL TESTING RESULTS

THE PADDOCKS, WAIRAU ROAD, OAKURA



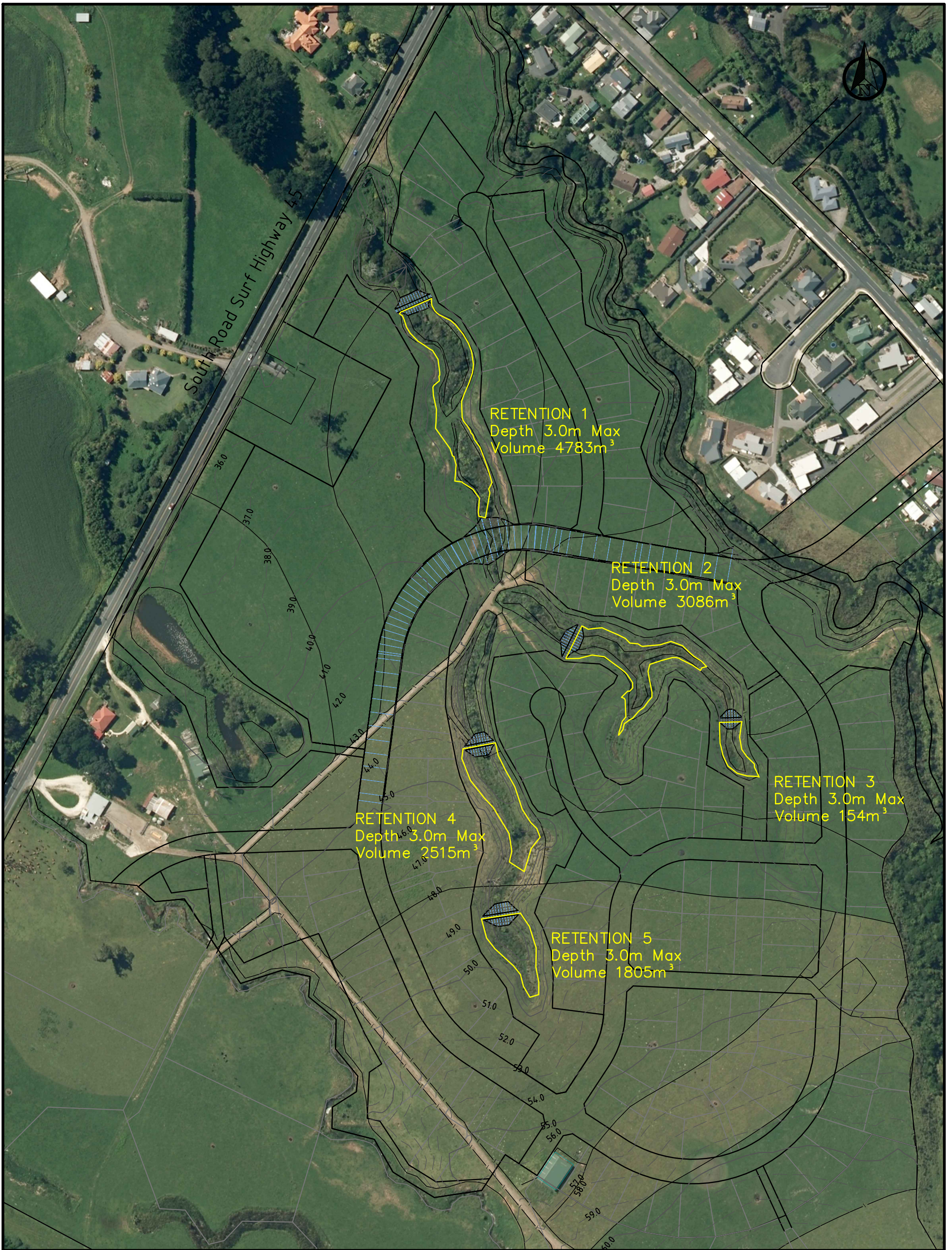
NOTES:


Shear Vane Used: Serial Number 1564

Shear Strength (kPa)	Soil Class.	Soil Type
	 OH	Top Soil
136 / 41	 CH	Volcanic Ash, Mid Tan, Firm, Moist
174 / 53		
165 / 50		
165 / 53		
>210	 CH	Volcanic Ash with Coarse Sand and Iron Staining Throughout, Firm, Moist
>210		
124 / 38		
>210		End of Hole

APPENDIX IV


STORMWATER CALCULATIONS

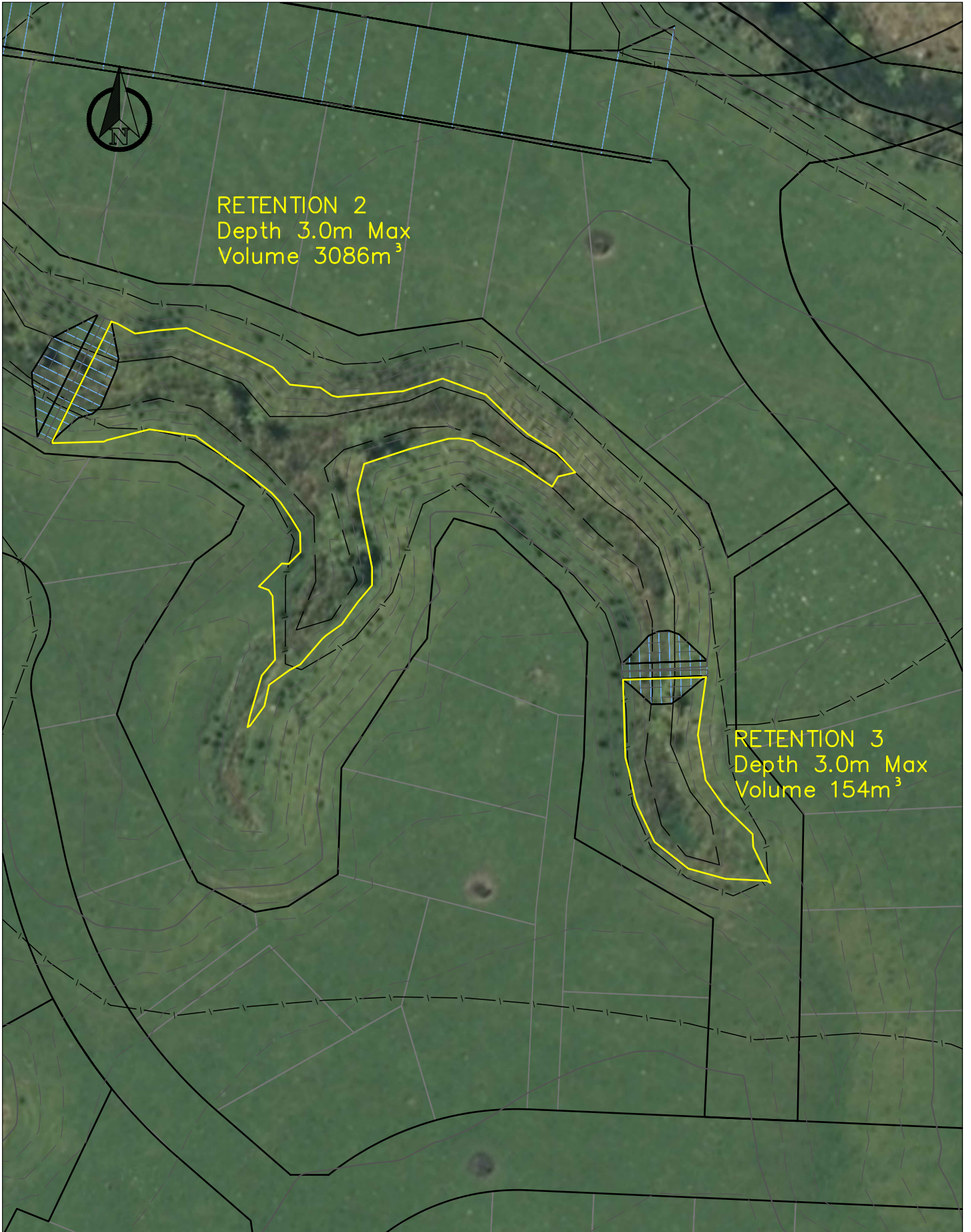


 <p>3 Young Street, PO Box 116 New Plymouth 4340 New Plymouth 06 758 5342 Hawera 06 278 4456 www.mckinlaysurveyors.co.nz</p>	TITLE WAIRAU ESTATE Proposed Stormwater Retention Areas		COMPRISED IN	
	CLIENT Oakura Farm Park Limited		TERRITORIAL AUTHORITY New Plymouth District Council	
	DATE 15/05/17		JOB No O-160109	
	SCALE 1:2500(A3)		DWG No SW01	
<i>This plan is prepared only for the purpose of obtaining a Resource Consent under the Resource Management Act 1991. It should not be used for any other purpose. Areas and dimensions are approximate and are subject to change on final field survey.</i>			SHEET OF 1 4	



RETENTION 1
 Depth 3.0m Max
 Volume 4783m³

	TITLE WAIRAU ESTATE - Stormwater Retention Area 1			
	CLIENT Oakura Farm Park Limited	COMPRISED IN	TOTAL AREA	JOB No O-160109
	TERRITORIAL AUTHORITY New Plymouth District Council	SCALE 1:1000	DATE 15/05/17	DWG No SW01 SHT 2
	3 Young Street, PO Box 116, New Plymouth 4340 New Plymouth 06 758 5342 Hawera 06 278 4456 www.mckinlaysurveyors.co.nz			

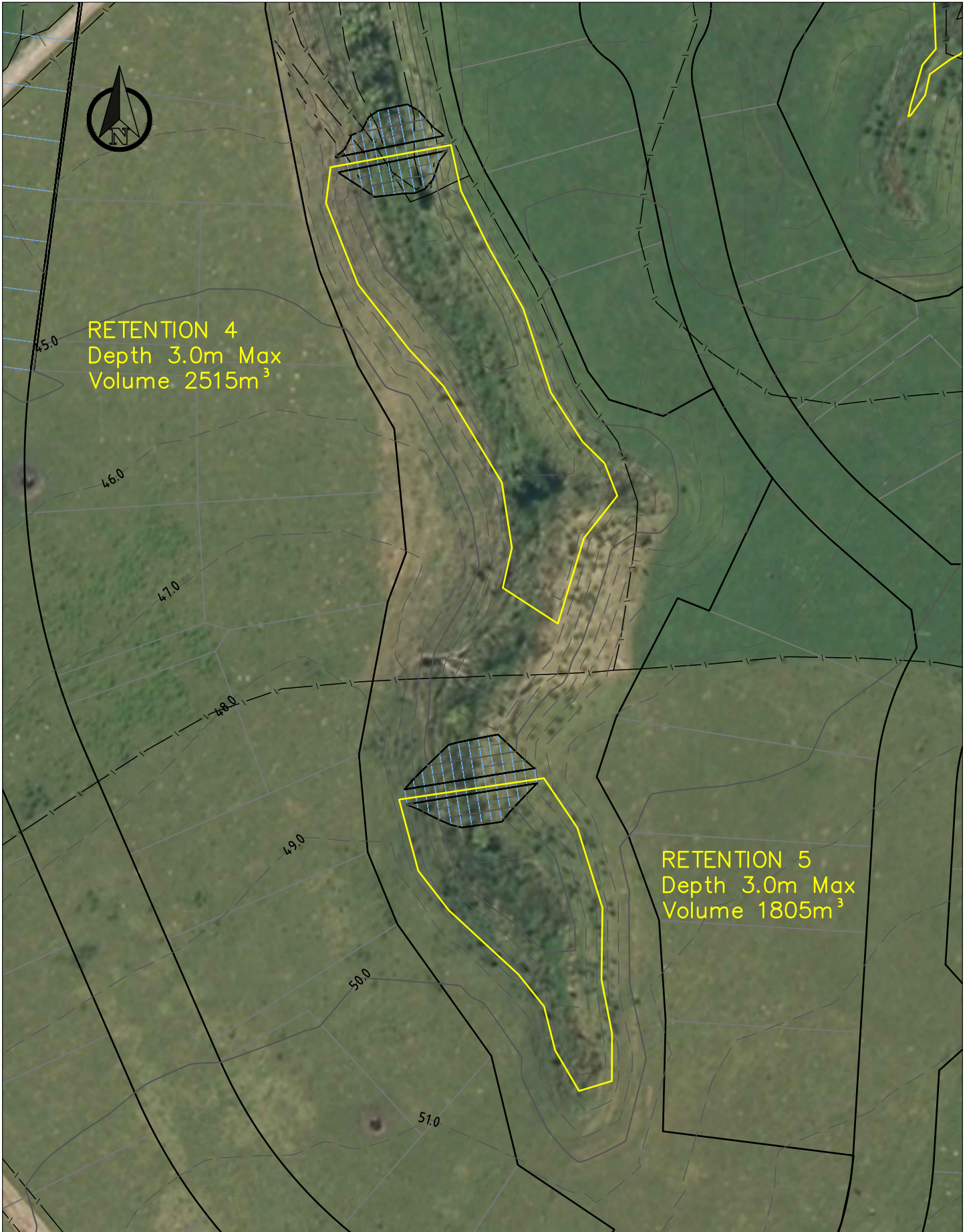



RETENTION 2
 Depth 3.0m Max
 Volume 3086m³

RETENTION 3
 Depth 3.0m Max
 Volume 154m³



TITLE				WAIRAU ESTATE - Stormwater Retention Areas 2 and 3			
CLIENT		COMPRISED IN		TOTAL AREA		JOB No	
Oakura Farm Park Limited						O-160109	
TERRITORIAL AUTHORITY		SCALE		DATE		DWG No	
New Plymouth District Council		1:1000		15/05/17		SW01 SHT 3	
3 Young Street, PO Box 116, New Plymouth 4340 New Plymouth 06 758 5342 Hawera 06 278 4456 www.mckinlaysurveyors.co.nz							



	TITLE WAIRAU ESTATE - Stormwater Retention Areas 4 and 5			
	CLIENT Oakura Farm Park Limited	COMPRISED IN	TOTAL AREA	JOB No O-160109
	TERRITORIAL AUTHORITY New Plymouth District Council	SCALE 1:1000	DATE 15/05/17	DWG No SW01 SHT 4
	3 Young Street, PO Box 116, New Plymouth 4340 New Plymouth 06 758 5342 Hawera 06 278 4456 www.mckinlaysurveyors.co.nz			

Cut/Fill Report

Generated: 2017-05-17 11:44:38

By user: WS1

Drawing: W:\Data\0_Oakura Farm Park\Plan Change\W:\Data\0_Oakura Farm Park\Plan Change\WAIRAU ESTATE - Stormwater Retention Volume Calculations.dwg

Volume Summary							
Name	Type	Cut Factor	Fill Factor	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
RETENTION 1	bounded	1.000	1.000	3565.781	0.067	4783.662	4783.595<Fill>
RETENTION 4	bounded	1.000	1.000	2027.858	61.386	2515.952	2454.566<Fill>
RETENTION 5	bounded	1.000	1.000	1348.038	53.808	1805.640	1751.832<Fill>
RETENTION 2	bounded	1.000	1.000	2122.350	0.111	3086.175	3086.065<Fill>
RETENTION 3	bounded	1.000	1.000	636.888	121.201	275.491	154.291<Fill>

Totals					
		2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total		9700.914	236.572	12466.920	12230.348<Fill>

* Value adjusted by cut or fill factor other than 1.0



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STORMWATER CALCULATION - 10% AEP WAIRAU ESTATE - OAKURA

General Stream Characteristics

Stream Name

Catchment Area (A) Ha

Runoff Coefficient

Catchment Map



Source:

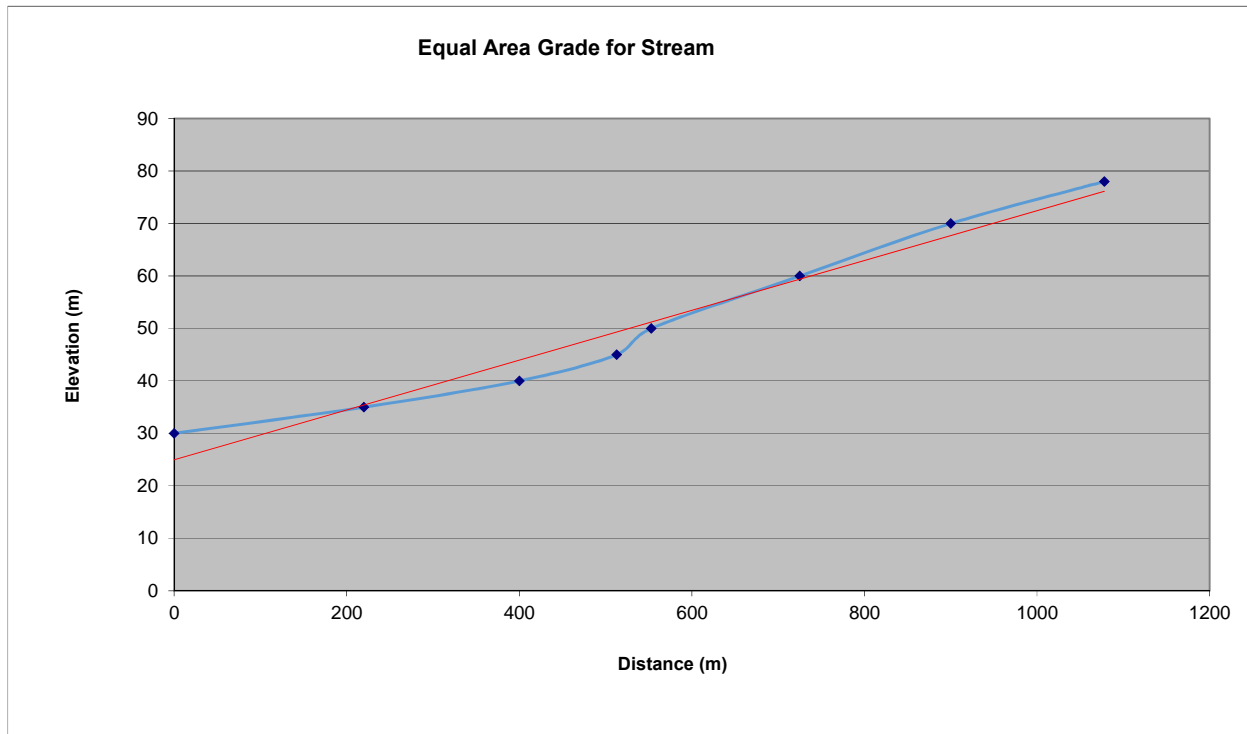


Date	17/03/2017	Job No.	2351
By	K Jansen	Page No.	
Doc No.	CAL-2351-01		

STORMWATER CALCULATION - 10% AEP WAIRAU ESTATE - OAKURA

Equal Area Stream Gradient

Elevation	distance between contours	Total rise	Stream length	area under graph	Accumulated area	Average slope	
30	0	0	0	0	0	0	30
35	220	5	220	550	550	0.022727273	
40	180	10	400	1350	1900	0.02375	
45	113	15	513	1412.5	3312.5	0.025173938	
50	40	20	553	700	4012.5	0.02624187	
60	172	30	725	4300	8312.5	0.031629013	
70	175	40	900	6125	14437.5	0.035648148	
78	178	48	1078	7832	22269.5	0.038326834	
		-30	1078	0	22269.5	0.038326834	71.31632653



AVERAGE SLOPE = 0.038 m/m

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By	K Jansen	Page No.	
Doc No.	CAL-2351-01		

STORMWATER CALCULATION - 10% AEP WAIRAU ESTATE - OAKURA

Time of Concentration

Ramser-Kirpich Method		US Soil Conservation		Bransby-Williams		Rural Catchments	
Length (m)	1078.00	Length (km)	1.08	Length (km)	1.08	Length (km)	1.08
$L^{0.777}$	216.33	L^3	1.25	$L^{1.2}$	1.09		62.52
RL top	78.00	Height diff	48.00	Area(km ²)	0.23	Area(km ²)	0.23
RL bott	30.00		1.09	$A^{0.1}$	0.86	$A^{0.1}$	0.86
RL diff	48.00	$0.87L^3/H$	0.02	H	48.00	Slope (m/km)	383.27
Sa	0.04	T.O.C. (hrs)	0.23	$H^{0.2}$	2.17	EAS ^{0.2}	3.29
$Sa^{-0.385}$	3.51			T.O.C(hrs)	0.56		2.832118572
T.O.C(min)	14.81	T.O.C(min)	13.97	T.O.C(min)	33.48	T.O.C(min)	22.08

AVERAGE T.O.C. (min) = 21.08

AVERAGE T.O.C. (min) = 15.56

EXCLUDING RURAL CATCHMENTS

SELECTED T.O.C. (min) = 30

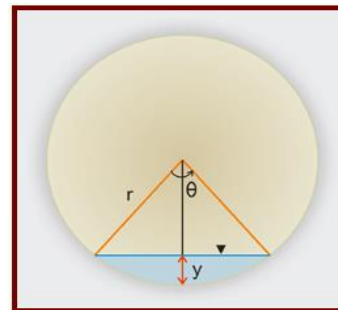
Rainfall Intensity

Source: HIRDS V3

ARI (years)	Rainfall Depth (mm)	Rainfall Intensity (mm/hr)	Flow (m ³ /s) Q* = CIA/360
2	19.9	39.8	1.12
5	25.5	51	1.44
10	30.1	60.2	1.70
20	35.3	70.6	1.99
50	43.3	86.6	2.45
100	50.5	101	2.85

Culvert Design

Pipe Diameter (D)	0.9	m
Flow Depth (y)	0.88	m
Bottom Slope (S)	1%	
Pipe Type	UPVC	
Manning's 'n'	0.013	
	5.68	rads
Flow Area (A)	0.63	m ²
Wetted Perimeter (P)	2.56	m
Hydraulic Radius (R)	0.25	m
Relative Depth (y/D)	0.98	
Froude Number	1.03	
Required Capacity (ARI)	10	
Discharge Demand (Q*)	1.70	
Discharge Capacity (Q)	1.917	m ³ /s
	Capacity OK	
Velocity (V)	3.03	m/s



$$Q = (1/n) A R^{2/3} S^{1/2}$$

$$V = Q / A$$



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By	K Jansen	Page No.	
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STORMWATER CALCULATION - 1% AEP WAIRAU ESTATE - OAKURA

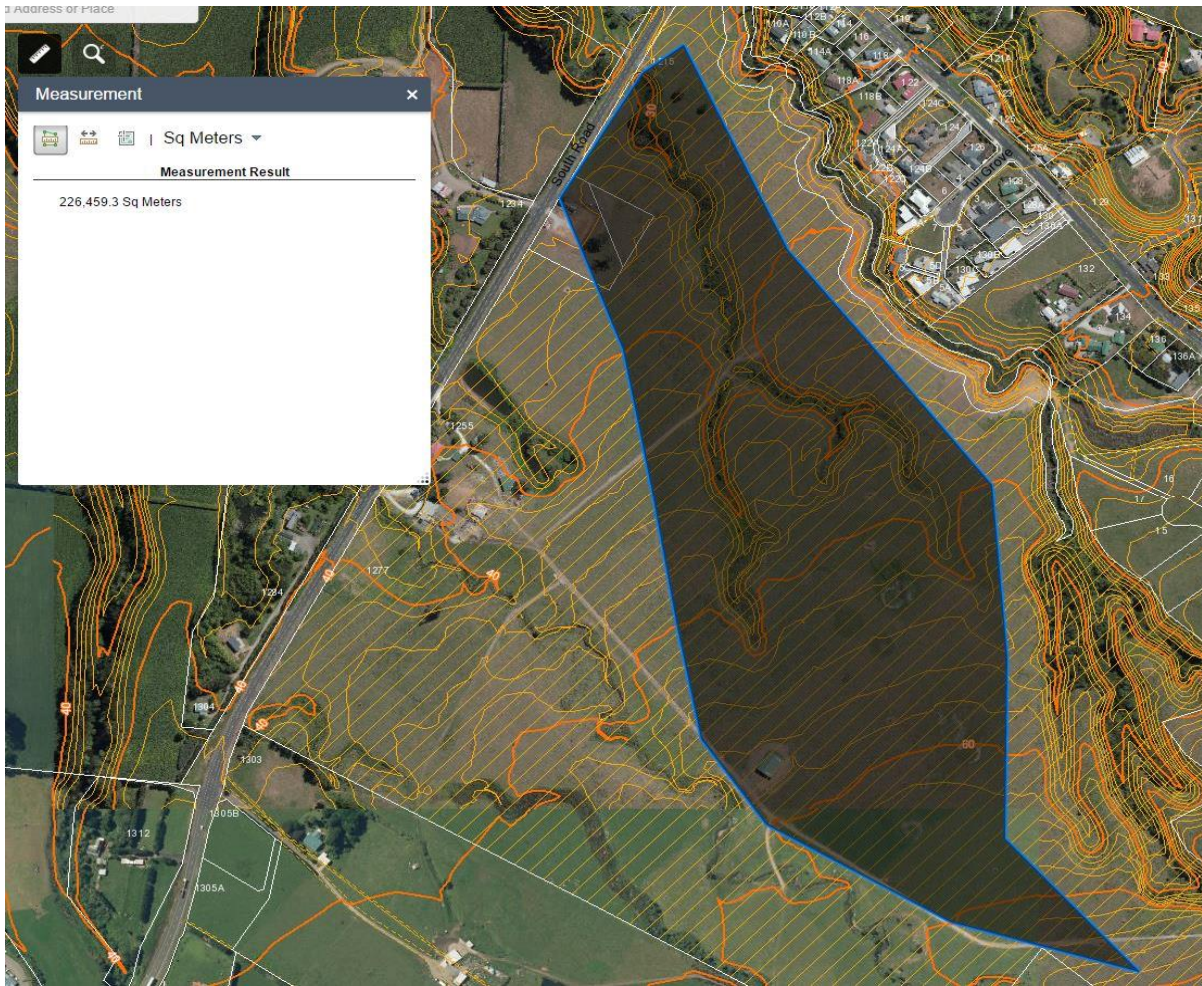
General Stream Characteristics

Stream Name

Catchment Area (A) Ha

Runoff Coefficient

Catchment Map



Source:

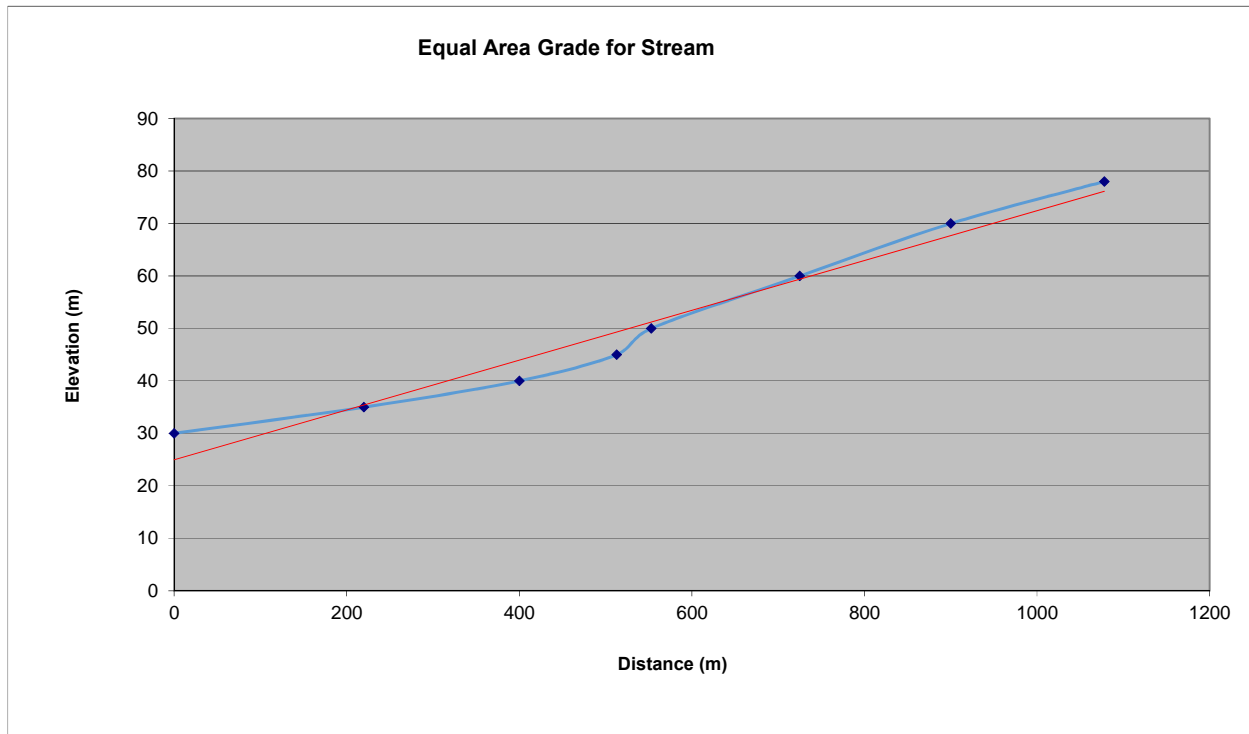


Date	17/03/2017	Job No.	2351
By	K Jansen	Page No.	
Doc No.	CAL-2351-01		

STORMWATER CALCULATION - 1% AEP WAIRAU ESTATE - OAKURA

Equal Area Stream Gradient

Elevation	distance between contours	Total rise	Stream length	area under graph	Accumulated area	Average slope	
30	0	0	0	0	0	0	30
35	220	5	220	550	550	0.022727273	
40	180	10	400	1350	1900	0.02375	
45	113	15	513	1412.5	3312.5	0.025173938	
50	40	20	553	700	4012.5	0.02624187	
60	172	30	725	4300	8312.5	0.031629013	
70	175	40	900	6125	14437.5	0.035648148	
78	178	48	1078	7832	22269.5	0.038326834	
		-30	1078	0	22269.5	0.038326834	71.31632653



AVERAGE SLOPE = 0.038 m/m

Date	17/03/2017	Job No.	2351
By	K Jansen	Page No.	
Doc No.	CAL-2351-01		

STORMWATER CALCULATION - 1% AEP WAIRAU ESTATE - OAKURA

Time of Concentration

Ramser-Kirpich Method		US Soil Conservation		Bransby-Williams		Rural Catchments	
Length (m)	1078.00	Length (km)	1.08	Length (km)	1.08	Length (km)	1.08
$L^{0.77}$	216.33	L^3	1.25	$L^{1.2}$	1.09		62.52
RL top	78.00	Height diff	48.00	Area(km ²)	0.23	Area(km ²)	0.23
RL bott	30.00	$0.87L^3$	1.09	$A^{0.1}$	0.86	$A^{0.1}$	0.86
RL diff	48.00	$0.87L^3/H$	0.02	H	48.00	Slope (m/km)	383.27
Sa	0.04	T.O.C. (hrs)	0.23	$H^{0.2}$	2.17	EAS ^{0.2}	3.29
$Sa^{-0.385}$	3.51			T.O.C(hrs)	0.56		2.832118572
T.O.C(min)	14.81	T.O.C(min)	13.97	T.O.C(min)	33.48	T.O.C(min)	22.08

AVERAGE T.O.C. (min) = 21.08

AVERAGE T.O.C. (min) = 15.56

EXCLUDING RURAL CATCHMENTS

SELECTED T.O.C. (min) = 30

Rainfall Intensity

Source: HIRDS V3

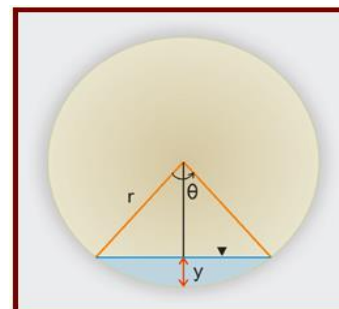
ARI (years)	Rainfall Depth (mm)	Rainfall Intensity (mm/hr)	Flow (m ³ /s) $Q^* = CIA/360$
2	19.9	39.8	1.12
5	25.5	51	1.44
10	30.1	60.2	1.70
20	35.3	70.6	1.99
50	43.3	86.6	2.45
100	50.5	101	2.85

Culvert Design

Pipe Diameter (D)	1.05	m
Flow Depth (y)	1.02	m
Bottom Slope (S)	1%	
Pipe Type	UPVC	
Manning's 'n'	0.013	
	5.60	rads
Flow Area (A)	0.86	m ²
Wetted Perimeter (P)	2.94	m
Hydraulic Radius (R)	0.29	m
Relative Depth (y/D)	0.97	
Froude Number	1.07	

Required Capacity (ARI)	100
Discharge Demand (Q*)	2.85
Discharge Capacity (Q)	2.907 m ³ /s

Capacity OK
3.39 m/s



$$Q = (1/n) A R^{2/3} S^{1/2}$$

$$V = Q / A$$

STORMWATER CALCULATION WAIRAU ESTATE - OAKURA

Wairau Estate Channel Storage Requirements - Bund Pipe Diameter

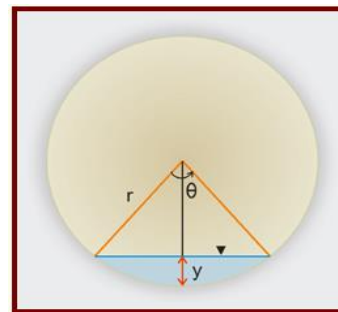
Rainfall Intensity

Source:

ARI (years)	Rainfall Depth (mm)	Rainfall Intensity (mm/hr)	Flow (m ³ /s) Q* = CIA/360
2	19.9	39.8	1.12
5	25.5	51	1.44
10	30.1	60.2	1.70
20	35.3	70.6	1.99
50	43.3	86.6	2.45
100	50.5	101	2.85

Culvert Design - Wairau Estate Bund Pipes

Pipe Diameter (D)	0.25	m
Flow Depth (y)	0.24	m
Bottom Slope (S)	1%	
Pipe Type	UPVC	
Manning's 'n'	0.013	
	5.48	rads
Flow Area (A)	0.05	m ²
Wetted Perimeter (P)	0.68	m
Hydraulic Radius (R)	0.07	m
Relative Depth (y/D)	0.96	
Froude Number	0.86	
Required Capacity (ARI)	10	
Discharge Demand (Q*)	1.70	
Discharge Capacity (Q)	0.064	m ³ /s
NOT OK - Change Culvert Design		
Velocity (V)	1.32	m/s



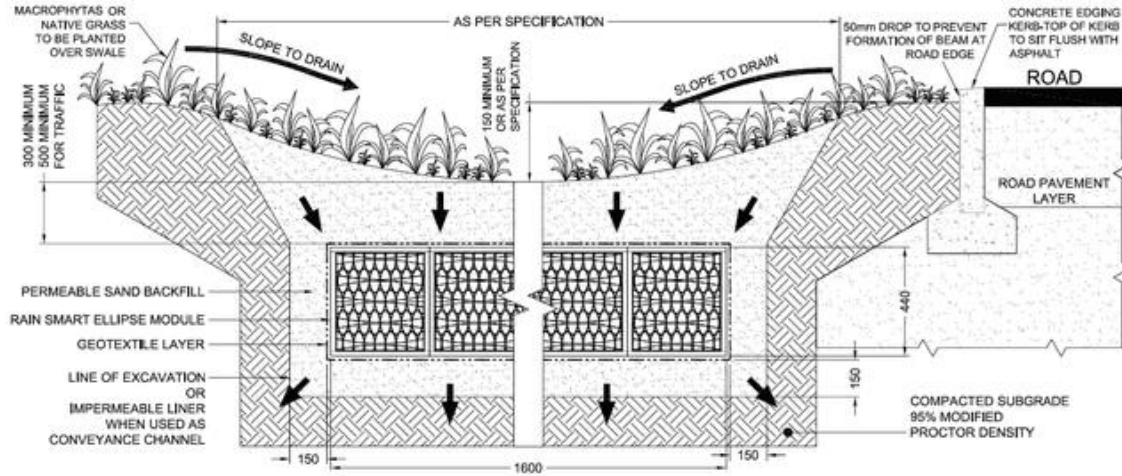
$$Q = (1/n) A R^{2/3} S^{1/2}$$

$$V = Q / A$$

Design Storm	Discharge m ³ /s	Pipe Capacity	Surplus flow requiring storage m ³ /s	Total Storage Required m ³
2	1.12	0.064	1.06	1909
5	1.44	0.064	1.38	2479
10	1.70	0.064	1.64	2946
20	1.99	0.064	1.93	3475
50	2.45	0.064	2.38	4289
100	2.85	0.064	2.79	5021

APPENDIX V

RAIN GARDEN DETAILS



GENERIC DIAGRAMATIC EXAMPLE OF ROADSIDE RAIN GARDEN



EXAMPLE OF CARRIAGE CENTRAL RAIN GARDEN IN RESIDENTIAL DEVELOPMENT

APPENDIX VI

WASTEWATER CALCULATIONS

Requested Information for Oakura Private Plan Change

1. **Maximum population figures for the Oakura areas presently zoned in the District Plan as Residential or Future Urban Development with consideration given to areas within this zoning which cannot practically be developed due to topography, flooding etc.**

Theoretical Dwelling Yield/Capacity and Population of Areas Currently Zoned Residential and Identified as Future Urban Development Areas

Area/Location	# of Dwellings	Potential Population
Potential available infill sections greater than 700m ²	93	248
Residential Zoned greenfield (west of Cunningham Lane and south of Arden Place)	45	120
Oakura South FUD	151	403
Oakura West FUD	395	1055
Total available	684	1826

Assumption in calculating theoretical yield:

- Minimum lot size of 700m² applied for greenfield areas, and a 30% allowance for roads, reserves and areas unsuitable for development (i.e. average yield of 10 dwellings per hectare).
- Potential population is based on a dwelling occupancy of 2.67 persons per dwelling.

Population and Dwelling Projections for Oakura

	2013	2018	2023	2028	2033	2038	2043	2048
Projections								
LTP Population Projection Estimate Growth		8%	6%	5%	4%	4%	3%	3%
Oakura Residential Area Unit	1,476	1,600	1,690	1,770	1,840	1,910	1,970	2,030
Total Occupied Dwellings	549	598	632	662	688	714	737	759
Dwelling Intensity	2.67							
Additional Dwellings Required (5 years)		49	34	30	26	26	23	22
Sum additional dwellings			83	113	139	165	188	210

2. **Details on the storage available in the wet well for the Shearer Reserve Pump Station. This information would be used to back calculate the potential population increase that can be accommodated available without imposing on the emergency storage (500+ m³).**

On 8th November, Graeme Pool at NPDC emailed Kim Jansen at Red Jacket drawings of the Shearer Reserve Pumping Station which showed details to calculate the wet well storage.

On 1st November, Hamish Wesney on behalf of NPDC emailed Colin Comber the information below.

Oakura Sewerage Scheme

Design horizon	Capacity	Assumptions	Known upgrades required to realise capacity	Additional cost
Current capacity	Current pump capacity is 25 l/s with 100% standby. this provides an ADWF of 5 l/s which is equivalent to pop of 1,730	Based on NZS4404 with amendments. Domestic sewage contribution is 250l/person/day (Cl5.3.5.1).	nil	nil
Ultimate capacity	16 l/s ADWF with additional pumps running duty assist and 50% standby. (equivalent to pop of 5,530).	As above.	Requires upgrade in form of extra pumps and associated controls, piping and valves plus a new transformer at Corbett Park PS to meet standby requirements.	Unknown as not fully scoped and priced

Oakura Water Supply

Design horizon	capacity	Assumptions	Known upgrades required to realise capacity	Additional cost
Current capacity	Dictated by size of existing reservoirs (2250 m ³ storage allows 26 l/s over 24 hours). Equivalent to pop of 3,480.	Based on NZS4404 with amendments. Domestic water consumption is 840l/property/day (Cl6.3.5.3). Assumed property occupancy rate 2.6. Peaking factor of 2 to recognise seasonal peaks (confirmed via recent work at 1.9). Resulting in a peak water consumption of 646 l/p/day.	nil	nil

Ultimate capacity	43 l/s (consent limit – 3715 m3/day). Equivalent to pop of 5,750.	As above.	Requires confirmation of pump capacity (possible upgrade required) and construction of additional reservoir for as this demand is greater than existing reservoir capacity (there is a need for operational and fire- fighting storage).	Unknown as not fully scoped and priced
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Potential Wastewater Discharge for Oakura						
Area/Location	No of Dwellings	Potential Population	Discharge/Person /day L	Total discharge/day L	Discharge /sec L/sec	Peak Discharge L/sec
Potential available Infill sections greater than 700 m2	93	248	250	62077.5	0.72	3.59
Residential Zoned Green field(west of Cunningham Lane and south of Ardern Place)	45	120	250	30037.5	0.35	1.74
Oakura South FUD	151	403	250	100792.5	1.17	5.83
Oakura West FUD	395	1055	250	263662.5	3.05	15.26
Wairau Estate-399 Lots - Sth FUD	248	662	250	165540	1.92	9.58
TOTALS	932	2488		622110	7.20	36.00

Wairau Estate - Existing Wastewater Mains - Capacity Calculations

Line	IL In	IL Out	DS GL	Distance	Fall	Grade	Dia.	Material	Pipe Capacity m ³ /s Mannings n = .013	Pipe Capacity l/s Mannings n = .013	Catchment Name	Sub- Catchment Area	Total Catchment Area	Catchment Discharge l/s	Total Discharge l/s
40182508	14.85	13.42	14.65	102.27	1.43	0.013983	150	uPVC	0.0188	18.8	Wairau Road Remainder	8.29	52.43	0.727613812	3.382908951
40182507	16.7	14.93	20.26	53.73	1.77	0.032942	150	uPVC	0.0289	28.9			44.14		2.655295139
40182506	17.62	16.78	18.6	63.61	0.84	0.013205	150	uPVC	0.0183	18.3			44.14		2.655295139
40181538	18.94	17.72	20.64	19.08	1.22	0.063941	150	uPVC	0.0403	40.3			44.14		2.655295139
40181537	20.1	19.13	20.43	56.03	0.97	0.017312	150	uPVC	0.0209	20.9			44.14		2.655295139
40181536	20.64	20.2	23.12	35.27	0.44	0.012475	150	uPVC	0.0178	17.8			44.14		2.655295139
40181535	21.76	20.74	22.76	31.61	1.02	0.032268	150	uPVC	0.0286	28.6			44.14		2.655295139
40181534	23.11	22.03	24.13	48.15	1.08	0.02243	150	uPVC	0.0238	23.8			44.14		2.655295139
40181993	24.23	23.23	24.95	33.53	1	0.029824	150	uPVC	0.0275	27.5			44.14		2.655295139
40181992	25.43	24.54	27.61	19.05	0.89	0.046719	150	uPVC	0.0344	34.4			44.14		2.655295139
											Wairau Estate Subdivision	32.93	44.14	2.256944444	2.655295139
40181533	26.61	25.61	32.16	48.15	1	0.020768	150	uPVC	0.0229	22.9	Wairau Road West Upper	2.91	11.21	0.25541088	0.398350694
40181532	28.91	26.73	28.68	74.96	2.18	0.029082	150	uPVC	0.0272	27.2			8.3		0.142939815
40181531	29.85	28.96	31.7	48.12	0.89	0.018495	150	uPVC	0.0216	21.6			8.3		0.142939815
40181530	30.26	29.89	31.65	20.12	0.37	0.01839	150	uPVC	0.0216	21.6			8.3		0.142939815
40181529	30.56	30.33	34.16	23.37	0.23	0.009842	150	uPVC	0.0158	15.8			8.3		0.142939815
40181528	32.67	30.84	34.83	38.26	1.83	0.047831	150	uPVC	0.0348	34.8			8.3		0.142939815
40181527	33.64	32.71	34.83	43.12	0.93	0.021568	150	uPVC	0.0234	23.4			8.3		0.142939815
40181989	34.45	33.77	38.45	43.48	0.68	0.015639	150	uPVC	0.0199	19.9			8.3		0.142939815
40181526	36.61	34.53	37.85	57.09	2.08	0.036434	150	uPVC	0.0304	30.4			8.3		0.142939815
40181524	37.43	36.81	38.81	39.28	0.62	0.015784	150	uPVC	0.02	20			8.3		0.142939815
40181523	37.64	37.46	38.68	29.86	0.18	0.006028	150	uPVC	0.0123	12.3			8.3		0.142939815
40181522	38.11	37.67	39.14	72.34	0.44	0.006082	150	uPVC	0.0124	12.4			8.3		0.142939815
40200582	38.46	38.2	39.72	27	0.26	0.00963	150	uPVC	0.0156	15.6			8.3		0.142939815
40200580	39.57	38.56	40.07	70.8	1.01	0.014266	150	uPVC	0.019	19			8.3		0.142939815
40200578	39.85	39.62	41.12	20.9	0.23	0.011005	150	uPVC	0.0167	16.7			8.3		0.142939815
40200577	40.13	39.9	41.47	19.8	0.23	0.011616	150	uPVC	0.0171	17.1			8.3		0.142939815
40200575	40.73	40.19	41.69	48.1	0.54	0.011227	150	uPVC	0.0169	16.9			8.3		0.142939815
40200573	41.6	40.78		36.2	0.82	0.022652	150	uPVC	0.024	24	Pahakahaka Drive	8.3	8.3	0.142939815	0.142939815
Downstream confluence of Unnamed Tributary and Wairau Road															
40182515	5.49	5.16	6.96	16.9	0.33	0.019527	225	uPVC	0.0652	65.2					
40182514	6.08	5.64	6.99	19.9	0.44	0.022111	225	uPVC	0.0693	69.3					
40182513	6.8	6.17	8.52	45.5	0.63	0.013846	225	uPVC	0.0549	54.9					
40182512	8.06	6.89	8.11	35.1	1.17	0.033333	225	uPVC	0.0852	85.2					
40182511	10.13	8.22	12.94	51.6	1.91	0.037016	225	uPVC	0.0897	89.7					
40182510	12.26	10.2	15.58	55.6	2.06	0.03705	225	uPVC	0.0898	89.8					
40182509	13.34	12.43	14.65	58.4	0.91	0.015582	225	uPVC	0.0582	58.2					
Downstream Confluence Wairau Catchments and Messenger Terrace Catchments															
40184243	4.31	3.92	6.86	10	0.39	0.039	300	uPVC	0.1974	197.4					
40184242	5.16	4.41	7.34	19.2	0.75	0.039063	300	uPVC	0.1976	197.6	Messenger Terrace	52.1	104.53	4.997627315	8.380536265

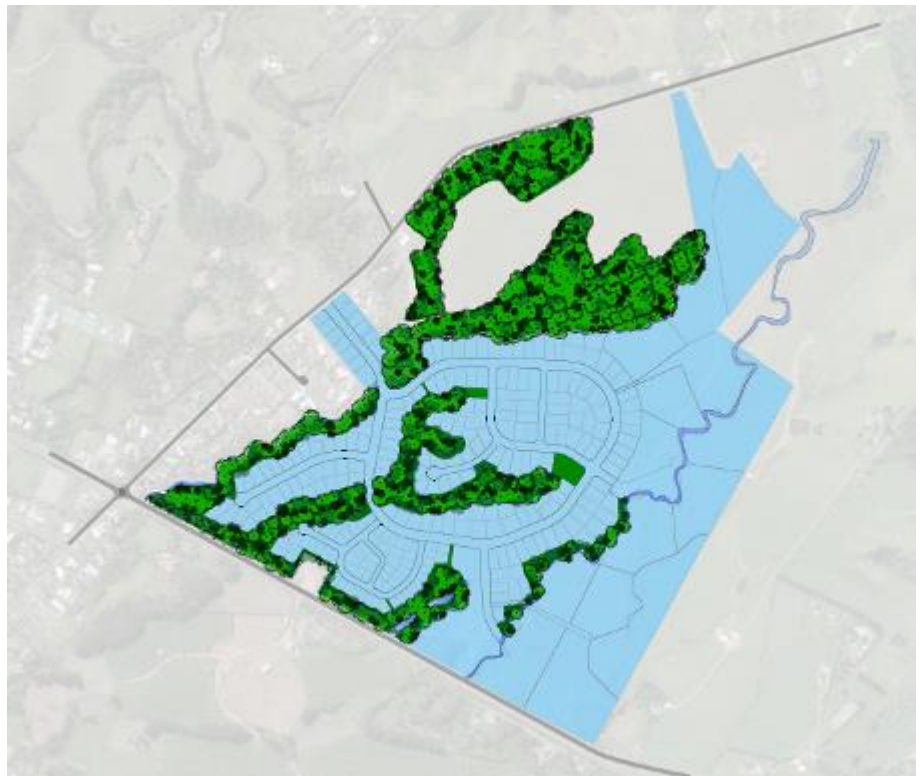
Appendix 9 Traffic Impact Assessment

Appendix 9.1 Traffic Impact Assessment

Appendix 9.2 Roundabout Cost Estimate



WAIRAU ESTATE



7 November 2017

Traffic Impact Assessment

Prepared for Oakura Farm Park Ltd by AMTANZ Ltd

Revision History

Revision N°	Prepared By	Description	Date
A	Andy Skerrett	Draft for comment	23/3/2017
B	Andy Skerrett	Issued for discussion	21/6/2017
C	Andy Skerrett	Update to include revised development yield, Future Urban Development options and crash prediction modelling.	7/11/2017

This report was prepared by AMTANZ Ltd solely for Oakura Farm Park Ltd. The scope of work and related responsibilities are defined in the Conditions of Engagement. The material in this report reflects industry standard judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. AMTANZ Ltd accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Document Acceptance

Action	Name	Signed	Date
Prepared by	Andy Skerrett		7 th November 2017
on behalf of	AMTANZ Ltd		

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EXECUTIVE SUMMARY

Introduction

The proposal is to develop some 58Ha of land immediately to the south west of the township of Oakura which is currently zoned rural and Future Urban Development. When fully developed it is intended to create some 399 lots, the majority being urban residential in nature, some smaller lots aimed at independent aged living, one commercial lot and some being larger with paddocks aimed at the equestrian community. It is anticipated that the development will be staged over a ten year period. Access will be via Upper Wairau Rd which then intersects with State highway 45 (South Rd) to provide access to the township and further afield.

Existing local road environment

Upper Wairau Rd is a no exit road that services a number of lifestyle blocks and agricultural businesses. It is also the access to the Koru Pa and provides access to the Kaitake Ranges via walking tracks. There are currently in the order of 145 dwellings on Upper Wairau Rd with another potential 30 lots currently available. The measured traffic volume on Upper Wairau RD near its intersection with SH45 was 1250 vpd.

In the vicinity of the proposed access Upper Wairau Rd is rural in nature and has an 8m seal width two traffic lanes, no kerb and channel and table drains. Sight distance exceeds the requirements for a 50kph zone being greater than 180m in both directions.

State highway 45 (South Rd) is classified as a regional distributor and has an annual average daily traffic volume of 3500vpd to the west of Oakura (Weld Rd). There is local concern regarding the speed of traffic in the vicinity of the Wairau Rd intersection and this was confirmed with measured speeds in excess of the 50kph speed limit, due in part to the proximity of the speed threshold being only 50m to the west of the intersection.

The intersection of Wairau Rd and State highway 45 takes the form of a crossroads with the Wairau Rd legs being offset by some 8m. The visibility from Upper Wairau Rd is restricted to the east by a cutting and therefore the crossroads has "Stop" controls. From the "Stop" line the visibility is in excess of the requirements of Austroads in all directions. To the east there is a dip in road which means the surface is not visible over the full length, but vehicles remain visible at all times.

The national crash data base indicates there have been three reported crashes in the past five years in the proximity of the development all have occurred on State highway 45 in the 100kph zone to the west of the intersection. When interrogated over a ten year period four further crashes were reported to have occurred at the intersection, one of which was an injury accident.

Traffic Generation

The proposed development of 399 lots will generate in the order of 3,392 vpd when it is fully developed using a trip generation rate of 8.5 trips per lot per day. This rate was established from the current trip generation for Upper Wairau Rd being 8.4 vpd. If NZTA's trip generation rate of 10.4 trips/lot/day is used then the development will generate 4,150 trips per day.

In the New Plymouth District Plan there are various areas identified for Future Urban Growth (FUD). Approx. 12 ha of the Wairau Estate site has been identified as FUD land. Some 38 ha of rural land between SH45 and the coast adjacent to the subject site has also been identified for future urban expansion. In order to assess the impacts on the local road network a number of scenarios were modelled which included the development of these FUD areas plus other additional development on Upper Wairau Rd.

Impacts of the traffic generation.

The state highway 45 and Wairau Road intersection was modelled for the morning peak hour in Sidra 7 the results of which indicate that the intersection will accommodate the majority of the potential development scenarios. The exception being for the ultimate case where Wairau Estate is fully developed and the future urban development land north of the highway is fully developed, then the performance of some of the movements falls to a level of service F.

Levels of service (LOS) is a quality measure that describes the operational conditions generally in terms of measures such as speed and travel time, freedom to manoeuvre (delays), traffic interruptions, comfort and convenience. It has six levels from A to F with A being excellent free flow conditions and F unacceptable delays and unstable flows.

Impacts of the development

On Upper Wairau Rd the predicted traffic generation from Wairau Estate will exceed the existing traffic volumes before the development is completed. Initially the development will be accessed by a "T" intersection and there is sufficient room and visibility for this to be achieved without impacting adversely on the road. However as the generated traffic exceeds the existing traffic volume the priority should be changed to Wairau Estate in a similar manner to the Surrey Hill/ Wairau Road intersection. Design of the lots adjacent to Wairau Road should take the ultimate road layout into account.

If the Wairau Estate development was considered in isolation the performance of the intersection with State highway 45 from LOS B to C with an average delay to right turning traffic of between 18.2 and 22.2 seconds depending on the traffic generation used, which is considered to be acceptable. The additional traffic from the potential development north of the State highway when combined with the Wairau Estate traffic drops the performance to LOS F and average delays are between 88 and 244 seconds depending on the traffic generation rate used which is not acceptable.

The Wairau Road / State highway 45 intersection currently performs better than expected in terms of safety when compared to crash prediction models, having an annual injury crash rate of 0.1 injury crashes/year versus a predicted rate of 0.25. As the traffic volumes increase the safety performance is expected to drop and at the ultimate traffic flows is expected to have an annual injury crash rate of 0.72.

Mitigation measures

Changing the form of the intersection from a crossroads to a suitable designed roundabout addresses not only the traffic delay issues with the worst performing movements being at LOS B, but also reduces the speed of the traffic on the State highway. It would also have a positive effect on the injury crash rates 0.39 per year for the ultimate traffic flows. Whilst the safety performance of roundabouts is generally better than a crossroads they typically adversely affect pedestrians and cyclists. The provision of a pedestrian under pass under the highway to the west of the intersection with suitably formed links would address these adverse effects.

Conclusion

The development of 399 lots will significantly increase traffic on Upper Wairau Rd. If this were to occur in isolation, the existing crossroads would accommodate the additional traffic but delays would increase. Other development is, however, likely to occur during the development of Wairau Estate. These will add additional pressure on the intersection until it fails during the peak hours. A roundabout will address the traffic delays and also other traffic concerns.

1. INTRODUCTION.

AMTANZ Ltd were engaged by Oakura Farm Parks Ltd to undertake a traffic impact assessment of their proposed Wairau Estate development of 58Ha of currently rural grazing land into residential lots. This report considers the existing traffic conditions on the surrounding road network, the likely traffic generation of the development, its impact on the road network and mitigation measures.

2. THE PROPOSAL.

The proposed development site is located to the south west of the township of Oakura and is bounded by State highway 45 to the north west, Upper Wairau Rd and residential properties to the north east, rural farmland and lifestyle blocks to the south west and the Kaitake Ranges to the south as shown outlined in red in the aerial photograph below:

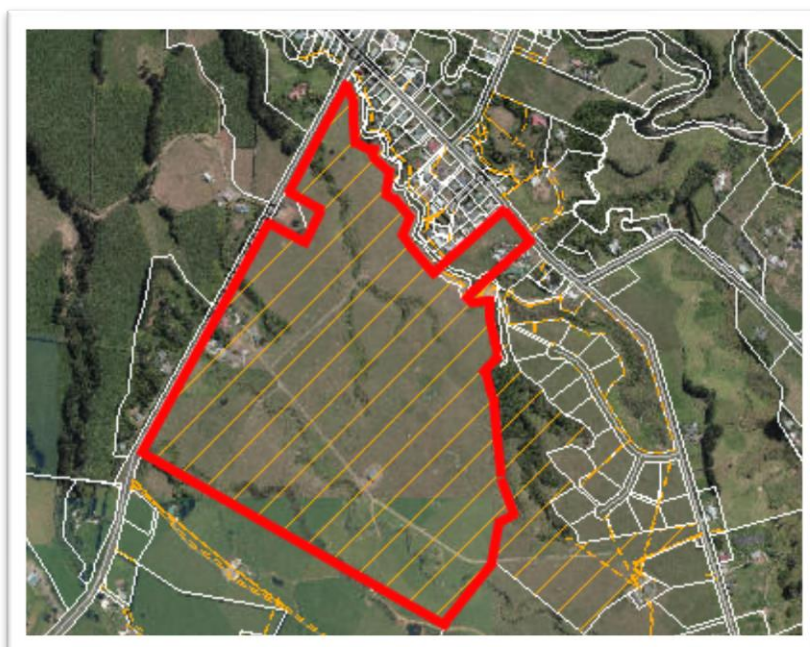


FIGURE 1 - AERIAL VIEW OF THE PROPOSED SITE

The land is currently zoned in the New Plymouth District Plan as a mix of Future Urban Development (FUD) and rural. The FUD area is in the northern section of the land as shown on the following extract from the district plan.

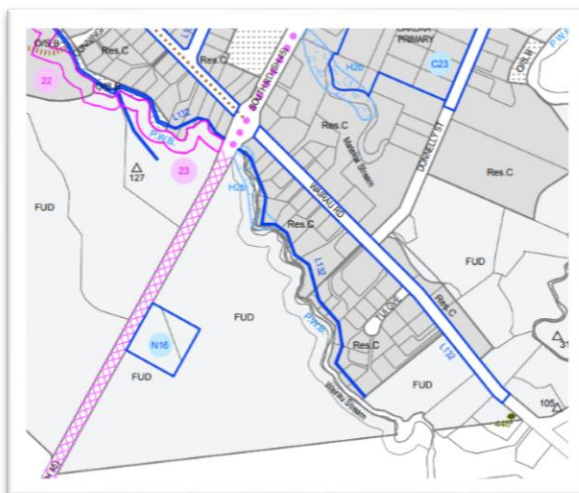


FIGURE 2 - DISTRICT PLAN ZONING

The proposal is to undertake a staged development with a mix of residential lots and some larger lots with small paddocks with horse owners in mind. In all the project is likely to generate in the order of three hundred and ninety nine lots over a ten year period. Access to the development is proposed to be via Upper Wairau Rd through a suitably formed intersection at the location shown below:



FIGURE 3 - PROPOSED ACCESS

The traffic would then access the township via State highway 45 (South Road), given the increase in traffic using the intersection it is proposed that a suitably designed roundabout be constructed. It is also proposed that non-vehicular access tracks are created throughout the sub-division with access to the north of the State highway (towards the beach) to be via an underpass capable of accommodating pedestrians and cyclists.

3. DESCRIPTION OF THE SURROUNDING BUILT ENVIRONMENT.

Oakura is a small coastal settlement some 15 minutes to the west of New Plymouth and is connected principally via State highway 45 which runs through the centre of the township. To the east of the town runs the Oakura River which provides a natural constraint to development back towards New Plymouth.

Between the highway and sea much of the land has been developed and growth could be achieved by sub-dividing some of the larger lots. Some sub-division has occurred where sea views or proximity to the beach has increased the value of the lots generally the lots remain quite large. In recent times there has been some development occurring to the north west of the township in a strip of land close to the sea and also inland along Upper Wairau Rd, Surrey Hill Rd and Kaitake Rd.



FIGURE 4 - AERIAL PHOTOGRAPH OF OAKURA

The majority of the commercial activity takes place along SH45 with the townships' store, pub, cafés, service station and other shops. Just to the west of the commercial area is the local primary school on Donnelly St which has pedestrian access onto Upper Wairau Rd.

Upper Wairau Rd is a "No exit" road but provides access to Surrey Hill Rd and subsequently Kaitake Rd. There is ribbon residential development along the length of Upper Wairau Rd with the lots becoming bigger, changing into life style blocks and small farms as you head south. It is a similar situation on Surrey Hill Rd and Kaitake Rd. Surrey Hill Rd also provides access to the Koru Hill Pa and the Davies Track, a walking track into the Kaitake Ranges. From a combination of counting the properties from aerial photography and counting letter boxes we estimate there are currently 145 dwellings using the Wairau Rd / SH45 intersection with an additional 25 to 30 lots still to be developed.

Road geometry

For the purposes of this report we will use the following names to identify the roads, Upper Wairau Rd for Wairau Rd south of State highway 45 and Lower Wairau Rd for north of the highway. Similarly the highway will be called SH45 (East) and (West) either side of the Wairau Rd intersection. Both State highway 45 and Wairau Rd are both straight roads in the vicinity of the intersection.

Wairau Rd

Upper Wairau Rd

Upper Wairau Rd from State highway 45 is sealed with a width of 8m, it is marked with a centre line and has a posted speed limit of 50 kph until the Surrey Hill Rd intersection. The intersection corners are kerbed but the eastern kerb stops after 10-15m where there is a second section of kerb in the vicinity of Tui Grove. The western kerb continues some 475m and has a 1.2m wide concrete foot path. Initially the road rises at approximately 5% from the intersection and then levels off to a grade of 1 or 2 % as it climbs towards the ranges. As can be seen in the photograph below:

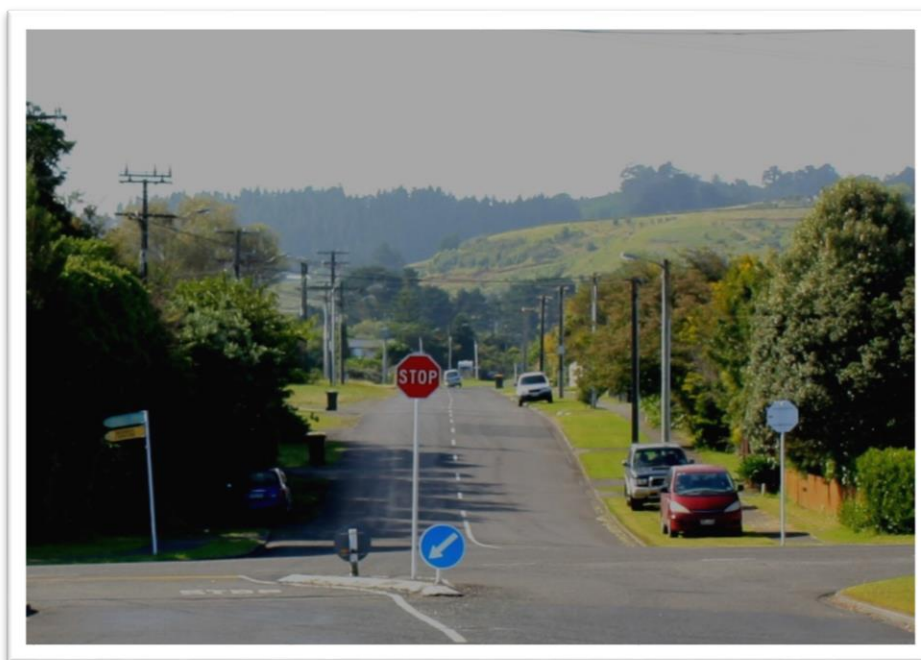


FIGURE 5 - VIEW OF UPPER WAIRAU RD

Proposed access to Wairau Estate

At the proposed access to the development the seal width is 8m. Drainage is achieved through table drains, the kerb on western side finishes some 40m to the north of the access. In the immediate vicinity of the access and despite the 50kph speed limit the road is rural in nature with no kerb and channel and table drains. From the access the visibility to the south is approximately 180m and is restricted by a curve to the east at the intersection of Surrey Hill Rd and Wairau Rd, where the priority is given to Surrey Hill Rd. To the north of the proposed access the visibility is in excess of 200m and is restricted by a slight curve to the west. The following photographs show the available visibility:



FIGURE 6 - VIEW SOUTH FROM ACCESS



FIGURE 7 - VIEW NORTH FROM ACCESS

Lower Wairau Rd

Lower Wairau Rd has a sealed width of 10m, it is kerbed both sides and has a concrete footpath on the eastern berm. The road generally falls at between 1 and 2% to the north in the vicinity of the intersection with State highway 45. The following photograph shows the approach to the intersection:



FIGURE 8 - WAIRAU RD NORTH

State highway 45 (South Rd)

SH45 is sealed and has a posted speed limit of 50kph until 50m west of the Wairau Rd intersection where the speed limit rises to 100kph. SH45 is kerbed to the east of Wairau Rd and through the intersection and consists of two 3.2m lanes with sealed shoulders which vary in width 1.5 to 3.0m. In the 100kph zone the highway consists of two 3.5m lanes with 0.5m sealed shoulders.

East of the intersection the highway falls at approximately 12%, at the intersection and to the west the highway rises at a grade of approximately 1%. There is a short vertical curve to the east of the intersection which partially restricts visibility to the intersection as shown in the photograph below:



FIGURE 9 - VIEW INTERSECTION FROM EAST

State highway 45 / Wairau Rd Intersection

Wairau Rd and State highway 45 intersect at 75° and in order to improve the angle of the approaches on Wairau Rd have curved to the east and west such that the side roads have an offset of 8m between the two centre lines as shown on the photograph below:



FIGURE 10 - AERIAL VIEW OF INTERSECTION

The intersection is “Stop” controlled due to the visibility to the east from Upper Wairau Rd being restricted to approximately 50m, when measured 9m back from the control line by the cutting.



FIGURE 11 - UPPER WAIRAU RD VISIBILITY TO EAST FROM 9M BACK

At the limit line the visibility is greater and exceeds the requirements of the Austroads guidelines as shown in the following photographs:



FIGURE 12 - UPPER WAIRAU RD VISIBILTY TO EAST



FIGURE 13 - UPPER WAIRAU RD VISIBILTY TO WEST

The above photograph shows that the visibility could be improved further by trimming back the vegetation.



FIGURE 14 - LOWER WAIRAU RD VISIBILTY TO EAST



FIGURE 15 - LOWER WAIRAU RD VISIBILTY TO WEST

To the west the visibility is in excess of 350m being restricted by a slight vertical crest curve.

Existing Traffic Volumes

Traffic counts were undertaken on all legs of the intersection for one week periods using tube counters and a peak hour turning count was undertaken between 8 and 9 a.m. during the count period. The traffic data is summarised below:

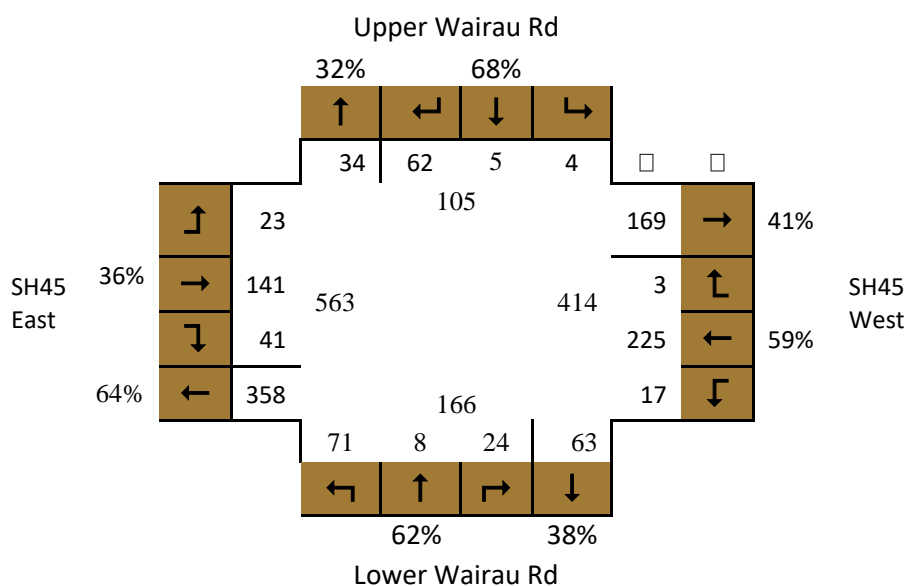
TABLE 1 - TRAFFIC SUMMARY

Road	Average Daily Traffic (Max.)	Average AM Peak Hour (Max.)	AM Period (Max.)	Average PM Peak Hour (Max.)	PM Period (Max.)
SH45 (East)	6311 (7301)	491 (621)	8-9 (Tues)	545 (682)	5-6 (Thur)
Lower Wairau Rd	1588 (1833)	121 (171)	8-9 (Thur)	157 (175)	5-6 (Thur)
SH45 (West)	4746 (5375)	352 (437)	8-9 (Tues)	402 (482)	5-6 (Fri)
Upper Wairau Rd	1220 (1357)	92 (126)	8-9 (Thur)	124 (139)	5-6 (Mon)

TABLE 2 - AM PEAK TURNING COUNT

Period Starting	Veh type	SH45 (East)			Lower Wairau Rd			SH45 (West)			Upper Wairau Rd		
		Left	Str	Right	Left	Str	Right	Left	Str	Right	Left	Str	Right
		↑	→	↓	←	↑	→	↓	←	↑	←	↓	←
8:00	Car	1	29	3	20	3	7	3	61	0	0	1	21
8:00	Bus	0	0	0	0	0	0	0	0	0	0	0	0
8:00	HCV	0	3	0	0	0	0	0	4	0	0	0	0
8:15	Car	8	27	11	23	1	2	1	68	1	2	1	17
8:15	Bus	0	0	0	0	0	0	0	0	0	0	0	0
8:15	HCV	0	3	0	0	0	0	0	1	0	1	0	2
8:30	Car	8	34	16	19	2	11	5	50	0	1	0	17
8:30	Bus	0	0	0	0	0	0	0	0	0	0	0	0
8:30	HCV	0	13	0	0	0	0	0	2	1	0	0	0
8:45	Car	5	28	11	8	2	4	8	39	1	0	3	5
8:45	Bus	0	0	0	1	0	0	0	0	0	0	0	0
8:45	HCV	1	4	0	0	0	0	0	0	0	0	0	0
Hour	Car	22	118	41	70	8	24	17	218	2	3	5	60
Hour	Bus	0	0	0	1	0	0	0	0	0	0	0	0
Hour	HCV	1	23	0	0	0	0	0	7	1	1	0	2
Tot Veh		23	141	41	71	8	24	17	225	3	4	5	62
% Veh		11.2	68.8	20.0	68.9	7.8	23.3	6.9	91.8	1.2	5.6	7.0	87.3
Hour	Cyclists	3	0	3	16	0	1	0	0	0	0	2	7
Hour	Peds	3	0	5	22	2	0	0	1	0	0	3	6

The peak hour turning traffic counts can be summarised as shown below:



The greater volume of traffic heading east is a reflection of the commuter stream heading to New Plymouth and we would expect that to be reversed in the evening peak hour.

Existing Crash Record

There have been three reported crashes in the past five years in the vicinity of the Wairau Rd / State highway 45 intersection. All three have occurred on State highway 45 west of the Wairau Rd Intersection in the 100kph zone. Two of the crashes were rear end crashes resulting in one fatality and one damage only. The third crash involved a loss of control whilst returning to the seal which resulted in minor injuries. Because of the lack of crashes at the intersection we extended the search period to ten years, this resulted in an additional four crashes that occurred in 2007, 2008 and 2009. Two of the crashes were type LB where a vehicle turning right is hit by a vehicle coming from the opposite direction, one involved a vehicle making a turn from an incorrect position and one involved a rear end crash on the side approach to the intersection. Only one crash resulted in injuries thus giving the intersection an annual injury crash rate of 0.1.

Traffic growth

Growth of traffic on local roads is generally governed by development but there would be an underlying growth of the order of 1% per year. On the State highways growth tends to be higher as they accumulate all the local road traffic growth. In order to determine the growth on the state highway we have sourced the annual average traffic flows published by NZTA for the Weld Rd count site, these are shown below having calculated from the graph that follows:

TABLE 3 - SH TRAFFIC GROWTH

Year	2011	2012	2013	2014	2015	%HCV
Measured AADT	3279	3244	3347	3506	3485	8
Calculated Linear AADT	3237	3304	3371	3439	3506	

Growth Calculated 2015-16	67
Growth % 2015-16	1.9%

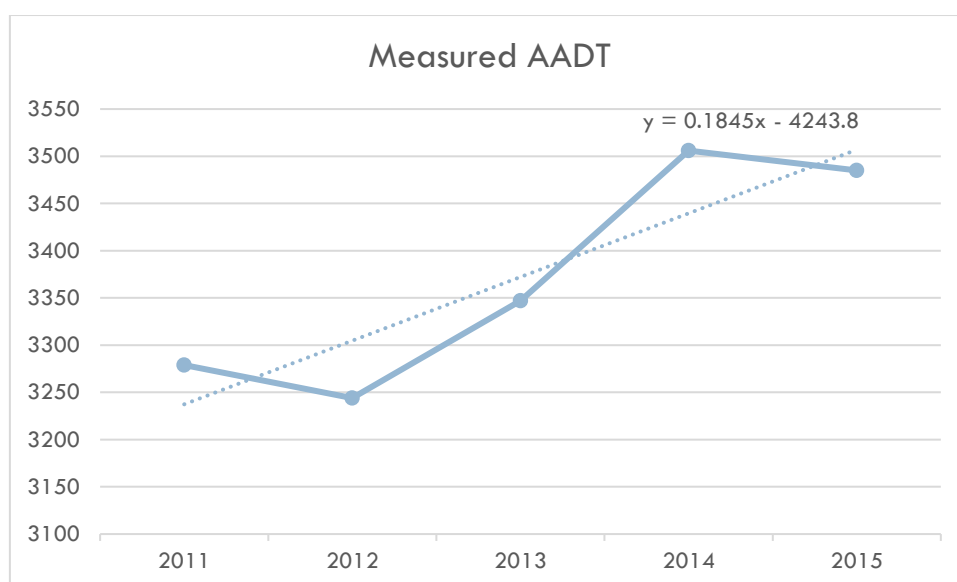


FIGURE 16 - GRAPH OF STATE HIGHWAY AADT

Speed Environment

The proximity of the 50/100kph zone change at only approximately 50m to the west of the intersection has an influence on the speed of traffic travelling through the intersection. The traffic counters provide a method of gauging the speed of traffic which is reasonably accurate. The counters were located at the 50/100kph sign to the west of the intersection and near the bottom of the sag curve approximately 140m to the east of the intersection. The counter data has been analysed and the results are shown below in a plot of the number vehicles for speed in ten km/hr steps:

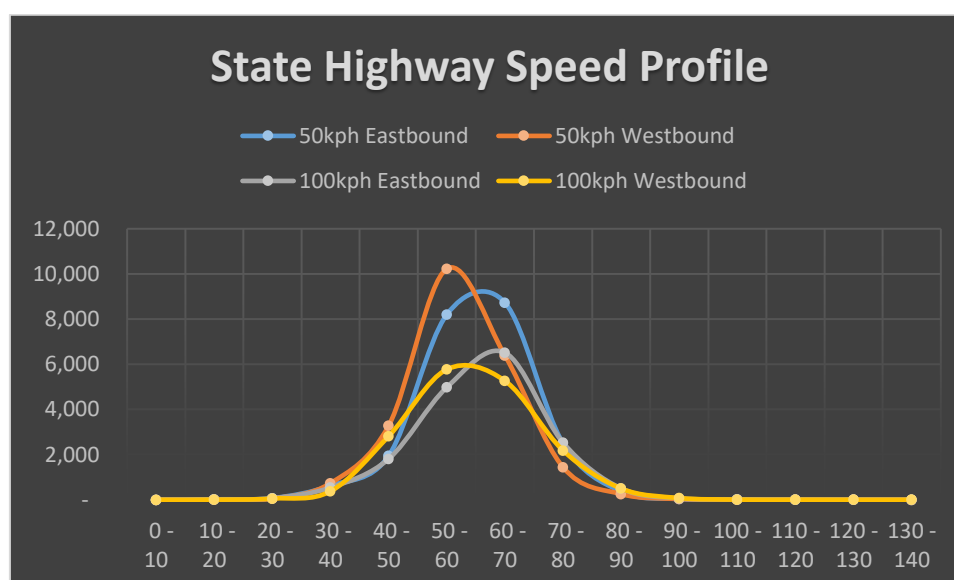


FIGURE 17 – GRAPH OF NO. OF VEHICLES PER SPEED BIN

Data from west of the intersection (100kph)

Vehicles recorded = 34138

Posted limit = 50 km/h, Exceeding = 28434 (83.29%), Mean Exceeding = 63.60 km/h

Maximum = 138.8 km/h, Minimum = 11.5 km/h, Mean = 60.3 km/h

85% Speed = 70.9 km/h, 95% Speed = 77.8 km/h, Median = 60.1 km/h

Data from east of the intersection (50kph)

Vehicles recorded = 44937

Posted limit = 50 km/h, Exceeding = 38201 (85.01%), Mean Exceeding = 61.39 km/h

Maximum = 125.5 km/h, Minimum = 11.0 km/h, Mean = 58.8 km/h

85% Speed = 67.7 km/h, 95% Speed = 73.8 km/h, Median = 58.7 km/h

4. ANALYSIS

Predicted Traffic Volumes

Wairau Estate Daily traffic generation

It is generally accepted that residential dwellings generate between 8 and 11 trips per day. It is our experience that outside of major urban centres the rate typically is at the lower end of the range and is likely to be due to the additional distances travelled.

Upper Wairau Rd currently has approximately 145 dwellings and the seven day average traffic flow of 1220 vehicles which equates to 8.4 trips/dwelling/day, this falls with the range indicated above. We have therefore adopted a generation rate of 8.5 trips/day. NZTA's planning guide line uses a daily trip generation rate of 10.4 and for completeness this has been used in a sensitivity analysis in the traffic analysis and the results are generally shown in brackets following the traffic volumes calculated on the existing generation rates.

From the inspection of aerial photographs and a visual inspection there are currently 27 lots that are yet to be developed or are under construction. These will therefore generate 230 trips/day. We have therefore used 1,450 trips/day as a base traffic flow.

The Wairau Estate development proposes to develop in the order of 399 lots spread over a ten year period. Ultimately it will therefore generate in the order of 3,392 (4,150) trips/day.

In order to assess the impact of the plan change beyond the existing district plan requirements the Future Urban Development (FUD) area, shown in figure 2 of this report, has the potential to develop 113 lots which would generate 961 (1175) trips/day.

Other Potential Traffic Growth

Since the development is likely to occur over a ten year period, traffic will grow as previously discussed. The traffic volume on State highway 45 west of Oakura will grow by 874 vehicles/day, Upper Wairau Rd by 115 vehicles/day, Lower Wairau Rd by 185 vehicles/day. The volume on State highway 45 was calculated from the morning peak hour turning counts and peak hour factor as an additional 1006 vehicles/day.

In order to determine the future performance of the intersection it is necessary to consider all potential development that may occur and which could impact the performance of the intersection.

To the north of State highway 45 opposite Wairau Estate there is 37.7Ha of undeveloped land zoned as residential and FUD in the district plan. If this were developed with a mix of residential A and C sized lots it would yield 601 lots. The traffic generation would be 5,190 (6,250) trips/day. In order to analyse the intersection we have assumed all this traffic will access the State highway from Lower Wairau Rd.

In addition we have assumed that some additional development will occur on Upper Wairau Rd, Surrey Hill Rd and Kaitake Rd and we have allowed for 30 additional lots generating 255 vehicles/day.

We understand that the local iwi is looking at the potential of developing the Koru Hill Pa as a tourism destination and we have allowed 50 vehicles/day to cater for this development.

The increasing interest in the Pouakai Crossing could lead to development of the walking tracks in the Kaitake ranges with Oakura as a potential entry or exit point. As yet the potential traffic demand for this is unknown but we have allowed for 80 vehicles/day in the intersection analysis.

A summary of the additional traffic generation is shown below:

TABLE 4 - ADDITIONAL TRAFFIC GENERATION

	Lower Wairau Rd	SH45 East	Upper Wairau Rd	SH45 West
Existing daily traffic	1850	6250	1150	4600
Traffic growth %	1%		1%	1.9%
10 yrs geometric growth	185	1006	115	874
Existing DP FUD Lots Yield	601		113	
8.5 trips/lot	5109	0	961	0
10.4 trips/lot	6250	0	1175	0
Wairau Estate Lots			399	
8.5 trips/lot	0	0	3392	0
10.4 trips/lot	0	0	4150	0
Other development	0	0	385	0

Peak hour traffic

It is generally accepted that peak hour traffic is approximately 8-10% of the daily traffic in the urban area, the table below plots the inferred average daily traffic from the morning peak for 8, 9 and 10%. By inspection we can see that 9% provides the best match with the traffic counts across all four roads and therefore we have adopted 9% of average daily flows as the peak hour flows.

TABLE 5 - DETERMINATION OF PEAK HOUR PERCENTAGE

	AM Peak count	Inferred Average Daily traffic			Measured average daily flow.
		8%	9%	10%	
SH45 East	563	7038	6256	5630	6311
Upper Wairau Rd	105	1313	1167	1050	1220
SH45 West	414	5175	4600	4140	4746
Lower Wairau Rd	166	2075	1844	1660	1588

Intersection Analysis

Wairau Rd / SH45

Given the significant increase in traffic volumes the intersection was modelled in Sidra 7 to determine its current performance and the impact of the proposed development. We also recognise that this proposal is unlikely to be the only development that will impact on the performance of the intersection in the medium to long term. We have therefore modelled a number of scenarios to test its performance and the potential roundabout going forward.

We have assumed that the turning movements will be similar to that measured during the traffic survey. We have therefore modelled the following scenarios:

TABLE 6 – MODELED TRAFFIC VOLUMES

Scenario	Lower Wairau Rd	SH45 East	Upper Wairau Rd	SH45 West
Existing	1,850	6,250	1,150	4,600
10 year growth	2,035	7,256	1,265	5,474
10 years growth + DP FUD ETG	7,244	12,144	2,733	7,033
10 years growth + DP FUD NZTATG	8,400	13,056	3,056	7,344
10 years growth + Wairau Estate ETG	2,367	11,211	4,644	5,744
10 years growth + Wairau Estate NZTATG	2,433	11,911	5,411	5,811
10 years growth + Wairau Estate + FUD and additional growth on Upper Wairau Rd ETG	7,511	14,678	5,511	7,256
10 years growth + Wairau Estate + FUD and additional growth on Upper Wairau Rd NZTATG	8,711	16,089	6,389	7,633
10 years growth + Southern FUD ETG	2,122	9,000	2,222	5,567
10 years growth + Southern FUD NZTATG	2,144	9,200	2,433	5,567

ETG = Existing Traffic Generation Rate

NZTATG = NZTA Planning Guide Line Traffic Generation Rate

The roundabout option was modelled using the traffic volumes from scenarios 7 and 8 i.e. the ultimate development in the area.

Results

The intersection was modelled in Sidra 7 for the morning peak hour which we expect to be the worst performing hour for the side roads. The results of the analysis are delivered in the form of levels of service (LOS) for each arm of the intersection. The LOS is a quality measure that describes the operational conditions generally in terms of measures such as speed and travel time, freedom to manoeuvre (delays), traffic interruptions, comfort and convenience. It has six levels from A to F with A being excellent free flow conditions and F unacceptable delays and unstable flows. A full definition is included in Appendix A. The results of the analysis are shown on the following page.

TABLE 7 - LEVEL OF SERVICE SUMMARY

	SH45 (East)	Lower Wairau Rd	SH45 (West)	Upper Wairau Rd
Existing situation (inc. lots to be developed)	A	B	A	B
Existing + 10 yrs growth	A	B	A	B
Development of existing Future Urban Development Areas	A (A)	C (C)	A (A)	C (C)
Existing + Wairau Estate	A (A)	B (C)	A (A)	C (C)
Existing + Wairau Estate + north of highway + extra on Upper Wairau Rd	A (A)	D (D)	A (A)	F (F)
Southern FUD only	A (A)	B (B)	B (B)	B (B)
Roundabout option	A (A)	B (B)	B (B)	B (B)

Note: Figures in () are based on the NZTA traffic generation rate.

The principal issue will be delays at the intersection and the following table provides the average delay per vehicle in the morning peak for the worst affected movement i.e. the right turn out of Upper Wairau Rd.

The table on the following page summarises the worst performing movements in terms of average delay during the morning peak hour.

TABLE 8 - AVERAGE DELAY A.M. PEAK

Average delay (seconds)	SH45 (East)	Lower Wairau Rd	SH45 (West)	Upper Wairau Rd
Existing situation (inc. lots to be developed)	5.5	10.8	6.1	10.8
Existing + 10 yrs growth	5.8	11.9	6.1	11.8
Development of existing Future Urban Development Areas	6.3 (6.4)	19.6 (23.3)	6.0 (6.1)	19.5 (22.9)
Existing + Wairau Estate	5.9 (6.0)	14.2 (15.1)	6.5 (6.8)	18.2 (22.2)
Existing + Wairau Estate + FUD North of highway	6.6 (6.9)	25.1 (34.4)	6.8 (7.1)	88.9 (244.5)
Southern FUD only	5.8 (5.8)	12.1 (12.1)	5.9 (6.0)	12.8 (13.1)
Roundabout option	8.5 (9.0)	14.6 (19.0)	12.6 (14.9)	10.1 (11.3)

Note: Figures in () are based on the NZTA traffic generation rate.

Wairau Estate Intersection Assessment

It is proposed to form the access to the subdivision on Upper Wairau Rd some 525m south of the intersection with state Highway 45. The access road will fall gently towards Upper Wairau Rd and the intersection will initially take the form of a give way controlled “T” intersection. The access road will be designed in accordance with NZS4404 and will consist of two sealed lanes of at least 3.5m in width. Upper Wairau Rd south of the proposed access currently has a daily traffic volume of approximately 978 veh/day based on 85% of the houses being south of this point. If our assumed additional growth were to occur then this would increase to 1,363 veh/day according to the Austroads Intersection Design Guide with a through traffic of 123 veh/hr a right turn bay into Wairau Estate is not required. However, as the development proceeds the turning traffic will grow to the point where it will exceed the through traffic and then consideration must be given to changing the priority of the intersection so that Upper Wairau Rd becomes the side road, in a similar form to the current Upper Wairau Rd / Surrey Hill Rd intersection. This is likely to occur when just over half the lots are developed, slightly earlier if the other development south of Wairau Estate does not occur.

When the development is complete and generating 3,392 (4,150) vehicle movements per day the expected traffic flows are as shown below:

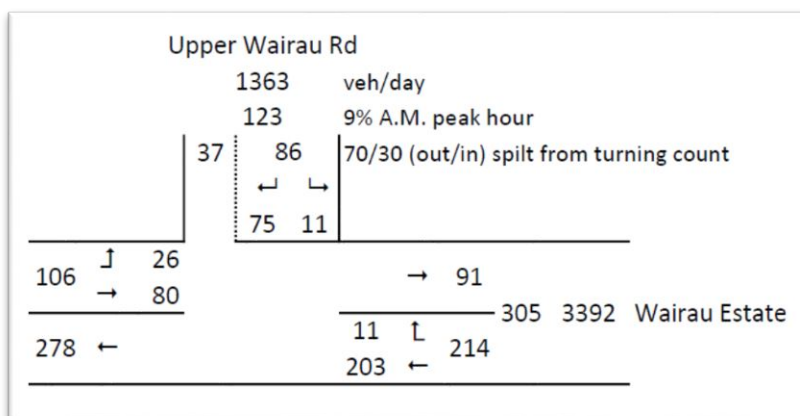


FIGURE 18 - PROJECTED TURNING MOVEMENTS

Safety Analysis

The existing intersection has an annual injury crash rate of 0.1 based on 10 years of records, the crash prediction models in NZTA’s Economic Evaluation Manual indicate that a cross roads with the existing traffic volumes would normally be expected to have an annual injury crash rate of 0.25, the existing intersection is therefore performing better than expected. The crash performance can be expected to drop as the traffic load on the intersection increases. At the ultimate state i.e. with Wairau Estate complete and the FUD area north of the highway fully developed and generating 10.4 trips/lot/day the intersection annual injury crash rate is calculated as 0.72 injury crashes per year with the intersection in its current form. If an appropriately design roundabout is installed then the predicted injury crash rate would be 0.39.

5. DISCUSSION

The proposed development will generate significant volumes of traffic. The impacts of which will be discussed in two parts firstly the new intersection on Upper Wairau Rd and the intersection with State highway 45.

Access from Upper Wairau Rd

The sight distances measured at the proposed intersection exceed those required for a “T” intersection in a 50kph posted speed limit, being 90m. The predicted traffic volumes do not meet the need for a right turn when assessed in accordance with the Austroads guidelines however, the volume of traffic generated by the fully developed proposal are predicted to exceed that on Upper Wairau Rd currently and the effects of this have to be considered.

As the development proceeds so its impacts on Upper Wairau Rd will change and whilst a right turn bay is not warranted, a widened shoulder opposite the intersection should be provided to enable vehicles to manoeuvre around right turning vehicles. When the generated traffic approaches 1000-1500 veh/day (approximately 115 to 175 lots) then the priority of the intersection should be changed to provide the priority to Wairau Estate, similar to the current layout of the Surrey Hill Rd / Upper Wairau Rd intersection.

The design of the lots in the development adjacent to Upper Wairau Rd must therefore take into account the ultimate road layout, since these are likely to be the first lots to be developed as access is formed into the sub-division.

Wairau Rd / State highway 45 Intersection

Capacity

Modelling of the intersection of Wairau and State highway 45 with the existing traffic flows shows that in terms of capacity (delays) it is currently performing well with the worst performing movements being the right turn out of both Upper and Lower Wairau Rd at a LOS B and average peak hour delays of 10.8 seconds per vehicle. The straight through movement from Lower Wairau Rd also performs at LOS B with an average delay of 10.3 seconds.

The intersection will continue to perform well into the future based on existing growth rates and in 10 years' time the right turn movements out of Upper and Lower Road are expected to perform at LOS B with average delays of 11.8 and 11.9 seconds. The through movements from both side roads also perform at LOS B with average delays of 10.1 and 11.2 seconds.

In order to consider the impacts of the proposal we modelled the potential traffic volumes if the land identified for future urban growth in the current district plan both north and south of the State highway 45 were to be developed. This was modelled for both the existing traffic generation rate measured on Upper Wairau Rd and the higher NZTA Planning guidelines rate. The performance of the intersection fell to a LOS C on both Upper and Lower Wairau Rd for the right turn movements, the straight through movement for Lower Wairau Rd and the left turn out of Upper Wairau Rd, for both traffic generation rates. The average delays are of the order of 19 to 23 seconds for these movements. This is considered acceptable and the intersection would perform well for the medium to long term in terms of capacity.

Wairau Estate traffic volumes as proposed was then modelled with the existing traffic plus the ten year growth in base traffic, as it is anticipated to take ten years to complete the sub-division. The results of the modelling indicate that based on the existing traffic generation rate the intersection

would perform at level LOS C on Upper Wairau Rd for the straight through and left turn movements. When the higher NZTA traffic generation rate was modelled the Upper Wairau Rd movements remained at LOS C and the Lower Wairau Rd straight through movement dropped to LOS C. Average peak hour delays are of the order of 18 to 22 seconds for the worst performing movements. Again this is considered acceptable in terms of capacity of the intersection.

The ultimate situation was then modelled with Wairau Estate, ten years base growth, development of the future urban development area north of State highway 45 plus the additional potential growth on Upper Wairau Road. Based on the existing traffic generation rate the intersection performs poorly with the level of service on Upper Wairau Rd dropping to LOS F on all movements with the average delay being between 75 and 88 seconds, with queues of 20 vehicles. Lower Wairau Rd drops to LOS D and an average delay of 25 seconds. If the higher NZTA generation rate is used the delays grow considerably as the intersection has exceeded its' capacity and the average delays on Upper Wairau Rd increase to a worst case of 244 seconds (over 4 minutes) and queues in excess of 48 vehicles.

For the completeness we also modelled the impacts of developing just the area designated for future urban development south of State highway 45. The intersection performed well with the worst movements on Upper and Lower Wairau Road being at LOS B.

It should be noted that the modelling approach taken has not allowed for traffic taking an alternative route on Lower Wairau Rd as congestion builds and can therefore be considered conservative. Although the alternative route is significantly longer and accesses the State highway to the east of Wairau Rd and is unlikely to be appealing to drivers turning right (the most affected movement).

A long term solution for the intersection is to replace the crossroads with a suitably designed roundabout. The sketch below shows there is sufficient road reserve to construct a roundabout designed to Austroads standards:

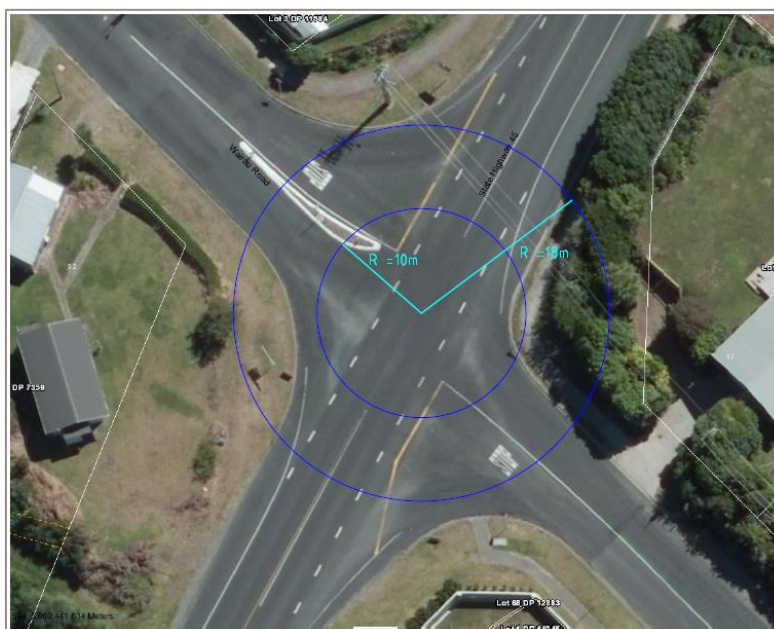


FIGURE 19 - ROUNDABOUT OPTION

A capacity analysis of a roundabout with a 10m radius central island indicates that it would perform well with all movements from all approaches operating at LOS A or B with the worst case

average peak hour delays being 14.6 seconds under the ultimate traffic generation scenario at the existing traffic generation rate. At the higher traffic generation rate the LOS does drop but the worst movement remains at level B but the average peak hour delays do increase with the worst case being 19 seconds.

The provision of the roundabout which is capable of accommodating the future traffic growth will also reduce the potential need for further access on to the State highway west of the township as the northern FUD area is developed.

Safety

There are no reported crashes at the intersection in the last five years for which data is available. The three reported crashes within 500m of the intersection all occurred in the 100kph zone on State highway 45 and the proposed development is unlikely to have any effect on the crash record west of Oakura. The ten year crash record does show four crashes occurring at the intersection of which one was an injury accident. The annual injury crash rate of 0.1 is below the predicted crash rate based on the NZTA crash prediction models which at the existing traffic volumes would be expected to be 0.25 injury crashes per year.

There is anecdotal evidence that the offset between the two side roads causes conflict between the right turn movements, but this does not translate into any recorded crashes and can be considered more of a nuisance rather than an issue. With crossroads the movements that typically generate the greatest risk for crashes are the crossing movements, whilst the turning count only recorded a relatively small number of movements, it is likely that the volume would be much higher at weekends in the summer to access the beach and associated facilities. At the ultimate development traffic volumes the expected crash is expected to be 0.72 injury crashes per year a significant increase. There are methods available to reduce this increase such as realigning the two side road centre lines and installing right turn bays to separate the turning traffic from the through traffic on the highway, but this would have a negative impact on the straight through movements on the side road.

Pedestrians and Cyclists

A roundabout typically performs better than a crossroads in terms of safety for vehicles, but not so well for vulnerable road users i.e. cyclists and pedestrians. At the ultimate traffic volumes the proposed roundabout has a predicted annual injury crash rate of 0.39. It is proposed as part of the Wairau Estate development to install an underpass under State highway 45 approximately 50m to the west of the intersection. This will provide a link through from the sub-division to a future pathway to follow the stream all points north of the highway and ultimately the beach. It is proposed to form all-weather paths from the intersection to the underpass. This can be achieved if the speed threshold signs are moved to the west of their current location, care will need to be taken with their design to ensure the gradients are sufficiently flat to allow access for all users.. This would provide an alternative crossing opportunity for pedestrians and cyclists using Wairau Road and thus minimising the crossing movements at the State highway. It would also be part of the solution to meet councils desire to have off road pedestrian and cyclist routes from the Kaitake and Pouakai Ranges to the coast.

For access to the school there is the formed path from Upper Wairau Rd to Donnelly St and a pedestrian crossing on the State highway just east of Donnelly St.

Speed

There is much anecdotal evidence that the speed of the traffic at the intersection on State highway 45 is too high and the results of the speed analysis confirms this to some extent, with approximately 85% of the traffic exceeding 50kph and a mean speed around 59kph. (Our experience is that traffic counting tubes tend to slow traffic whilst they are in place.) The proximity of the 50/100kph zone limit, being only 50m from the intersection, will be a significant factor in the measured speeds through the intersection. With the increasing volumes of traffic on the side roads the speed environment should be lowered to decrease the risk of crashes occurring and also the potential severity of any crashes. To achieve this the 50kph speed zone should be extended to the west by at least 100m and a suitable threshold treatment installed.

The roundabout would have a positive effect on the speed of the State highway traffic forcing them to slow to negotiate the roundabout and would also form an additional entry feature to the township.

Cost Sharing

The roundabout addresses a number of different issues for a number of parties, in that it will have positive effects on safety, speed and level of service and will provide a positive entrance way to the township. The cost of the construction should be shared between a number of parties including New Zealand Transport Agency and New Plymouth District Council (NPDC), with NPDC recovering some of their share from current and future developments.

6. CONCLUSION

The proposed development will generate in the order of 3,392 (4,150) vehicle trips/day when fully developed. Its effects will be significant on Upper Wairau Rd where the access to the development is proposed and monitoring of the generated traffic volumes should be undertaken so that improvements to the intersection are implemented to offset these effects.

The intersection of Wairau Rd and State highway 45 will be significantly affected by the growth in traffic volumes. Whilst it can accommodate the Wairau Estate proposal in isolation, in the medium to long term as other potential developments occur the performance of the intersection will deteriorate to a point where the peak hour delays will become unacceptable.

The construction of a roundabout at the intersection will address the effects of the development and provide certainty of the intersection performance for the foreseeable future.

Appendix A

Level of Service Definitions

LEVEL OF SERVICE DEFINITIONS

The quality of service provided by a road network requires quantitative measures to characterise operational conditions within a traffic stream. The level of service (LOS) is a quality measure that describes the operational conditions generally in terms of measures such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience.

In general, six levels of service are defined with letters from A to F used to designate each level. A level of service A represents the best operating conditions while LOS F represents the worst conditions. Each level of service represents a range of operating conditions and the driver's perception of those conditions. Safety does not form part of the measures used to assign a level of service.

The following descriptions for individual levels of service have been taken from the Austroads Guides to Traffic Engineering Practice:

- Level of Service A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist or passenger is excellent.
- Level of Service B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to manoeuvre within the traffic stream from level of service A. The level of comfort and convenience provided is somewhat less than at level of service A, because the presence of others in the traffic stream begins to affect individual behaviour.
- Level of Service C is the range of stable flow, but marks the beginning of a range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and manoeuvring within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.
- Level of Service D represents high-density, but stable-flow. Speed and freedom to manoeuvre are severely restricted, and the driver experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.
- Level of Service E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to manoeuvre within the traffic stream is extremely restricted, and is generally accomplished by forcing a vehicle to "give way" to accommodate such manoeuvres. Comfort and convenience levels are extremely poor, and driver frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.
- Level of Service F is used to define a forced or breakdown flow. The condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind such locations. Operations within the queue are characterised by stop-and-go waves, and they are extremely unstable.

Appendix B

Traffic Count & Speed Data

Description: Upper Wairau Rd

Filter time: 18:00 Sunday, 5 March 2017 => 18:00 Sunday, 12 March 2017

Scheme: Vehicle classification (TNZ 1999)

Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(NESW) Sp(10,160) Headway(>0)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages			
								Mon-Fri	7 day		
0000-0100		4	0	1	1	5	7	7	2.2	3.6	
0100-0200		0	0	0	0	0	1	6	0	1	
0200-0300		0	1	2	1	0	1	1	0.8	0.9	
0300-0400		4	0	1	2	2	1	3	1.8	1.9	
0400-0500		5	5	6	2	1	3	4	3.8	3.7	
0500-0600		7	7	12	8	12	6	4	9.2	8	
0600-0700		22	30	21	30	21	5	2	24.8	18.7	
0700-0800		99	111	103	96	86	17	12	99	74.9	
0800-0900	115	115	108	126	114		34	30	115.6	91.7	
0900-1000	71	85	81	63	98		62	59	79.6	74.1	
1000-1100	55	49	74	76	76		75	56	66	65.9	
1100-1200	58	59	84	75	96		80	78	74.4	75.7	
1200-1300	67	50	63	75	83		103	85	67.6	75.1	
1300-1400	59	62	79	65	74		104	66	67.8	72.7	
1400-1500	75	72	76	87	94		95	100	80.8	85.6	
1500-1600	103	88	118	110	109		104	101	105.6	104.7	
1600-1700	131	126	119	139	133		87	96	129.6	118.7	
1700-1800	139	137	134	137	117		93	111	132.8	124	
1800-1900	91	102	93	106	97		76	70	97.8	90.7	
1900-2000	57	60	74	66	58		42	41	63	56.9	
2000-2100	35	22	29	38	33		47	29	31.4	33.3	
2100-2200	29	13	17	14	29		32	13	20.4	21	
2200-2300	6	15	10	10	14		26	5	11	12.3	
2300-2400	1	4	0	5	5		18	1	3	4.9	
Totals											
0700-1900	1063	1056	1132	1155	1177	930	864		1116.6	1053.9	
0600-2200	1206	1181	1273	1303	1318	1056	949		1256.2	1183.7	
0600-0000	1213	1200	1283	1318	1337	1100	955		1270.2	1200.9	
0000-0000	1233	1213	1305	1332	1357	1119	980		1288.0	1219.9	
AM Peak	800	800	800	800	800	1100	1100				
	115	115	108	126	114	80	78				
PM Peak	1700	1700	1700	1600	1600	1500	1700				
	139	137	134	139	133	104	111				

Description: Lower Wairau Rd

Filter time: 18:00 Sunday, 5 March 2017 => 18:00 Sunday, 12 March 2017

Scheme: Vehicle classification (TNZ 1999)

Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(NESW) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages		
Hour								Mon-Fri	7 day	
0000-0100	1	1	1	3	7	3	8	2.6	3.4	
0100-0200	0	0	0	1	4	2	10	1	2.4	
0200-0300	0	0	0	0	3	3	5	0.6	1.6	
0300-0400	1	1	0	1	2	2	2	1	1.3	
0400-0500	2	1	2	2	3	2	0	2	1.7	
0500-0600	7	7	9	4	7	4	1	6.8	5.6	
0600-0700	19	22	21	20	16	7	8	19.6	16.1	
0700-0800	85	100	95	98	71	20	15	89.8	69.1	
0800-0900	142	155	160	171	156	34	30	156.8	121.1	
0900-1000	97	111	121	123	129	69	63	116.2	101.9	
1000-1100	78	76	86	116	118	103	132	94.8	101.3	
1100-1200	94	92	79	93	124	139	105	96.4	103.7	
1200-1300	87	96	92	83	89	126	87	89.4	94.3	
1300-1400	105	68	83	103	80	99	126	87.8	94.9	
1400-1500	125	131	128	162	135	125	150	136.2	136.6	
1500-1600	135	148	135	164	157	154	163	147.8	150.9	
1600-1700	160	142	166	175	150	121	158	158.6	153.1	
1700-1800	165	168	159	175	158	124	153	165	157.4	
1800-1900	107	111	114	148	138	87	117	123.6	117.4	
1900-2000	78	70	71	102	79	43	72	80	73.6	
2000-2100	42	25	35	51	44	31	35	39.4	37.6	
2100-2200	17	20	25	22	38	28	14	24.4	23.4	
2200-2300	10	12	14	9	14	22	7	11.8	12.6	
2300-2400	5	2	7	7	5	22	2	5.2	7.1	
Totals										
0700-1900	1380	1398	1418	1611	1505	1201	1299	1462.4	1401.7	
0600-2200	1536	1535	1570	1806	1682	1310	1428	1625.8	1552.4	
0600-0000	1551	1549	1591	1822	1701	1354	1437	1642.8	1572.1	
0000-0000	1562	1559	1603	1833	1727	1370	1463	1656.8	1588.1	
AM Peak	800	800	800	800	800	1100	1000			
	142	155	160	171	156	139	132			
PM Peak	1700	1700	1600	1700	1700	1500	1500			
	165	168	166	175	158	154	163			

* - No data.

Description: SH45 East (Oakura)

Filter time: 10:06 Tuesday, 14 March 2017 => 11:42 Tuesday, 21 March 2017

Scheme: Vehicle classification (NZTA2011)

Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(NESW) Sp(10,160) Headway(>0)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages	
								Mon-Fri	7 day
0000-0100	21	9	11	9	22	122	75	14.4	38.4
0100-0200	20	5	6	6	13	19	21	10	12.9
0200-0300	5	6	5	3	7	13	15	5.2	7.7
0300-0400	6	7	5	7	8	10	11	6.6	7.7
0400-0500	20	16	15	10	25	20	14	17.2	17.1
0500-0600	60	77	65	61	56	48	31	63.8	56.9
0600-0700	194	162	171	168	179	65	60	174.8	142.7
0700-0800	442	444	451	451	434	137	112	444.4	353
0800-0900	586	621	539	592	563	283	252	580.2	490.9
0900-1000	481	428	410	444	505	419	422	453.6	444.1
1000-1100	467	174	375	367	454	469	525	335.2	375.6
1100-1200	406	201	382	354	464	504	564	334.7	384.5
1200-1300	372	328	358	418	397	497	562	374.6	418.9
1300-1400	374	349	391	384	432	451	563	386	420.6
1400-1500	449	450	468	442	522	420	515	466.2	466.6
1500-1600	533	494	592	579	672	360	459	574	527
1600-1700	480	517	553	607	646	392	441	560.6	519.4
1700-1800	563	535	599	682	634	386	419	602.6	545.4
1800-1900	360	416	402	465	432	361	315	415	393
1900-2000	203	211	227	344	293	238	214	255.6	247.1
2000-2100	149	139	206	218	196	170	194	181.6	181.7
2100-2200	84	122	119	124	124	149	117	114.6	119.9
2200-2300	47	48	59	51	110	119	113	63	78.1
2300-2400	18	16	23	20	122	157	76	39.8	61.7
Totals									
0700-1900	5513	4957	5520	5785	6155	4679	5149	5527	5339
0600-2200	6143	5591	6243	6639	6947	5301	5734	6253.6	6030.4
0600-0000	6208	5655	6325	6710	7179	5577	5923	6356.4	6170.3
0000-0000	6340	5775	6432	6806	7310	5809	6090	6473.6	6311
AM Peak	800	800	800	800	800	1100	1100		
	586	621	539	592	563	504	564		
PM Peak	1700	1700	1700	1700	1500	1200	1300		
	563	535	599	682	672	497	563		

* - No data.

Description: SH45 West (Okato)

Filter time: 10:05 Tuesday, 14 March 2017 => 12:11 Tuesday, 21 March 2017

Scheme: Vehicle classification (NZTA2011)

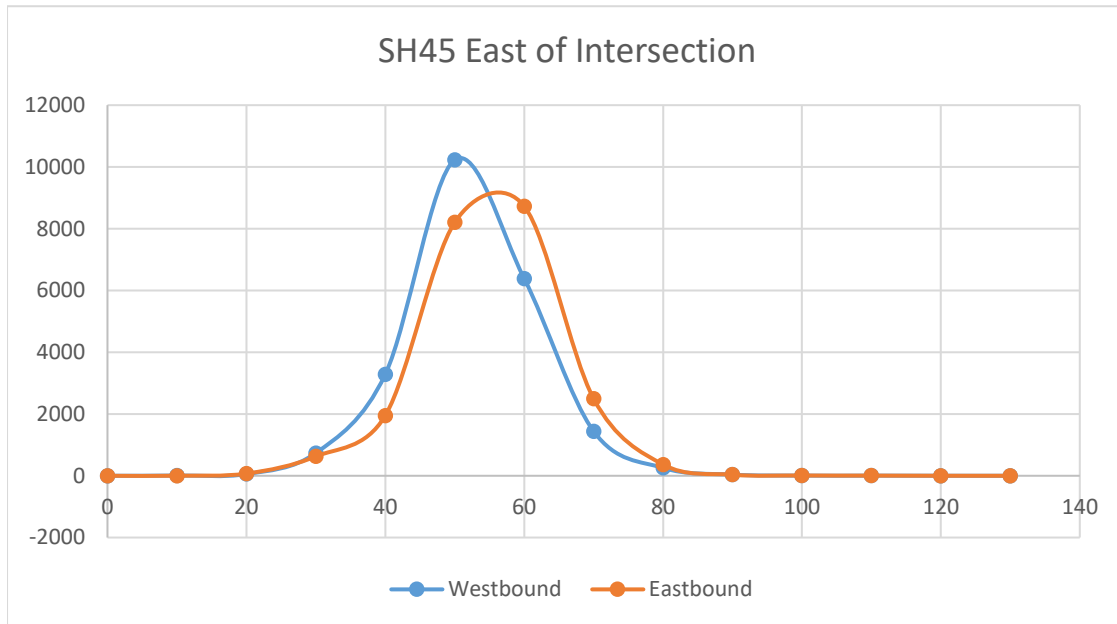
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(NESW) Sp(10,160) Headway(>0)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages	
								Mon-Fri	7 day
0000-0100	13	4	6	7	16	61	49	9.2	22.3
0100-0200	16	4	2	4	11	20	17	7.4	10.6
0200-0300	3	3	4	3	6	10	11	3.8	5.7
0300-0400	5	4	5	6	6	6	10	5.2	6
0400-0500	18	8	10	9	14	18	16	11.8	13.3
0500-0600	45	65	50	54	45	41	31	51.8	47.3
0600-0700	157	140	151	145	146	58	45	147.8	120.3
0700-0800	325	329	329	323	306	110	90	322.4	258.9
0800-0900	418	437	366	436	393	233	180	410	351.9
0900-1000	368	343	319	377	387	304	328	358.8	346.6
1000-1100	373	143	277	318	388	328	399	273.7	296.1
1100-1200	311	291.5	289	266	359	358	428	301.3	324.3
1200-1300	298	161.5	280	354	308	356	443	260.5	295.3
1300-1400	285	289	304	321	323	355	459	304.4	333.7
1400-1500	325	334	331	336	385	350	416	342.2	353.9
1500-1600	378	354	416	391	435	294	360	394.8	375.4
1600-1700	359	384	421	427	482	291	356	414.6	388.6
1700-1800	414	417	436	478	444	304	320	437.8	401.9
1800-1900	266	300	303	338	317	253	245	304.8	288.9
1900-2000	141	151	165	234	207	160	167	179.6	175
2000-2100	119	110	171	163	158	122	159	144.2	143.1
2100-2200	65	86	91	99	96	110	90	87.4	91
2200-2300	34	37	50	43	74	75	69	47.6	54.6
2300-2400	21	14	21	18	69	106	43	28.6	41.7
Totals	<hr/>							<hr/>	
0700-1900	4120	3783	4071	4365	4527	3536	4024	4125.3	4015.2
0600-2200	4602	4270	4649	5006	5134	3986	4485	4684.3	4544.6
0600-0000	4657	4321	4720	5067	5277	4167	4597	4760.5	4640.9
0000-0000	4757	4409	4797	5150	5375	4323	4731	4849.7	4746.1
AM Peak	800	800	800	800	800	1100	1100		
	418	437	366	436	393	358	428		
PM Peak	1700	1700	1700	1700	1600	1200	1300		
	414	417	436	478	482	356	459		

* - No data.

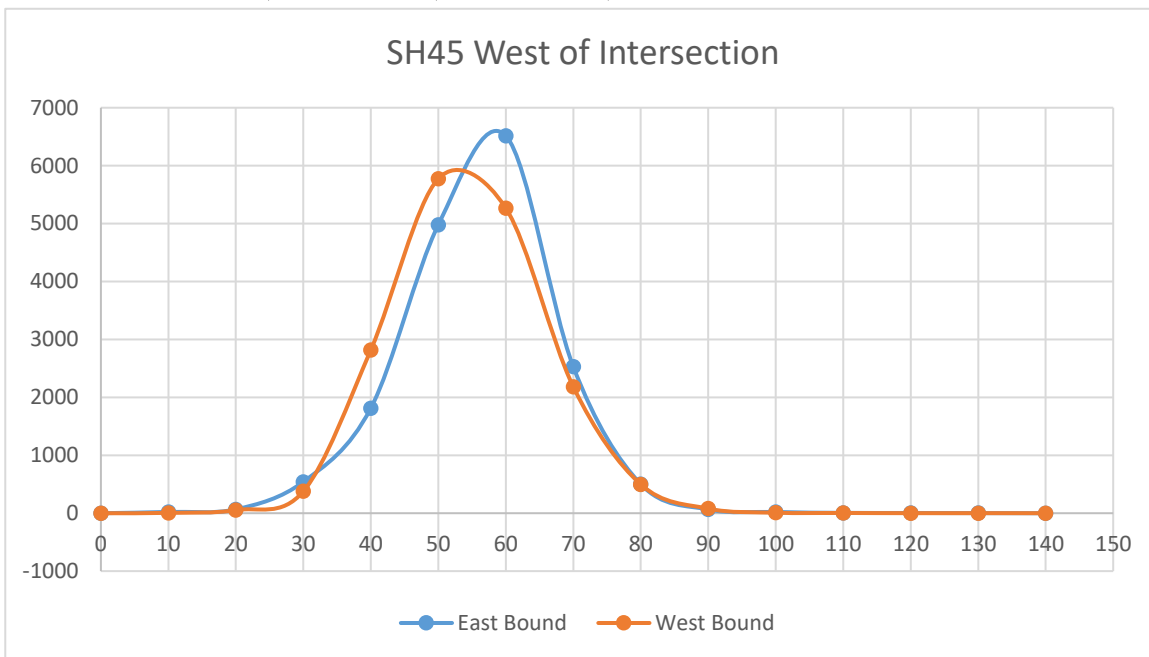
SH45 East of Intersection

Speed	Speed	Westbound	Eastbound
0 - 10	0	0	0
10 - 20	10	8	2
20 - 30	20	55	71
30 - 40	30	736	628
40 - 50	40	3286	1950
50 - 60	50	10228	8203
60 - 70	60	6387	8730
70 - 80	70	1442	2496
80 - 90	80	254	365
90 - 100	90	37	34
100 - 110	100	5	9
110 - 120	110	4	5
120 - 130	120	1	1
130 - 140	130	0	0



SH45 West of Intersection

Speed Bin	Speed	East Bound	West Bound
0-10	0	0	0
10-20	10	22	6
20-30	20	67	55
30-40	30	542	379
40-50	40	1814	2819
50-60	50	4979	5774
60-70	60	6515	5266
70-80	70	2528	2183
80-90	80	501	497
90-100	90	64	79
100-110	100	21	9
110-120	110	6	4
120-130	120	4	1
130-140	130	2	1
140+	140	0	0
		17065	17073



Appendix C

Crash Data

ROAD	DIST	SIDE ROAD	DATE	DOW	TIME	IVMT DESCR	CAUSES	Fatal	Ser	Min	Non
45/0/15.07	160	WAIRAU ROAD	8/10/2011	Sat	18:32	CAR1 NBD on SH 45 SOUTH hit rear end of CAR2 stopped/moving slowly	CAR1 alcohol test above limit or test refused, too fast on straight, failed to notice car slowing VAN3 suddenly swerved to avoid vehicle	0	1	0	0
45/15/0		WAIRAU ROAD	12/01/2007	Fri	8:30	CAR2 turning right hit by oncoming CAR1 NBD on SH 45	CAR1 didn't signal in time incorrect signal	0	0	0	1
45/15/0		WAIRAU ROAD	21/04/2009	Tue	11:18	CAR2 turning right hit by oncoming CAR1 EBD on SH 45	CAR2 failed to give way when turning to non-turning traffic, Did not check / notice another party	0	0	1	0
45/15/0		WAIRAU ROAD	1/04/2008	Tue	11:45	CAR1 NBD on SH 45 hit turning CAR2	CAR2 Turned from incorrect position on road	0	0	0	1
WAIRAU RD		45/15/0	1/01/2008	Tue	13:30	CAR1 EBD on WAIRAU ROAD hit rear end of CAR2 stop/slow for cross traffic	CAR1 failed to notice car slowing, misjudged intentions of another party	0	0	0	1
45/15/0.1	100	WAIRAU ROAD	19/05/2007	Sat	8:24	CAR1 SBD on SH 45 lost control; went off road to right, CAR1 hit Cliff Bank	CAR1 lost control due to vehicle fault, steering	0	0	1	0
45/15/0.1	100	WAIRAU ROAD	21/10/2014	Tue	12:29	CAR1 NBD on SH 45 hit rear end of CAR2 stop/slow for queue	CAR1 following too closely, failed to notice car slowing	0	0	0	1
45/15/0.14	140	WAIRAU ROAD	1/11/2016	Tue	16:28	CAR1 SBD on SH 45 hit rear end of OTHER2 stopped/moving slowly	CAR1 failed to notice car slowing OTHER2 alcohol test below limit, lost control	1	0	0	0
45/15/0.19	190	WAIRAU ROAD	24/08/2016	Wed	19:50	CAR1 SBD on SH 45 hit rear of VAN2 turning right from left side	CAR1 overtaking vehicle signaling right turn, failed to notice indication of vehicle in front	0	0	0	1

Urban Priority Intersection Crash Models - from NZTA EEM Crash Compendium 2016

Project: Wairau Estate - Oakura

Description: SH45 / Wairau Rd Cross Roads - Existing

$$A_T := b_0 \cdot Q_{Maj}^{b_1} \cdot Q_{Min}^{b_2}$$

Q_{major} : is the highest two-way link volume (AADT) for cross roads and the primary road volume for T-junctions.

$Q_{minor/side}$: is the lowest of the daily two-way link volumes (AADT) for cross roads and the side road flow for T-junctions

$$Q_{Maj} := 6250$$

$$Q_{Min} := 1150$$

Intersection Type	b_0	b_1	b_2
Uncontrolled T	0.00219	0.36	0.19
Priority X	0.00108	0.21	0.51
Priority T	0.0000489	0.76	0.2
Traffic Signals X	0.00281	0.46	0.14
Traffic Signals T	0.131	0.04	0.12

$$b_0 := 0.00108$$

$$b_1 := 0.21$$

$$b_2 := 0.51$$

$$A_T := b_0 \cdot Q_{Maj}^{b_1} \cdot Q_{Min}^{b_2} = 0.25 \quad \text{Injury accidents per year}$$

Urban Priority Intersection Crash Models - from NZTA EEM Crash Compendium 2016

Project: Wairau Estate - Oakura

Description: SH45 / Wairau Rd Cross Roads - Ultimate Case @ 10.4 veh/lot/day

$$A_T := b_0 \cdot Q_{Maj}^{b_1} \cdot Q_{Min}^{b_2}$$

Q_{major} : is the highest two-way link volume (AADT) for cross roads and the primary road volume for T - junctions.

$Q_{minor/side}$: is the lowest of the daily two-way link volumes (AADT) for cross roads and the side road flow for T -junctions

$$Q_{Maj} := 16089$$

$$Q_{Min} := 6389$$

Table 13			
Intersection Type	b_0	b_1	b_2
Uncontrolled T	0.00219	0.36	0.19
Priority X	0.00108	0.21	0.51
Priority T	0.0000489	0.76	0.2
Traffic Signals X	0.00281	0.46	0.14
Traffic Signals T	0.131	0.04	0.12

$$b_0 := 0.00108$$

$$b_1 := 0.21$$

$$b_2 := 0.51$$

$$A_T := b_0 \cdot Q_{Maj}^{b_1} \cdot Q_{Min}^{b_2} = 0.72 \quad \text{Injury accidents per year}$$

Urban Roundabout Crash Model - from NZTA EEM Crash Compendium 2016

Project Name: Wairau Estate Oakura

Site description: SH45/Wairau Rd Intersection Roundabout Option @10.4 veh/lot/day

The crash rate is the sum the crash rates for each approach calculated from the following formula.

$$A_T := b_0 \cdot Q_{\text{Approach}}^{b_1}$$

Q_{approach} is the two-way link volume (AADT) on the approach being examined.

Table 15: General urban roundabouts 50-70km/h coefficients (reference 5).

Number of entry lanes per approach	Single		Multiple	
	b_0	b_1	b_0	b_1
Roundabout	4.81×10^{-4}	0.58	7.95×10^{-4}	0.58

Table 16: General urban roundabouts 50-70km/h k values.

Number of entry lanes per approach	Single		Multiple	
	Flow range AADT	k value	Flow range AADT	k value
Roundabout	170 - 25,000	2.2	800 - 42,000	2.2

Approach traffic volumes

$$Q_{\text{App1}} := 16089 \quad Q_{\text{App3}} := 7633$$

$$b_0 := 0.000481 \quad b_1 := 0.58$$

$$Q_{\text{App2}} := 8711 \quad Q_{\text{App4}} := 6389$$

□

$$A_{T1} := b_0 \cdot Q_{\text{App1}}^{b_1} = 0.1324$$

$$A_{T2} := b_0 \cdot Q_{\text{App2}}^{b_1} = 0.0928$$

$$A_{T3} := b_0 \cdot Q_{\text{App3}}^{b_1} = 0.0859$$

$$A_{T4} := b_0 \cdot Q_{\text{App4}}^{b_1} = 0.0775$$

$$A_T := A_{T1} + A_{T2} + A_{T3} + A_{T4} = 0.39$$

Appendix D

Sidra Analysis Reports

MOVEMENT SUMMARY

 Site: 101 [Scenario 1 Existing]

Existing situation
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h
South: Upper Wairau Rd											
1	L2	4	25.0	0.125	9.4	LOS A	0.4	2.8	0.45	0.99	43.4
2	T1	5	0.0	0.125	9.5	LOS A	0.4	2.8	0.45	0.99	43.6
3	R2	65	3.2	0.125	10.8	LOS B	0.4	2.8	0.45	0.99	42.2
Approach		75	4.2	0.125	10.7	LOS B	0.4	2.8	0.45	0.99	42.4
East: SH45 East											
4	L2	23	4.5	0.127	5.3	LOS A	0.4	2.8	0.19	0.17	47.3
5	T1	147	16.4	0.127	0.3	LOS A	0.4	2.8	0.19	0.17	48.1
6	R2	43	0.0	0.127	5.5	LOS A	0.4	2.8	0.19	0.17	47.1
Approach		214	11.8	0.127	1.9	NA	0.4	2.8	0.19	0.17	47.8
North: Lower Wairau Rd											
7	L2	75	1.4	0.122	8.6	LOS A	0.5	3.4	0.40	0.90	43.3
8	T1	8	0.0	0.122	10.3	LOS B	0.5	3.4	0.40	0.90	44.2
9	R2	25	0.0	0.122	10.8	LOS B	0.5	3.4	0.40	0.90	44.2
Approach		108	1.0	0.122	9.2	LOS A	0.5	3.4	0.40	0.90	43.6
West: SH45 West											
10	L2	18	0.0	0.134	4.7	LOS A	0.0	0.2	0.01	0.04	49.2
11	T1	237	3.1	0.134	0.0	LOS A	0.0	0.2	0.01	0.04	49.7
12	R2	2	50.0	0.134	6.1	LOS A	0.0	0.2	0.01	0.04	46.9
Approach		257	3.3	0.134	0.4	NA	0.0	0.2	0.01	0.04	49.6
All Vehicles		654	5.8	0.134	3.5	NA	0.5	3.4	0.18	0.33	47.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: AMTANZ LTD | Processed: Saturday, 23 September 2017 4:47:27 AM

Project: C:\Users\Andrew\Documents\SIDRA7\Oakura Farm Park v2.sip7

MOVEMENT SUMMARY

 Site: 101 [Scenario 2]

Existing + 10 years growth on all legs
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h
South: Upper Wairau Rd											
1	L2	5	20.0	0.151	9.2	LOS A	0.5	3.4	0.50	1.00	43.1
2	T1	5	0.0	0.151	10.1	LOS B	0.5	3.4	0.50	1.00	43.2
3	R2	71	3.0	0.151	11.8	LOS B	0.5	3.4	0.50	1.00	41.7
Approach		81	3.9	0.151	11.5	LOS B	0.5	3.4	0.50	1.00	41.9
East: SH45 East											
4	L2	25	4.2	0.150	5.5	LOS A	0.4	3.3	0.20	0.16	47.4
5	T1	180	13.5	0.150	0.4	LOS A	0.4	3.3	0.20	0.16	48.1
6	R2	47	0.0	0.150	5.8	LOS A	0.4	3.3	0.20	0.16	47.2
Approach		253	10.0	0.150	1.9	NA	0.4	3.3	0.20	0.16	47.9
North: Lower Wairau Rd											
7	L2	82	1.3	0.146	8.9	LOS A	0.6	4.0	0.44	0.92	43.0
8	T1	9	0.0	0.146	11.2	LOS B	0.6	4.0	0.44	0.92	44.0
9	R2	27	0.0	0.146	11.9	LOS B	0.6	4.0	0.44	0.92	43.9
Approach		119	0.9	0.146	9.8	LOS A	0.6	4.0	0.44	0.92	43.3
West: SH45 West											
10	L2	21	0.0	0.160	4.7	LOS A	0.0	0.3	0.01	0.04	49.2
11	T1	282	2.6	0.160	0.0	LOS A	0.0	0.3	0.01	0.04	49.6
12	R2	3	33.3	0.160	6.1	LOS A	0.0	0.3	0.01	0.04	47.5
Approach		306	2.7	0.160	0.4	NA	0.0	0.3	0.01	0.04	49.6
All Vehicles		759	5.0	0.160	3.5	NA	0.6	4.0	0.20	0.32	47.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [Scenario 3]

10 year growth + FUD North and South existing trip generation
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	9	11.1	0.450	10.7	LOS B	1.8	13.2	0.73	1.09	40.4
2	T1	34	0.0	0.450	14.3	LOS B	1.8	13.2	0.73	1.09	40.3
3	R2	124	1.7	0.450	19.5	LOS C	1.8	13.2	0.73	1.09	38.4
Approach		167	1.9	0.450	17.9	LOS C	1.8	13.2	0.73	1.09	39.0
East: SH45 East											
4	L2	79	1.3	0.254	6.0	LOS A	1.3	9.5	0.41	0.30	46.0
5	T1	180	13.5	0.254	1.1	LOS A	1.3	9.5	0.41	0.30	46.6
6	R2	138	0.0	0.254	6.3	LOS A	1.3	9.5	0.41	0.30	45.7
Approach		397	6.4	0.254	3.9	NA	1.3	9.5	0.41	0.30	46.2
North: Lower Wairau Rd											
7	L2	289	0.4	0.587	11.8	LOS B	4.7	33.2	0.61	1.11	40.6
8	T1	38	0.0	0.587	18.7	LOS C	4.7	33.2	0.61	1.11	41.9
9	R2	97	0.0	0.587	19.6	LOS C	4.7	33.2	0.61	1.11	41.9
Approach		424	0.2	0.587	14.2	LOS B	4.7	33.2	0.61	1.11	41.0
West: SH45 West											
10	L2	91	0.0	0.200	4.7	LOS A	0.1	0.7	0.03	0.14	48.6
11	T1	282	2.6	0.200	0.0	LOS A	0.1	0.7	0.03	0.14	48.9
12	R2	7	14.3	0.200	6.0	LOS A	0.1	0.7	0.03	0.14	47.7
Approach		380	2.2	0.200	1.3	NA	0.1	0.7	0.03	0.14	48.8
All Vehicles		1368	2.8	0.587	8.1	NA	4.7	33.2	0.40	0.60	44.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [Scenario 4]

10 year growth + FUD north and south NZTA trip generation
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	9	11.1	0.555	12.2	LOS B	2.5	17.5	0.79	1.14	39.1
2	T1	40	0.0	0.555	16.4	LOS C	2.5	17.5	0.79	1.14	39.0
3	R2	137	1.5	0.555	22.9	LOS C	2.5	17.5	0.79	1.14	37.0
Approach		186	1.7	0.555	21.0	LOS C	2.5	17.5	0.79	1.14	37.6
East: SH45 East											
4	L2	92	1.1	0.280	6.1	LOS A	1.5	11.1	0.44	0.32	45.8
5	T1	180	13.5	0.280	1.3	LOS A	1.5	11.1	0.44	0.32	46.4
6	R2	159	0.0	0.280	6.4	LOS A	1.5	11.1	0.44	0.32	45.5
Approach		431	5.9	0.280	4.2	NA	1.5	11.1	0.44	0.32	45.9
North: Lower Wairau Rd											
7	L2	336	0.3	0.701	13.8	LOS B	7.2	50.2	0.66	1.22	39.2
8	T1	44	0.0	0.701	22.4	LOS C	7.2	50.2	0.66	1.22	40.8
9	R2	112	0.0	0.701	23.3	LOS C	7.2	50.2	0.66	1.22	40.7
Approach		492	0.2	0.701	16.7	LOS C	7.2	50.2	0.66	1.22	39.8
West: SH45 West											
10	L2	105	0.0	0.208	4.7	LOS A	0.1	0.8	0.03	0.15	48.6
11	T1	282	2.6	0.208	0.1	LOS A	0.1	0.8	0.03	0.15	48.8
12	R2	7	14.3	0.208	6.1	LOS A	0.1	0.8	0.03	0.15	47.7
Approach		395	2.1	0.208	1.4	NA	0.1	0.8	0.03	0.15	48.7
All Vehicles		1503	2.5	0.701	9.6	NA	7.2	50.2	0.45	0.67	43.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: 101 [Scenario 5]**

10 year growth + Wairau Estate Existing Trip Generation
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	18	5.9	0.637	11.8	LOS B	3.7	26.0	0.73	1.20	40.5
2	T1	21	0.0	0.637	15.5	LOS C	3.7	26.0	0.73	1.20	40.4
3	R2	260	0.8	0.637	18.2	LOS C	3.7	26.0	0.73	1.20	38.5
Approach		299	1.1	0.637	17.6	LOS C	3.7	26.0	0.73	1.20	38.8
East: SH45 East											
4	L2	215	0.5	0.254	4.9	LOS A	0.6	4.2	0.15	0.28	46.6
5	T1	180	13.5	0.254	0.4	LOS A	0.6	4.2	0.15	0.28	47.2
6	R2	47	0.0	0.254	5.9	LOS A	0.6	4.2	0.15	0.28	46.3
Approach		442	5.7	0.254	3.2	NA	0.6	4.2	0.15	0.28	46.8
North: Lower Wairau Rd											
7	L2	82	1.3	0.189	8.9	LOS A	0.7	5.1	0.48	0.93	42.5
8	T1	25	0.0	0.189	14.2	LOS B	0.7	5.1	0.48	0.93	43.6
9	R2	27	0.0	0.189	12.6	LOS B	0.7	5.1	0.48	0.93	43.5
Approach		135	0.8	0.189	10.6	LOS B	0.7	5.1	0.48	0.93	43.0
West: SH45 West											
10	L2	21	0.0	0.171	5.6	LOS A	0.2	1.5	0.08	0.06	48.9
11	T1	282	2.6	0.171	0.2	LOS A	0.2	1.5	0.08	0.06	49.3
12	R2	16	6.7	0.171	6.5	LOS A	0.2	1.5	0.08	0.06	48.3
Approach		319	2.6	0.171	0.8	NA	0.2	1.5	0.08	0.06	49.2
All Vehicles		1195	3.2	0.637	7.0	NA	3.7	26.0	0.32	0.53	44.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [Scenario 6]

10 year growth + Wairau Estate NZTA trip generation
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	21	5.0	0.771	14.6	LOS B	5.6	39.4	0.81	1.34	38.9
2	T1	24	0.0	0.771	19.1	LOS C	5.6	39.4	0.81	1.34	38.8
3	R2	303	0.7	0.771	22.2	LOS C	5.6	39.4	0.81	1.34	36.7
Approach		348	0.9	0.771	21.5	LOS C	5.6	39.4	0.81	1.34	37.0
East: SH45 East											
4	L2	258	0.4	0.278	4.9	LOS A	0.6	4.4	0.15	0.30	46.5
5	T1	180	13.5	0.278	0.4	LOS A	0.6	4.4	0.15	0.30	47.1
6	R2	47	0.0	0.278	6.0	LOS A	0.6	4.4	0.15	0.30	46.2
Approach		485	5.2	0.278	3.3	NA	0.6	4.4	0.15	0.30	46.7
North: Lower Wairau Rd											
7	L2	82	1.3	0.202	8.9	LOS A	0.8	5.5	0.49	0.93	42.3
8	T1	28	0.0	0.202	15.1	LOS C	0.8	5.5	0.49	0.93	43.5
9	R2	27	0.0	0.202	12.7	LOS B	0.8	5.5	0.49	0.93	43.4
Approach		138	0.8	0.202	10.9	LOS B	0.8	5.5	0.49	0.93	42.8
West: SH45 West											
10	L2	21	0.0	0.175	5.9	LOS A	0.3	1.9	0.10	0.07	48.8
11	T1	282	2.6	0.175	0.2	LOS A	0.3	1.9	0.10	0.07	49.2
12	R2	19	5.6	0.175	6.8	LOS A	0.3	1.9	0.10	0.07	48.3
Approach		322	2.6	0.175	1.0	NA	0.3	1.9	0.10	0.07	49.1
All Vehicles		1294	2.9	0.771	8.4	NA	5.6	39.4	0.35	0.59	43.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [Scenario 7]

10 year growth + Wairau Estate + Other Wairau Growth + FUD North of SH Existing Trip Generation
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	20	5.3	1.105	75.7	LOS F	19.7	139.0	1.00	2.39	22.7
2	T1	46	0.0	1.105	81.7	LOS F	19.7	139.0	1.00	2.39	22.7
3	R2	280	0.8	1.105	88.9	LOS F	19.7	139.0	1.00	2.39	20.0
Approach		346	0.9	1.105	87.2	LOS F	19.7	139.0	1.00	2.39	20.5
East: SH45 East											
4	L2	235	0.4	0.340	5.6	LOS A	1.7	12.6	0.37	0.31	45.7
5	T1	180	13.5	0.340	1.2	LOS A	1.7	12.6	0.37	0.31	46.3
6	R2	138	0.0	0.340	6.6	LOS A	1.7	12.6	0.37	0.31	45.4
Approach		553	4.6	0.340	4.4	NA	1.7	12.6	0.37	0.31	45.8
North: Lower Wairau Rd											
7	L2	289	0.4	0.663	13.3	LOS B	6.0	41.9	0.64	1.19	39.3
8	T1	51	0.0	0.663	25.1	LOS D	6.0	41.9	0.64	1.19	40.8
9	R2	97	0.0	0.663	22.1	LOS C	6.0	41.9	0.64	1.19	40.8
Approach		437	0.2	0.663	16.6	LOS C	6.0	41.9	0.64	1.19	39.9
West: SH45 West											
10	L2	91	0.0	0.210	5.0	LOS A	0.3	2.0	0.09	0.14	48.4
11	T1	282	2.6	0.210	0.2	LOS A	0.3	2.0	0.09	0.14	48.6
12	R2	18	5.9	0.210	6.8	LOS A	0.3	2.0	0.09	0.14	47.9
Approach		391	2.2	0.210	1.6	NA	0.3	2.0	0.09	0.14	48.5
All Vehicles		1726	2.2	1.105	23.5	NA	19.7	139.0	0.50	0.91	36.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [Scenario 8]

10 year growth + Wairau Estate + FUD north of SH45 + Additional development south of SH45 NZTA Trip Generation Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	23	4.5	1.480	233.1	LOS F	48.3	340.2	1.00	3.71	11.4
2	T1	55	0.0	1.480	238.0	LOS F	48.3	340.2	1.00	3.71	11.4
3	R2	323	0.7	1.480	244.5	LOS F	48.3	340.2	1.00	3.71	9.6
Approach		401	0.8	1.480	242.9	LOS F	48.3	340.2	1.00	3.71	9.9
East: SH45 East											
4	L2	278	0.4	0.382	5.9	LOS A	2.3	16.8	0.41	0.33	45.5
5	T1	180	13.5	0.382	1.5	LOS A	2.3	16.8	0.41	0.33	46.0
6	R2	159	0.0	0.382	6.9	LOS A	2.3	16.8	0.41	0.33	45.2
Approach		617	4.1	0.382	4.9	NA	2.3	16.8	0.41	0.33	45.6
North: Lower Wairau Rd											
7	L2	336	0.3	0.812	18.3	LOS C	10.4	73.0	0.70	1.44	36.4
8	T1	59	0.0	0.812	34.4	LOS D	10.4	73.0	0.70	1.44	38.3
9	R2	112	0.0	0.812	29.2	LOS D	10.4	73.0	0.70	1.44	38.3
Approach		506	0.2	0.812	22.6	LOS C	10.4	73.0	0.70	1.44	37.1
West: SH45 West											
10	L2	105	0.0	0.222	5.1	LOS A	0.4	2.5	0.11	0.16	48.3
11	T1	282	2.6	0.222	0.3	LOS A	0.4	2.5	0.11	0.16	48.4
12	R2	21	5.0	0.222	7.1	LOS A	0.4	2.5	0.11	0.16	47.7
Approach		408	2.1	0.222	1.9	NA	0.4	2.5	0.11	0.16	48.3
All Vehicles		1933	2.0	1.480	58.3	NA	48.3	340.2	0.54	1.28	25.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [Scenario 9]

10 year growth + Southern FUD existing trip generation
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	9	11.1	0.274	9.1	LOS A	1.0	7.0	0.55	1.02	42.8
2	T1	9	0.0	0.274	11.0	LOS B	1.0	7.0	0.55	1.02	42.7
3	R2	124	1.7	0.274	12.8	LOS B	1.0	7.0	0.55	1.02	41.2
Approach		143	2.2	0.274	12.4	LOS B	1.0	7.0	0.55	1.02	41.4
East: SH45 East											
4	L2	79	1.3	0.180	5.1	LOS A	0.5	3.7	0.19	0.20	47.1
5	T1	180	13.5	0.180	0.4	LOS A	0.5	3.7	0.19	0.20	47.7
6	R2	47	0.0	0.180	5.8	LOS A	0.5	3.7	0.19	0.20	46.8
Approach		306	8.2	0.180	2.4	NA	0.5	3.7	0.19	0.20	47.4
North: Lower Wairau Rd											
7	L2	82	1.3	0.155	8.9	LOS A	0.6	4.3	0.45	0.92	42.9
8	T1	14	0.0	0.155	11.9	LOS B	0.6	4.3	0.45	0.92	43.9
9	R2	27	0.0	0.155	12.1	LOS B	0.6	4.3	0.45	0.92	43.9
Approach		123	0.9	0.155	9.9	LOS A	0.6	4.3	0.45	0.92	43.3
West: SH45 West											
10	L2	21	0.0	0.163	4.9	LOS A	0.1	0.7	0.03	0.05	49.1
11	T1	282	2.6	0.163	0.0	LOS A	0.1	0.7	0.03	0.05	49.5
12	R2	7	14.3	0.163	5.9	LOS A	0.1	0.7	0.03	0.05	48.2
Approach		311	2.7	0.163	0.5	NA	0.1	0.7	0.03	0.05	49.5
All Vehicles		883	4.3	0.274	4.4	NA	1.0	7.0	0.23	0.38	46.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [Scenario 10]

10 year growth + Southern FUD NZTA generation
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	9	11.1	0.304	9.3	LOS A	1.1	8.1	0.57	1.03	42.6
2	T1	11	0.0	0.304	11.2	LOS B	1.1	8.1	0.57	1.03	42.6
3	R2	137	1.5	0.304	13.1	LOS B	1.1	8.1	0.57	1.03	41.0
Approach		157	2.0	0.304	12.7	LOS B	1.1	8.1	0.57	1.03	41.3
East: SH45 East											
4	L2	92	1.1	0.187	5.1	LOS A	0.5	3.8	0.19	0.21	47.0
5	T1	180	13.5	0.187	0.4	LOS A	0.5	3.8	0.19	0.21	47.6
6	R2	47	0.0	0.187	5.8	LOS A	0.5	3.8	0.19	0.21	46.7
Approach		319	7.9	0.187	2.5	NA	0.5	3.8	0.19	0.21	47.3
North: Lower Wairau Rd											
7	L2	82	1.3	0.158	8.9	LOS A	0.6	4.3	0.45	0.92	42.9
8	T1	15	0.0	0.158	12.1	LOS B	0.6	4.3	0.45	0.92	43.9
9	R2	27	0.0	0.158	12.1	LOS B	0.6	4.3	0.45	0.92	43.8
Approach		124	0.8	0.158	10.0	LOS A	0.6	4.3	0.45	0.92	43.3
West: SH45 West											
10	L2	21	0.0	0.163	5.0	LOS A	0.1	0.7	0.03	0.05	49.1
11	T1	282	2.6	0.163	0.1	LOS A	0.1	0.7	0.03	0.05	49.5
12	R2	7	14.3	0.163	6.0	LOS A	0.1	0.7	0.03	0.05	48.2
Approach		311	2.7	0.163	0.5	NA	0.1	0.7	0.03	0.05	49.5
All Vehicles		911	4.2	0.304	4.6	NA	1.1	8.1	0.24	0.40	46.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [Wairau Rd / SH45 Rndbt Ultimate ETG]

Potential roundabout for ultimate development at existing trip generation rate
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	20	5.3	0.414	7.2	LOS A	2.8	19.5	0.70	0.79	43.7
2	T1	46	0.0	0.414	6.9	LOS A	2.8	19.5	0.70	0.79	44.4
3	R2	280	0.8	0.414	10.1	LOS B	2.8	19.5	0.70	0.79	44.3
Approach		346	0.9	0.414	9.5	LOS A	2.8	19.5	0.70	0.79	44.3
East: SH45 (East)											
4	L2	235	0.4	0.515	5.3	LOS A	4.9	35.6	0.63	0.60	45.2
5	T1	180	13.5	0.515	5.5	LOS A	4.9	35.6	0.63	0.60	45.7
6	R2	138	0.0	0.515	8.5	LOS A	4.9	35.6	0.63	0.60	45.7
Approach		553	4.6	0.515	6.2	LOS A	4.9	35.6	0.63	0.60	45.5
North: Lower Wairau Rd											
7	L2	289	0.4	0.598	11.5	LOS B	5.5	38.9	0.86	1.01	42.4
8	T1	51	0.0	0.598	11.4	LOS B	5.5	38.9	0.86	1.01	43.0
9	R2	97	0.0	0.598	14.6	LOS B	5.5	38.9	0.86	1.01	42.9
Approach		437	0.2	0.598	12.2	LOS B	5.5	38.9	0.86	1.01	42.6
West: SH45 (West)											
10	L2	91	0.0	0.514	9.0	LOS A	4.3	30.6	0.81	0.86	43.9
11	T1	282	3.8	0.514	9.2	LOS A	4.3	30.6	0.81	0.86	44.5
12	R2	18	7.4	0.514	12.6	LOS B	4.3	30.6	0.81	0.86	44.1
Approach		391	3.1	0.514	9.3	LOS A	4.3	30.6	0.81	0.86	44.4
All Vehicles		1726	2.4	0.598	9.1	LOS A	5.5	38.9	0.74	0.80	44.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [Wairau Rd / SH45 Rndbt Ultimate NZTATG]

Potential roundabout for ultimate development at NZTA trip generation rate
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Upper Wairau Rd											
1	L2	23	4.5	0.499	8.4	LOS A	3.9	27.3	0.77	0.86	43.2
2	T1	55	0.0	0.499	8.0	LOS A	3.9	27.3	0.77	0.86	43.9
3	R2	323	0.7	0.499	11.3	LOS B	3.9	27.3	0.77	0.86	43.7
Approach		401	0.8	0.499	10.7	LOS B	3.9	27.3	0.77	0.86	43.7
East: SH45 (East)											
4	L2	278	0.4	0.596	5.8	LOS A	6.1	44.5	0.74	0.65	45.0
5	T1	180	13.5	0.596	6.0	LOS A	6.1	44.5	0.74	0.65	45.5
6	R2	159	0.0	0.596	9.0	LOS A	6.1	44.5	0.74	0.65	45.5
Approach		617	4.1	0.596	6.7	LOS A	6.1	44.5	0.74	0.65	45.2
North: Lower Wairau Rd											
7	L2	336	0.3	0.726	15.9	LOS B	8.6	60.5	0.96	1.19	40.3
8	T1	59	0.0	0.726	15.7	LOS B	8.6	60.5	0.96	1.19	40.9
9	R2	112	0.0	0.726	19.0	LOS B	8.6	60.5	0.96	1.19	40.8
Approach		506	0.2	0.726	16.5	LOS B	8.6	60.5	0.96	1.19	40.5
West: SH45 (West)											
10	L2	105	0.0	0.582	11.4	LOS B	5.5	39.5	0.88	0.98	42.7
11	T1	282	3.8	0.582	11.5	LOS B	5.5	39.5	0.88	0.98	43.3
12	R2	21	6.3	0.582	14.9	LOS B	5.5	39.5	0.88	0.98	42.9
Approach		408	3.0	0.582	11.7	LOS B	5.5	39.5	0.88	0.98	43.1
All Vehicles		1933	2.2	0.726	11.1	LOS B	8.6	60.5	0.83	0.90	43.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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5th July 2017

Dear Colin,

Re: Wairau Estate Concept Roundabout Cost Estimate

Please find attached the cost estimate for the roundabout. It based on the attached sketch SK1 rev A. The estimate is based on the following assumptions:

- The existing pavement is excavated and a new asphalt pavement constructed, based on 300mm of sub-base, 200mm of bound base course and 10mm of asphalt wearing course.
- The existing threshold signs can be reused.
- The roundabout inner circulation radius is 10m, with a 1.5m wide concrete apron and a circulating carriageway width of 4.5m.
- No service information has been received and thus an allowance of \$50,000 has been allowed for in the estimate.
- No resource consents are required.
- No land is required.

The estimated cost for the roundabout is \$793,000 including professional fees. The estimate has a confidence of $\pm 25\%$ and therefore the cost range is \$595,000 to \$991,000.

We trust this is sufficient for your discussions with New Plymouth District Council and the New Zealand Transport Agency.

Yours sincerely,



Andrew Skerrett
Director – AMTANZ Ltd

Enc: **Sketch SK1 RevA**
Cost estimate

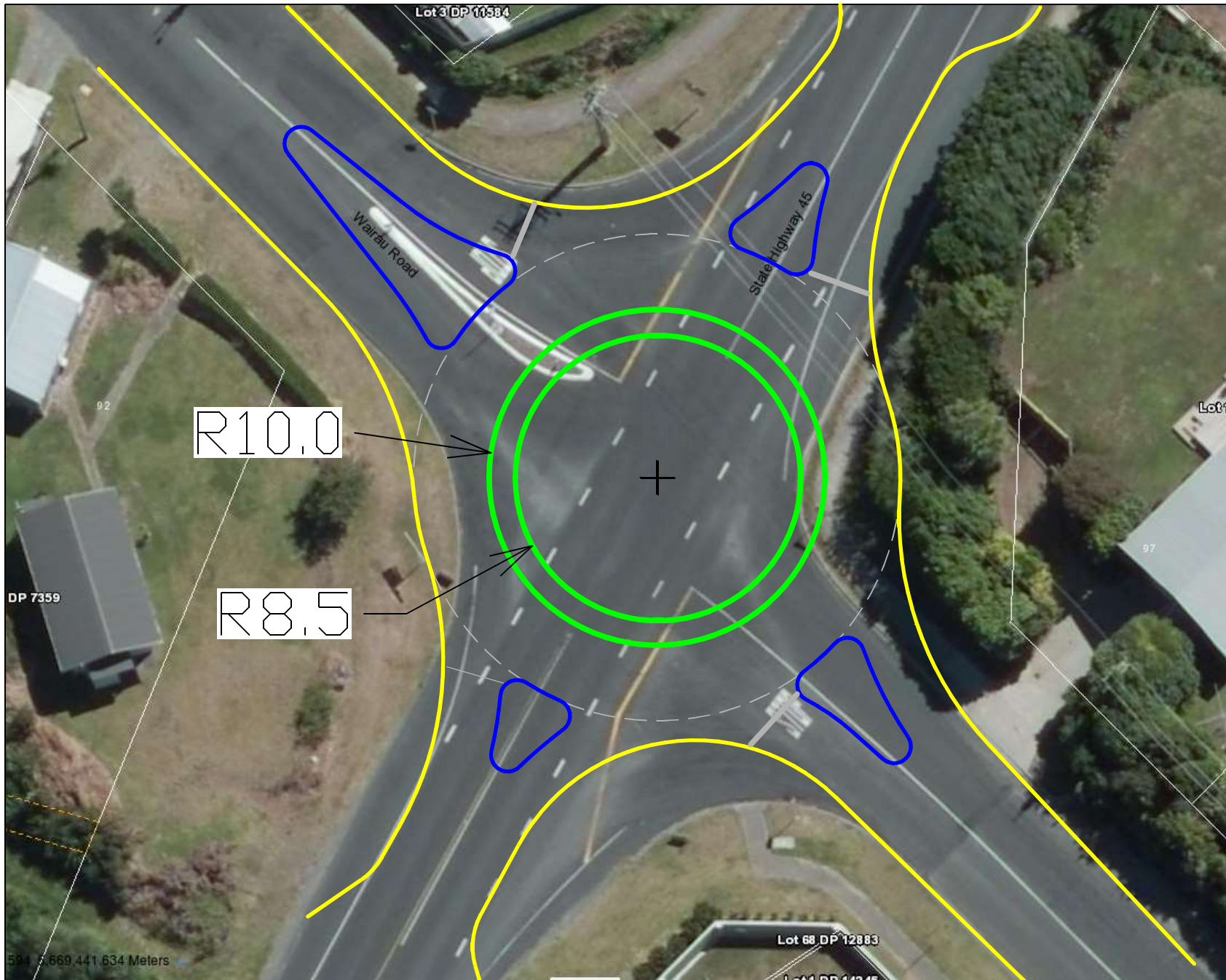
Assumptions:

Based on sketch SK1 dated 23/06/2017 Rev A

Threshold signs can be reused. Pavement quantities are based on total dig out and re-construct new deep asphalt pavement. No land or resource consents are required. Drainage can be discharged via well up sumps on SH45 to the north of the intersection.

Preliminary & General	Quantity	Unit	Rate	Cost	Total
Site establishment	1	LS	5000	5000	
Insurances	1	LS	10000	10000	
Traffic Management	1	LS	10000	10000	
Environmental plans	1	LS	5000	5000	
Overheads and profit	10	%age		57000	
					87,000.00
Site clearance					
Remove kerb & channel	225	lm	30	6750	
Revoke existing sump	1	No	1000	1000	
Removal manhole	1	No	2000	2000	
Remove existing drain	16	lm	125	2000	
Remove existing footpath	55	lm	100	5500	
Remove existing berm	225	m2	10	2250	
Remove threshold signs and set aside for reuse	2	No	2500	5000	
					24,500.00
Concrete works					
Kerb	410	lm	50	20500	
Concrete infill	375	m2	150	56250	
Concrete apron	100	m2	250	25000	
Footpath (includes link to underpass)	175	lm	300	52500	
					154,250.00
Pavement					
Saw cut existing pavement	80	lm	5	400	
Excavation	600	m3	30	18000	
Sub-base	300	m3	80	24000	
Bitumen bound basecourse (200mm)	200	m3	300	60000	
Asphalt wearing course (100mm)	100	m3	500	50000	
					152,000.00
Drainage					
375mm laterals	80	lm	400	32000	
Manhole 1.5-2m in depth	2	No	5000	10000	
425mm discharge pipe	80	lm	500	40000	
Double sumps	6	No	4000	24000	
					106,000.00
Roadmarking					
Centre line	100	lm	1	100	
Edge line	225	lm	1	225	
Give way line	4	No	200	800	
Give way words	4	No	1000	4000	
Hatching	120	m2	75	9000	
					14,125.00

Preliminary & General	Quantity	Unit	Rate	Cost	Total
Lighting					
Poles	4	No	6500	26000	
Cable 16mm2 copper	100	lm	125	12500	38,500.00
Signage					
Advanced warning	4	No	800	3200	
Directional	4	No	2500	10000	
Keep Left RG17.1	4	No	800	3200	
Give way	4	No	800	3200	
Chevron boards	4	No	1250	5000	
Re-erect threshold signs	2	No	2500	5000	29,600.00
Landscaping					
Top soil berms & grass	200	m2	15	3000	3,000.00
Utilities					
Allowance for minor service relocations	1	LS	50000	50000	50,000.00
Accommodation works					
Drive crossings	2	No	5000	10000	
Fences	112	lm	60	6720	
Planting		LS		5000	21,720.00
Construction Estimate					681,000.00
Professional fees					
Design fees	10.0%			68000	
Safety Audits	1	LS	10000	10000	
Construction supervision	5%			34000	112,000.00
Total costs					793,000.00
Confidence level ±25%	25%				198,250.00
Estimate Range					595,000.00 991,000.00



PROJECT:
Wairau Estate

TITLE:
Roundabout Concept

CLIENT:
Oakura Farm Park Ltd

SKETCH NO.:
Sk1

REV.:
A

DATE:
23/6/17

AMTANZ LTD

Appendix 10 Traffic Noise Attenuation Assessment



MARSHALL DAY
Acoustics



WAIRAU ESTATE
ACOUSTIC ENVIRONMENT
Rp 001 Rev 1 20169282N | 26 March 2017

Project: **WAIRAU ESTATE**

Prepared for: **Oakura Farm Parks Ltd**
3 Hine Street
New Plymouth 4310

Attention: **Michael McKie**

Report No.: **Rp 001 Rev 1 20169282N**

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Document Control

Status:	Rev:	Comments	Date:	Author:	Reviewer:
Draft	-	-	20 March 2017	Damian Ellerton	
Final	1	-	26 March 2017	Damian Ellerton	Colin Comber

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APPENDIX A ACOUSTIC TERMINOLOGY

APPENDIX B NZTA – MANAGEMENT OF EFFECTS ON NOISE SENSITIVE LAND

1.0 INTRODUCTION

Marshall Day Acoustics (MDA) has been commissioned to consider potential noise levels within the proposed Wairau Estate from SH45 road traffic.

The proposed Wairau Estate is designed to include a combination of residential housing lots and larger lifestyle sections. Figure 1 illustrates the outline development proposed.

Interwoven with the housing development is a strong equestrian theme that includes pathways suitable for walking and horses as well as an equestrian facility.

The developer anticipates a high-quality environment and this includes controlling extraneous noise from road traffic to an appropriate level within the site. The control of noise on new housing occupants is also an issue with New Zealand Transport Agency (NZTA) who are likely to be identified as an affected party as part of the Private Plan Change (PPC) process to rezone land from Rural Environment Area to "Rural Lifestyle".

A glossary of acoustic terminology is attached as Appendix A.

Figure 1: Site location and development proposal

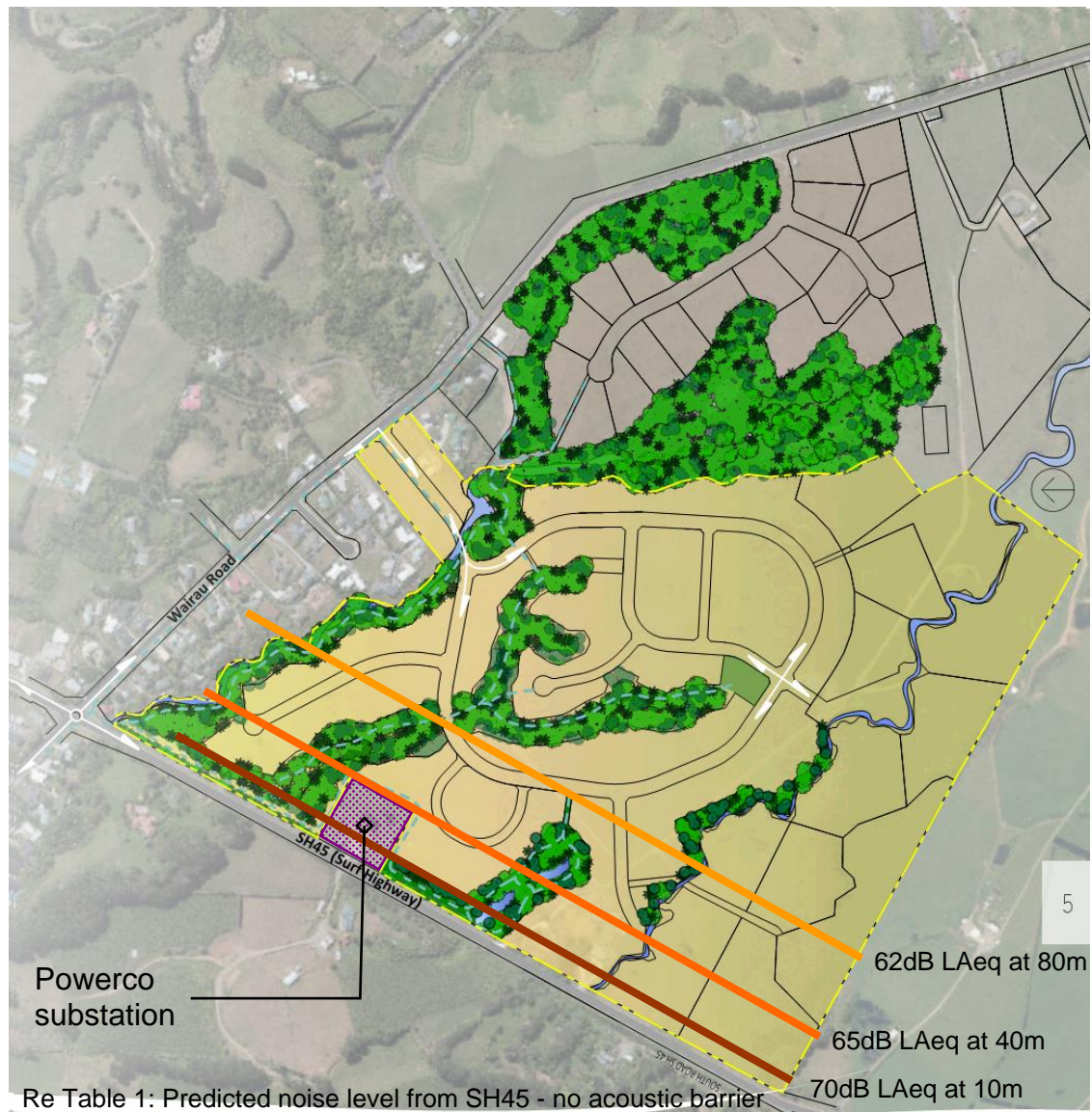


Image source: blue marble

2.0 NOISE CRITERIA

2.1 MDA Recommendation

Our recommendation for noise received within outdoor areas around houses or indeed in communal amenity spaces is for noise to be less than 55dB L_{Aeq} . This recommendation is in line with World Health Organisation guidance and NZS6802:2008 Assessment of Environmental Sound.

2.2 NZTA

We understand a PPC will be applied for to undertake the subdivision of the land for the Wairau Estate development. While the New Plymouth District Council is unlikely to raise concerns regarding the noise emission from the application, NZTA will be identified as a potentially affected party.

The reason NZTA will be identified as an affected party is because of the potential reverse sensitivity effect caused by the proposed PPC with regard to the operation of SH45. NZTA have been proactive in developing a policy and standard approach to reverse sensitivity issues throughout New Zealand.

The NZTA position in terms of what they deem suitable mitigation of noise by the applicant is clear and can be found at NZTA.co.nz. A copy of their document "Guide to the management of effects on noise sensitive land use near to the state highway network" is attached as Appendix B.

The requirements about the proposed Wairau Estate are likely to be that all houses built within an 80m setback of SH45 will need to comply with the following:

The following conditions are appropriate for a land use consent enabling new residential buildings to be located in the state highway effects area (but outside the buffer area), where the relevant district plan rules do not cover reverse sensitivity noise effects. Use of these conditions by councils and developers will generally satisfy the Transport Agency with respect to reverse sensitivity effects.

1. Any dwelling on the site must be designed, constructed and maintained to achieve a design noise level of 40 dB $L_{Aeq(24h)}$ inside all habitable spaces.
2. If windows must be closed to achieve the design noise level in **[condition 1]**, the building must be designed, constructed and maintained with a ventilation and cooling system. For habitable spaces the system must achieve the following:
 - › Ventilation must be provided to meet Clause G4 of the New Zealand Building Code. At the same time the sound of the system must not exceed 30 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.

- › The occupant must be able to control the ventilation rate in increments up to a high air flow setting that provides at least 6 air changes per hour. At the same time the sound of the system must not exceed 35 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
- › The system must provide cooling that is controllable by the occupant and can maintain the temperature at no greater than 25°C. At the same time, the sound of the system must not exceed 35 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
3. A design report prepared by an acoustics specialist must be submitted to the **[council officer]** demonstrating compliance with **[conditions 1 and 2]**, prior to construction or alteration of any dwelling. The design must take into account future permitted use of the state highway; for existing roads this is achieved by the addition of 3 dB to existing measured or predicted levels.

2.3 Criteria Summary

Achieving 55dB L_{Aeq} outside houses should make 40dB L_{Aeq} inside relatively straightforward and is considered desirable. Ideally a lower level of road traffic noise could attract a price premium and would also lower the noise mitigation required at Building Consent stage for houses within 80m of SH45.

When considering the height of the acoustic barrier, we recommend the noise level at the 40m setback position is focussed on in the first instance. Development closer to SH45 can certainly occur providing the knock on effect to outdoor amenity and building construction implications are clearly understood.

3.0 PREDICTED NOISE LEVELS

We understand the current volume of traffic is approximately 3,500 vehicles per day and includes 7% being trucks. It is necessary to anticipate the noise level allowing for 15 years' traffic growth in the future. On the assumption of ~1% increase per year the volume of traffic is likely to be 4-4,500 vehicle per day and the same 7% being trucks. Table 1 summarises our noise prediction.

Our noise predictions have considered several scenarios. These scenarios are:

- Existing situation – no barrier parallel with SH45
- 2m barrier¹ parallel with SH45
- 3m barrier¹ parallel with SH45

Note¹: the barrier height is relative to the height of SH45 at its centre line, not the existing height of the development land.

A nominal receiver position has been assumed at three locations perpendicular to SH45. These positions are:

- 10m from SH45
- 40m from SH45
- 80m from SH45

Table 1: Predicted SH45 noise level

Mitigation/Receiver	10m from SH45	40m from SH45	80m from SH45
No barrier	70	65	62
2m barrier parallel with SH45	60	55	52
3m barrier parallel with SH45	57	52	49

From Table 1 we conclude the following:

- The no barrier option will result in noise levels within the development site that exceed the recommended outdoor amenity criterion.
- The 2m high barrier option provides good “bang for buck” noise attenuation.
- The modest difference between a 2m and 3m high barrier is anticipated and may be favoured to minimise noise within the development site regardless of NZTA requirements.

4.0 NOISE BARRIER – GENERAL

The form of noise barriers typically includes use of earth bunding or solid fencing or a combination of both.

The basic principles for a barrier to have acoustic properties are:

- Weight - minimum mass ~10Kg/m²
- Height – dependent on noise source/receiver heights and no holes or gaps

Acoustic barriers work best close to either the noise source or receiver – see note below about non-development neighbouring site implication below.

- Extent -length of the barrier to prevent “noise leakage” around the ends (return sections).

The minimum mass of a barrier can be achieved with earth bunding, 25mm timber palings or other materials that achieve the minimum mass requirement i.e. concrete panels, glass etc.

The height of barrier will need to be referenced against the centre line of SH45 as noted above in Section 3. The final form may take a single or multiple forms depending on aesthetics, engineering and other site specific matters.

The length of the barrier, and presence of return sections, are important in ensuring any noise barrier offers the protection from road traffic noise that is anticipated and/or required. Figure 2 illustrates initial barrier return section location/extent.

It is common for noise barriers to taper off, rather than abruptly ceasing. The form of this tapering and aesthetic as part of the development and will need to include input from blue marble.

The location of the Powerco substation adjacent to SH45 poses some acoustic issues. The setback of the barrier by 40m as it follows the site boundary means the barrier height at that position may need to be + 1m higher to compensate for the separation distance.

The final height of the barrier is an issue for the developer as part of the wider vision for the development, and as noted previously, the implications about outdoor amenity and increased building costs for houses.

Figure 2: Noise barrier location



5.0 DISCUSSION

Once the degree and form of acoustic barrier is known, the implications for construction of houses to achieve the internal NZTA criteria can be calculated. In very general terms, the provision of suitably constructed acoustic barrier, with return sections will have little implication on the building materials that can be used for houses within 80m of SH45.

On the other hand, if the outside amenity criteria (55dB L_{Aeq}) were set aside, and only compliance with NZTA internal requirement was required, then considerable upgrading of new house design would be required. That additional cost would fall upon the homeowner. These two factors are likely to detract from achieving a premium housing development in our experience.

Clearly there could be a large difference in the acoustic outcomes between the do nothing approach and providing an acoustic barrier. Ultimately the decision will be made by others which path is to be followed.

Providing the NZTA standard acoustic design requirements are adopted into the Private Plan Change then it is our opinion the potential for any reverse sensitivity effects regarding noise received from SH45 will be adequately addressed.

6.0 SUMMARY

Marshall Day Acoustics has been commissioned to provide outline guidance regarding the implication for road traffic noise within the proposed Wairau Estate residential development.

Because the subdivision of land will require NZTA written approval as an affected party it is prudent that the implications of securing their approval are understood.

In our experience the “do nothing” approach will lower development costs but force higher build costs onto the houses to be built. We understand the development is aimed to attract a premium price and therefore the mitigation of road traffic noise will need to be addressed.

The construction of acoustic barriers is the common form of noise mitigation undertaken by developers prior to individual building consent for new houses being sought. The form of acoustic barriers is typically earth bunds and /or timber fencing or a combination of both. The final extent including return sections are critical to ensuring noise mitigation by the barrier is maintained.

We recommend the NZTA acoustic conditions are adopted into the Private Plan Change should it be granted.

APPENDIX A ACOUSTIC TERMINOLOGY

SPL or L_p	<u>Sound Pressure Level</u> A logarithmic ratio of a sound pressure measured at distance, relative to the threshold of hearing (20 μ Pa RMS) and expressed in decibels.
dB	<u>Decibel</u> The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of $P_r=20 \mu$ Pa i.e. $dB = 20 \times \log(P/P_r)$
dB(A)	The unit of sound level which has its frequency characteristics modified by a filter (A-weighted) so as to more closely approximate the frequency bias of the human ear.
A-weighting	The process by which noise levels are corrected to account for the non-linear frequency response of the human ear.
$L_{Aeq}(t)$	The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level. The suffix "t" represents the time period to which the noise level relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent a measurement time between 10 pm and 7 am.
L_{Amax}	The A-weighted maximum noise level. The highest noise level which occurs during the measurement period.
NZS 6801:2008	New Zealand Standard NZS 6801:2008 <i>"Acoustics – Measurement of environmental sound"</i>
NZS 6802:2008	New Zealand Standard NZS 6802:2008 <i>"Acoustics – Environmental Noise"</i>
NZS 6806:2010	New Zealand Standard NZS 6806:2010 <i>"Acoustics - Road-traffic noise - New and altered roads"</i>

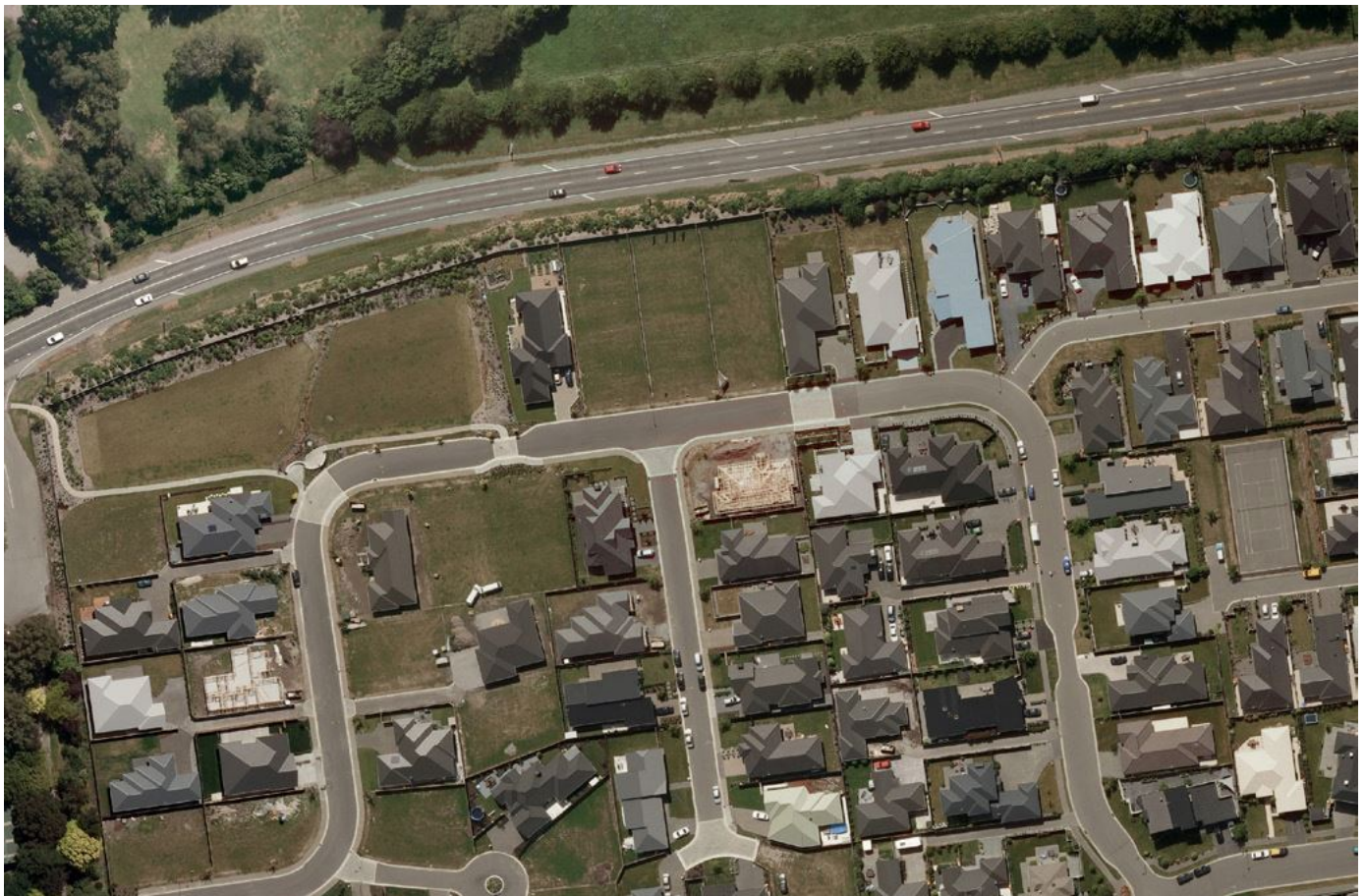
APPENDIX B NZTA – MANAGEMENT OF EFFECTS ON NOISE SENSITIVE LAND

Guide to the management of effects on noise sensitive land use near to the state highway network

Noise sensitive activities such as a new residential building near to an existing state highway can potentially be affected by road-traffic noise. This could cause annoyance and sleep disturbance potentially resulting in adverse health effects. In turn, this can cause reverse sensitivity effects on the state highway network.

This guide describes how the NZ Transport Agency, working together with local authorities and landowners/developers, manages reverse sensitivity effects from noise and vibration sensitive activities. Appropriate setback distances and criteria for acoustically treating buildings are provided, together with model district plan rules and resource consent conditions.

September 2015, Version 1.0



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Wellington 6141

This publication is also available on NZ Transport Agency's website at www.nzta.govt.nz



The NZ Transport Agency is part of, and contributes to, the Safer Journeys programme.

Safer Journeys is the government's strategy to guide improvements in road safety over the period 2010-2020. The strategy's vision is a safe road system increasingly free of death and serious injury. It is a coordinated effort across partner agencies to improve each aspect of road safety - better behaviours, a safer road environment, safer speeds and higher vehicle standards.

For more information visit www.saferjourneys.govt.nz

DOCUMENT MANAGEMENT PLAN

1. PURPOSE

This management plan outlines the updating procedures and contact points for the document.

2. DOCUMENT INFORMATION

DOCUMENT NAME	Guide to the management of reverse sensitivity effects on the state highway network
DOCUMENT NUMBER	SP/M/023
DOCUMENT AVAILABILITY	This document is located in electronic form on the NZ Transport Agency's website at http://www.nzta.govt.nz/resources/
DOCUMENT OWNER	Aaron Hudson
DOCUMENT SPONSOR	Rob Hannaby

3. AMENDMENTS AND REVIEW STRATEGY

All corrective action/improvement requests (CAIRs) suggesting changes will be acknowledged by the document owner.

ACTIVITY	COMMENTS	FREQUENCY
Amendments (minor revisions)	Updates incorporated soon as practicable.	As required
Review (major revisions)	Amendments fundamentally changing the content or structure of the document will be incorporated as soon as practicable. They may require coordinating with the review team timetable.	At least biennially
Notification	All users that have subscribed to HNO Technical Advice Notes (http://hip.nzta.govt.nz/tan) will be advised by email of amendments and updates.	Immediately

RECORD OF AMENDMENT

AMENDMENT NUMBER	DESCRIPTION OF CHANGE	EFFECTIVE DATE	UPDATED BY

1 INTRODUCTION

PURPOSE OF THIS DOCUMENT

The purpose of this guide is to promote good practice for the management of noise sensitive land use near to state highways. This guide provides information that can be applied to avoid or manage adverse effects, such as sleep disturbance, for people in buildings located near to state highways. This guide is consistent with the levels of service (noise criteria) outlined in NZS 6806:2010 Acoustics – road traffic noise – new and altered roads.

The good practice this guide promotes recognises the social, economic and health benefits of managing interior working and living environments located near to state highways and other land transport networks. Relieving stress related illness and other sleep deprivation related health effects, reduces both individual and collective expenditure on health care. Careful and considered planning also balances the aspirations and wellbeing of landowners with New Zealanders' desire to have access to a safe and efficient road transport network.

Contained within this document is information about:

- the nature of reverse sensitivity issues
- the roles and responsibilities of the Transport Agency, local councils and landowners
- information on regional and district plans; and resource consents and plan changes
- performance standards
- noise mitigation options
- model plan provisions and consent conditions.

Transport Agency and council planners are the primary audience for this guide, but the information is also relevant to other staff in the Transport Agency; local councils; developers; acoustics specialists and the general public.

This guide includes detailed technical information relating to noise and vibration, and planners will require specialist support when implementing some aspects. For queries relating to the state highway network, please contact environment@nzta.govt.nz.

For the general public, particularly private house builders or those undertaking alterations, this guide explains the noise and vibration effects that should be considered. Further information on the process required for building works near to state highways can be found at the Transport Agency website⁰¹ and in an information brochure⁰².

For the Transport Agency, this guide presents a consistent approach and performance criteria to implement when:

1. determining the appropriate footprint of new state highway designations
2. submitting on council plan reviews/changes under the Resource Management Act 1991 (RMA)
3. submitting or giving affected party approval to plan changes and resource consent applications under the RMA.

The Transport Agency has prepared various other guides, which are also relevant, including:

- *Guide to assessing road-traffic noise using NZS 6806 for state highway asset improvement projects*⁰³
- *State highway noise barrier design guide*⁰⁴
- *State highway guide to acoustic treatment of buildings*⁰⁵

This guide replaces the information previously contained in Appendix 5D to the NZ Transport Agency *Planning policy manual*⁰⁶.

01 Building a house near a state highway
www.acoustics.nzta.govt.nz

02 NZ Transport Agency state highways – development and access
www.nzta.govt.nz

03 NZ Transport Agency (2011) *Guide to assessing road-traffic noise using NZS 6806 for state highway asset improvement projects*. www.nzta.govt.nz



04 NZ Transport Agency (2010) *State highway noise barrier design guide*. www.nzta.govt.nz



05 NZ Transport Agency (2015) *State highway guide to acoustic treatment of buildings*. www.nzta.govt.nz

06 Transit NZ (2007) *Planning policy manual, SP/M/001, Appendix 5D reverse sensitivity*.



WHAT IS REVERSE SENSITIVITY?

Reverse sensitivity is the legal vulnerability of an established activity to complaint from a new land use⁰⁷. This can occur in situations where different land uses/activities are located in close proximity to each other, resulting in conflict between the activities. The term 'reverse sensitivity' generally relates to the effects of the development of a sensitive activity in an area that is already affected by established activities⁰⁸.

For land transport network operators, including the Transport Agency, there is a risk that new activities (such as houses and schools) that choose to locate near to established roads or railways may object to the effects of the land transport network (such as noise and vibration) and take action against the operator. The same issues arise around ports, airports and other infrastructure. The focus of this guide is on managing reverse sensitivity effects on the state highway network, but the information may also be relevant when managing effects on railways and regionally significant local roads.

Vehicles on state highways can produce adverse effects that extend beyond the state highway boundary, such as:

- noise and vibration
- vehicle generated emissions, especially to air
- lighting/glare
- dust
- non-point source pollution e.g. stormwater run-off, spray-drift and litter.

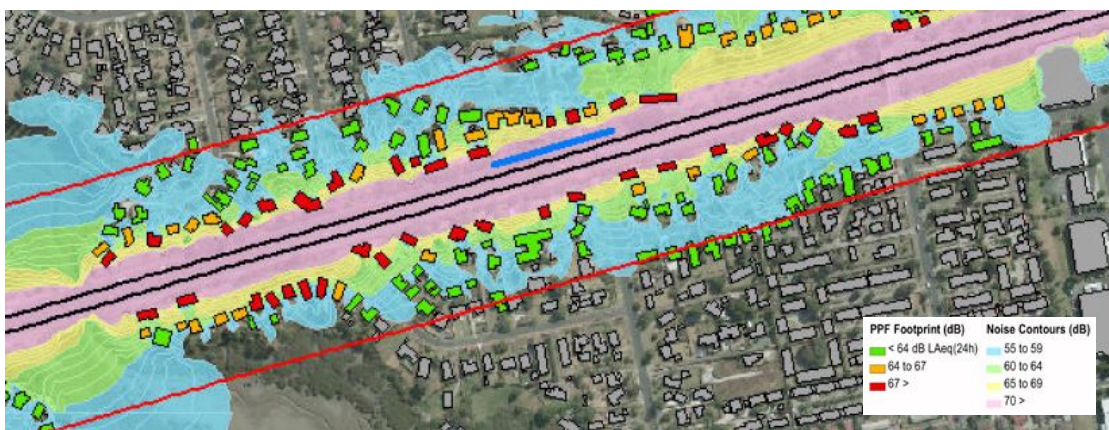
Sensitive receivers, which are susceptible to the effects of roads, can include houses, schools and childcare facilities, hospitals, offices and hotels/motels. While there are a range of issues, the most widespread effects generally relate to noise. Methods in this guide have been devised initially for the management of noise. Other effects are generally addressed indirectly by the buffer areas required for noise.

This guide addresses effects from existing state highways, and also from confirmed designations for future state highways. The Transport Agency also develops new state highways, and section 2 summarises how noise effects are addressed in those cases.

⁰⁷ NZ Journal of Environmental Law (1999) Volume 3, Pardy, B. and Kerr, J. *Reverse sensitivity - the common law giveth, and the RMA taketh away.* www.nzcel.auckland.ac.nz/uoa

⁰⁸ Judge Sheppard (RMA 10/97) confirmed: 'the term reverse sensitivity is used to refer to the effects of the existence of sensitive activities on other activities in their vicinity, particularly by leading to restraints in the carrying on of those other activities.'

FIGURE 1: NOISE MODELLING



WHY IS REVERSE SENSITIVITY AN ISSUE?

Tension can arise between the Transport Agency's requirement to operate and maintain the state highway network and the desire of neighbouring landowners to develop their land as they wish, or to enjoy their property free from unreasonable interference or nuisance. While the Transport Agency aims to manage interference or nuisance through careful planning, complaints from sensitive receivers still arise.

For the 10-year period between 2002 and 2012, the Transport Agency received over 250 complaints about noise from the operation and maintenance of the Auckland state highway network. Nationally, the Transport Agency receives in the order of ten complaints each month about noise from the state

highway network, as recorded in its Customer Relationship Management System (2014). Complaints predominantly relate to noise experienced by residents living near to a state highway.

Modelling undertaken by the Transport Agency (2011) showed that noise levels adjacent to the state highway network throughout the Auckland region could cause disturbance for new sensitive activities, if they locate close to state highways. Similar patterns occur adjacent to state highways throughout New Zealand. This guide sets out a nationally consistent approach that the Transport Agency applies to encourage appropriate planning for and treatment of sensitive environments near state highways.

ENVIRONMENTAL AND SOCIAL RESPONSIBILITY POLICY

The NZ Transport Agency has a strong regard for the natural, built and social environment, which is demonstrated through its Environmental and Social Responsibility Policy⁰⁹. The Transport Agency aims to continuously improve performance in the management of environmental and social impacts; improve the knowledge and understanding of the extent and conditions of New Zealand’s environment; and identify and comply with all relevant environmental legislation and regulation.

This policy, together with the Government Policy Statement¹⁰ are consistent with the Land Transport Management Act 2003 and the RMA.

To implement the Environmental and Social Responsibility Policy, the Environmental and Social Responsibility Manual¹¹ contains standards, guidelines, tools and references applicable to all capital works and maintenance operations. This guide forms part of that manual.

TRANSPORT AGENCY’S APPROACH TO PLANNING PROCESSES

The Transport Agency is committed to influencing regional and local planning processes to ensure:

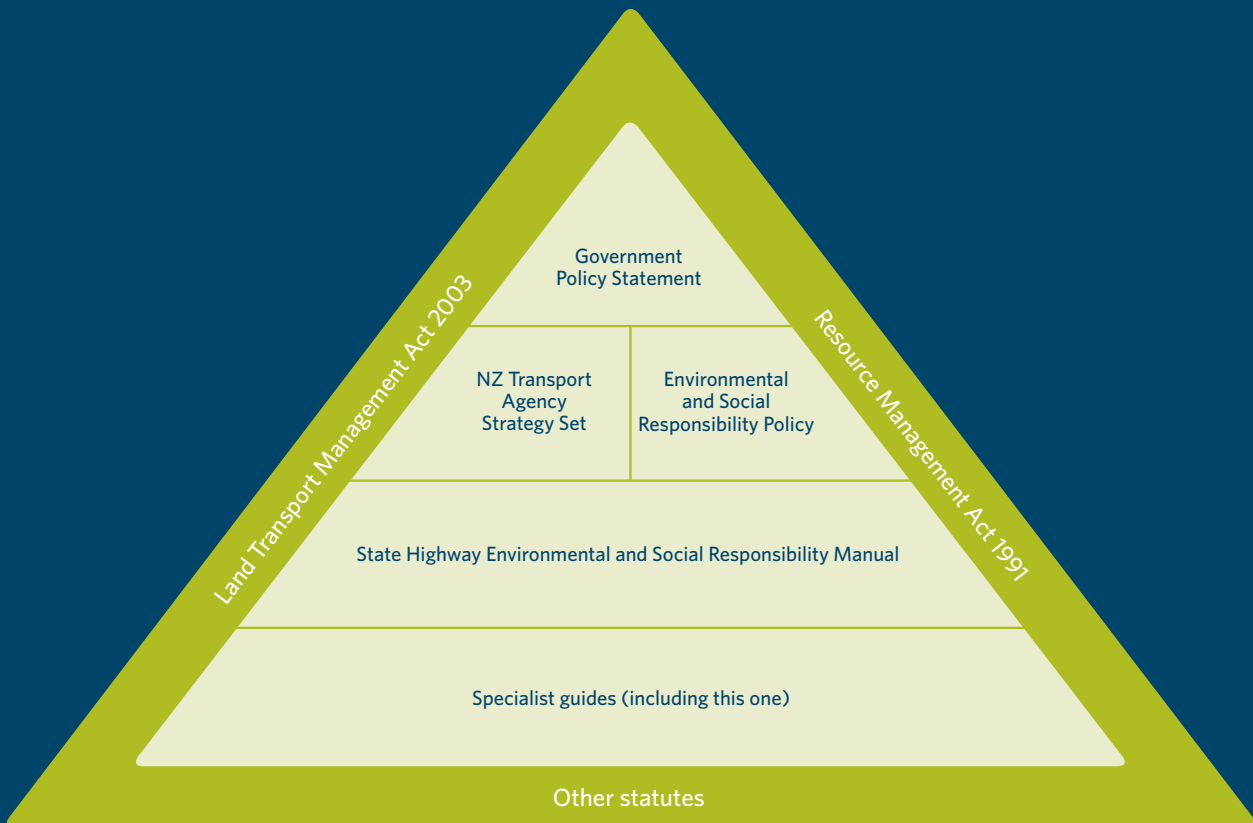
- the long-term needs of state highways are recognised and provided for
- the delivery of an effective, efficient, safe, and affordable transport system that supports prosperity and economic growth, vibrant communities and a healthy environment
- recognition of the economic and social function of state highways and the diverse range of transport functions performed by high volume, regional arterial, collector and access roads
- new developments near state highways address potential adverse effects for future occupants and also the consequent reverse sensitivity effects on the transport network.

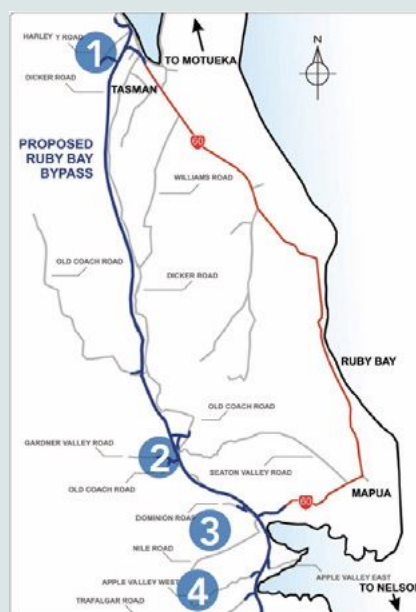
09 NZ Transport Agency (2014) *Environmental and Social Responsibility Policy*. www.nzta.govt.nz

10 Ministry of Transport *Government policy statement on land transport* (updated every 3 years). www.transport.govt.nz

11 NZ Transport Agency *HNO Environmental and Social Responsibility Manual*. www.nzta.govt.nz

FIGURE 2: RELATIONSHIP OF THIS GUIDE TO KEY POLICY AND STRATEGY DOCUMENTS





Ruby Bay Bypass

CASE STUDY - EXAMPLE OF POOR OUTCOMES WHEN REVERSE SENSITIVITY NOISE EFFECTS ARE NOT FULLY ADDRESSED

This case study provides an example of the outcomes that can eventuate if reverse sensitivity noise effects are not fully addressed on the state highway network. In this example the residents remain unhappy with the noise effects they are experiencing.

The State Highway 60 Ruby Bay Bypass (completed 2010) links Richmond and Motueka in the Tasman District. The 10.7 km road consists of single lane carriageways in both directions with a number of passing lanes and connections to local roads. The road carries approximately 5,000 vehicles per day and bypasses the townships of Mapua and Ruby Bay.

The investigation phase for the bypass was completed in 1999 and a Notice of Requirement was lodged with Tasman District Council (TDC) and approved in 2000. Designation conditions required the Transport Agency to mitigate noise from the bypass at houses that had already been built at the time of the designation (2000), resulting in noise barriers being constructed as part of the project to protect those houses.

In 2005 TDC adopted controls within the district plan to assess the location of subdivisions relative to the proposed State Highway 60

route, and to provide discretion for the application of building noise control measures for locations exposed to traffic noise from the Ruby Bay Bypass.

The project enjoyed positive community support during the construction phase and once opened no complaints were raised due to road-traffic noise. However, following the application of a second coat seal in 2012, a number of noise complaints were received. These complaints were primarily from residents whose houses were consented after the approval of the bypass designation.

To assess these complaints the Transport Agency commissioned an independent consultant to conduct noise monitoring of both noise levels at houses and also of the road surface. The investigation concluded that the second coat seal had slightly changed the road-traffic noise but that the noise levels remained as expected and in compliance with the designation conditions. Some residents did not agree with these findings and remain dissatisfied with the noise effects they experience.

This situation is an example of a reverse sensitivity effect whereby new houses were built adjacent to an existing designation (without a

road in it at the time); the owners were then affected by road-traffic noise and complained about the operation of the state highway, requesting significant expenditure on new road surfacing.

While the designation itself could be found in the district plan, the plan does not include reverse sensitivity noise buffer and effects areas. In addition, the district plan did not identify noise mitigation performance standards for new construction or alterations. Including these provisions in district plans helps alert future residents of the traffic noise environment and encourages acoustic treatment of dwellings.

This outcome highlights the importance of land use planning provisions to control the location and design of new houses near existing and designated state highways. It also highlights the need to make information widely available to councils and the general public to inform them of potential current and future noise effects when developing properties adjacent to existing or designated state highways. With appropriate controls, houses could be built to achieve acceptable indoor environments.

2 A SHARED RESPONSIBILITY

There is a shared responsibility for managing reverse sensitivity noise effects because it is neither practical nor reasonable for any one party to assume sole responsibility. The Transport Agency, councils and landowners/developers must all assume responsibilities. For new and altered state highways the onus falls on the Transport Agency to address noise effects, whereas for new and altered noise sensitive activities near state highways the responsibility lies with councils to include appropriate land-use controls in district plans and on landowners/developers to implement them. Careful and considered planning is pivotal to protect the environment and enhance the quality of life for New Zealanders.

TRANSPORT AGENCY'S ROLE

The Transport Agency recognises that constructing, operating and maintaining state highways can impose adverse effects on communities and the environment, and takes reasonable steps to manage noise and vibration emissions, and other adverse effects.

For new or altered state highways, a good opportunity exists to integrate the highway with existing or anticipated adjacent land uses. The Transport Agency adopts NZS 6806¹² as best practice guidance for mitigating road-traffic noise during the planning, design and construction phases of new or altered state highway projects¹³.

On new and altered state highways the Transport Agency routinely uses low-noise road surfaces and noise barriers to reduce noise levels. In cases where there is unavoidable high noise exposure the Transport Agency acoustically treats individual buildings.

On existing state highways the Transport Agency adopts good practice measures to manage road surface noise and vibration¹³. It also investigates noise and vibration complaints and addresses issues where practicable, such as following up with truck operators using noisy engine brakes.

For maintenance works on existing state highways, the Transport Agency adopts good practice environmental management processes. This includes using noise and

vibration management plans to determine the controls necessary to minimise any adverse effects.

Existing state highways were designed and constructed to the relevant standards of their time, and there are often limited practicable opportunities to further mitigate adverse road-traffic noise and vibration effects.

Separation is often the most effective method of mitigating adverse effects such as noise, vibration, vehicle emissions, lighting/glare and dust on adjoining land uses. New state highway designations are wider than the vehicle carriageways and can incorporate buffer areas between the road and existing or anticipated adjoining land uses. However, there is a tension between separating/isolating state highways for control of health and amenity effects, and maintaining connectivity and compact urban form, as well as a safe environment for all modes of transport. This can be partly addressed through other non-sensitive land uses providing a buffer in some areas. Alternative approaches may be required as a compromise in some constrained urban areas.

Section 3 provides an appropriate buffer area to control the most significant noise effects. For motorways and expressways this typically results in a 40m buffer area due to their relatively high traffic volumes and vehicle speeds (figure 4). This buffer may be achieved either through encumbrances on the

12 Standards New Zealand (2010) NZS 6806:2010 Acoustics – road-traffic noise – new and altered roads. www.standards.co.nz

13 NZ Transport Agency (2014) Guide to state highway road surface noise. www.nzta.govt.nz



FIGURE 3: BUFFER AREA WIDTH

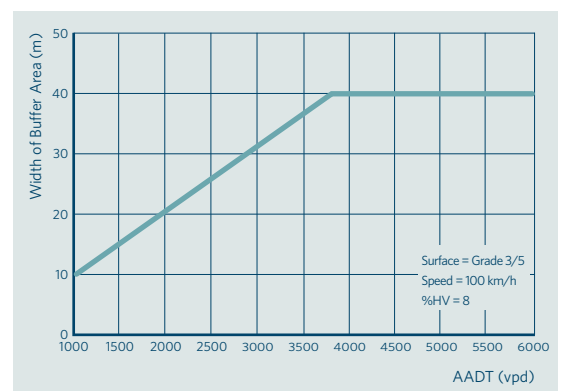
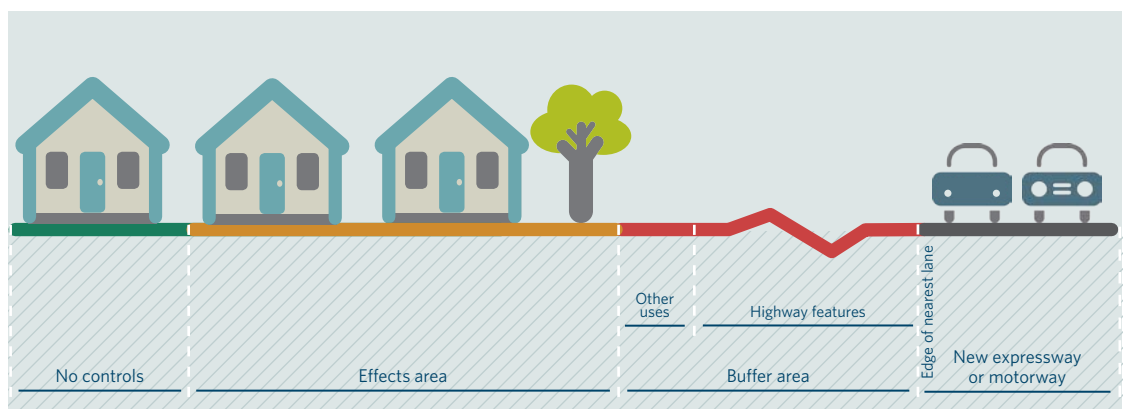


FIGURE 4: TYPICAL BUFFER AREA FOR A NEW MOTORWAY OR EXPRESSWAY



land preventing future noise sensitive development, or by including the land within the designation. Encumbrances may be put in place when surplus land owned by the Crown is disposed of or through separate agreements made with the landowner. In urban areas noise sensitive activities are generally accepted in the buffer area subject to additional controls.

The buffer area is created to promote separation between sensitive land use activities and the state highway, and is measured from the edge of the nearest traffic lane. The buffer typically incorporates shoulder areas, stormwater drains, stormwater treatment, utility

corridors, cycle and foot paths and other non noise sensitive activities. In many cases, the outer Buffer Area may be available for other activities, such as grazing, that do not compromise highway operations. Vibration and air quality effects also reduce with distance from a road, so a buffer from state highways and expressways would provide some protection from those potential adverse effects.

COUNCILS' ROLE

The Transport Agency and local authorities have a collective duty to balance the operation of an effective, efficient and safe land transport system with the desire of landowners to develop their land as they wish, or to enjoy their property free from unreasonable interference and nuisance.

As the effects of a state highway usually extend beyond the road designation, it is appropriate to control the establishment of new activities close to state highways to reduce potential conflicts and manage reverse sensitivity effects.

Land in rural areas can be zoned so that new sensitive activities are not permitted near to existing and/or designated state highways, or rules can be imposed requiring sensitive activities near state highways to manage effects from the highway.

FIGURE 5: EXAMPLE VIBRATION LEVELS¹⁴

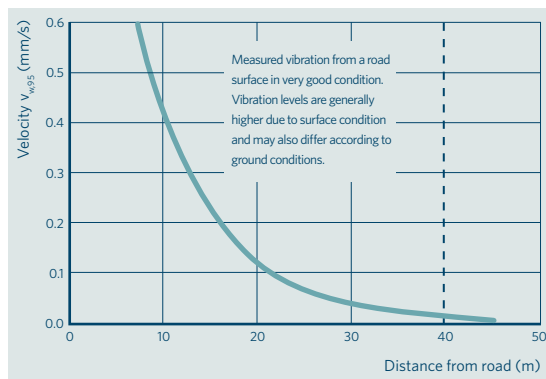


FIGURE 6: EXAMPLE AIR QUALITY LEVELS¹⁵

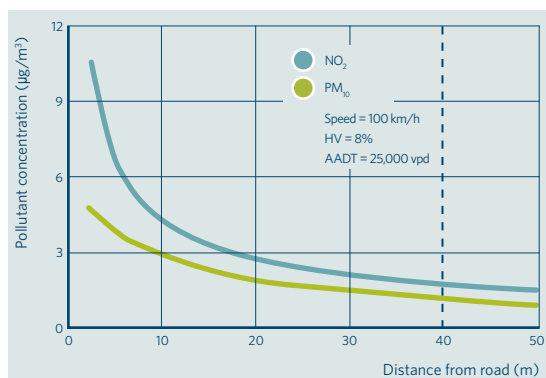


FIGURE 7: AREAS OF RESPONSIBILITY



14 NZ Transport Agency (2011) Acoustics Assessment, Transmission Gully Project. Technical report 12. www.nzta.govt.nz

15 NZ Transport Agency Air quality screening model v2.0. www.air.nzta.govt.nz

16 Judge Thompson (W055/04) stated: 'In a number of previous decisions this Court has held that reverse sensitivity is itself an adverse effect in terms of s3 RMA [e.g. A049/02 and A103/03]. That has a significant consequence. If reverse sensitivity is an adverse effect, then there is a duty, subject to other statutory directions to avoid, remedy or mitigate it, so as to achieve the Act's purpose of sustainable management.'

3 PERFORMANCE STANDARDS

BUFFER AND EFFECTS AREAS

The Transport Agency has developed a stepped approach to protect sensitive activities as shown below. The approach is based around buffer and effects areas, which are determined in the same way for both rural and urban state highways, but the applicable reverse sensitivity controls within each area vary depending on the environment. To achieve a reasonable level of acoustic amenity, all noise sensitive activities in rural areas should be located outside of a buffer area, providing a setback from state highways. The buffer area will be partly or sometimes fully within the state highway designation, particularly for more recent designations. However, in other cases where an existing state highway has a narrow designation, the buffer will need to be accommodated outside the designation, and for example might take the form of local roading, stormwater treatment or reserve land within a new residential development, or may be accommodated by building setbacks within larger sections. Beyond the buffer area buildings containing new noise sensitive activities within a wider 'effects area' may be allowed but need to be designed and constructed to achieve reasonable indoor acoustic amenity. In urban areas noise sensitive activities may be allowed in the buffer area, subject to additional vibration controls.

The Transport Agency will seek to have the buffer and effects areas overlaid on individual district plan maps. While the district planning review process is on a 10-year cycle the Transport Agency will update the buffer and effect areas every two years in order to reflect any changes to the state highway network¹⁷. However, the versions of the overlays in each district plan must be used when applying the controls in the district plan. The Transport Agency will generally not seek for updated overlays to be included in the district plan until the next plan review. In some cases, especially for significant changes in the state highway network, the Transport Agency may seek a specific plan change to include updates to the revised buffer and effect maps. For example, this may occur in parallel with a Notice of Requirement for a new state highway.

The buffer and effects areas discussed here are those proposed by the Transport Agency. However, the appropriate district plan should be consulted to determine the actual areas that apply as district plan provisions may differ.

¹⁷ NZ Transport Agency
Buffer and effects areas maps.
www.acoustics.nzta.govt.nz

FIGURE 8: BUFFER AND EFFECTS AREAS

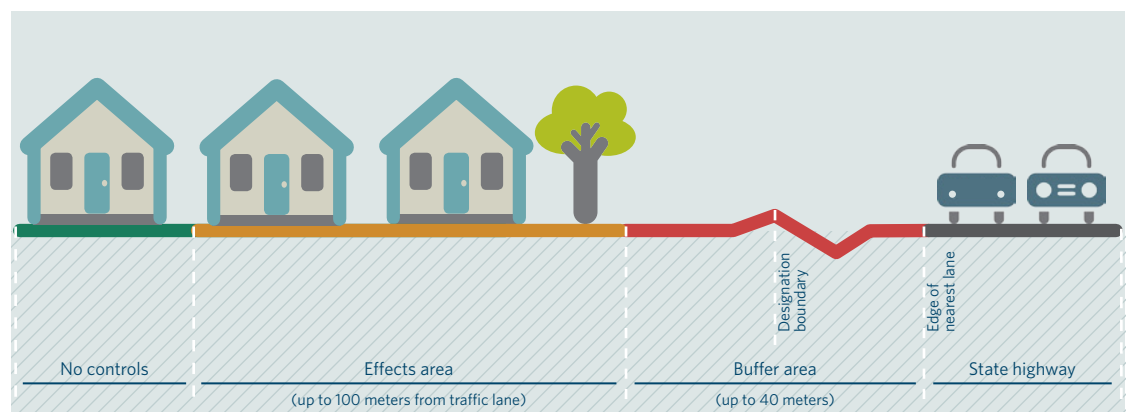


FIGURE 9: WEB BASED MAP SHOWING BUFFER AND EFFECTS AREAS



CALCULATION OF DISTANCES

The buffer area and effects area for the entire state highway network have been determined and are shown on a web based map¹⁷.

The Transport Agency will provide digital exports from these maps if required to be inserted into district plan maps (contact environment@nzta.govt.nz).

The maps will be updated nationwide biennially. Additional updates will be made for localised areas if required to reflect altered designations or significant changes to traffic volumes, road surfaces or speed limits.

The extent of the buffer area and the effects area depend on the noise level from the highway, with the dominant factors being the traffic flow, vehicle speed and percentage of heavy vehicles. Noise levels can be calculated using a road traffic noise model, such as the calculation of road-traffic noise¹⁸ (CRTN, the most commonly used road noise model in New Zealand). However, detailed modelling for the entire state highway network is not practicable. The equation

below is a simplified version of the CRTN calculation that can be used to determine the approximate extent of the buffer area and effects area, based on achieving the NZS 6806 new road noise criteria of 64 dB $L_{Aeq,24h}$ (buffer) and 57 dB (effects). The simplified equation does not consider potential noise mitigation provided by existing topography or existing solid and continuous barriers (eg, a wall or another building). Where there is no line of sight between the road and the location of the proposed development (noise sensitive activity) then mitigation may not be required. The rules proposed in section 8 address such situations.

Recognising the limitations of the simplified calculation, the distances for the Buffer area and effects area have been grouped into categories and capped as described below.

For completeness this equation has been presented in this guide but in most situations the maps provided by the Transport Agency can be used to determine the buffer and effects areas¹⁹.

¹⁸ Department of Transport, Welsh Office (1988) *Calculation of road traffic noise*, published by HMSO, London.
<http://products.ihf.com>

¹⁹ NZ Transport Agency
State highway traffic volumes.
www.nzta.govt.nz

EQUATION 1: CALCULATION OF EXTENT OF BUFFER AND EFFECTS AREAS

$$d = K \times \underbrace{AADT \times \left(V + 40 + \frac{500}{V} \right)^{3.3}}_{\text{Traffic speed}} \times \underbrace{\left[\left(1 - \frac{p}{100} \right) \times 10^{\left(\frac{R_c}{10} \right)} + \left(\frac{p}{100} + \frac{5p}{V} \right) \times 10^{\left(\frac{R_t}{10} \right)} \right]}_{\text{Road surface (and traffic speed and composition)}}$$

Where:

d	Distance (m)
K	Constant factor related to noise level (1.82 x 10 ⁻¹⁰ for buffer area, 9.13 x 10 ⁻¹⁰ for effects area)
AADT	Annual average daily traffic (vpd) ^{19,20}
V	Traffic speed (km/h)
p	Percentage of heavy vehicles (percentage points, eg for 12 %HV, p = 12) ^{19,20}
R _c	Surface correction ¹³ for cars (dB)
R _t	Surface correction ¹³ for trucks (dB)

Buffer area distances D _B	10, 20, 30 or 40 m
Effects area distances D _E	40, 50, 60, 70, 80, 90 or 100 m

The distances (d) calculated using the equation opposite are rounded and capped as follows:

Buffer area	Effects area
d < 15 then D _B = 10 m	d < 45 then D _E = 40 m
15 ≤ d < 25 then D _B = 20 m	45 ≤ d < 55 then D _E = 50 m
25 ≤ d < 35 then D _B = 30 m	55 ≤ d < 65 then D _E = 60 m
d ≥ 35 then D _B = 40 m	65 ≤ d < 75 then D _E = 70 m
	75 ≤ d < 85 then D _E = 80 m
	85 ≤ d < 95 then D _E = 90 m
	d ≥ 95 then D _E = 100 m

²⁰ Auckland Motorway
Alliance Mobile Road.
www.mobileroad.org

NOISE AND VIBRATION DESIGN LEVELS

New or altered buildings containing noise sensitive activities within the effects area should be designed, constructed and maintained to meet the internal noise levels set out in table 1.

These noise limits are based on NZS 6806 and AS/NZ 2107:2000²¹. In AS/NZS 2107 there is a satisfactory and maximum value given for each type of space. In the table below, the maximum values have generally been selected in recognition of reasonable expectations for the environment in close proximity to a state highway. The noise levels relate to the sensitivity of each activity, for example activities requiring active listening are more sensitive to noise than sleeping.

NZS 6806 defines protected premises and facilities (PPFs) as spaces in buildings used for residential activities; marae; overnight medical care; teaching and sleeping in educational facilities; and playgrounds that are part of educational facilities that are within 20m of buildings used for teaching purposes. Other noise standards define 'noise sensitive activities/locations' and although there is some variability in the definitions, these are essentially PPFs. All PPFs in NZS 6806 are included in table 1. In this guide the term noise sensitive activity will be used.

²¹ Standards Australia/ Standards New Zealand (2000) AS/NZ 2107:2000 Recommended design sound levels and reverberation times for building interiors.
www.infostore.saiglobal.com

TABLE 1: INTERNAL NOISE LEVELS FOR BUILDINGS IN BUFFER AND EFFECTS AREAS

BUILDING TYPE	OCCUPANCY/ACTIVITY	MAXIMUM INDOOR DESIGN NOISE LEVEL $L_{Aeq(24h)}$
Residential	Living spaces, sleeping spaces (including visitor accommodation and retirement accommodation)	40 dB
Education	Assembly halls	35 dB
	Conference rooms, drama studios	40 dB
	Lecture rooms and theatres, music studios	35 dB
	Libraries	45 dB
	Sleeping areas in educational facilities	40 dB
	Teaching areas	40 dB
Health	Overnight medical care, wards	40 dB
	Clinics, consulting rooms, theatres, nurses' stations	45 dB
Cultural Buildings	Places of worship, marae	35 dB

In urban areas, and on occasion in other situations, it can be impractical to restrict noise sensitive activities from a buffer area around state highways. Should sensitive activities be required to locate within the buffer area, additional controls need to be applied. As well as the internal noise level controls set out in table 1, controls are required to manage the adverse effects of vibration and to manage noise in the main outdoor living space for residential activities in rural areas. Where development occurs within the buffer area, the criteria in table 2 should be applied, in addition to the criteria in table 1.

Internal noise levels have been specified rather than a façade reduction in order to obtain an effects based approach, which takes into account the actual road-traffic noise level outside a building. This approach is consistent with NZS 6806 for noise.

Road-traffic noise levels fluctuate over time: there are short-term changes over seconds as individual vehicles pass; variations over minutes due to the changing mixture of cars and trucks; and daily oscillations due to peak and off-peak traffic flows. A number of different noise measurement parameters are available. For road-traffic noise in New Zealand, the $L_{Aeq(24h)}$ is used, with the units of decibels (dB). This is an A-weighted, time-averaged noise level over 24 hours.

No differentiation has been made between living and sleeping spaces as the 40 dB design noise level is measured over a 24 hour period and is broadly equivalent to 35 dB during the night period combined with 40 dB during the day.

²² Norwegian Standard (2005) NS 8176:2005 *Vibration and shock - Measurement of vibration in buildings from landbased transport and guidance to evaluation of its effects on human beings.*
www.infostore.saiglobal.com

NS 8176²² has been used as the basis for the recommended vibration level, with class C corresponding to the 'value for vibration in new residential buildings'. A statistical maximum value for weighted vibration is used to quantify the vibration and class C has an upper limit of 0.3 mm/s $v_{w,95}$.

For vibration, NS 8176 uses the statistical maximum weighted velocity $v_{w,95}$ (units of mm/s), which is the maximum weighted velocity that can be expected with 95% probability. The 'combined frequency weighting' W_{mv} from ISO 8041:2005 is used to reduce to vibration influence outside the frequency range to which humans are sensitive.

TABLE 2: NOISE AND VIBRATION LEVELS FOR BUILDINGS IN BUFFER AREA

BUILDING TYPE	MAXIMUM EXTERNAL DESIGN NOISE LEVEL (RURAL AREAS)	INTERNAL DESIGN VIBRATION LEVEL (URBAN AND RURAL AREAS)
Residential	57 dB $L_{Aeq(24h)}$	NS 8176 Class C

ASSESSMENT METHODOLOGIES

When there is a requirement to assess noise and/or vibration as set out in the model plan rules/conditions (sections 8 and 9), an acoustics expert is typically required.

For noise, the assessment determines the existing road-traffic noise by measurement, prediction or a combination of both. To take into account the future permitted use of state highway 3 dB should be added to existing measured or predicted noise levels. The noise levels inside and outside the new sensitive land use are then predicted and any mitigation specified for the building design, barriers or bunds in order to achieve compliance with the required levels in table 1 or table 2. The Transport Agency provides a number of tools and data sources for this assessment:

- a guide to road surface noise¹³
- a road-traffic noise calculator www.acoustics.nzta.govt.nz
- traffic flow and percentage heavy vehicle data^{19,20}
- a guide to the acoustic treatment of buildings⁰⁵

For some parts of the state highway network (such as in Auckland) the Transport Agency may also have noise contours available on request (environment@nzta.govt.nz).

Due to the influence of local ground conditions and the condition of the road surface, site-specific measurements are recommended for a vibration assessment. These measurements should be carried out in accordance with NS 8176 on the ground surface, ('free-field') using a statistical maximum velocity or acceleration from a characteristic sample of road traffic. Empirical relationships can then be used²³ to determine the vibration inside a building.

The vibration levels will correspond to the road surface condition at the time of the measurements and should be used to assess vibration effects on the proposed development. However, if there is a temporary defect in the road surface at the time of the measurements causing elevated vibration levels then an adjustment should be made to the measured values. No adjustment should be made if elevated levels are caused by permanent features of the surface such as seal joints, completed repairs such as patches, or issues with the underlying pavement.

Where adopted, the draft plan rules and consent conditions in sections 8 and 9 make landowners/developers responsible for providing design solutions that achieve the specified performance standards. As specified in these rules/conditions, landowners have to supply an assessment from a suitably qualified acoustics specialist stating that each building in the effects area will achieve the prescribed design noise levels (and vibration level if a building is within the buffer area).

Noise and vibration assessments are estimated to cost \$1,000 (2015) with additional costs for any measurements. Advice on both of these assessment methodologies can be sought from the Environment and Urban Design Team (environment@nzta.govt.nz).

²³ NZ Transport Agency (2013) *State highway construction and maintenance noise and vibration guide.*
www.nzta.govt.nz

VENTILATION PROVISIONS

Where compliance with specified internal noise levels is required and building relocation/reorientation or noise barriers are not practicable, acoustic treatment of the building will be necessary. The overall acoustic performance of a building envelope is determined mainly by its weakest elements. In most cases, the weakest elements are ventilation openings such as windows through which natural ventilation is provided. Mechanical ventilation/cooling can allow windows to be kept closed, which can significantly reduce road-traffic noise and, in the majority of cases, is the only measure required.

Ventilation and cooling systems are often specified in district plans as part of reverse sensitivity controls for houses near airports, ports, roads and railways. However, there is substantial variation between specifications, despite the systems all serving the same basic purpose in each case. The range of different specifications commonly found in district plans was reflected in the proposed Auckland Unitary Plan in 2013, where houses near airports, ports, road and rail had varying ventilation provisions. A review²⁴ of these found that:

- Clause G4 of the Building Code (Schedule 1 of the Building Regulations 1992) is not designed to provide thermal comfort. District plans that specify compliance with Clause G4 for ventilation systems as part of reverse sensitivity controls are unlikely to achieve the intended outcome. Occupants would be likely to experience hot/stuffy conditions at least in summer, and would probably open the windows, which should remain closed to achieve appropriate indoor noise levels.
- Systems that seek to simulate cooling through provision of high air flow rates (up to 15 air changes per hour), have a number of drawbacks and will not always achieve the desired cooling effect. Issues with a high air flow rate ventilation only system include relatively high capital and maintenance costs, larger components, and higher levels of system noise to control.
- Provision of a ventilation system including cooling, such as from a reverse cycle heat pump, is likely to be the most effective way of achieving reasonable thermal comfort, commensurate with the effect that would be obtained by opening windows. However, in cooler regions such as the lower North Island and coastal and southern parts of the South Island, mechanical ventilation alone would be sufficient.

Where mechanical ventilation or cooling is provided as an alternative to opening windows it should be a genuine alternative such that occupants are not forced to choose between excess noise or hot/stuffy conditions. Prior to 2014, to achieve this outcome the Transport Agency generally sought either a high air flow rate or cooling, when ventilation systems were required as part of reverse sensitivity controls. On the basis of this review, the following specifications are now recommended.

SPECIFICATION FOR VENTILATION AND COOLING SYSTEMS

- Ventilation must be provided to meet clause G4 of the New Zealand Building Code. At the same time as meeting this minimum provision, the sound of the system shall not exceed 30 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
- The occupant must be able to control the ventilation rate in increments up to a high air flow setting that provides at least 6 air changes per hour (more than is specified in clause G4). At the same time the sound of the system shall not exceed 35 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
- The system must provide cooling that is controllable by the occupant and can maintain the temperature at no greater than 25°C. At the same time, the sound of the system must not exceed 35 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.

(The last item can be omitted for cooler regions such as the lower North Island and coastal and southern parts of the South Island.)

To achieve this specification it is likely that the most common solution would be an in-ceiling ducted system with a reverse-cycle heat pump providing cooling (figure 13).

Note that in addition to the specification detailed above, any ventilation and cooling system must comply with district plan provisions for noise emissions to neighbouring property. This may constrain the location of external equipment and air grilles, and/or require screening and attenuation.

The specification is considered a minimum for ventilation and cooling systems implemented to address reverse sensitivity noise effects. Heating and additional cooling may be an overall design objective for these systems.

The noise limits for ventilation systems are lower than the 40 dB road-traffic noise limit, to avoid a cumulative effect. Ideally the ventilation systems would be 10 dB below the road-traffic noise but this is not practicable at higher duties so the ventilation specification is only 5 dB below the road-traffic noise limit in those instances.

²⁴ Beca Ltd (2014)
Ventilation systems installed for
road-traffic noise mitigation.
www.acoustics.nzta.govt.nz

4 NOISE BARRIERS

In some instances the noise criteria in section 3 can be achieved by screening the land use from the road by a barrier. Effective barriers can be formed with walls or bunds and advice can be found in the barrier guide⁰⁴ and urban design guidelines²⁵. The natural terrain and other buildings can also act as noise barriers.

Noise barriers erected close to the road often provide the best acoustic performance. However, in addition to potential urban design issues, structures within the state highway road reserve must be maintained by the Transport Agency. Therefore, noise barriers provided by developers for reverse sensitivity control should be located either where they will be maintained by the landowner, or preferably on land

that will be transferred to the local council for ongoing maintenance.

For most types of barrier, access is required to both sides for maintenance, and therefore locating a barrier on a cadastral boundary can be problematic. Consideration is also needed to avoid gaps between barriers and boundary fences, which can become litter traps and unsafe places.

If a noise barrier for an individual development does not join up with other noise barriers, or otherwise extend wider than the area to be protected, then it may be necessary to include return sections at each end of the barrier perpendicular to the state highway⁰⁴ (figure 10).

²⁵ NZ Transport Agency (2013) *Bridging the gap: NZTA urban design guidelines*. www.nzta.govt.nz

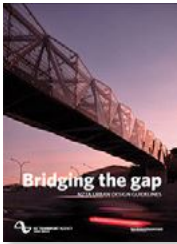


FIGURE 10: NOISE BARRIER RETURN

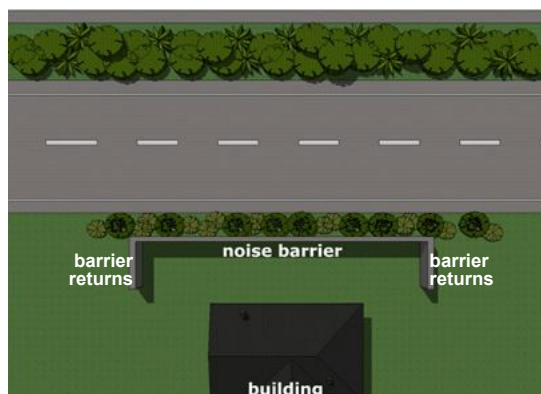


FIGURE 11: PLANTED BUNDS BESIDE SH1 IN ROLLESTON INSTALLED BY COUNCIL/DEVELOPER





Noise barriers on individual sections and council land in Christchurch



CASE STUDY - MAINTENANCE IMPLICATIONS FROM BARRIER LOCATION

This case study highlights difficulties that can arise with the ongoing maintenance of noise barriers depending on who owns the land on which they are located. The figure above is an aerial photograph showing two stages of a subdivision adjacent to State Highway 1 in Christchurch. For both stages a continuous noise barrier has been constructed adjacent to the state highway. The noise barrier comprises an earth bund with a timber fence on top. In the first stage of the subdivision (shown on the top half of the figure) the barrier

is located wholly within individual private sections of land. However, for the second stage (shown on the bottom half of the figure) the barrier is located wholly within a specific council reserve. The council is responsible for both sides of the barrier within the council reserve. However, where the barrier is located within individual private sections of land (first stage), it is not obvious who will maintain the state highway side of the barrier. While it is the landowners' responsibility, the lack of direct access and varying ownership could

result in an unsightly barrier viewed from the state highway. Fortunately, at this particular location the planting of appropriate vegetation by the developer has meant minimal maintenance is required; although issues may arise in future. This is a good example of the importance of landscape design for noise bunds. However, in general it is recommended that noise barriers for reverse sensitivity control adjacent to state highways should not be within individual sections, but should be within a council reserve.

5 BUILDING DESIGN

Section 3 describes how installing mechanical ventilation/cooling is a common treatment to reduce road-traffic noise in buildings by allowing windows to be kept closed. Example systems and specific advice on the acoustic treatment of buildings is provided in the Transport Agency guide⁰³.

For higher noise exposures (closer to a road) it may be necessary to upgrade windows as well as providing mechanical ventilation/cooling. A common misconception is that 'double-glazing' is the primary means of noise control. However, if a significant noise reduction across a window is required, achieving

effective seals is usually more important than the glazing configuration. Thin thermal double-glazing has relatively poor acoustic performance due to resonance. More efficient means of noise reduction across windows can be achieved by using thicker glazing, secondary glazing or laminated glass. Typically only those rooms facing the state highway will require treatment, so the measures do not need to extend to the whole house. Additionally, within a certain room, the treatment might not be required for all elevations. For alterations to existing buildings, acoustic treatment should only be required for those parts of the building that are being altered.

FIGURE 12: GLAZING TYPES

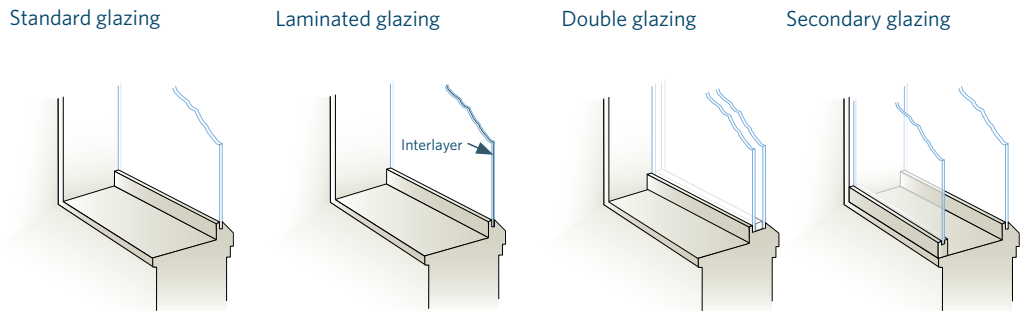
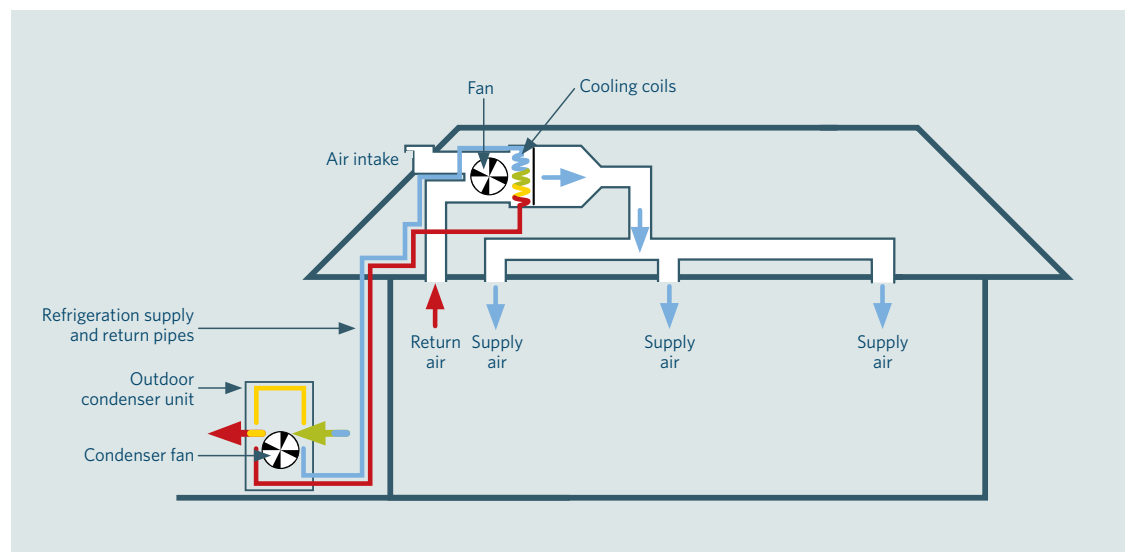


FIGURE 13: DUCTED AIR CONDITIONING SYSTEM



A study has been undertaken to assess the typical costs of treating buildings to achieve the criteria in section 3²⁶. Figure 16 shows the additional acoustic treatment costs calculated for a typical new build single storey home (three bedroom, 175 m²) and double storey home (four bedroom, 225 m²), with base prices of \$235,000 and \$332,000, respectively (2013). This study considers traffic noise levels that

would be similar to a location next to a road with a chip seal surface and 9,000 vehicles per day, or next to a road with a porous asphalt surface and 30,000 vehicles per day. There would also be design, consenting and operation and maintenance costs associated with the acoustic treatments. Many new houses include these acoustic treatments.

²⁶ Beca Ltd (2013) *New Zealand Transport Agency building acoustic mitigation case study*. www.acoustics.nzta.govt.nz

FIGURE 14: TYPICAL SINGLE STOREY HOME

FIGURE 15: TYPICAL DOUBLE STOREY HOME



Image from A1 Homes



Image from A1 Homes

FIGURE 16: ACOUSTIC TREATMENT COSTS (EXCLUDING GST) - 2013²⁶



6 REGIONAL AND DISTRICT PLANS

The Transport Agency advocates for statutory planning documents to recognise the effects of nearby development on transport infrastructure, including the national state highway network.

Specifically, the Transport Agency will seek that reverse sensitivity is efficiently managed by local authorities through:

- imposing separation and setback distances between sensitive activities and the road edge (see section 3)
- encouraging non-sensitive land use to separate residential or other sensitive activities from major transport corridors
- adopting effective urban design principles (see page 13) and acoustic treatment performance standards within district plans
- requiring design and construction standards to achieve appropriate internal noise and vibration levels within effects areas.

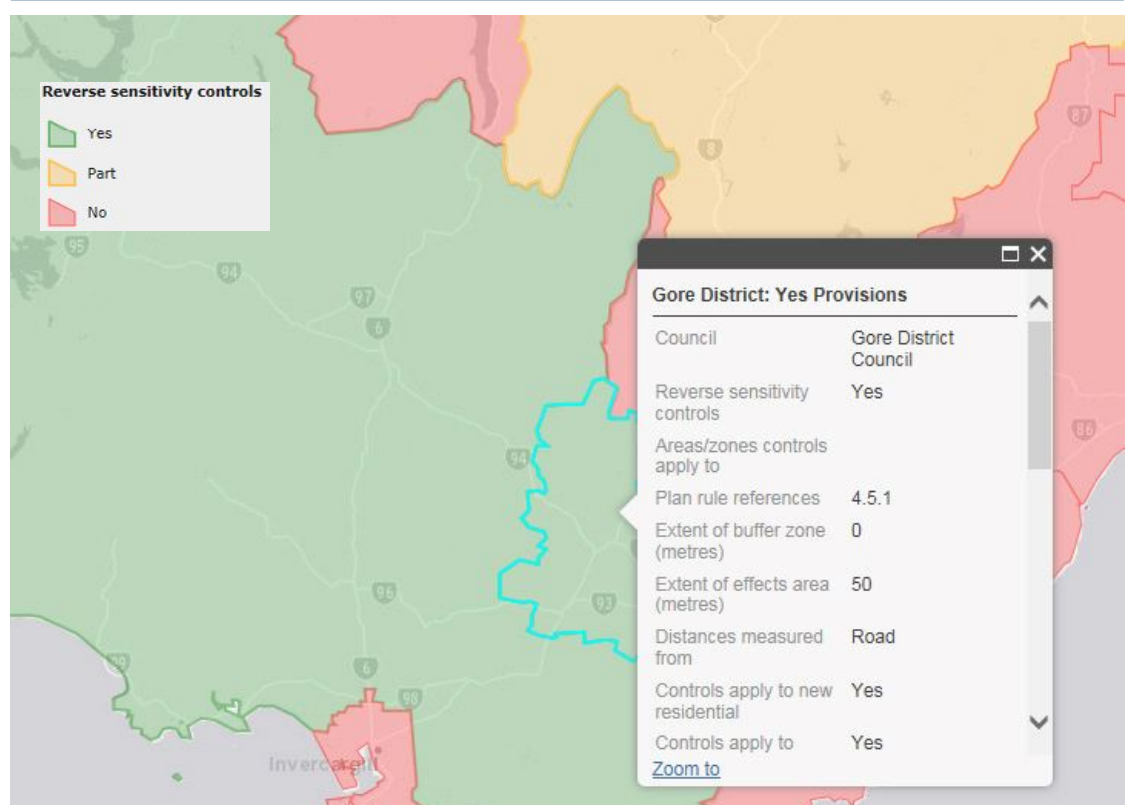
²⁷ NZ Transport Agency
District plan provisions.
www.acoustics.nzta.govt.nz

The Transport Agency participates in review processes of statutory planning documents to advocate for reverse sensitivity provisions that are consistent with the good practice set out in this guide. Using the formal review processes is favoured over initiating private plan change processes. This approach has been adopted because of the significant resource and expense required to prepare and lodge plan changes on numerous statutory planning documents throughout New Zealand. Model plan provisions are provided in section 8 of this guide.

The Transport Agency has collated information about existing reverse sensitivity rules within district plans and displays this material on a web based map²⁷. For current information and provisions it is recommended that the individual district plans are referenced.

Reverse sensitivity controls have the potential to encourage poor urban design outcomes. For example, if solid and tall fences were built to reduce noise in all houses adjacent to an urban arterial, then the vibrancy of the environment could be compromised, potentially affecting the local economy and creating safety issues for pedestrians and cyclists in the road corridor. It is therefore recommended that when implementing reverse sensitivity controls within a district plan, consideration should also be given towards applying good urban design practices.

FIGURE 17: WEB BASED MAP OF DISTRICT PLAN REVERSE SENSITIVITY PROVISIONS



7 RESOURCE CONSENTS AND PLAN CHANGES

The Transport Agency seeks to proactively manage reverse sensitivity effects through adoption of appropriate district-wide controls and standards within district plans. Where these controls have not yet been included in district plans, the Transport Agency also manages reverse sensitivity through participating in the consenting process, primarily through providing submissions on subdivision or land use resource consent applications, and less frequently on discharge consent applications. The Transport Agency can also be a submitter on district plan changes for specific areas. For complicated or significant projects in particular, the Transport Agency seeks to be consulted by applicants prior to lodging a consent application or plan change request. The district planning and consenting process can be used to effectively protect sensitive activities, such as residential development, from undesirable environmental effects of the state highway by identifying and imposing performance standards as conditions on resource consents.

The Transport Agency has developed an effects area, in which it seeks the management of reverse sensitivity effects through the district planning process, and in which it considers proposed developments may cause an effect on the Transport Agency. As described in section 3, the effects area may be up to 100 metres from a state highway, and is not dependent on whether the development directly accesses the state highway.

While the Transport Agency prefers that new noise and vibration sensitive activities are not developed within the buffer area (section 3), in urban areas this may not be a practical outcome, and urban design considerations may lead to development within the buffer area. In these cases the Transport Agency will seek to have appropriate noise and vibration controls included in the district plan or consent conditions.

Overall the Transport Agency considers the district plan process as a proactive mechanism to encourage developers to locate and/or treat their sensitive activity to mitigate reverse sensitivity effects. By including both appropriate permitted and restricted discretionary activity pathways and encouraging buffer and effects areas within district plans, ambiguity in the consenting process is reduced and developers are informed of the potential reverse sensitivity effects.

When an applicant approaches the Transport Agency prior to lodging an application, a review of the location of the development along with the sensitivity of the activity and the proposed controls is undertaken. Based on the outcome of this review, the following mechanisms may typically be sought to address the potential effects of reverse sensitivity:

- modifications to the location of the sensitive activity, and
- the building standards as set out in section 9 of this guide.

If a proposal satisfies the Transport Agency's mechanisms for managing reverse sensitivity and other effects, the Transport Agency will provide its affected party approval for consent applications. The Transport Agency may however decline to provide affected party approval where changes sought to a consent application do not satisfy the Transport Agency's concerns.

For notified consent applications, the Transport Agency may lodge a submission if the reverse sensitivity effects on the state highway network have not been addressed. Lodging a submission secures the Transport Agency's ability to participate in the consent process, including appeal if necessary.

The Transport Agency generally will not seek 'no complaints' covenants as a method to manage reverse sensitivity effects. While such covenants can forewarn prospective tenants of road-traffic noise exposure, it does not mitigate the potential effects.

URBAN DESIGN

There are a wide range of factors that should be considered, with respect to a state highway corridor and surrounding land uses, to achieve good urban design outcomes. The use of buffers and noise barriers for managing reverse sensitivity effects both require careful integration in urban areas to avoid causing other adverse effects.

The Transport Agency urban design guidelines *Bridging the gap*, provide examples of compatible land uses adjacent to urban arterials such as local roads/public transport, cycleways, commercial buildings and public spaces. These land uses form the necessary buffer to manage reverse sensitivity effects.



8 PLAN PROVISIONS

The following definitions, objectives, policies and rules, are provided as guidance for Transport Agency and council planners to manage reverse sensitivity noise and vibration effects on the state highway network. Because the state highway network is linear and therefore adjoins varying noise sensitive activities, it is recommended that local government adopt a district-wide approach to managing reverse sensitivity. These should be considered alongside other section 32 matters.

These rules can also be adapted to apply to mitigating reverse sensitivity effects on local arterial roads and railway infrastructure.

District plans should contain appropriate urban design guidance so that reverse sensitivity controls do not result in high, solid boundary fences/walls, where this would give rise to poor urban design outcomes.

DEFINITIONS

NOISE SENSITIVE ACTIVITIES

- Any residential activity (including visitor accommodation and retirement accommodation).
- Any educational activity.
- Any healthcare activity.
- Any congregations within places of worship/marae.

SIGNIFICANT LAND TRANSPORT NETWORK

Existing or proposed carriageways, structures and installations that due to their location and function are critical to the movement of people and goods within or between a region. These include:

- state highways and local roads classified as arterial or greater in accordance with the One Network Road Classification
- railway networks.

REVERSE SENSITIVITY

Reverse sensitivity is the vulnerability of an established land use to complaint from a new land use. In practice such complaints can compromise the established land use.

STATE HIGHWAY BUFFER AREA

The area shown on **[district plan maps]**.

STATE HIGHWAY EFFECTS AREA

The area shown on **[district plan maps]**.

OBJECTIVES

Objective 1

Significant land transport networks are protected from the reverse sensitivity effects associated with surrounding new and altered land use activities.

Objective 2

Conflict between new and altered land use activities and significant land transport networks is avoided, remedied or mitigated.

POLICIES

Policy 1

Ensure noise sensitive activities are set back a sufficient distance from significant land transport network boundaries to avoid, remedy and mitigate effects.

Policy 2

Allow noise sensitive activities to be located near significant land transport networks only where they do not compromise or limit the existing or planned function of the significant land transport network.

RULES

Within the state highway buffer area and the state highway effects area, all buildings containing new and altered noise sensitive activities must meet the following activity status and relevant standards:

- Activity status table
 - All permitted activities listed in the table below must comply with the standards set out in [3] as follows:
 - Standard [3].A, or
 - Standards [3].B, [3].C, [3].D, and [3].E.
 - All restricted discretionary activities listed in the table below must be assessed with discretion restricted to the matters set out in [2].

ACTIVITY	AREA	URBAN	RURAL / RURAL-RESIDENTIAL
Construction of a building containing a noise sensitive activity	Buffer	Permitted	Restricted discretionary
	Effects	Permitted	Permitted
Alteration of building containing a noise sensitive activity	Buffer and effects	Permitted	Permitted
Any other activity that does not meet [1.a]	Buffer and effects	Restricted discretionary	Restricted discretionary

2. Restricted discretionary activities

In determining an application for resource consent to construct or alter a building containing a noise sensitive activity in the state highway buffer area or effects area, council must have regard to the matters set out below, to which council has restricted the exercise of its discretion.

ACTIVITY LOCATION	MATTERS OF DISCRETION
In the state highway buffer area in (rural and rural-residential zones)	<ul style="list-style-type: none"> Whether the development is able to be located outside the state highway buffer area, and the extent to which the standards in [3] are achieved and the effects of any non-compliance.
All other locations in the state highway buffer area or effects area	<ul style="list-style-type: none"> The effects of non-compliance with the standards in [3].

3. Standards

A. New buildings or alterations to existing buildings containing noise sensitive activities must be at least 40 metres from the edge of the state highway carriageway and there is an existing solid and continuous building, fence, wall or landform that blocks the line of sight from all parts of all windows and doors to the new or altered habitable spaces to any part of the road surface of the state highway. This excludes unaltered existing spaces.

B. New buildings or alterations to existing buildings containing noise sensitive activities, in or partly in the state highway buffer area must be designed, constructed and maintained to achieve road-traffic vibration levels complying with class C of NS 8176E:2005.

C. New buildings or alterations to existing buildings containing noise sensitive activities, in or partly in the state highway buffer area or effects area must be designed, constructed and maintained to achieve the indoor design noise levels from road-traffic set out in (reference table below).

D. If windows must be closed to achieve the design noise levels in [C], the building must be designed, constructed and maintained with a ventilation and cooling system. For habitable spaces a ventilation cooling system must achieve the following:

- Ventilation must be provided to meet clause G4 of the New Zealand Building Code. At the same time, the sound of the system must not exceed 30 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
- The occupant must be able to control the ventilation rate in increments up to a high air flow setting that provides at least 6 air changes per hour. At the same time, the sound of the system must not exceed 35 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
- The system must provide cooling that is controllable by the occupant and can maintain the temperature at no greater than 25°C. At the same time, the sound of the system must not exceed 35 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.

E. A design report prepared by a suitably qualified and experienced acoustics specialist must be submitted to the [council officer] demonstrating noise and vibration compliance prior to the construction or alteration of any building containing a noise sensitive activity in or partly in the state highway buffer area or effects area. The design must take into account the future permitted use of the state highway; for existing roads this is achieved by the addition of 3 dB to existing measured or predicted noise levels.

BUILDING TYPE	OCCUPANCY/ACTIVITY	MAXIMUM INDOOR DESIGN NOISE LEVEL $L_{Aeq(24h)}$
Residential	Living spaces, sleeping spaces (including visitor accommodation and retirement accommodation)	40 dB
	Assembly halls	35 dB
Education	Conference rooms, drama studios	40 dB
	Lecture rooms and theatres, music studios	35 dB
	Libraries	45 dB
	Sleeping areas in educational facilities	40 dB
	Teaching areas	40 dB
	Overnight medical care, wards	40 dB
Health	Clinics, consulting rooms, theatres, nurses' stations	45 dB
	Places of worship, marae	35 dB

Note: Excludes areas not deemed to be habitable spaces as defined by schedule 1 of the Building Regulations 1992.

9 CONSENT CONDITIONS

The following conditions are appropriate for a land use consent enabling new residential buildings to be located in the state highway effects area (but outside the buffer area), where the relevant district plan rules do not cover reverse sensitivity noise effects. Use of these conditions by councils and developers will generally satisfy the Transport Agency with respect to reverse sensitivity effects.

1. Any dwelling on the site must be designed, constructed and maintained to achieve a design noise level of 40 dB $L_{Aeq(24h)}$ inside all habitable spaces.
2. If windows must be closed to achieve the design noise level in **[condition 1]**, the building must be designed, constructed and maintained with a ventilation and cooling system. For habitable spaces the system must achieve the following:
 - › Ventilation must be provided to meet Clause G4 of the New Zealand Building Code. At the same time the sound of the system must not exceed 30 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
 - › The occupant must be able to control the ventilation rate in increments up to a high air flow setting that provides at least 6 air changes per hour. At the same time the sound of the system must not exceed 35 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
 - › The system must provide cooling that is controllable by the occupant and can maintain the temperature at no greater than 25°C. At the same time, the sound of the system must not exceed 35 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
3. A design report prepared by an acoustics specialist must be submitted to the **[council officer]** demonstrating compliance with **[conditions 1 and 2]**, prior to construction or alteration of any dwelling. The design must take into account future permitted use of the state highway; for existing roads this is achieved by the addition of 3 dB to existing measured or predicted levels.



10 GLOSSARY

TERM	DEFINITION	TERM	DEFINITION
AADT	Annual average daily traffic - the vehicle count for an entire year in both directions past a point on the road, divided by the number of days in the year.	Land-use consent	A land-use consent is a resource consent that authorises an activity that is not otherwise permitted under a regional, city or district rule or national environmental standard. Land-use consents are often required for the construction of a new dwelling or alterations to an existing dwelling.
Acoustics specialist	A person with: an engineering or science degree including study of acoustics; at least five years professional experience in acoustics; and chartered or certified status with a body that audits continuing professional development.	Mitigation	Measures designed to reduce environmental effects such as external road-traffic noise levels. Mitigation can include low-noise road surfaces and noise barriers (walls/bunds).
Affected party	An affected party is defined in the RMA as a person or a group of people who may experience an adverse effect from a proposed activity. This effect will be greater than, or significantly different from, the effect on the general public.	Noise sensitive activity	An activity that may be affected by noise from an external source. For example, someone prevented from sleeping due to night-time noise from an adjacent airport.
Buffer area	An area adjacent to a state highway where new or altered sensitive activities should ideally be avoided.	Notice of Requirement	A notice of requirement is a proposal for a designation.
Design noise level	Target noise levels to be used during the design process.	NZS 6806	The New Zealand Standard that describes processes that can be used to assess and, where required, determine appropriate mitigation for road-traffic noise for new and altered roads.
Designations	A designation is a form of spot zoning provision in a RMA district plan that provides notice to the community that a requiring authority (e.g. the NZ Transport Agency) is using or intends to use land in the future for a particular work or project (eg a state highway).	Performance standards	The minimum standard to be met.
Designation conditions	Conditions imposed on a requiring authority as part of the approval to undertake a project or work. Conditions are typically set by a city or district council.	Resource Management Act (RMA)	The RMA sets out the functions, powers and duties of local government, including the resource consent and designation process.
Effects area	An area near a state highway where new or altered sensitive activities should be assessed and treated as necessary to mitigate effects from the state highway.	Requiring authority	A Minister of the Crown; a local or regional authority; or a network utility operator, including the NZ Transport Agency.
Environmental effect	The social, economic, aesthetic and cultural conditions that result in a positive or negative consequence whether temporary or permanent on ecosystems including people, communities and all natural and physical resource (refer RMA sections 2 and 3).	Reverse sensitivity	Reverse sensitivity is the vulnerability of an established land use to complaint from a new land use. In practice such complaints can compromise the established land use.
Habitable space	A space used for activities normally associated with domestic living, but excludes any bathroom, laundry, water-closet, pantry, walk-in wardrobe, corridor, hallway, lobby, clothes-drying room, or other space of a specialised nature occupied neither frequently nor for extended periods (refer NZ Building Code).	Shoulder areas	The general area (sealed or unsealed) between the edge of a traffic lane and a surface water channel, drain, berm or fence/ boundary.
		Significant land transport network	Existing or proposed, carriageways, structures and installations, which due to their location and function are critical to the movement of people and goods within or between regions. These include: <ul style="list-style-type: none"> state highways and local roads classified as arterial or greater in accordance with the One Network Road Classification railway networks.



If you have further queries, call our contact centre on 0800 699 000 or write to us:

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This publication is also available on NZ Transport Agency's website at www.nzta.govt.nz



[New Zealand Government](http://www.govt.nz)

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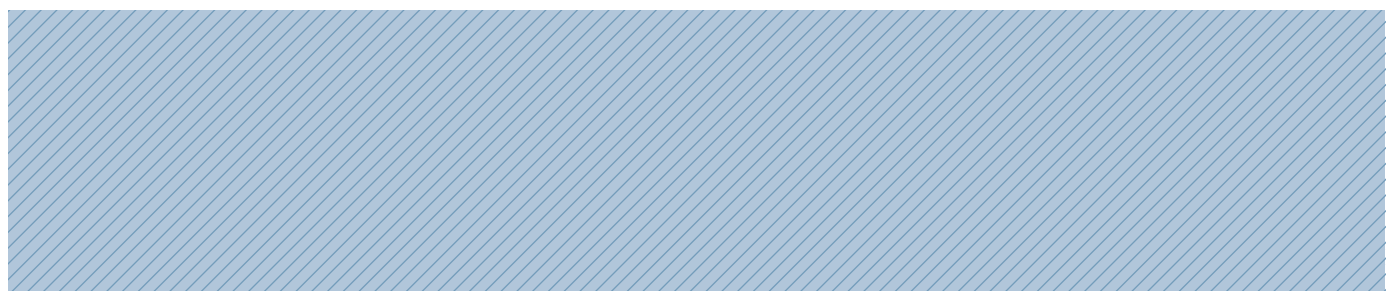
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September 2015



Appendix 11 Required Changes to Operative District Plan

Appendix 11.1 Volume 1 – Objectives, Policies and Rules

Areas for Future Urban Development

Issue 23: The need to comprehensively plan for future urban development

Add the following Policy, Methods of implementation and Reasons:

Policy 23.8

To ensure land at Oakura, legally described as Lot 29 DP 497629 and Lot 3 DP 21111, and which is partially included in a Future Urban Development Area (FUD), is comprehensively planned for urban development in its entirety.

Methods of Implementation 23.8

- a) Develop a Structure Plan for Lot 29 DP 497629 and Lot 3 DP 21111, to be titled “Wairau Estate Structure Plan’ that indicates the desired pattern of development by ENVIRONMENT AREAS.
- b) Identify the extent of the Wairau Estate Structure Plan area on the relevant planning maps.
- c) Develop a RESIDENTIAL D ENVIRONMENT AREA and a RURAL E ENVIRONMENT AREA.
- d) Rules requiring development and subdivision to be undertaken in accordance with the Structure Plan in Appendix 32.
- e) Rules specifying standards relating to:
 - I. Maximum HEIGHT of BUILDINGS and STRUCTURES within the Structure Plan Area.
 - II. Number of HABITABLE BUILDINGS per ALLOTMENT.
 - III. Maximum COVERAGE of SITES in the RESIDENTIAL D ENVIRONMENT AREA.
 - IV. Nil COVERAGE in the FRONT YARDS of all RESIDENTIAL ENVIRONMENT AREA SITES.
 - V. Light Reflectance Values for roof and other exterior claddings for STRUCTURES and BUILDINGS.
 - VI. Minimum area of ALLOTTMENTS in RESIDENTIAL D ENVIRONMENT AREA.
 - VII. Traffic generation for the RURAL E ENVIRONMENT AREA.
- f) Covenants on Records of Title (CFR) restricting build form in front yards and within landscape buffers.

Reasons

The urban expansion of Oakura is geographically constrained at the coastal edge to the west, the Oakura River to the north, and the Egmont National Park to the east.

The present southern most urban edge of Oakura east of SH 45 is on the south side of Upper Wairau Road and adjoins the subject site, further confirming that developing the property for urban living is a logical and efficient expansion of the Oakura urban fabric.

Expanding the urban fabric of Oakura essentially south either side of State Highway 45 has long been regarded by successive Councils and the community as being logical. This has been

evidenced in various planning documents over recent decades, and most recently in the Oakura Structure Plan 2006⁷⁸ and the operative New Plymouth District Plan⁷⁹.

The land parcel described in the Computer Freehold Register as Lot 29 DP 497629, an area of some 66.3 hectares is 'zoned' Rural Environment Area. Excluding the QEII Covenant areas within Lot 29 that are not included in the Structure Plan Area, approximately 21 percent of the site, a triangular section of some 12 ha on the north-western aspect, is subject to a Future Urban Development (FUD) overlay as shown in District Plan Map A61.

The south boundary of the triangular-shaped FUD area within Lot 29 DP 497629 can best be described as 'a line on drafting convenience'. It has no logical relationship to the topography of the site, does not follow a legal boundary nor does it acknowledge the single ownership of the property.

To give best effect to Objective 23 it is considered that it is appropriate to plan for the urban development of Lot 29 DP 497629 and Lot 3 DP 21111 in its entirety. To only give effect to the that portion of the property included in the Future Urban Development (FUD) Area would not result in orderly and logical urban development, would be an inefficient use of the available public infrastructure (including the ROAD TRANSPORTATION NETWORK, water supply and sewerage system) that can be readily linked and made available to the entire site.

Preliminary technical investigations have also shown the site soils to have adequate bearing capacity for foundations typical in residential development.

Stormwater disposal, using low-impact designed disposal methods by ground soakage and to the natural gully systems will ensure all stormwater from within the site can be managed to preserve hydraulic neutrality post urban development.

Preservation and enhancement of the vegetation of the natural gully systems within the site will help to ensure the endemic biodiversity will be sustained and will also be supportive of the native bird life that moves between the coastal edge and the extensive natural vegetation inland within the nearby Egmont National Park.

The proposed development of the subject site can be readily connected to Wairau Road by road, and to the existing Council public water supply and sewerage networks.

Undertaking development in accord with a Structure Plan is an effective and efficient administrative approach to the managing the development on greenfield land and facilitates a comprehensive urban design approach.

The RESIDENTIAL D ENVIRONMENT AREA will provide for small lot subdivision (300m² minimum lot size) enabling a housing choice of 1-2 bedrooms for these preferring smaller sites. This will promote efficient use of land while also reducing compliance/consent costs.

The RURAL E ENVIRONMENT AREA is a discreet area and only applying within the Wairau Estate Structure Plan Area. This will enable rural lifestyle living and particularly for those among the local equestrian community. The lots are sized (1-2ha) for the keeping of 1-2 horses. It is

⁷⁸ Oakura Structure Plan 2006 – pg. 4 - Map

⁷⁹ New Plymouth District Plan – Map A61

intended the operative rules for Rural subdivision will apply thus preventing the further subdivision of the RURAL E ENVIRONMENT AREA beyond the indicative pattern on the Structure Plan. Reciprocal rights of way across lots will enable a bridal trail to be established.

Building heights within the RESIDENTIAL A and C ENVIRONMENT AREAS and the RURAL E and BUSINESS C ENVIRONMENT AREAS have been limited to 6m to reduce visual impacts from “The Paddocks” subdivision, from dwellings on elevated portions of Upper Wairau Road and views from SH45. For the same reasons, and taking into account the permitted minimum lots sizes, the maximum BUILDING HEIGHT within the RESIDENTIAL D ENVIRONMENT AREA has been set at 5m.

Recognising the maximum BUILDING HEIGHT in the RESIDENTIAL D ENVIRONMENT AREA has been set at 5m the maximum site coverage for this ENVIRONMENT AREA has been set at 55 percent. This will allow for a BUILDINGS footprint of 165m² inclusive of garaging/storage etc.

Maximum Light Reflectance Values from the roofs and exterior claddings of BUILDINGS and STRUCTURES have been set to reduce the potential effects of GLARE when viewed from elevated properties in the locality.

Traffic Generation limits have been specified for the RURAL E ENVIRONMENT AREA. Given that the nature of activities within the RURAL E ENVIRONMENT AREA can be expected to be more residential in nature (as opposed to that of a working farm) and that traffic to and from the RURAL E ENVIRONMENT AREA will be travelling through residential environments before reaching the nearest arterial road (SH45) the limits applying to the RESIDENTIAL ENVIRONMENT AREAS have been adopted.

Covenants (as a condition of subdivision) will be attached to Records of Title (CFR) to restrict built form within front yards not subject to District Plan rules (e.g. small BUILDINGS and fences less than 2m in HEIGHT) to encourage an open space park-like aesthetic at the front of residential lots.

Covenants requiring a 10m wide planted buffer strip (and free of built form) to be maintained within specified RURAL E ENVIRONMENT AREA lots where they have common boundary with RESIDENTIAL ENVIRONMENT AREA lots will be applied as a condition of subdivision.

The Wairau Estate Structure Plan provides for the naturally occurring topographical features, in the form of gullies and stream tributaries, to be retained and enhanced with indigenous vegetation plantings. This will in turn be supportive of natural biodiversity, and birdlife in particular. It is almost inevitable that nearby residential living will bring with it domestic and (in time) feral cats. It is now well established that cats kill native bird life and in significant numbers. Community awareness about this issue is growing. Methods to reduce or eliminate the loss of native bird like attributable to domestic and feral cats include community education, neutering of cats, keeping cats indoors as much as possible, non-replacement of cats or an outright ban.

Policy 23.9

To provide for a safe and efficient ROAD TRANSPORTATION NETWORK to meet the long-term needs of the Oakura urban area by planning for, in conjunction with the New Zealand Transport Agency (NZTA), the provision of a roundabout and pedestrian underpass at the intersection of State Highway 45 and Wairau Road, with the infrastructure being funded by a combination of contributions from NZTA, the COUNCIL and developers.

Method of Implementation

Negotiating with the New Plymouth District Council and the New Zealand Transport Agency and securing the agreement of the respective road controlling authorities to plan for the construction of a roundabout and pedestrian underpass at Oakura and incorporate the agreed infrastructure and associated funding formulae into their respective long-term plans.

Reasons

The urban expansion of Oakura to the south of the present township is projected to occur either side of State Highway 45 south of Wairau Road.

The land within Structure Plan Area Appendix 32, approximately 59ha, will result in approx 385 residential lots and 12-14 rural lifestyle lots. When fully built up the development area will comprise some 399 plus dwellings accommodating a resident population of some 1065.

In addition to the above projected growth, a further approx. 48ha immediately across SH45 (on the coastal side) is already zoned Residential or Rural Future Urban Development (FUD) and borders the existing well-establish residential settlement. This area, like the Wairau Estate site is rural 'greenfields'. Assuming this land is all zoned for 'Residential' use and developed in the decades ahead, it will comprise some 480 dwellings and a resident population of some 1200 persons.

Taking the present population of the Oakura urban area of 1,380 (Census 2013) together with the projected further settlement of Oakura over the long term could see a local urban population in excess of 3,500.

Other growth factors affecting traffic volumes at Oakura are likely to be further lifestyle lots created in the rural area in the Upper Wairau Road and Surrey Hill road localities.

In addition, growth in outdoor recreation (tramping/treking) associated with the nearby Egmont National Park are likely to see additional traffic drawn from SH 45 to the Upper Wairau Rd and Surrey Hill Rd road ends. Koru Pa the the associate loop walking track at the end the of Surrey Hill Rd is also likely to increase in attraction as a recreational destination.

This combined growth on Upper and Lower Wairau Roads will result in significant additional traffic locally generated utilising the Wairau Rd/SH45 intersection.

Associated with the forecast growth in traffic, an increase in pedestrian and active transport modes (bicycles, equestrian etc) across SH 45 in the vicinity of Upper and Lower Wairau Roads generated from within the locality is anticipated.

To promote the safe passage of pedestrians and other active modes across SH45 a pedestrian underpass (for walking, cycling and horses) is considered an important element in the safe and efficient use of the ROAD TRANSPORTATION NETWORK at Oakura, and SH45 in particular.

It is anticipated that the method and formula for the funding of the roundabout and pedestrian underpass, and the timing of construction of these facilities, will be jointly agreed in principle by the New Plymouth District Council and the New Zealand Transport Agency and subsequently incorporated into the road controlling authorities' respective long-term plans.

Residential Environment Area

Residential Environment Area – Vol 1, page 209

After the paragraph commencing with ‘The RESIDENTIALC ENVIRONMENT AREAS...’ add the following paragraph:

The RESIDENTIAL D ENVIRONMENT AREA is specific to the Wairau Estate Oakura Structure Plan Area (Refer Appendix II, Diagram 32.1) and is a living area designed to provide for a housing choice to accommodate households of one or two persons who would prefer compact living arrangements (i.e. one or two bedrooms) on smaller lots while still living in a standalone single storey dwelling and with a standard of residential amenity appropriate to low density suburban living.

Definitions – Vol 1, page 407

For the definition of FRONT YARD, include the words ‘RESIDENTIAL D’ after the words ‘RESIDENTIAL B’

Definitions – Vol 1, page 418

For the definition of RESIDENTIAL ENVIRONMENT AREA amend the last sentence to read ‘These areas are identified on the planning maps as RESIDENTIAL A, B, C or D ENVIRONMENT AREAS.’

Add the following new rules

WAIRAU ESTATE STRUCTURE PLAN AREA SHOWN IN APPENDIX 32: STRUCTURE PLAN						
The rules for the RESIDENTIAL ENVIRONMENT CHARACTER AREA shall apply to the Residential A, C and D areas within the WAIRAU ESTATE STRUCTURE PLAN AREA with the following exceptions. Where the same or a similar rule parameter occurs the more restrictive conditions, standards and terms shall apply.						
Rule No.	Parameter	Conditions Permitted	Standards and Terms Controlled		Matters over which control is reserved	Assessment Criteria COUNCIL has <u>restricted</u> the exercise of its discretion to these matters for <u>land use consents</u>
STRUCTURES - BUILDINGS						
ERECTION of BUILDINGS and STRUCTURES other than BUILDINGS						
	maximum HEIGHT					
	RESIDENTIAL A ENVIRONMENT AREA but excluding Lot 3 DP 2111 (the 'Thurman block' 132 Wairau Rd).	6m	n/a	n/a	n/a	n/a
	RESIDENTIAL C ENVIRONMENT AREA	6m	n/a	n/a	n/a	n/a
	RESIDENTIAL D ENVIRONMENT AREA	5m	n/a	n/a	n/a	n/a

COMBER CONSULTANCY
RMA & ENVIRONMENTAL PLANNING

	RESIDENTIAL A, C and D ENVIRONMENT AREAS maximum number of HABITABLE BUILDINGS on a SITE	1	n/a	n/a	n/a	n/a
	RESIDENTIAL A, C and D ENVIRONMENT AREAS maximum COVERAGE (including STRUCTURES and TEMPORARY BUILDINGS) in the FRONT YARD of a SITE	Nil COVERAGE permitted	n/a	n/a	n/a	n/a
Res13a	maximum COVERAGE (excluding TEMPORARY BUILDINGS) of a SITE	55%	n/a	greater than 55%	n/a	As for Rules Res 10 – 13 inclusive.
	RESIDENTIAL A, C and D BUSINESS C and OPEN SPACE C ENVIRONMENT AREAS Light Reflectance Value of exterior roof claddings	The Light Reflectance Value of any exterior roof cladding material on any STRUCTURE or BUILDING shall be no greater than 25 percent.	n/a	n/a	n/a	n/a
	RESIDENTIAL A, C and D BUSINESS C and OPEN SPACE C ENVIRONMENT AREAS	The Light Reflectance Value of any exterior				

	Light Reflectance Value of exterior claddings other than roof claddings	cladding other than exterior roof cladding material on any STRUCTURE or BUILDING shall be no greater than 40 percent.	n/a	n/a	n/a	n/a
SUBDIVISION						
Subdivision of land						
	development and SUBDIVISION within the Wairau Estate Structure Plan Area as shown in Appendix 32	development shall be in accordance with the Wairau Estate Structure Plan	n/a	development not in accordance with the Wairau Estate Structure Plan	n/a	The extent of non-compliance with the provisions of the Wairau Estate Structure Plan and how this affects the ability to comprehensively develop the Area.
	RESIDENTIAL D ENVIRONMENT AREA	n/a	300m ²	No minimum	1) Design and layout of the subdivision, including position of boundaries. 2) Development of the subdivision and SITES having regard to: - appropriate VEHICLE access; and - provision and location of services. 3) Protection of: - natural features; - OUTSTANDING and REGIONALLY SIGNIFICANT LANDSCAPES; and - vegetation.	1) Where access is via a RIGHT OF WAY: - the extent to which the RIGHT OF WAY is capable of handling extra traffic or parking from the land use associated with the subdivision; - whether the RIGHT OF WAY could be reasonably upgraded to meet the extra usage; - whether the extra use of the RIGHT OF WAY places it beyond the scale of development which a RIGHT OF WAY could reasonably be expected to provide access; - effects on the amenity of ALLOTMENTS adjoining the RIGHT OF WAY; and - any adverse effects on the ROAD TRANSPORTATION NETWORK.

				<p>4) Legal protection of SIGNIFICANT NATURAL AREAS.</p> <p>5) Provision of public space areas for recreation, conservation, or pedestrian/cycle access purposes.</p> <p>6) Works to mitigate against the adverse effects of natural and/or other hazards.</p> <p>7) Alteration of contour, earthworks and clearance of vegetation.</p> <p>8) Amalgamation requirements.</p> <p>9) Easement requirements.</p> <p>10) Financial contributions.</p> <p>11) INDICATIVE ROADS.</p>	<p>2) Where an ALLOTMENT includes a CONTAMINATED SITE, the extent of contamination, proposed use of the ALLOTMENT and mitigation measures proposed.</p> <p>3) Effects of ALLOTMENT size and shape on the character of the area, amenities of the neighbourhood and the potential efficiency and range of uses of the land.</p> <p>4) The effect of the subdivision on natural features, SIGNIFICANT NATURAL AREAS, OUTSTANDING or REGIONALLY SIGNIFICANT LANDSCAPES, Category A heritage BUILDINGS or items and their settings, vegetation, wetlands, or other habitats of wildlife and any existing or proposed protection or enhancement measures.</p> <p>5) The effect of any methods used to make the ALLOTMENT suitable for the purpose of the subdivision on</p> <ul style="list-style-type: none"> - the land form; or - the likelihood or magnitude of natural hazard events. <p>6) Effects of natural hazards on potential uses of the ALLOTMENT and any methods proposed to avoid or mitigate against them.</p> <p>7) Any intensification of land use due to the subdivision or consequent use and the extent to which this will increase risk to human life, property, INFRASTRUCTURE and the environment.</p> <p>8) Whether the size of the ALLOTMENTS enables use of them in compliance with the relevant rules of the plan for</p>
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						<p>permitted activities or standards and terms for controlled activities (i.e. setback requirements etc.).</p> <p>9) Whether the non-compliance of BUILDINGS with the required standards for permitted activities will adversely affect the character or other aspects of the environment.</p> <p>10) Effects of the proposed ROADING pattern and subdivision on the INDICATIVE ROADING pattern shown on the planning maps.</p> <p>11) Effects on existing traffic levels, the ROAD TRANSPORTATION NETWORK, access, stormwater management, potable water supply, and wastewater reticulation.</p>
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Rural E Environment Area

Rural Environment Area – Vol 1, page 241

After the last paragraph on page 241 add the following:

Distinct from the RURAL ENVIRONMENT AREA, and specific to the Wairau Estate Structure Plan (Refer Appendix II, Diagram 32.1) is the RURAL E ENVIRONMENT AREA. The RURAL E ENVIRONMENT AREA is intended for rural-residential living. In recognition of the significant equestrian community long-associated with Oakura the lot sizes of 1-2 hectares are designed for the keeping of 1-2 horses in association with residential living.

Definitions – Vol 1, page 418a

Add the following definition:

RURAL E ENVIRONMENT AREA means that area of land at Oakura defined in the Wairau Estate Structure Plan (Refer Volume 2, Appendix II, Diagram 32.1)

Add the following new rules

WAIRAU ESTATE STRUCTURE PLAN AREA SHOWN IN APPENDIX 32: STRUCTURE PLAN						
The rules for the RURAL ENVIRONMENT CHARACTER AREA shall apply to the RURAL E ENVIRONMENT CHARACTER AREA with the following exceptions. Where the same or a similar rule parameter occurs (as between RURAL ENVIRONMENT CHARACTER AREA and the RURAL E ENVIRONMENT CHARACTER AREA) the more restrictive conditions standards and terms shall apply.						
Rule No.	Parameter	Conditions Permitted	Standards and Terms Controlled	Standards and Terms Discretionary	Matters over which control is reserved	Assessment Criteria COUNCIL has restricted the exercise of its discretion to these matters for land use consents
STRUCTURES - BUILDINGS						
ERECTION of STRUCTURES and BUILDINGS including TEMPORARY STRUCTURES						
	maximum HEIGHT In addition, any attachment to a BUILDING may exceed the permitted HEIGHT of the BUILDING provided that the sum of the attachment's three dimensions does not exceed 3.5m (HEIGHT plus width plus depth)	6m	n/a	n/a	n/a	n/a
	maximum number of HABITABLE BUILDINGS (including TEMPORARY BUILDINGS)	1	n/a	n/a	n/a	n/a

	on a SITE					
	Light Reflectance Value of exterior roof claddings	The Light Reflectance Value of any exterior roof cladding material on any STRUCTURE or BUILDING shall be no greater than 25 percent.	n/a	n/a	n/a	n/a
	Light Reflectance Value of exterior claddings other than roof claddings	The Light Reflectance Value of any exterior cladding other than exterior roof cladding material on any STRUCTURE or BUILDING shall be no greater than 40 percent.	n/a	n/a	n/a	n/a
Traffic Generation						
Generation of traffic associated with activity(s) on SITE (excluding traffic generated by CONSTRUCTION WORK or EMERGENCY SERVICES or TEMPORARY EVENTS) for SITES obtaining access from a RIGHT OF WAY or LOCAL ROAD						

	maximum trip generation, measured in VEHICLE EQUIVALENT MOVEMENTS					1) The ability to mitigate the adverse effects of extra traffic generation to and within the SITE. 2) The extent to which any increase in the number or pattern of traffic movements will affect the safety or convenience of any ROAD or RIGHT OF WAY including the time of day/night that the additional traffic movements occur and/or their concentration at any particular point. 3) The extent to which any increase in the number or pattern of traffic movements is likely to adversely affect the amenity
.....	total over 24 hours	30	n/a	more than 30	n/a	
.....	total between 7am and 10pm (day)	22	n/a	more than 22	n/a	
.....	hourly between 7am and 10pm (day)	8	n/a	more than 8	n/a	

.....	total between 10pm and 7am (night)	8	n/a	more than 8	n/a	values of nearby properties and in particular the likelihood for increased noise resulting in sleep disturbance. 4) Any adverse effects on the safety and efficiency of the ROAD TRANSPORTATION NETWORK and ROAD users. 5) The type and intensity of increased VEHICLES using the ROAD or RIGHT OF WAY and how this may adversely impact on the quality and maintenance requirements of the ROAD OR RIGHT OF WAY pavement, taking into consideration the need for a maintenance agreement to address extra-ordinary repair work, widening or resurfacing to and within the SITE. 6) Where the use of a SITE is for RENEWABLE ELECTRICITY GENERATION ACTIVITIES, the alternative locations and methods that have been considered to avoid, remedy or mitigate any adverse effects, recognising: - the practical constraints associated with RENEWABLE ELECTRICITY GENERATION ACTIVITIES; and - the environmental benefits of RENEWABLE ELECTRICITY GENERATION ACTIVITIES.
.....	hourly between 10pm and 7am (night)	6	n/a	more than 6	n/a	

Definitions

Amend definition of 'FRONT YARD' by adding the 'D' so that the definition reads as follows:

FRONT YARD means that area of land extending for the full width of each ROAD boundary and for a depth of 4.5m in the RESIDENTIAL A, ~~and~~ C and D ENVIRONMENT AREAS and for SITES less than 4000m₂ within the RURAL ENVIRONMENT AREAS or 1.5m in the RESIDENTIAL B and BUSINESS D ENVIRONMENT AREAS from the ROAD BOUNDARY. Where a SITE has more than one ROAD BOUNDARY the SITE is considered to have a FRONT YARD requirement for each ROAD BOUNDARY and the COVERAGE shall apply to each FRONT YARD separately.

Business Environment Area

Amend Rules as follows:

Bus7 – Vol 1 – pg. 281

Amend the Parameter to read:

‘BUSINESS C and D ENVIRONMENT AREAS but excluding the BUSINESS C ENVIRONMENT AREA within the Wairau Estate Oakura Structure Plan Area.’

Add a new rule:

Rule No.	Parameter	Conditions Permitted	Standards and Terms Controlled	Standards and Terms Discretionary	Matters over which control is reserved	Assessment Criteria COUNCIL has <u>restricted</u> the exercise of its discretion to these matters for <u>land use consents</u>
7a	maximum HEIGHT BUSINESS C ENVIRONMENT AREA within Wairau Estate Oakura Structure Plan Area.	6m	n/a	up to 6.5m		

Bus14 – Vol 1 – pg. 285

Amend the Parameter to read:

‘in the BUSINESS C ENVIRONMENT AREA but excluding the BUSINESS C ENVIRONMENT AREA within the Wairau Estate Oakura Structure Plan Area.’

Add a new rule:

Rule No.	Parameter	Conditions Permitted	Standards and Terms Controlled	Standards and Terms Discretionary	Matters over which control is reserved	Assessment Criteria COUNCIL has <u>restricted</u> the exercise of its discretion to these matters for <u>land use consents</u>
14a	maximum HEIGHT in the BUSINESS C ENVIRONMENT AREA within Wairau Estate Oakura Structure Plan Area.	6m	n/a	up to 6.5m		

Appendix 11.2 Volume 2 – Appendices

Add a new page numbered 382 titled 'Appendix 32 Structure Plan (Plan Change XXX)

APPENDIX 32

STRUCTURE PLAN (PLAN CHANGE XX)

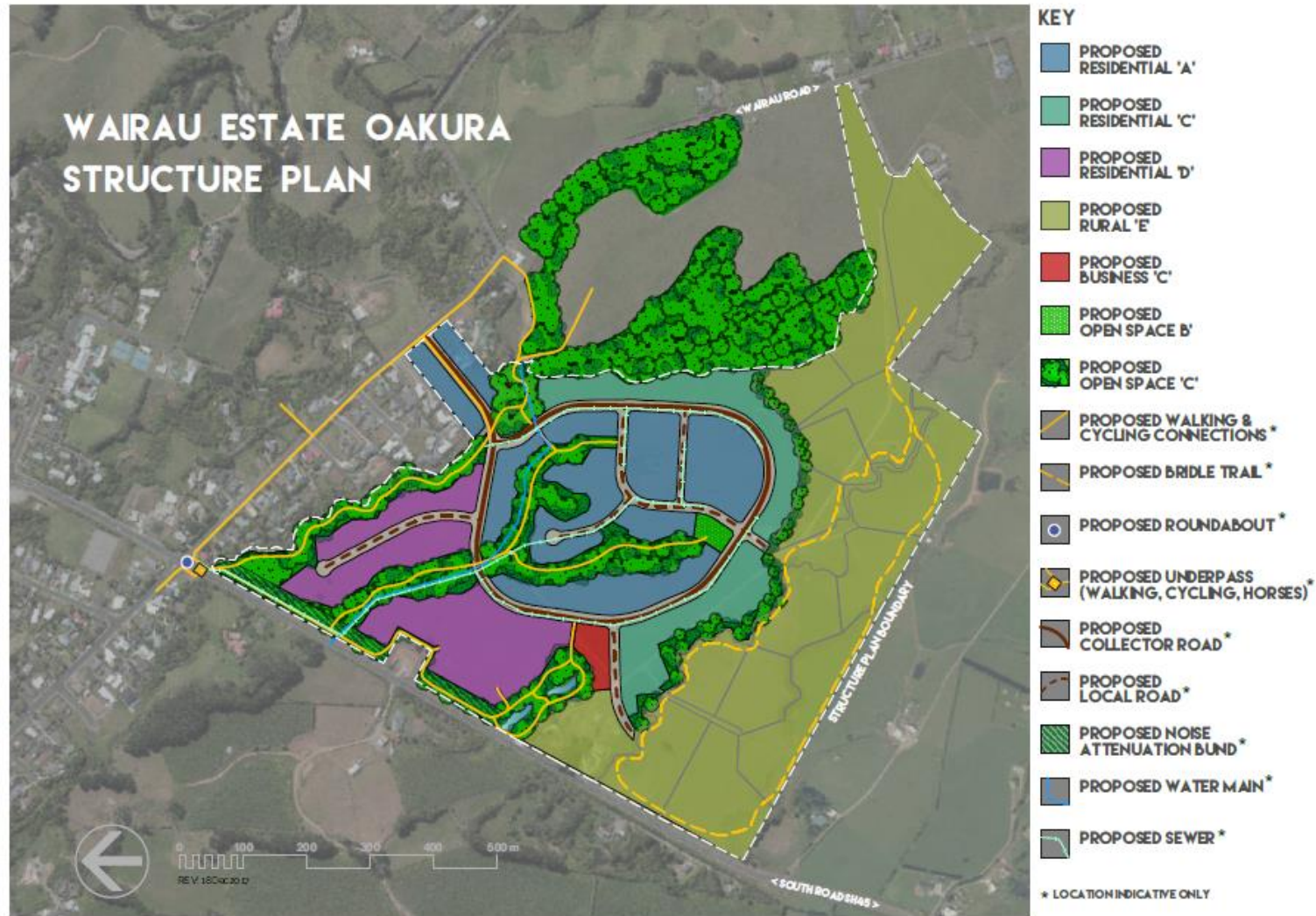
Wairau Estate Oakura Structure Plan.

The provision for the subdivision and development of Lot 29 DP 497629 and Lot 3 DP 21111, located at Oakura is set out in the Wairau Estate Oakura Structure Plan as incorporated in this Appendix and as identified in the Wairau Estate Oakura Structure Plan Area on Planning Maps A61, A62 and A63.

The Structure Plan and associated rules Res xxxx and Rur xxxx are intended to provide for the comprehensive development of the subject site while ensuring that any potential or actual adverse effects are appropriately avoided, remedied or mitigated.

Add a new page numbered 383 titled 'Diagram 32.1 Wairau Estate Oakura Structure Plan'

Diagram 32.1 Wairau Estate Oakura Structure Plan



Appendix 11.2.1 Wairau Estate Oakura Structure Plan – Yield Analysis

Wairau Estate Structure Plan Area

Reconciliation of Land Areas and Indicative Yield

Site Area by CFR/Title		
		ha
McKie	Lot 29 DP	
	497629	62.588
	Less QEII	-5.9305
	Sub total	56.6575
Thurman Powerco purchase	Lot 3 DP 21111	1.309
	Part Sections 14	0.5094
	Total Site	57.97

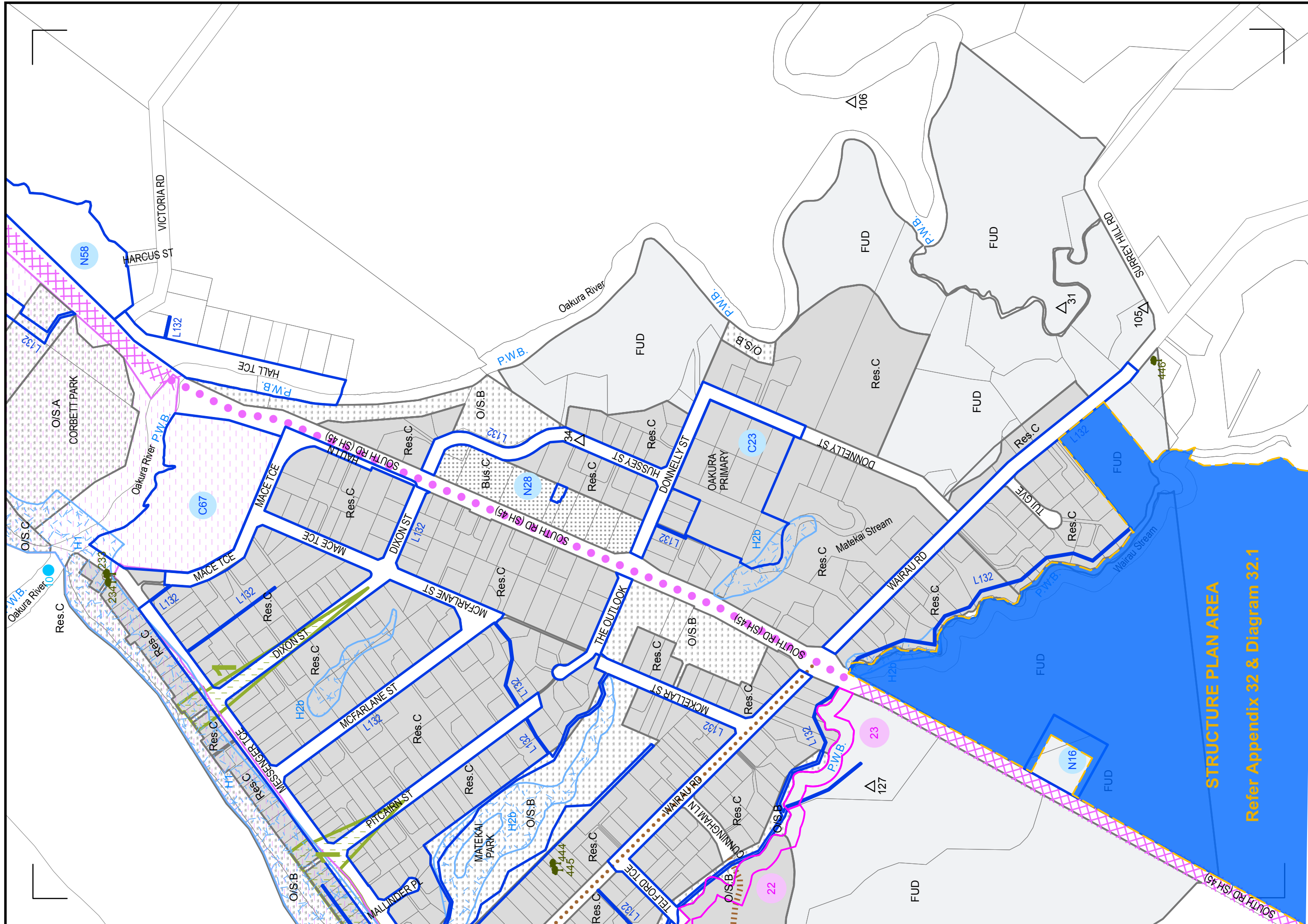
Areas (approx) from Wairau Estate Structure Plan			
Env Area	ha	Buildable Lots	Area by %
Res A	8.67	170	15.0%
Res C	4.53	55	7.8%
Res D	5.85	160	10.1%
Rur E	25.30	13	43.6%
Open Space B	0.24	n/a	0.4%
Open Space C	8.73	n/a	15.1%
Business C	0.45	1	0.8%
Roads (estimate)	4.20		7.2%
Total	57.97	399	100.0%

*Based on 500m2 per allotment**Based on 800m2 per allotment**Based on 365m2 per allotment including roading*

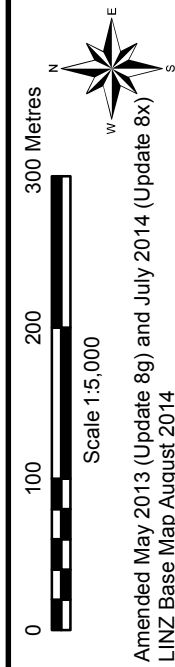
Appendix 11.3 Volume 3 – Planning Maps

Volume 3 – Planning Maps – Requested Changes

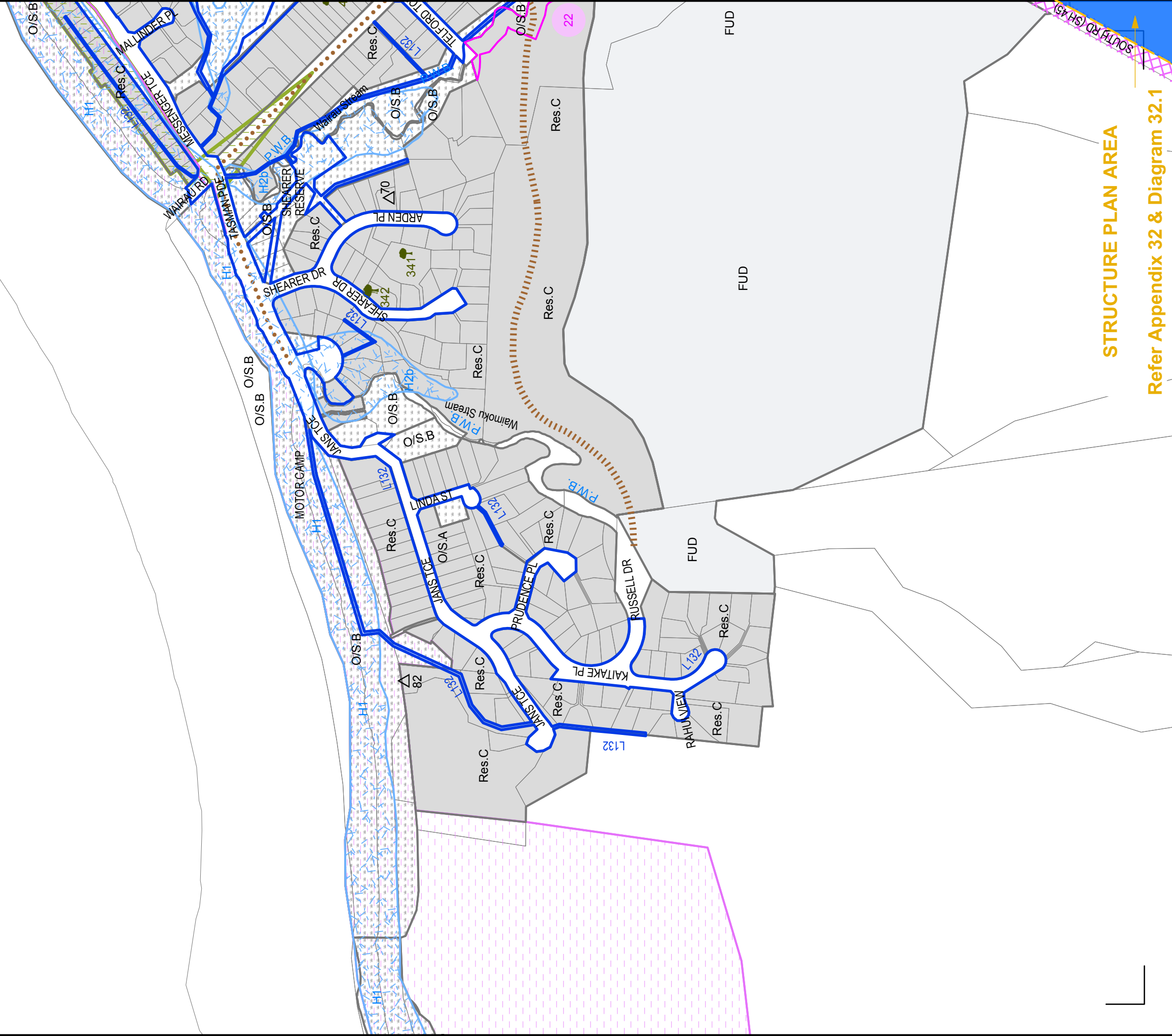
Maps A60, A61, E2 and E3 – amend to show the extent of the Wairau Estate Oakura Structure Plan area and the change in Environment Areas consequential on the granting of plan change request. Refer to amended maps attached.



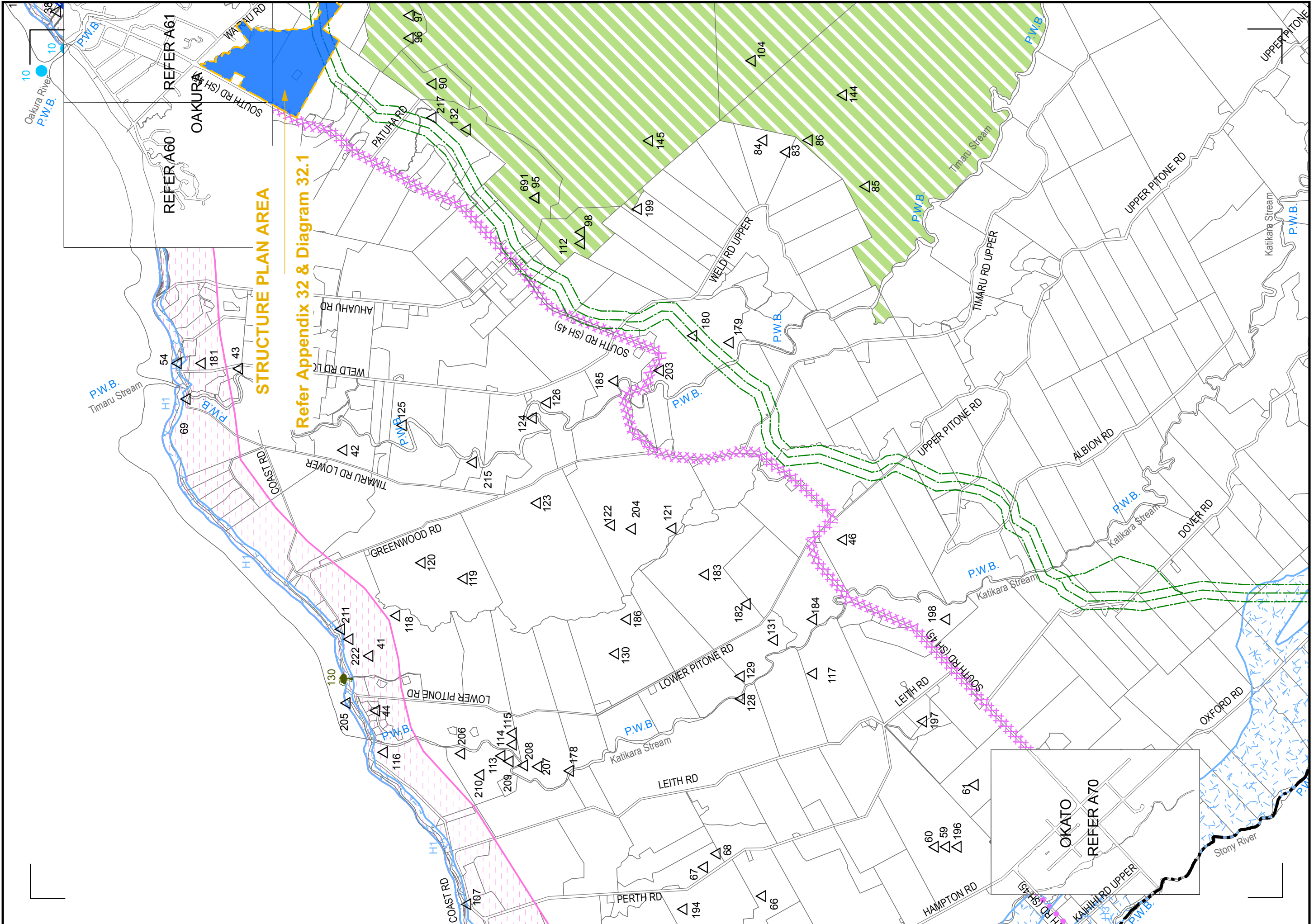
STRUCTURE PLAN AREA
 Refer Appendix 32 & Diagram 32.1



Amended May 2013 (Update 8g) and July 2014 (Update 8x)
 LINZ Base Map August 2014



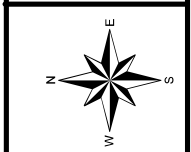
STRUCTURE PLAN AREA
Refer Appendix 32 & Diagram 32.1

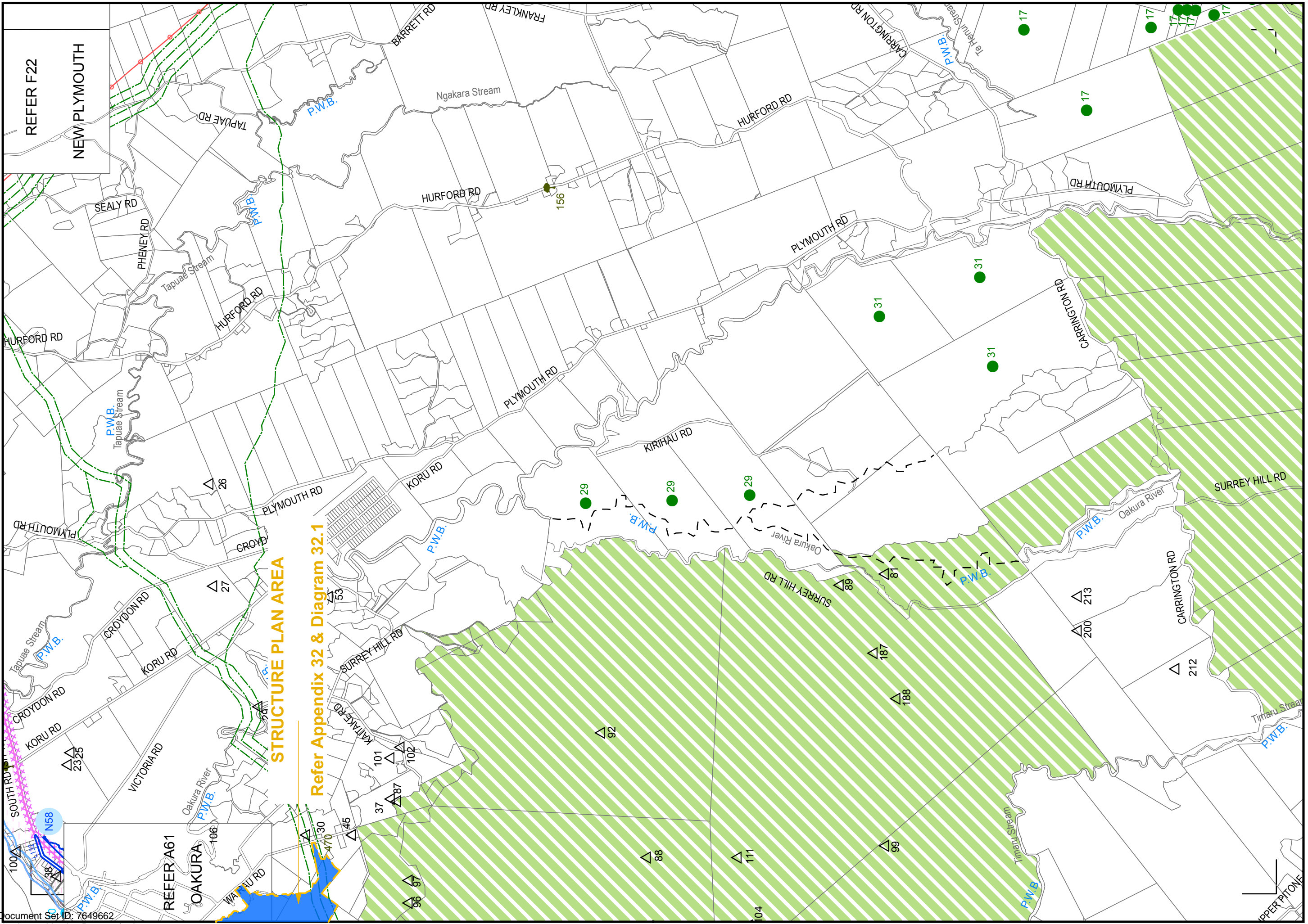


Refer Appendix 32 & Diagram 32.1

STRUCTURE PLAN AREA

D3	E3	F3
E1	E2	F2





STRUCTURE PLAN AREA

Refer Appendix 32 & Diagram 32.1

0 500 1,000 1,500 Metres

Scale 1:30,000

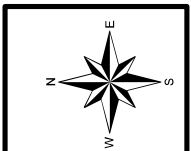
Amended April 2014 (Update 8e, 8g & 8q)
LINZ Base Map March 2014

NEW PLYMOUTH DISTRICT COUNCIL
newplymouthnz.com

NEW PLYMOUTH DISTRICT PLAN

D3	D4	E2	E3	E4	F2	F3	F4
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PLANNING MAP
E 3
RURAL



Appendix 12 Community Engagement

Appendix 12.1 Brochure – Facing page

Appendix 12.1 Brochure – Reverse page

Appendix 12.3 Analysis of Community Feedback by Issue

Appendix 12.3 Analysis of Community Feedback by Issue Ranking

Wairau Estate

The future of Oakura.....NOW!

WWW.WAIRAUESTATE.CO.NZ

Oakura Farm Park is a tract of rural land at Oakura nestled beneath the Kaitake Ranges, lying to the south of Wairau Road and with Surf Highway SH 45 on its western boundary.

The land owner, Oakura Farm Park Ltd, now believes the time is right to commence planning for the urban development of its land. The company's vision for the area is that of well-planned area of urban expansion with a high quality urban environment consistent with the unique environmental and community values that is Oakura.

Accessible

- Direct access from Upper Wairau Rd.
- Good visibility at new intersection.
- Easy and safe traffic circulation.
- Cul-de-sac's only where limited by topography and natural areas.

Connected

- Roundabout
 - Easy traffic access to and from Wairau Estate.
 - Make Wairau Road/SH45 intersection safer.
 - Calm traffic through Oakura Village.
- Pedestrian Underpass under SH45.
- Safe walking (or cycling) from Wairau Rd/The Village to Oakura Beach.
 - Safe walking (or cycling) from coastal side of highway to school and business area.

Natural

- Wairau Stream tributaries, with their native vegetation will be conserved and enhanced.
- Small lake to be conserved and enhanced as reserve/public open space.
 - Approx. 9ha will be set aside as open space.

Equestrian Lifestyle

- 25 hectares for equestrian lifestyle.
- Twelve (12) buildable lots each of 1-2ha.
- Half-size equestrian arena.
- Bridle path, approx. 1 km in length.

Walkable

- Footpaths along streets linking to walkways.
- Walkways through the natural areas.
- Walking tracks linking existing esplanade walkway up the Wairau Stream.
- Walking access between Wairau Estate and The Paddocks lifestyle area.
- Walking tracks also for off-road cycling.
- Easy walking distance to the school, village centre, beach and coastal reserves.

Liveable

- High quality urban living environment.
- Lot sizes ranging from 300m² to 1000m².
- Lifestyle choice - 3-4 bdr homes on larger lots or 1-2 bdr on smaller lots.
- Limits on site coverage, and bulk, height and location to maintain sense of spaciousness.
- Controls on the colour of roofs and claddings sensitive local landscape.
- Well connected by road with the Village and beyond.
- Readily accessible and easy to move around and within on foot and by cycle.
- A flat grassed informal play and 'kick a ball' area.
- And maybe 'Farm House Café' by the lake.



We're here to answer your questions!

Where?

Oakura Library

16 Donnelly St

Oakura

Mon 13th Nov 2pm - 4pm

Thurs 16th Nov 9.30am - 10.30am

Fri 17th Nov 2pm - 3.30pm

Hi Tide Café

South Road, SH45

Oakura Village

Sat 18th Nov 2pm - 4pm

Sun 19th Nov 2pm - 3.30pm

Thurs 23rd Nov 2pm - 3pm

Fri 24th Nov 2pm - 3pm

How?

Visit our website....

www.wairauestate.co.nz

and email a question or offer a comment.

Call...

Mike – 027 444 6240

Colin – 027 249 2864

Next steps...

Now...

During November 2017, obtain community feedback.

Then...

Oakura Farm Park Ltd will lodge a Request for Private Plan Change with the District Council in mid-December 2017.

Followed by...

It is envisaged the Council will formally publicly notify the Private Plan Change request in the first quarter of 2018.

When this occurs any persons who consider themselves affected by the proposal will have the opportunity to make a formal submission to the Council.

We value your opinion!

Please visit the project website site

www.wairauestate.co.nz and tell us:

- What you like BEST about Wairau Estate
- What you like LEAST about Wairau Estate
- One thing you think we could IMPROVE
- Anything else?

Thank you for your interest – we appreciate your feedback.

Introducing:

Wairau Estate

The future of Oakura...NOW!

www.wairauestate.co.nz

Prepared by:

COMBER CONSULTANCY
RMA & ENVIRONMENTAL PLANNING



McKinlay
SURVEYORS



bluemarble
A WORLD OF DIFFERENCE

November 2017

Wairau Estate											
Community Engagement by Issue											
	Date	13-Nov-17	16-Nov-17	17-Nov-17	18-Nov-17	19-Nov-17	23-Nov-17	24-Nov-17	Email Feedback (15 as at 12/02/18)	Frequency	
	No. Persons	4	2	3	9	5	9	3	15	50	
Issue Area	Theme										
Access Point	Provide alternate access to Wairau Estate from Wairau Rd - 'not near me please'				1				1	2	
Access Point	Provide separate access to Wairau Estate directly off SH45	1				1			1	3	
Access Point	Purchase 100 Upper Wairau Rd for access road					1				1	
Equestrian	Equestrian - increase in horses - personal safety, droppings etc.	1								1	
Equestrian	Equestrian lifestyle lots and bridle path supported								1	1	
Equestrian	Why are horses and dogs banned from existing esplanade walkway?					1				1	
Lot sizes	Small lots (300sqm) not supported	1			1				1	3	
Lot sizes	Small lots (300sqm) supported	1						1		2	
Pace of development	Will the developmen tbe staged - how long to develop?		1		1		1	1		4	
Retirement Village	Retirement Village supported - full service (indp living > care > hosp) preferred	1			1		1	1		4	
Reverse Sensitivity	Potential for reverse sensitivity - rural affecting residential								1	1	
Roundabout	Proximity of roundabout to adjoining properties	1			1					2	
Roundabout	Roundabout and pedestrian underpass supported								1	1	
Roundabout	Roundabout not supported.								1	1	
Roundabout	Shift roundabout further south - to sevice both sides of road (new intersection)				1	1				2	
Rural Character	Loss of rural outlook from Tui Grove				1				1	2	
Rural Character	Maintain rural character - develop the land similar to the Paddocks i.e lifestyle lots								1	1	
Rural Character	What about limitation of further subdivision of rural land				1					1	
Size of development	Why is the development so big - 'people frightened' - why so many lots		1		1		1			3	
Traffic	SH45 - Additional Traffic - congestion affecting left turn from Pitcairn onto SH45	1								1	
Traffic	SH45 - Additional Traffic - congestion affecting right turn into Donnelly St	1								1	
Traffic	SH45 - additional traffic through Village	1		1			1		1	4	
Traffic	SH45 - shift 50kph posted speed limit further south	1	1			1				3	
Traffic	Upper Wairau Rd - pedestrian safety - lack of footpaths	1				1	1			3	
Traffic	Upper Wairau Rd - Additional Traffic - construction traffic, vehicle speed	1		1	1	1	1		1	6	
Traffic	Upper Wairau Rd - Additional Traffic- width of seal	1		1			1		1	4	
Traffic	Upper Wairau Rd - provide a crossing point for school children opposite Donnelly St walkway								1	1	
Urban Design	Concept supported - 'it's a good design'				1		1	1	1	4	
Urban Design	Excited by walkways and linkages				1		1	1	1	4	
Urban Design	Landscape the entry road (trees)				1		1	1		3	
Urban Design	Oakura has changed a lot and will continue to change				1					1	
Urban Design	Plantings at The Paddocks appreciated				1		1	1		3	
Urbanisation	Exisitng properties will be devalued				1					1	
Urbanisation	Increase in population - demand on medical facilities, shops etc		1				1		1	3	
Urbanisation	Increase in population - extra demand on school already at capacity	1	1		1				1	4	
Urbanisation	Increase in population - loss of village character - intensity of settlement	1		1			1		1	4	
Urbanisation	New residents coming into Oakura a positive				1		1	1		3	
Urbanisation	There is high demand for houses, sections, Oakura lifestyle		1							1	
Utilities	Adequacy of water supply, sewer?	1			1		1	1		4	
Utilities	Effect of development on stormwater discharge for downstream properties				1		1	1		3	

Wairau Estate											
Community Engagement by Issue Ranking											
	Date	13-Nov-17	16-Nov-17	17-Nov-17	18-Nov-17	19-Nov-17	23-Nov-17	24-Nov-17	Email Feedback (15 as at 12/02/18)	Frequency	
	No. Persons	4	2	3	9	5	9	3	15	50	
Issue Area	Theme										
Traffic	Additional Traffic - Upper Wairau Rd - construction traffic, vehicle speed	1		1	1	1	1		1	6	
Pace of development	Will the development be staged - how long to develop?		1		1		1	1		4	
Retirement Village	Retirement Village supported - full service (indp living > care > hosp) preferred	1			1		1	1		4	
Traffic	Additional Traffic - Upper Wairau Rd - width of seal	1		1			1		1	4	
Traffic	Additional Traffic - Through Village	1		1			1		1	4	
Urban Design	Concept supported - 'it's a good design'				1		1	1	1	4	
Urban Design	Excited by walkways and linkages				1		1	1	1	4	
Urbanisation	Increase in population - extra demand on school already at capacity	1	1		1				1	4	
Urbanisation	Increase in population - loss of village character - intensity of settlement	1		1			1		1	4	
Utilities	Adequacy of water supply, sewer?	1			1		1	1		4	
Access Point	Provide separate access to Wairau Estate directly off SH45	1				1			1	3	
Lot sizes	Small lots (300sqm) not supported	1			1				1	3	
Size of development	Why is the development so big - 'people frightened' - why so many lots		1		1		1			3	
Traffic	Posted 50kpm Speed Limited - shift further south	1	1			1				3	
Traffic	Pedestrian safety (lack of footpaths) - Upper Wairau Rd	1				1	1			3	
Urban Design	Landscape the entry road (trees)				1		1	1		3	
Urban Design	Plantings at The Paddocks appreciated				1		1	1		3	
Urbanisation	Increase in population - demand on medical facilities, shops etc		1				1		1	3	
Urbanisation	New residents coming into Oakura a positive				1		1	1		3	
Utilities	Effect of development on stormwater discharge for downstream properties				1		1	1		3	
Access Point	Provide alternate access to Wairau Estate from Wairau Rd - 'not near me please'				1				1	2	
Lot sizes	Small lots (300sqm) supported	1						1		2	
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Roundabout	Shift roundabout further south - to sevice both sides of road (new intersection)				1	1				2	
Rural Character	Loss of rural outlook from Tui Grove				1				1	2	
Access Point	Purchase 100 Upper Wairau Rd for access road					1				1	
Equestrian	Equestrian - increase in horses - personal safety, droppings etc.	1								1	
Equestrian	Why are horses and dogs banned from existing esplanade walkway?					1				1	
Equestrian	Equestrian lifestyle lots and bridle path supported								1	1	
Reverse Sensitivity	Potential for reverse sensitivity - rural affecting residential								1	1	
Roundabout	Roundabout and pedestrian underpass supported								1	1	
Roundabout	Roundabout not supported.								1	1	
Rural Character	What about limitation of further subdivision of rural land				1					1	
Rural Character	Maintain rural character - develop the land similar to the Paddocks i.e lifestyle lots								1	1	
Traffic	Additional Traffic - congestion affecting right turn into Donnelly from SH45	1								1	
Traffic	Additional Traffic - congestion affecting left turn from Pitcairn onto SH45	1								1	
Traffic	Provide a crossing point for school children on Upper Wairau Rd opposite Donnelly St walkway								1	1	
Urban Design	Oakura has changed a lot and will continue to change				1					1	
Urbanisation	There is high demand for houses, sections, Oakura lifestyle		1							1	
Urbanisation	Exisitng properties will be devalued				1					1	