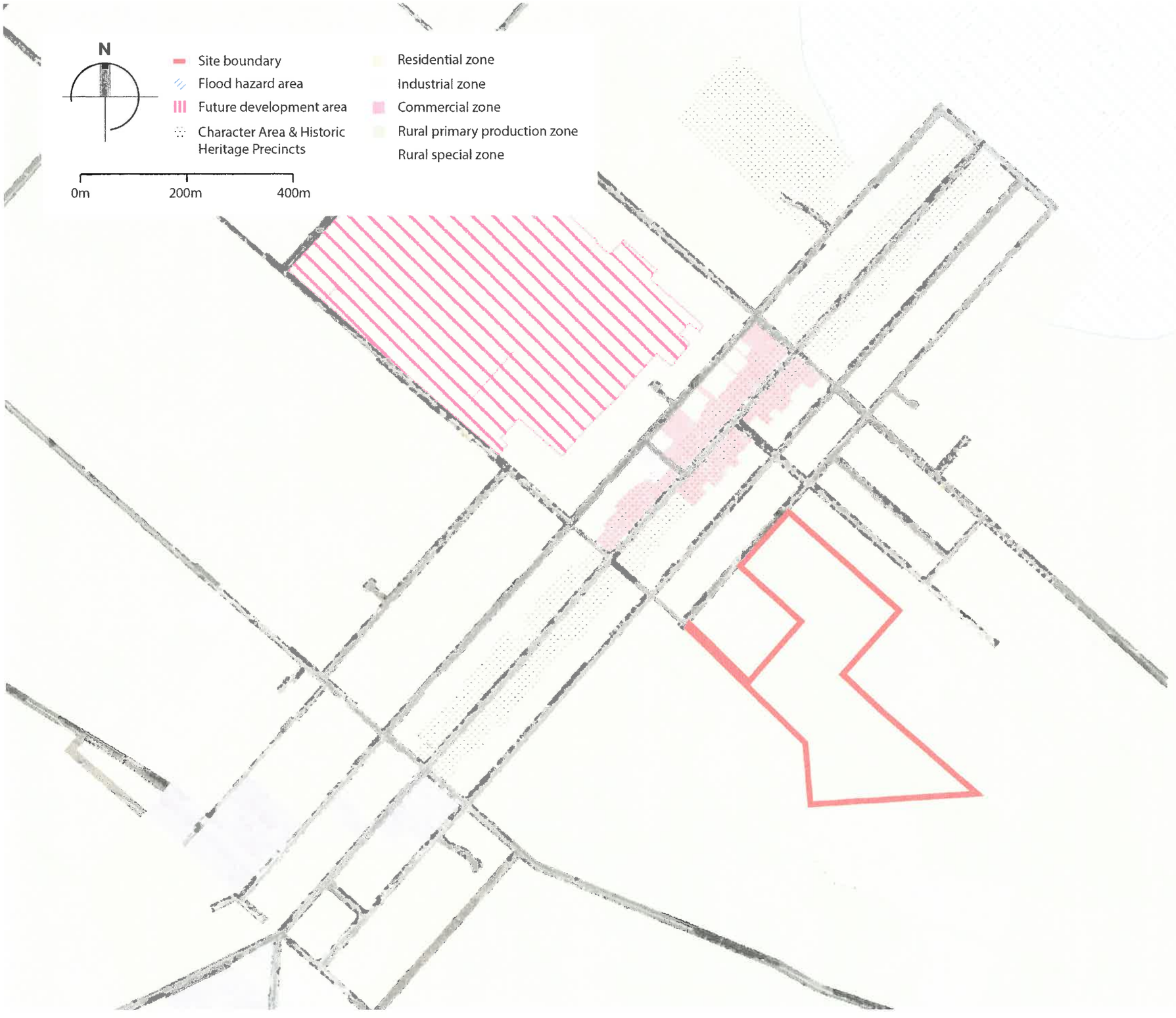
Appendix 1

Scope of Plan Change



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Client
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01.03.2019
Scale approximate

Environmental zones

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Appendix 2

Appropriateness of Objectives Table

Assessment of Appropriateness of Objectives

	Operative Objective
Objective Res1 (Residential)	To maintain and enhance the character and amenity values of Wairarapa's residential areas, having due regard to the particular characteristics of each neighbourhood, and the need to provide for a diversity of residential lifestyles and non-residential services and activities.
Relevance	
Directly related to resource management issue?	Yes. The objective envisages diversity of residential lifestyles, which can include retirement villages. Retirement villages are discussed in the operative introductory text to Section 5 Residential Zone as a type of residential development suited to the Residential Zone. The proposed amendments to Resource Management Issues 4 and 5 further strengthen the connection between the introductory text of the chapter and provide context for this Objective.
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes. The objective seeks to ensure that residential development in the Residential Zone meets the needs of the region's community and enable people to provide for their social, economic and cultural wellbeing and for their health and safety. The existing introductory text, in conjunction with the proposed amendments to the Issues 4 and 5, ensure this aspect of the purpose of the RMA is being specifically achieved for older people wanting to live in comfort and safety in the Wairarapa. The assessments that form part of this Request and the resource consent application demonstrate that the Orchards Retirement Village can be developed in such a way that the life-supporting capacity of air, water, soil and ecosystem are safeguarded.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(a),8)	In developing this proposal for a Private Plan Change, tangata whenua have been consulted. A particular issue raised by Rangitane was that water quality not be adversely affected by this development. The stormwater catchment and treatment proposals for the Character Area will ensure that on-site stormwater can be treated using natural processes. The requester also seeks to continue engagement with tangata whenua throughout the development of the Orchards site and ensure that the development reflects the site's history and associations with local iwi and hapū.
Relevant to statutory functions or to give effect to another plan or policy (i.e., NPS, RPS)?	Yes. In the context of the Orchards Retirement Village Character Area, Objective Res1 continues to be relevant to obligations established under NPSFW, the RPS and the NES for Contaminated Soils.
Usefulness	
Will effectively guide decision-making?	Yes. In the context of the Orchards Retirement Village Character Area, Objective Res1 continues to be useful for guiding decision making of any application made under the proposed character area policy, standards and rules.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes.
Consistent with other objectives?	Yes. In the context of the Orchards Retirement Village Character Area, Objective Res1 continues to be consistent with other objectives.
Achievability	

Summary	This objective can remain without change and is the most appropriate way of achieving the purpose of the Act.

	Operative Objective
Objective TW1 (Tangata Whenua)	To recognise and provide for the cultural values and relationship of Tangata Whenua in managing the natural and physical resources and the effects of activities, while taking into account the principles of the Treaty of Waitangi.
Relevance	
Directly related to resource management issue?	In the context of the Orchards Retirement Village Character Area, this objective remains relevant to the resource management issues identified in Section 8 of the WCDP.
Will achieve one or more aspects of the purpose and principles of the RMA?	In the context of the Orchards Retirement Village Character Area, this objective will continue to achieve the purpose of the RMA. As stated above, the requester seeks continued engagement with tangata whenua throughout the development of the Orchards site to ensure that this objective is achieved in an ongoing way with respect to the Orchards and ensure that the development reflects the site's history and associations with local iwi and hapū.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(a),8)	In the context of the Orchards Retirement Village Character Area, this objective remains relevant to Māori environmental issues as encapsulated in sections 6, 7 and 8 of the Act. In developing this proposal for a Private Plan Change, tangata whenua have been consulted. A particular issue raised by Rangitane was that water quality not be adversely affected by this development. The stormwater catchment and treatment proposals for the Character Area will ensure that on-site stormwater can be treated using natural processes. The requester also seeks to continue engagement with tangata whenua throughout the development of the Orchards site and ensure that the development reflects the site's history and associations with local iwi and hapū.
Relevant to statutory functions or to give effect to another plan or policy (i.e., NPS, RPS)?	In the context of the Orchards Retirement Village Character Area, this objective remains relevant to giving effect to other plans or policies.
Usefulness	
Will effectively guide decision-making?	Yes. In the context of the Orchards Retirement Village Character Area, this objective will prove useful in guiding both the Council and the applicant as to their obligations under the Plan and the Act and help to ensure environmental outcomes of relevance to tangata whenua are achieved.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes.
Consistent with other objectives?	Yes. In the context of the Orchards Retirement Village Character Area, Objective TW1 continues to be consistent with other objectives
Achievability	
Will it be clear when the objective has been achieved	In the context of the Orchards Retirement Village Character Area, the achievement of Objective TW1 can be measured through environmental outcomes within the site and through the development of relationships between the Requester and local iwi and hapū.

	Operative Objective
Objective TT1 (Transportation)	To maintain the safe and efficient operation and development of the road network from the adverse effects of land use while maintaining the network's ability to service the current and future needs of the Wairarapa
Relevance	
Directly related to resource management issue?	In the context of the Orchards Retirement Village Character Area, this objective remains directly relevant to Issues 1-3 of Section 17.
Will achieve one or more aspects of the purpose and principles of the RMA?	In the context of the Orchards Retirement Village Character Area, this objective will achieve the purpose of the Act. The traffic anticipated to be generated by the development can be accommodated by the existing roading network, subject to some physical measures that can be assured through conditions of consent related to the development. The controlled activity rule proposed for the Orchards includes roading and the provision of access and parking spaces as a matter of control.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(a),8)	In the context of the Orchards Retirement Village Character Area, Objective TW1 is more relevant.
Relevant to statutory functions or to give effect to another plan or policy (ie, NPS, RPS)?	In the context of the Orchards Retirement Village Character Area, yes this objective remains relevant, particular to giving effect to RPS policies relating to urban development and integrated land use and transport planning.
Usefulness	
Will effectively guide decision-making?	In the context of the Orchards Retirement Village Character Area, yes, this is a useful objective against which to assess the development.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes.
Consistent with other objectives?	In the context of the Orchards Retirement Village Character Area, yes.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	In the context of the Orchards Retirement Village Character Area, yes it will be clear if this objective has been achieved. It is anticipated that this development will contribute to the safe and efficient functioning of the roading network, and provide a safe environment in which people are encouraged to cycle and walk
Is it expected that the objective will be achieved	The timeframe for the building out of the Orchards is around 10 years. However, the performance standards and proposed rule designed to achieve Objective TT1 will have relevance throughout the development stage and for the life of the Orchards.

Objective SLD1 (Subdivision, Land Development and Urban Growth)	To ensure subdivision and land development maintains and enhances the character, amenity, natural and visual qualities of the Wairarapa, and protects the efficient and effective operation of land uses and physical resources.
Relevance	
Directly related to resource management issue?	In the context of the Orchards Retirement Village Character Area, this Objective remains directly related to Issues 1-5 in Section 18 of the Plan.
Will achieve one or more aspects of the purpose and principles of the RMA?	In the context of the Orchards Retirement Village Character Area, yes, this Objective will continue to ensure that Section 5 is achieved.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(a),8)	In the context of the Orchards Retirement Village Character Area, this Objective is not inconsistent with those sections of the Act that relate to Māori environmental issues.
Relevant to statutory functions or to give effect to another plan or policy (i.e., NPS, RPS)?	In the context of the Orchards Retirement Village Character Area, this Objective will give effect to the NPSFW, the NES for Soil Contamination and relevant policies in the RPS.
Usefulness	
Will effectively guide decision-making?	In the context of the Orchards Retirement Village Character Area, yes, this Objective will be useful in helping to guide decision making.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes.
Consistent with other objectives?	Yes, it is consistent with the other objectives identified in this s32 evaluation.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	Yes. In the context of the Orchards Retirement Village Character Area, Objective SLD1 will able to be measured. The thresholds and limits in the specific Character Area standards are one means by which a measurement of whether the objective has been achieved can be done. The proposed assessment criteria can also be related back to the environmental standards for the Orchards and thereby back to the proposed policy and the achievement of the Objective.
Is it expected that the objective will be achieved within the life of the Plan or is	The timeframe for the building out of the Orchards is around 10 years. However, the performance standards and proposed rule designed to achieve Objective SLD1 will have relevance throughout the development stage and for the life of the Orchards.

Objective SLD2 (Subdivision, Land Development and Urban Growth)	To ensure that subdivision and land development is appropriately serviced to provide for the likely or anticipated use of the land.
Objective SLD3 (Subdivision, Land Development and Urban Growth)	To maintain sustainable and efficient public infrastructure that meets the additional demand generated by development and subdivision, while avoiding, remedying or mitigating adverse effects on the environment.
Relevance	
Directly related to resource management issue?	In the context of the Orchards Retirement Village Character Area, this objective remains directly relevant to Issues 1 ad 3 of the Section 18.
Will achieve one or more aspects of the purpose and principles of the RMA?	In the context of the Orchards Retirement Village Character Area, yes this Objective will contribute to the achievement of section 5 of the Act.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	In the context of the Orchards Retirement Village Character Area, this Objective is not inconsistent with those sections of the Act that relate to Māori environmental issues.
Relevant to statutory functions or to give effect to another plan or policy (ie, NPS, RPS)?	In the context of the Orchards Retirement Village Character Area, this Objective will give effect to the NPSFW, the NES for Soil Contamination and relevant policies in the RPS.
Usefulness	
Will effectively guide decision-making?	In the context of the Orchards Retirement Village Character Area, yes, this Objective will be useful in helping to guide decision making.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes.
Consistent with other objectives?	Yes, it is consistent with the other objectives identified in this s32 evaluation.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective	In the context of the Orchards Retirement Village Character Area, the achievement of this objective is likely to be most acutely felt at the detailed design stage, which is proposed to be strongly guided by the principles for servicing the site established in reports prepared by Stantec and Calibre and conditions of consent.

	Operative Objective
Objective SLD4 (Subdivision, Land Development and Urban Growth)	To provide for urban expansion adjoining existing urban areas where such growth does not adversely affect the safe and efficient use and development of land, roads and infrastructure.
Relevance	
Directly related to resource management issue?	In the context of the Orchards Retirement Village Character Area, this Objective remains directly relevant to Issues 3 and 4 of Section 18.
Will achieve one or more aspects of the purpose and principles of the RMA?	In the context of the Orchards Retirement Village Character Area, yes this Objectives helps to achieve the purpose of the Act.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	In the context of the Orchards Retirement Village Character Area, this Objective is not inconsistent with those sections of the Act that relate to Māori environmental issues.
Relevant to statutory functions or to give effect to another plan or policy (ie, NPS, RPS)?	In the context of the Orchards Retirement Village Character Area, this Objective will give effect to the NPSFW, the NES for Soil Contamination and relevant policies in the RPS.
Usefulness	
Will effectively guide decision-making?	In the context of the Orchards Retirement Village Character Area, yes, this provides a useful means of assessing the appropriateness of the Private Plan Change request and the accompanying resource consent.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes.
Consistent with other objectives?	Yes
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective	In the context of the Orchards Retirement Village Character Area, the achievement of this objective is likely to be tested during the private plan change and resource management process, and most acutely felt at the detailed design stage, which is proposed to be strongly guided by the principles for servicing the site established in reports prepared by Stantec and Calibre and conditions of consent.

	Operative Objective
Objective SLD5 (Subdivision, Land Development and Urban Growth)	To sustainably manage and develop the reserve and open space network to cater for current and future community needs and to protect and enhance significant environmental assets.
Relevance	
Directly related to resource management issue?	In the context of the Orchards Retirement Village Character Area, this Objective is directly related to Issue 2 of Section 18.
Will achieve one or more aspects of the purpose and principles of the RMA?	In the context of the Orchards Retirement Village Character Area, yes the achievement of this Objective will contribute to achieving the purpose of the Act.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	In the context of the Orchards Retirement Village Character Area, this Objective is not inconsistent with those sections of the Act that relate to Māori environmental issues.
Relevant to statutory functions or to give effect to another plan or policy (ie, NPS, RPS)?	In the context of the Orchards Retirement Village Character Area, this Objective will give effect to the NPSFW, the NES for Soil Contamination and relevant policies in the RPS.
Usefulness	
Will effectively guide decision-making?	In the context of the Orchards Retirement Village Character Area, yes. The proposed Orchards development includes a significant amount of open space that will remain privately owned by can be enjoyed by the wider community. This provision will meet the immediate on-site needs of the residents of The Orchards, as well as visitors to the site. It will make an important contribution to the open space network of Greytown and South Wairarapa.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes.
Consistent with other objectives?	Yes.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective	In the context of the Orchards Retirement Village Character Area, the achievement of this objective is likely to be felt in the later stages of development.

	Operative Objective
Objective GAV1(General Amenity Values)	To maintain and enhance those general amenity values which make the Wairarapa a pleasant place in which to live and work, or visit.
Relevance	
Directly related to resource management issue?	In the context of the Orchards Retirement Village Character Area, yes this Objective is directly related to Issues 1-3 of Section 19 of the WCDP.
Will achieve one or more aspects of the purpose and principles of the RMA?	In the context of the Orchards Retirement Village Character Area, yes, the achievement of this objective will achieve the purpose of the Act.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	In the context of the Orchards Retirement Village Character Area, this Objective is not inconsistent with those sections of the Act that relate to Māori environmental issues.
Relevant to statutory functions or to give effect to another plan or policy (ie, NPS, RPS)?	In the context of the Orchards Retirement Village Character Area, this Objective will give effect to the NPSFW, the NES for Soil Contamination and relevant policies in the RPS.
Usefulness	
Will effectively guide decision-making?	In the context of the Orchards Retirement Village Character Area, yes. This Objective, along with the relevant policies, provides useful guidance as to the outcomes that need to be achieved.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes.
Consistent with other objectives?	Yes.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective	In the context of the Orchards Retirement Village Character Area, the achievement of this Objective can be measured throughout the proposed stages of development and during the operation of the site. Conditions of consent can help manage effects on amenity, and provide measures to determine whether amenity is being maintained during construction and operation (e.g. dust, noise and odour control measures, site work times, noise limits etc).

Appendix 3

Appropriateness of Preferred Option

Analysis of Preferred Option

Proposal: Rezone the land from Rural (Primary Production) Zone to Residential Zone and provide specifically for The Orchards Retirement Village through the introduction of an Orchards Retirement Village Character Overlay

	Benefits	Costs
Environmental	• Soil contamination hotspots are remediated and managed. • Many significant trees to be retained including parts of the orchard • Contaminated soil to be sealed • Dangerous oversized tress to be removed • Design of the new buildings to be sympathetic to the townscape • Design includes walking/cycling path which will be open to the public •	• Loss of area of land characterised by versatile soils and currently in agricultural production. • Loss of amenity value associated with rural use and appearance of the site. • Increased general busyness in the town centre. • Construction effects – noise, traffic, dust.
Economic (including growth and employment)[1]	**Construction Phase** • The construction phase of the Orchards development will create 151 FTE jobs and $12.1 million of GDP in South Wairarapa. • If it is possible for the development to increase its use of local contractors, this effect would be increased even further.	• Loss of area of land characterised by versatile soils and currently in agricultural production. • Loss of local employment opportunity in agriculture, equating to 1.5FTE (when operating as Murphy's Orchard). • Opportunity cost – alternative potential uses of the land • Increased Council spending needed for infrastructure

[1] Soured from BERL, *Orchards at Greytown – Economic Impact Assessment* February 2019 and *Four Wellbeings*, March 2019.

	Benefits	Costs
	• The economic impact of the construction phase in the Wairarapa sub-region will be 827 FTE jobs and $67.4 million in additional GDP in the Wairarapa.[2] **Operational Phase** • Once fully operational, it is estimated the Village will employ 93 FTEs. • Once fully occupied, the Village will boost employment in South Wairarapa by the equivalent of 3% of its current level. • The boost to GDP will be the equivalent of 1.4% of its current level. • Annual expenditure of the Village is likely to be over $6 million per annum, of which $2.7 million will be spent within South Wairarapa. This directly results in an additional $2.4 million in GDP and 47 FTE jobs in the South Wairarapa district. • Taking into account indirect and induced effects, the operation of the Village will contribute a total of $3.4 million in GDP to the South Wairarapa economy annually, and employment for 63 FTEs. • The Wairarapa sub-region will experience increased employment of over 1%, considered by BERL to be a significant contribution for a single business.	

[2] Based on the construction phase lasting 8 years. The economic benefits from construction are temporary.

	Benefits	Costs
	• The annual economic impacts of the Village occur for every year it operates, providing a lasting economic benefit to the South Wairarapa economy. **Impacts of Residents' Spending** • BERL have estimated that nearly $5 million per annum will be spent by Village residents (once fully operational), of which $2.1 million or 48% will be spent in the South Wairarapa district. • This residents' expenditure will be associated with GDP of $1.1 million, which in turn will be associated with the creation of 30 FTE jobs within South Wairarapa. • These direct effects of residents' expenditure will be multiplied by indirect and induced (flow-on) effects. **Combined Impact of Village Operational and Residents' Spending** • Taking these two aspects together, within South Wairarapa this amounts to $4.8 million annually which will directly generate 73 FTEs. • Including the flow on effects of this spending, the local economy will be expanded by $5 million annually. • The total combined impact on the Wairarapa sub-region is larger – an enduring $8.6 million additional GDP and 178 FTE jobs.	

	Benefits	Costs
Social	• Creation of up to 180 independent residential dwelling units and up to 120 advanced care beds to meet needs of local and regional older population. • Boost to South Wairarapa population of around 500 people, most of which will occur in Greytown. • Compared to younger people, older people spend more time on unpaid work outside the home. The introduction of around 320 older people will result in more available volunteer hours. • As demonstrated above, both the construction and operation of the Village will result in a boost to local employment opportunities, making it potentially less necessary for people to leave the District to find work • Elderly in the district will have a high quality rest home, dementia and hospital level care in their area meaning they won't have to relocate away from family • Many in the 70+ age group will be active and engaged in the community, enriches social fabric. • Potential co-location of the bowling club ensuring the club's ongoing operation • Development includes public amenities including accommodating the local bowling club. • Extensive fruit trees to be maintained and will be a focus for village residents at harvest time	• Loss of enjoyment from Murphy's Orchard farm shop. • Change in age demographics – the town is ageing, but this will be accelerated by the implementation of the proposal. • Implications for Council spending and service provision from increased elderly population.

	Benefits	Costs
Cultural	• Institutions such as libraries, clubs and cultural groups are likely to have a boost in members • Increased patronage at events such as performances, flower shows etc. • Potential for inter-generational connections to be made through relationship with the primary school	• Incoming population might have different views and preferences from the existing population.
Effective?	• The assessment in Appendix 2 demonstrates that the proposal is consistent with achieving the relevant objectives of the Plan.	
Efficient?	• The benefits of implementing the proposal outweigh the costs.	
Risk of Acting or Not Acting	• Section 32(2) requires an assessment of the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions. In my view, sufficient information has been providing about the subject matter of the provisions. The information is not uncertain. The proposed provisions have been drafted in light of the information provided by the technical experts working on the project, and in light of an assessment of the objectives of the Plan the proposed provisions must contribute to achieving. I conclude that the risks of acting based on the information provided are low. The risks of not acting are that the environmental, economic, social and cultural benefits that are available as a consequence of the Private Plan Change request are not captured, and that the needs of the region's ageing population are not sufficiently met.	

Appendix 4

Soil Class Maps



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01.03.2019
Scale approximate

NZSC soil classes

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Appendix 5

Proposed Provisions of Plan Change

PART A - ENVIRONMENTAL ZONES

Last Amended: 25 May 2011

5 RESIDENTIAL ZONE

5.1 Introduction

The Wairarapa contains a variety of residential areas, including those within the main urban communities of Masterton, Carterton, Featherston, Martinborough and Greytown, and as well as smaller coastal and rural settlements. While each community is distinctive in size, setting and character, the fundamental elements of the residential areas are similar enough to be managed under a single environmental zone:

- A degree of consistency in the density, size and scale of buildings with a reasonable amount of private open space;
- A adequate ratio of private to public open space and accessibility to such open space;
- Attractive streetscapes;
- A adequate degree of privacy; access to sunlight; low levels of noise, vibration, odour, and dust; and
- A safe and functional road network for traffic and pedestrians.

Residents seek to maintain and enjoy this widely recognised residential amenity.

The residential environment can accommodate a range of appropriate 'non-residential' activities without any significant loss of amenity, including schools, small-scale retail and professional services, and home occupations.

However, while many of these supporting activities are generally acceptable within the residential environment, they can create adverse effects if their scale and intensity of use create more than minor adverse effects on amenity values and residential character of neighbourhoods and settlements.

Conversely, even residential development can adversely effect the residential environment if it is of an inappropriate scale or density.

Residential character and amenity will change over time, so as to meet a wide range of urban residential lifestyles. A growing aged population, and a demand for lower maintenance properties has resulted in infill and higher density housing in some areas of the Wairarapa, such as inner parts of the Masterton. Retirement villages and housing complexes for the elderly are also more popular. These more intensive forms of residential development need good design to ensure they fit well with the residential character.

In other parts of the Wairarapa, holiday and weekend homes represent an increasing proportion of residential areas: indeed, in Martinborough large developments of such uses have been established or proposed: again, good design is required to ensure they maintain the character of the towns. Also, the southern end of Carterton has a lower density residential character and some historical land uses associated with this character.

5.2 Significant Resource Management Issues

1. Higher density residential development, and inappropriate building design, scale, bulk and site layout may conflict with the local residential

character and amenity values, particularly in areas with historic heritage values and/or a strong cohesive sense of character.

2. New structures can have adverse effects on the amenity values of adjoining residential properties, particularly with regard to openness, sunlight access and overshadowing.

3. Relocated buildings can create ongoing adverse visual effects on a neighbourhood without adequate screening, landscaping or finishing.

4. The need to provide for a wide range of residential lifestyle choices, including more intensive forms of residential development, including retirement villages, in a way that protects the amenity values and character of the residential neighbourhoods.

5. The design and layout of new comprehensive residential development, including retirement villages, may not provide an appropriate basis for an evolving sense of coherent character and amenity values, including appropriate connections for pedestrian, cycle and car modes of transport, and access to commuter rail services (where they exist) to the existing urban area.

6. Non-residential activities that are necessary to support and service residential neighbourhoods may generate adverse effects, out of keeping with the accepted amenity values and character of the residential environment.

7. Non-residential activities that are not generally an accepted part of the residential environment may create adverse effects, including a cumulative change in character and land use.

8. Development of infrastructure servicing urban development can have both positive and adverse effects on natural and physical resources, ecosystems, and amenity values (for example water bodies).

5.3 Objective, Policies and Methods

5.3.1 Objective Res1 – Residential Amenity Values and Character

To maintain and enhance the character and amenity values of Wairarapa's residential areas, having due regard to the particular characteristics of each neighbourhood, and the need to provide for a diversity of residential lifestyles and non-residential services and activities.

5.3.2 Res1 Policies

nted through Method 1.1.1(b) and 1.1.1(c)

(a) **Manage the Wairarapa's residential area under a single overall framework to provide for a wide range of lifestyles in a manner that is consistent with maintaining and enhancing an acceptable level of residential character and amenity values.**

nted through Method 1.1.1(b), 1.1.1(c) and

(b) **To provide residents with an acceptable level of certainty through environmental controls imposed on development and land use in the Residential Zone.**

nted through Method 1.1.1(b), 1.1.1(c) and

(c) **Apply specific management requirements as necessary to maintain and enhance the special character and amenity values of those residential areas with differing characters.**

(d)	**Require comprehensive residential developments to be designed and developed to a high environmental standard through a specific management framework.**	*Implemented thr 1.1.1(d)*
(e)	**Promote variety and innovation in residential development to meet the diverse needs of current and future generations, including opportunities to use renewable energy in housing design and siting.**	*Implemented thr 1.1.1(a), 1.1.1(b) 1.1.1(f)*
(f)	**Enable a wide range of residential based business and activities in keeping with the relative amenity values and character of residential neighbourhoods.**	*Implemented thr 1.1.1(a), 1.1.1(b)*
(g)	**Protect the character and amenity of the Residential Zone from the potential adverse effects of relocated buildings.**	*Implemented thr 1.1.1(a), 1.1.1(b)*
(h)	**Provide for existing local shopping areas and other supporting services such as schools, and ensure any change or expansion in these areas do not adversely affect the qualities of the residential environment.**	*Implemented thr 1.1.1(b) and 1.1.*
(i)	**Manage non-residential activities that are not generally accepted within a residential area to avoid, remedy or mitigate adverse effects on residential character and amenity values.**	*Implemented thr 1.1.1(b) ar*
(j)	**Provide for low density residential and primary production activities in the Carterton Low Density Residential Character Area subject to such environmental standards as necessary to avoid, remedy or mitigate any adverse effects.**	*Implemented thr 1.1.1(a), 1.1.1(b)*
(k)	Provide for the development and operation of a retirement village in the Orchards Retirement Village Character Area shown on the Indicative Concept Plan (Appendix X) subject to such environmental standards as necessary to avoid, remedy or mitigate any adverse effects.	

5.3.3 Explanation

The focus of the management of the Wairarapa's residential environments is to provide for the ongoing use and development of residential areas in a way that will maintain a generally acceptable level of amenity values and to protect the residential character of each neighbourhood. This can be achieved under a single management framework (the Residential Zone) that recognises and provides for the common environmental elements of Wairarapa's residential neighbourhoods – for example, building scale, sunlight access, streetscape views, and noise levels.

To maintain and enhance an acceptable level of residential amenity values and character, minimum environmental standards specifying requirements for site development and land use can provide a consistent approach throughout the Wairarapa, with such variations as necessary to recognise important differences in environmental characteristics and qualities. Such standards should not prevent innovation and diversity in design or lifestyles, provided the external effects are acceptable within the residential context.

The management framework should also seek to afford residents with a strong level of certainty about the nature of land uses that can occur within the

residential environment, by limiting permitted activities to residential uses, as well as those activities that are commonly associated with residential neighbourhoods and that provide important economic, social and cultural services – for example, parks and reserves, local shops, and home occupations.

The Zone should also set some standards to ensure the scale and intensity of these supporting activities is appropriate and is likely to be no more than minor – for example, if a residential business grows to such a level and intensity of use that it adversely affects the local amenity values and character. If an activity cannot meet one or more of the minimum environmental standards, its potential effects may be more than minor.

Threats to the character and amenity of the residential environment include incompatible activities, and buildings and structures of an inappropriate scale, location or density. Controls are also necessary to maintain enough daylight and privacy in dwellings, with their outlooks not unduly dominated by bulky buildings, with adequate setbacks from neighbours and streets, and with an acceptable provision of open space (private and public). The effects of vehicle access, movement and manoeuvrability, noise emissions, artificial light levels and signage may also need to be controlled to address potential effects on safety and residential amenity.

Initiatives to promote more sustainable residential development and building design would have significant cumulative benefits for the Wairarapa and the nation as a whole. While aspects are outside the district plan to pursue, Plan policies should not limit and preferably encourage opportunities to use more renewable sources of energy, such as through solar access in the layout, siting and design of houses.

The visual effects of relocatable buildings can potentially degrade the amenity values of localities, particularly if the condition of relocated buildings and the site are not promptly brought back into acceptable standard. It therefore may be appropriate to impose basic requirements so the building does not detract from an area's visual amenity.

Comprehensive residential developments, such as retirement villages and special tourist accommodation complexes, should be managed in a way that provides for separate yet compatible character with existing residential neighbourhoods – this may require specific area definition and subdivision/ development controls to provide certainty.

Large-scale greenfield residential developments may also need specific treatment to ensure that any cumulative effects are addressed comprehensively, that any outstanding attributes are protected and that the development connects with existing urban areas in a coherent manner.

Local shopping areas occur within many parts of the Residential Zone. These facilities provide a valuable function to the community, servicing the needs of local residents, but any further expansion needs to be controlled to ensure any adverse effects are avoided or mitigated. Other small-scale residential businesses and services also support the functioning of the Wairarapa's residential neighbourhoods, including schools, medical centres, home businesses and child care facilities. Environmental standards can be applied as thresholds to indicate the scale, intensity and character beyond which may not be acceptable within a residential context.

Non-residential activities that may not be generally acceptable within the residential area need rigorous control to determine whether the adverse effects can be satisfactorily avoided, remedied or mitigated.

At the southern end of the Carterton urban area, parts of the residential area is valued for its relatively low density character and amenity values. The low density provides a more spacious and open areas around dwellings, and allows for small scale primary production activities that reflect the size and nature of development in this area. Specific minimum standards apply to this area to maintain the low density character, with graduated minimum lot sizes reflecting a transition from the standard residential density in the main urban area through to a slightly lower density in the middle of the southern area, through to a low residential density in the outer parts. The Wairarapa Branch Railway Line passes through a corner of the Carterton South area, and it is important to ensure that development is well integrated with the existing transport networks (including rail), and provide for the continued operation of existing transport infrastructure by avoiding, remedying or mitigating adverse effects, including reverse sensitivity effects, from future development adjoining these networks. *Plan Chang*

5.3.4 Methods to Implement Residential Zone Policies

(a) Specifically identify permitted land uses within the Residential Zone, supported by such environmental standards as necessary to protect the character, amenity values and function of the Zone.

(b) The resource consent process to assess potential adverse environmental effects of activities that are not permitted, either because of non-compliance with environmental standards or because of the nature of the non-residential land uses.

(c) Use of conditions on resource consents to control the effects of activities to acceptable levels.

(d) Identify areas of comprehensive residential developments and provide a management framework through specific rules designed to maintain and enhance the residential character and amenity values in the development area and the adjoining area.

(e) For large-scale greenfields development, use a structure plan approach to identifying appropriate roading and infrastructure connections, the management of environmental attributes (for example, streams) and connectivity with existing urban areas.

(f) Education, guidance and information about environmental standards and sustainable residential design.

(g) Financial contributions for the provision and upgrading of roads, infrastructure and reserves.

(h) Compliance with New Zealand Standard 4404: 2004 *Land Development and Subdivision Engineering* to ensure a suitable standard of infrastructure and development, except where other forms of development can achieve environmentally satisfactory outcomes.

(i) **Allocation of funds through Strategic and Long Term Council Community Plan (LTCCP) processes for projects or initiatives to support the policies.**

(j) **The use of powers and functions under other legislation, including Council bylaws, as necessary to support or supplement Res1 policies.**

5.3.5 Principal Reasons for Adoption

People living in the Residential Zone expect the amenity values and the character of development in their neighbourhoods to be appropriate for residential living. They also expect a certain level of certainty in the nature and character of the area in which they live. Therefore, a specified list of permitted activities have been set, supported by appropriate environmental standards, which establish a baseline for protecting these expectations, while also enabling a range of activities and building forms to occur without undue impediment. The minimum standards apply to both residential and non-residential activities.

Activities that cannot meet these standards, or which are the types of non-residential activities not generally found in residential neighbourhoods, would require resource consent, which provides a process for assessing the environmental effects of the proposal, and whether there are measures that can be applied to avoid, remedy or mitigate any adverse effects.

Variations in the environmental standards for the Wairarapa's Residential Zone apply in those areas that have a specific residential character that is either being developed or protected.

For new large-scale residential developments, structure planning is an effective way of requiring comprehensive planning of roading, infrastructure, layout and connectivity, as well as addressing the environmental attributes of sites, such as streams, remnant bush, topographical features and natural hazards.

There is a range of non-RMA methods available to promote a good standard of residential design and development, particularly through the use of Codes and Guidelines, and through council funded initiatives for community and residential amenities. Financial contributions from residential development will be used in the upgrading and expansion of the Districts' roads, reserves and other civic amenities and facilities.

5.4 Anticipated Environmental Outcomes

(a) **A diversity of residential environments, providing for the living needs of Wairarapa's residents.**

(b) **Residential neighbourhoods supported by a good range of services, facilities and amenities that enhance their character and environmental quality.**

(c) **Residential environments where the scale, character and amenity of new development is appropriate for the particular neighbourhood.**

(d) **Comprehensive residential developments that have a high standard of character and amenity values.**

(e) **Protection of residential amenity values from environmental pollutants such as excessive dust and noise.**

(f) **Greater use of renewable energy sources, particularly through passive solar design.**

5.5 Residential Zone – Rules & Standards

5.5.1 Permitted Activities

The following are Permitted Activities:

(a) Residential buildings and activities;

(b) Homestays; *Policy 1.1.1(f)*

(c) Papakainga housing;

(d) The following non-residential activities:

i. Residential business;

ii. Reserves and recreational activities;

iii. Healthcare activities;

iv. Community amenity facilities;

v. Education and child care facilities;

vi. Temporary Activities that comply with the standards under Rule 21.1.16;

vii. Primary production activities (excluding forestry), aviaries, and apiaries, in the Carterton Low Density Residential Character Area.

(e) Any activity listed as a District Wide Permitted Activity in the rules in Section 21.1, and which is not otherwise specified as a controlled, restricted discretionary, discretionary or non-complying activity under Sections 5.5 or 21.1;

5.5.2 Standards for Permitted Activities

Permitted activities shall comply with all of the following standards for the Residential Zone:

(a) Maximum Building Height *Policy 1.1.1(b) and 1.1.1(e)*

i. 10 metres.

ii. 7 metres for coastal settlements (Castlepoint, Riversdale, Lake Ferry, Whangaimoana, Whatarangi, Ngawi, Mangatoetoe).

(b) Maximum Height to Boundary *Policy 1.1.1(b) and 1.1.1(e)*

i. 3 metres height at the boundary with a 45-degree recession plane.

(c) Minimum Building Setback *Policy 1.1.1(b) and 1.1.1(e)*

i. 5 metres from the front boundary.

ii. For front sites, 1.5 metres from all other boundaries, except that there shall be two setbacks of at least 3 metres from any side and/or rear boundary.

iii. For rear sites, 1.5 metres from all other boundaries, except that there shall be two setbacks of at least 3 metres from any side and/or rear boundary.

iv. 0 metres for common wall boundaries.

Note: For the purpose of the above rule –

Front site: means a site with a legal road frontage of not less than 10 metres;

Rear site: means a site with a legal road frontage less than 10 metres.

v. Within the Carterton South Structure Plan Area, 5 metres from any proposed road shown on the Carterton South Structure Plan in Appendix 14.

Plan Change 6

vi. 5 metres from any waterbody.

vii. In the South Wairarapa District, 20 metres from the banks of any river and stream whose bed has an average width of 3 metres or more.

Exceptions:

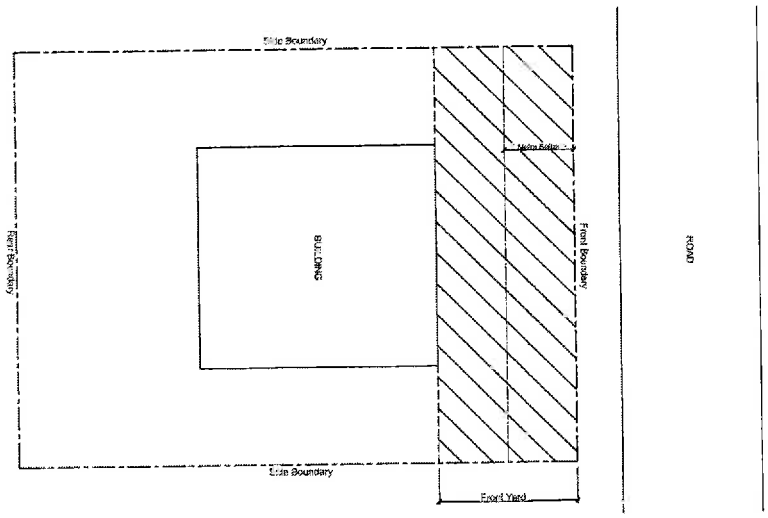
Plan Change 6

(i) Eaves, porches, balconies and decks or other minor features may occupy any part of a required setback, other than the front yard setback, provided they do not encroach by more than 25% of the relevant setback distance and do not, except for eaves, exceed 2m in length.

(d) Accessory Building Setback

i. No accessory building shall be located in a front yard,

ii. An accessory building may be located within any part of the building setbacks for side and rear boundaries only provided the building does not cover more than 25% of the total yard requirements along any one boundary.



(e) Maximum Fence Height

Plan Change 6

i. 1.8 metres for fences, walls and screens, except at road intersections of Strategic Arterial roads identified on the Roading Hierarchy on the Planning Maps, no obstruction exceeding 1.0 metre in height is permitted within a 6.0 metres by 6.0 metres triangle measured from a boundary intersection point (Refer Figure 32.1 in Appendix 5).

(f) Number of Dwellings

Policy 1.1.1(b) and 1.1.1(e)

i. The total number of dwellings per site shall be limited to that which enables each dwelling to meet the minimum lot area subdivision requirements for that site (Rule 20.1.2(a)).

(g) Noise Limits

Policy 1.1.1(b)

i. The sound level from activities within any site in the Residential Zone, shall not exceed the following limits within any measurement time interval in the stated time-frames when assessed at any point within the boundary of any site in the Residential Zone:

Daytime	7.00am – 7.00pm	55dBA L10
Nighttime	7.00pm – 7.00am	45dBA L10
	9.00pm – 7.00am	75dBA Lmax

i. All sound levels shall be measured in accordance with NZS 6801:1999 "*Acoustics - Measurement of Environmental Sound*", and assessed in accordance with NZS 6802:1991 "*Assessment of Environmental Sound*".

(h) Signs

Policy 1.1.1(b)

i. Any permanent sign shall be permitted provided it complies with the following standards:

1) One sign per site, with a total face area of no more than 0.5m^2.

2) The sign must relate to the activity undertaken on the site and be located fully within the site of the activity to which it relates.

3) Where a sign is affixed to a building, the sign shall comply with the maximum height and setback requirements.

4) All signs must comply with the sight distance requirements in Appendix 5.

5) No sign shall be located where it conceals the visibility of an existing official sign or traffic-controlling device.

6) No sign shall use reflective materials, or be illuminated, flashing or moving.

7) No sign shall be affixed to the exterior of any heritage item listed in Appendix 1.7 Heritage Items.

Exception:

(i) Official Traffic Signs are excluded from complying with the above standards provided they comply with the Land Transport Rule: Traffic Control Devices 2004 and the Manual of Traffic Signs and Marking (MOTSAM).

Policy 1.1.1(b)

(i) Roads, Access, Parking and Loading Areas

ii. Compliance with the standards in Appendix 5 Requirements for Roads, Access, Parking and Loading.

iii. One vehicle access point per frontage.

iv. No contiguous carparking area containing five or more parking spaces, including access and manoeuvring areas.

Policy 1.1.1(b), 1.1.1(i) and 1.1.1(j)

(j) Non-Residential Activities

In addition to the other standards for permitted activities in the Residential Zone, permitted non-residential activities shall comply with the following standards:

i. Any area containing more than four parking spaces shall be screened by fencing, planting or other treatment so it will not be visible from any public road, public open space, or dwelling on an adjoining property.

ii. No more than 2 persons (fulltime equivalent) who reside off the premises may be employed in the activity.

iii. No outdoor storage of goods and materials.

iv. No accessory building and enclosures for the housing and keeping of animals in confinement shall be located within 20m from the boundary of the site.

Policy 1.1.1(b), 1.1.1(c) and 1.1.1(d)

(k) Greytown Villas Character Area

i. All buildings within the Greytown Villas Character Area shall comply with all Residential Zone and District-wide permitted activity standards, except where the following applies:

1) The total number of buildings (including stand-alone and duplex units, and advanced residential care facilities) shall not exceed 100 structures. Advanced residential care facilities shall be constructed only within Stage 4 of the Indicative Concept Plan for Greytown Villas (Refer Appendix 9).

2) Buildings within the Greytown Villas Character Area shall be subject to the following standards:

a) Minimum building setback to West Street is 6.0 metres.

b) Minimum building setback at the boundary of the Greytown Villas Character Area is 3.0 metres.

c) Minimum separation distances between buildings is 3.0 metres.

d) No new building shall exceed 10 metres in height above ground level, and no building shall exceed a height of 3.0 metres plus three quarters of the shortest horizontal distance between that part of the building and the nearest site boundary.

1) No outdoor fence, wall or screen shall exceed 1.8 metres in height.

2) The overall building coverage shall not exceed 35% except in Stage 4, which shall not exceed 40%.

3) Each residential unit (except for advanced residential care facilities) shall have an exclusive outdoor living court of at least $30m^2$.

4) Buildings requiring wastewater disposal shall be connected to the reticulated sewerage system.

5) Stormwater from buildings and hard surfaces shall be disposed of within the Greytown Villas Character Area or piped to an approved outfall without affecting adjoining properties.

ii. All private roads within the Greytown Villas Character Area shall comply with the following standards:

1) Minimum width of formation

a) 6.0 metres for main internal roads

b) 5.0 metres for small cul-de-sacs

2) Shall be located as generally shown in the Indicative Concept Plan in Appendix 9.

iii. All screening and landscape treatment within the Greytown Villas Character Area shall comply with the following standards:

1) Any commercial storage, parking, loading, manoeuvring or service area adjoining and visible from any site zoned Residential or any public place shall be screened from that area. The screening shall be no less than 1.8m in height, comprising either a densely planted buffer of at least 2m width or a solid fence or wall.

2) The Character Area shall be landscaped as follows:

a) Not less than 20% of the space between the road frontage boundary and the front of the principal building shall be planted; and

b) Not less than 10% of the space between the boundary of any adjoining site zoned Residential and the principal building shall be planted; and

c) Not less than 20% of the site, or the part of the site directly associated with the use or development shall be laid out in lawn and garden.

1) Roads and buildings shall not encroach within 10 metres (the assumed maximum tree root area) of the protected matai and totara trees within the Greytown Villas Character Area, except no more than 50% of the assumed root area of any individual tree and no more than 20% of the overall assumed root area of all the protected matai and totara trees shall be affected.

(l) The Orchards Retirement Village Character Area

All buildings and activities within The Orchards Retirement Village Character Area shall comply with all Residential Zone and District-wide permitted activity standards, except where the following apply:

1) The total number of independent residential units (including stand-alone, duplex and terrace dwellings but excluding advanced residential care facilities and communal buildings) shall not exceed 180.

2) Advanced residential care facilities shall not exceed 120 beds.

3) Buildings within the Orchards Retirement Village Character Area shall be subject to the following building setbacks, as shown on the Indicative Concept Plan (Appendix X):

a) Boundaries 1, 2, 3 and 7 – 5m

b) Boundaries 4, 8 and 9 – 7.5m

c) Boundaries 5 and 6 – 10m

4)The advanced residential care facility must include doors, windows, building modulation or other architectural detail for no less than 50% of its total façade facing Boundary 3.

5) Minimum separation distances between independent dwelling units is 4.5m, except in the case of attached duplexes or terraced dwellings where there is no minimum separation distance requirement for their common walls.

6) The overall building coverage of the Orchards Retirement Village Character Area shall not exceed 26% as shown on the Indicative Concept Plan (Appendix X).

7) Each independent residential unit shall provide exclusive paved outdoor living court (including any covered outdoor space) as follows:

   a) For Villas – at least $15m^2$

   b) For Terraces – at least $6m^2$.

8) Buildings requiring wastewater disposal shall be connected to the reticulated sewerage system.

9) Stormwater from buildings and hard surfaces within The Orchards Retirement Village Character Area shall be disposed in accordance with NZS 4404:2010 Land Development and Subdivision Infrastructure.

10) All private roads within The Orchards Retirement Village Character Area shall comply with the following standards:

   a) Minimum width formation:

      i. 5.5 metres with a footpath on one side for primary internal roads

      ii. 3 metres with pedestrian shared in the movement lane for secondary roads

      iii. Passing opportunities every 50m on secondary roads

   b) Shall be located as generally shown in the Indicative Concept Plan (Appendix X)

11) All vehicle crossings to an independent residential unit, accessed from a public road, shall comply with the standards in Appendix 5 Requirements for Roads, Access, Parking and Loading.

12) Any staff cycle parking areas provided shall be secured and covered and be visible from communal buildings on the site.

13) A contiguous carparking area shall contain no more than 15 parking spaces and associated access and manoeuvring areas.

14) Parking spaces for independent residential units shall be provided within The Orchards Retirement Village Character Area as follows:

   a) Villas – at least 1 parking space off-street

   b) Terrace -at least 1 parking space either off-street or on-street

15) Parking spaces for Advanced Residential Care Facilities shall be provided within The Orchards Retirement Village Character Area and meet the requirements of Table 21.1.25.1.

16) Parking spaces for non-residential activities shall be provided within The Orchards Retirement Village Character Area to meet the demands generated by the activity or building. This can be provided either as formed off-street or on-street parking spaces.

17) All screening and landscape treatment within The Orchards Retirement Village Character Area shall comply with the following standards:

a) Any commercial storage, bin storage or service area shall be screened. The screening shall be no less than 1.5m in height, comprising either a planted buffer, or a fence or wall with 40% visual permeability.

b) Not less than 10% of the common areas within the Orchards Retirement Village Character Area shall be planted with shrubs of a minimum height of 200mm in general accordance with the Concept Plan in Appendix X.

18) Any permanent sign shall be permitted provided it complies with the following standards:

a) A maximum of three signs per frontage with the public road, with a total face area per sign of no more than 4m^2.

b) The sign must relate to the activity undertaken on the site and be located fully within the site of the activity to which it relates.

c) Where a sign is affixed to a building, the sign shall comply with the maximum height and setback requirements.

d) All signs must comply with the sight distance requirements in Appendix 5.

e) No sign shall be located where it conceals the visibility of an existing official sign or traffic-controlling device.

f) No sign shall use reflective materials, or be illuminated, flashing or moving.

19) All non-residential activities within the Orchards Retirement Village Character Area shall be ancillary to the operation of the retirement village.

20) There shall be no limit to the number of persons (full time equivalents) employed in the Orchards Retirement Village provided that:

a) The number of persons employed to deliver the on site services are necessary to the operation of the Orchards Retirement Village;

b) Parking requirments shall be met in accordance with Table 21.1.25.1 - Parking Requirements in the District Wide Rules.

5.5.3 Controlled Activities

The following are Controlled Activities:

(a) Any activity involving relocating a dwelling or other building over 10m^2.

The matters over which control is reserved are:

i. Siting, design, and exterior condition.

ii. Screening and landscape treatment.

iii. Bonds.

iv. Transportation route.

Policy 1.1.1(b), 1.1.1(c) and 1.1.1(d)

(b) Within the Greytown Villas Character Area, any retirement villas, relocated buildings, buildings and land for advanced residential health care, recreational facilities, grounds maintenance and ancillary activities.

The matters over which control is reserved are:

i. The design and appearance of relocated buildings and for buildings for advanced residential health care and/or recreational facilities.

ii. The location of buildings with respect to site boundaries and each other.

iii. The provision of outdoor living courts, service courts, access and parking.

iv. Landscaping and site development.

v. The timeframe for the work to be completed.

vi. Staging of development.

vii. Financial contributions.

Policy 1.1.1(b), 1.1.1(c) and 1.1.1(d)

(c) Within the Orchards Retirement Village Character Area, any independent residential units, buildings and land for advanced residential health care, recreational and communal facilities, grounds maintenance and ancillary activities.

The matters over which control is reserved are:

(i) The design, scale and appearance of all buildings.

(ii) Minimum floor areas for residential units.

(iii) Building coverage for the site as shown in the Indicative Concept Plan in Appendix 9.

(iv) The provision for and method of stormwater collection and disposal.

(v) The provision for wastewater disposal.

(vi) The location of buildings with respect to site boundaries and each other.

(vii) The provision of outdoor living courts.

(viii) The provision of outdoor storage and service areas, including bin storage and collection.

(ix) Roading and the provision of access and parking spaces.

(x) The provision for safe pedestrian and cycle access throughout the site.

(xi) The provision of landscaping, screening and open space.

(xii) Noise and vibration management.

(xiii) Lighting.

(xiv) Signage.

(xv) Staging of development.

(xvi) Odour.

(xvii) Sediment and dust management.

(xviii) Financial contributions.

Policy 1.1.1(b), 1.1.1(c) and 1.1.1(d)

(c) Within the Jellicoe Residential Character Area, any private clubrooms, grounds maintenance, recreational facilities and a conference venue.

The matters over which control is reserved are:

viii. Standard and location of access.

ix. Parking.

x. Design and appearance of new buildings.

Assessment Criteria

Controlled activities will to be assessed against the relevant assessment criteria set out in Section 22.

Notification and Service of Applications

An application for resource consent for controlled activities made under this rule need not be notified; and need not be served on affected persons.

Note:

All the standards for permitted activities in Rule 5.5.2 must be met.

5.1.2 Restricted Discretionary Activities

The following are Restricted Discretionary Activities:

1.1(b) and 1.1.1(i)

(a) Any permitted or controlled activity that does not meet one or more of the standards for permitted or controlled activities.

Discretion is restricted to the following matters:

i. Avoiding, remedying or mitigating of any effects deriving from non-compliance with the particular standard(s), that is not met.

Assessment Criteria

Restricted Discretionary activities will be assessed against the relevant assessment criteria set out in Section 22.

5.1.3 Discretionary Activities

The following are Discretionary Activities:

1.1(b) and 1.1.1(i)

(a) Any other activity including any commercial and retail activity that is not a permitted, controlled, restricted discretionary or a non-complying activity is a discretionary activity.

Assessment Criteria

Discretionary activities will be assessed against, but not limited to, the relevant assessment criteria set out in Section 22.

5.1.4 Non-Complying Activities

The following are Non-Complying Activities:

Policy 1.1.1(b) and 1.1.1(i)

(a) Any activity listed in the Schedule of Primary Industry (Appendix 4).

(b) Any residential development within the Orchards Retirement Village Character Area that is not provided for as a Controlled Activity in Rule 5.3.3(c).

Assessment Criteria

Non-complying activities will be assessed against, but not limited to, the relevant assessment criteria set out in Section 22.

20 DISTRICT WIDE SUBDIVISION RULES AND STANDARDS

No form of subdivision is a permitted activity under this Plan, as even simple forms of subdivisions may require assessment and the imposition of conditions, such as those in relation to access, infrastructure, water supply and sewage and stormwater disposal. Thus, at the least, subdivision is a controlled activity if it meets the standards as set out in this section, but is otherwise a restricted discretionary, discretionary or non-complying activity.

20.1.1 Controlled Activities

All Environmental Zones

(a) Any subdivision that complies with all of the standards in 20.1.2 is a Controlled Activity.

The matters over which control is reserved are:

i. The design and layout of the subdivision, including the size, shape and position of any lot, any new roads, the provision of footpaths and cycleways, provision of linkages to existing roads, access over the railway, access, passing bays, parking and manoeuvring standards, any necessary easements, or the diversion or alteration to any existing roads;

ii. Potable water supply, water storage and water treatment;

iii. Effluent disposal systems and maintenance requirements;

iv. Stormwater control and disposal, including adequacy of disposal;

v. Service arrangements, including easements;

vi. Provision of reserves, including connections to existing and future reserves;

vii. Provision of esplanade reserves and esplanade strips, and access strips, to and around the coastline and margins of lakes and rivers;

viii. Effects on indigenous biological diversity, including protection of existing vegetation, wildlife and watercourses, revegetation and weed and pest control;

ix. The protection of any significant environmental features or other special feature(s) on any lot;

x. The staging of development or the timing of any works;

xi. Controls to mitigate the effects of construction;

xii. Separation distance, barriers, acoustical treatment, and orientation of buildings;

xiii. Fire rating of party/common walls;

xiv. Provision of fire fighting and management of fire risk;

xv. Design and location of network utilities;

xvi. Earthworks management, including sediment control;

xvii. Effects on historic heritage;

xviii. Effects on values of any waahi tapu sites and any resources of significance to Tangata Whenua.

xix. Natural hazard avoidance or mitigation;

xx. Effects on the character, landscape and amenity values of the vicinity, including the effects of siting and design of buildings, screening and landscape treatment, including building sites on ridgelines;

xxi. Energy efficiency and the ability for lots to use renewable energy;

xxii. Measures to remedy any site contamination;

xxiii. Financial contributions;

xxiv. Bonds and other payments and guarantees;

xxv. Compliance with New Zealand Standard 4404:2004 *"Land Development and Subdivision Engineering"* and other standards referenced in NZS4404:2004;

xxvi. Application of New Zealand Handbook 44:2001 *Subdivision for People and the Environment;*

xxvii. Conformance with any relevant current resource consent for a comprehensive development, including minor variations, or any relevant Structure Plan; and

xxviii. Reverse sensitivity effects, including but not limited to noise, odour, dust and visual effects.

Assessment Criteria

Controlled activities are to be assessed against the relevant assessment criteria set out in Section 22.

Notification and Service of Applications

An application for resource consent for controlled activities made under this rule need not be notified; and need not be served on affected persons.

Note: Earthworks may also require resource consent from Wellington Regional Council for discharges to water or land or for the amount of earthworks being undertaken.

20.1.2Standards for Controlled Activities

Lot Standards - Residential, Commercial and Industrial Zones

(a) All lots in the Residential, Commercial or Industrial Zones shall comply with all the relevant standards in the table below. *Error! Reference source not found. and Error! Reference source not found.*

	Zone	Minimum Lot Area	Minimum Average Lot Area
(i)	Residential Serviced (Masterton Districts)	350m²	400m² (for three or more lots)
(ii)	Residential Serviced (Carterton and South Wairarapa Districts)	400m²	500m²
(iii)	Residential Serviced Coastal (Masterton District)	400m²	450m²
(iv)	Residential Unserviced	1,000m²	N/A
(v)	Residential (Opaki and Chamberlain Road Future Development Areas)	350m²	1,200m²
(vi)	Residential Serviced (Carterton Low Density Residential Character Area)	2,000m²	N/A
(vii)	Residential Serviced (Carterton Medium Density Residential Character Area)	750m²; and 1,000m² minimum average lot area	N/A
(viii)	Residential (Greytown Villas Character Area)	500m²	N/A
(ix)	Residential (Jellicoe Residential Character Area)	88m² Townhouse Lots 375m² Cottage Lots 1,200m² Large Lots	N/A
(x)	Residential (Underhill Road Character Area)	1,000m²	N/A
(xi)	Residential (The Orchards Retirement Village Character Area	No minimum	N/A
(xii)	Commercial	No minimum	N/A
(xiii)	Industrial	No minimum	N/A

Plan Chai

For the purposes of this rule:

Note 1: The minimum lot area and minimum average lot area shall exclude any accessways or rights-of-way, and the minimum lot size shall not apply to those areas where they are a separate access lot.

Note 2: "Residential Serviced" refers to the 'Residential Zone' areas serviced by reticulated wastewater systems, such as Masterton, and

includes the Greytown Future Development Area, but excludes Lake Ferry Township due to the limited capacity of its reticulated system.

Note 3: "Residential Unserviced" refers to the 'Residential Zone' areas not serviced by reticulated wastewater systems, and includes Lake Ferry Township due to the limited capacity of its reticulated system.

Note 4: "Residential Serviced Coastal" refers to the 'Residential Zone' areas serviced by reticulated wastewater systems and located to the seaward side of the inland boundary of the Coastal Environmental Management Area, such as Castlepoint.

Note 5: For the purpose of the subdivision rules and standards, where any allotment is to be amalgamated or held together with any other allotment on the same plan or any land of an adjoining owner in accordance with a condition of subdivision, the combined area shall be deemed to be a single allotment for the purpose of determining compliance with these standards.

Lot Standards – Rural Zones

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(b) Any subdivision in the Rural (Primary Production), Rural (Special) or Rural (Conservation Management) Zones shall comply with all of the relevant standards in the table below:

	Zone	Minimum Lot Area	Lot Frontage
(i)	Rural (Primary Production)	All lots shall have a minimum lot area of 4 hectares, except for:	Minimum 100m for front lots.
		1. Where the Certificate of Title for the site was issued before 26 August 2006, or resource consent to subdivide was granted for the site before 26 August 2006, no minimum lot area applies for a lot containing an existing dwelling provided the balance lot has a minimum lot area of 4 hectares; or	N/A
		2. Where the Certificate of Title for the site being subdivided was issued before 29 March 2008, or resource consent to subdivide was granted for the site before 29 March 2008, up to two lots may have a minimum lot area of 1 hectare provided they have a minimum average lot area of 2 hectares.	Minimum 100m for front lots
(ii)	Rural (Special)	4 hectares	Minimum 100m for front lots
(iii)	Rural (Conservation Management)	Each lot shall comply with all District-wide Rules	N/A

For the purposes of this rule:

Note 1: For the purpose of calculating the average lot size, where there are any lots larger than 10 hectares, these lots shall be given a nominal size of 10 hectares.

Note 2: For the purpose of the subdivision rules and standards, where any allotment is to be amalgamated or held together with any other allotment on the same survey plan or any land of an adjoining owner in accordance with a condition of subdivision, the combined area shall be deemed to be a single allotment for the purpose of determining compliance with these standards.

Access Standards – All Environmental Zones

(c) All lots shall demonstrate compliance with the District-wide permitted activity land use standards for Roads, Access, Parking and Loading in Section Error! Reference source not found..

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(d) In the Rural (Primary Production) Zone and Rural (Special) Zone, if there are two or more rear lots, they shall share a single vehicle access.

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Development Standards - All Environmental Zones

(e) Each lot shall contain a *building area*. For the purpose of this rule, *building area* shall be defined as that area (or areas) shown within each lot on a proposed subdivision plan that:

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i. Contains any dwelling house to be located on the lot, and complies with the permitted activity land use standards for dwellings in the respective Environmental Zone; and

ii. Has minimum dimensions of 15m by 12m that is clear of any right-of-way of other easements; and

iii. In the Rural (Primary Production), Rural (Special) and Rural (Conservation Management) Zones shall be able to satisfactorily dispose of effluent on-site.

Note 1: The Certificate of Title of any lot that is not intended to be developed for residential purposes may be required to have registered against its Certificate of Title consent notices pursuant to Section 221 of the Act detailing any future requirements for or restrictions on residential development and use.

(f) Each undeveloped lot in the Jellicoe Residential Character Area shall contain a shape factor of the following dimensions:

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iv. Townhouse Lots – rectangle measuring 6.5 metres by 8.5 metres.

v. Cottage Lots – rectangle measuring 12.5 metres by 25 metres.

vi. Large Lots – rectangle measuring 20 metres by 25 metres

(g) In the Residential Zone, the maximum building coverage for lots with existing dwellings shall be no more than 30 percent of the lot area excluding any accessways or rights-of-way.

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(h) **All lots shall demonstrate compliance with the permitted activity land use standards for the respective Environmental Zone in Section 4, 5, 6 or 7.**

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(i) **All new water supplies, waste water supplies and stormwater systems shall be provided in accordance with NZS 4404:2004 "Land Development and Subdivision Engineering".**

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(j) **All financial contributions shall be in accordance with the requirements of Section 23.**

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(k) **All lots shall comply with the Esplanade Reserve/Strip standards in Section 24.**

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(l) **Any subdivision within a Future Development Area shall be in accordance with an approved Development Concept Plan, under Rule Error! Reference source not found..**

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(m) **Any subdivision within the Greytown Future Development Area shall be in accordance with the Structure Plan for this area.**

Exceptions - All Environmental Zones

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(a) **Any boundary adjustment shall comply with all standards in Rule 20.1.2 except as follows:**

vii. Minimum Lot Area: Where any affected lot is already less than the minimum lot area for subdivision as a Controlled Activity in the respective Environmental Zone:

i. Any adjustment shall not decrease the area of that lot by more than 10%; and

ii. Any adjustment shall not cause any non-compliance or increase any existing non-compliance with any other rules.

viii. No dwelling shall be severed from its existing site.

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(b) **Any subdivision of different floors or levels of a building, or different parts of a floor or level of a building.**

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(c) **Any lots for the purpose of containing network utilities where the subdivision is necessary for networks utility purposes, or lots for reserves and access need not meet any of the other requirements in Rule 20.1.2.**

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(d) **Any subdivision creating a Conservation Lot containing a Significant Natural Area listed in Appendix 1.3, shall comply with the following standards:**

ix. The subdivision shall result in the whole of the listed feature being physically and legally protected in perpetuity. An agreement regarding an encumbrance, bond, consent notice or covenant must be entered into before the issue of the Section 224 Certificate. Such an instrument is to be

registered on the Certificate(s) of Title of the relevant lots. The covenant or encumbrance shall be prepared by a solicitor at the applicant's expense.

x. The covenant shall incorporate any specified protective or enhancement measures to maintain or enhance its value or physical security.

xi. The application shall include sufficient detail for the Council to ascertain the particular natural, historic or cultural value associated with the item.

xii. The conservation lot does not need to meet the relevant minimum lot area requirements.

ii. Restricted Discretionary Activities

The following are Restricted Discretionary Activities:

Rural (Primary Production) and Rural (Special) Zone

(a) Any subdivision in the Rural (Primary Production) Zone or Rural (Special) Zone that does not comply with any one of the minimum standards for a Controlled Activity in Rule (b), provided that the standards for Restricted Discretionary Activities in Rule (d) are met.

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Discretion is restricted to the following matters:

i. Design, layout, shape, location and number of lots;

ii. Efficiency of land use;

iii. Effects on rural character and amenity values, including the siting and design of buildings;

iv. Avoiding, remedying or mitigating any effects deriving from the relevant risks, values and character that are particular to the area; and

v. The matters set out in (a).

All Environmental Zones – Access

(b) Any subdivision that does not comply with Rules (c) and (d), provided that all other standards for Controlled Activities in Rule 20.1.2 are met.

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Discretion is restricted to the following matters:

vi. Development and site characteristics;

vii. Design, location and construction of vehicle crossings, entranceways, access and roads;

viii. Availability of alternative private or public access, parking or loading areas;

ix. Design, layout, number and standard of parking and loading areas;

x. Financial contributions.

All Environmental Zones – Development

(a) Any subdivision that does not comply with Rule 20.1.2(e) and 20.1.2(f), provided that all other standards for Controlled Activities in 20.1.2 are met.

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Discretion is restricted to the following matters:

xi. All matters as specified in Rule 20.1.1;

xii. Design, layout, size, number and location of lots;

xiii. Methods to avoid or mitigate the effects of external primary production activities on the proposed lots, including buffer setbacks, dwelling siting and planting.

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(b) Any subdivision that does not comply with Rule 20.1.2(h), provided that all other standards for Controlled Activities in 20.1.2 are met.

Discretion is restricted to the following matters:

xiv. Avoiding, remedying or mitigating of any effects deriving from non-compliance with the particular standard(s) that is not met.

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(c) Any subdivision that does not comply with Rule (i), provided that all other standards for Controlled Activities in 20.1.2 are met.

Discretion is restricted to the following matters:

xv. Potable water supply, water storage and treatment;

xvi. Wastewater collection, treatment and disposal;

xvii. Stormwater collection, treatment and disposal; and

xviii. Financial contributions.

Assessment Criteria

Restricted discretionary activities are to be assessed against the relevant assessment criteria set out in Section 22.

20.1.4Standards for Restricted Discretionary Activities

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Rural (Primary Production) Zone and Rural (Special) Zone

(d) Any subdivision within the Rural (Primary Production) Zone and Rural (Special) Zone under Rule (a) shall comply with all of the relevant standards in the table below:

	Zone	Minimum Lot Area	Lot Frontage
(i)	Rural (Primary Production)	All lots shall have a minimum lot area of 4 hectares, except for: Where the Certificate of Title for the site being subdivided was issued before 29 March 2008, or resource consent to subdivide was granted for the site before 29 March 2008, up to two lots may have a minimum lot area of 1 hectare provided they have a minimum average lot area of 2 hectares. Where two or more Certificates of Title are proposed to be subdivided in a proposal, the entitlement to 1 hectare lots may be located on different Certificates of Title within the application site to that from which the entitlement is created.	Minimum 90m for front lots.
(ii)	Rural (Special)	4 hectares	Minimum 90m for front lots.

For the purposes of this rule:

Note 1: For the purpose of the subdivision rules and standards, where any allotment is to be amalgamated or held together with any other allotment on the same survey plan or any land of an adjoining owner in accordance with a condition of subdivision, the combined area shall be deemed to be a single allotment for the purpose of determining compliance with these standards.

Note 2: Where a subdivision proposes lots of minimum 1 hectare under Rule (d)(i) above, the entitlement of the 1 hectare lots may be located on a different Certificate of Title within the application site to that from which the entitlement is created.

Development Standards - All Environmental Zones

(a) Any subdivision shall comply with the standards for Controlled Activities in Rules (a), (g), (j), 2(a), (l) and (m).

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20.1.5Discretionary Activities

The following are Discretionary Activities:

Residential, Commercial and Industrial Zones

(a) Any subdivision that does not comply with any one or more of the standards for controlled activities in Rule (a).

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(b) Any subdivision that does not comply with the standard for a Controlled Activity in Rule (g).

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(c) Any subdivision within a Future Development Area that does not have an approved Development Concept Plan, or is not

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consistent with an approved Development Concept Plan under Rule Error! Reference source not found..

(d) **Any subdivision in the Waingawa Industrial Area that is consistent with the Waingawa Industrial Area Structure Plan in Appendix 12.**

(e) **Subdivision within the Greytown Future Development Area that is not consistent with the Structure Plan for this area.**

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Rural Zones

(f) **Any subdivision in the Rural (Primary Production) Zone that does not comply with the minimum standards for Restricted Discretionary Activities in Rule (d), provided that the standards for Discretionary Activities are met.**

(g) **Any subdivision in the Rural (Primary Production) Zone or Rural (Special) Zone extending public water, stormwater or wastewater utility services or extending any legal road.**

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All Environmental Zones

(h) **A subdivision that is not otherwise a controlled, restricted discretionary, or non-complying activity under Chapter 20.**

(i) **Any subdivision that creates a new allotment in which one or more of the following circumstances apply:**

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(i) Contains Contaminated Land listed in Appendix 3;

i. It is on land previously or currently used for an activity or industry listed on the modified Wairarapa Hazardous Activity and Industry List (Wairarapa HAIL) in Appendix 3.2.

ii. The allotment is within a Flood Hazard Area or Erosion Hazard Area;

iii. The allotment is within the Coastal Environment Management Area;

iv. The allotment is within an Outstanding Landscape listed in Appendix 1.1;

v. Contains an Outstanding Natural Feature listed in Appendix 1.2;

vi. Contains all or part of a site of a Significant Natural Area listed in Appendix 1.3, except if the Significant Natural Area is wholly contained in a Conservation Lot under Rule (d);

vii. Contains all or part of a site of an Archaeological or Geological Site listed in Appendix 1.5a or Appendix 1.5b;

viii. Contains all or part of a Site of Significance to Tangata Whenua listed in Appendix 1.6;

ix. Contains all or part of a Site of Historic Heritage listed in Appendix 1.7;

x. The allotment is within an identified Historic Heritage Precinct listed in Appendix 1.8 (refer also to Rule **Error! Reference source not found.**);

xi. Any part of the allotment is within 150 metres of an effluent distribution area, effluent holding pond or oxidation pond (excluding waste disposal areas associated with domestic septic tanks located on an adjacent site);

xii. Any part of the new allotment is within 20 metres of the centreline of a high voltage (110kV or more) transmission line (as shown on the Planning Maps).

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(j) Any subdivision with access to a State Highway, Limited Access Road, Masterton Heavy Traffic Bypass or over or under the Wairarapa Railway, provided that the standards for Discretionary Activities are met.

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(k) Any subdivision that does not comply with the standards in Rules (j) or (k).

Assessment Criteria

Discretionary activities will be assessed against, but not limited to, the relevant assessment criteria set out in Section 22.

20.1.6Standards for Discretionary Activities

Rural Zones

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(a) Any subdivision within the Rural (Primary Production) Zone under Rule (f) shall comply with the following:

i. Minimum average lot area of 4 hectares, provided that, where there are any lots larger than 10 hectares, these lots shall be given a nominal size of 10 hectares when calculating the average lot size.

(b) Any subdivision within the Rural (Primary Production) Zone or Rural (Special) Zone under Rule (g) shall comply with the following:

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i. Standards for a Controlled Activity in the respective Environmental Zone in Rule 20.1.2.

All Environmental Zones

(c) Access to a State Highway, Limited Access Road Masterton Heavy Traffic Bypass or over or under the Wairarapa Railway.

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i. Any subdivisions under Rule (j) shall comply with the following:

i. Standards for a Controlled Activity in the respective Environmental Zone in Rule 20.1.2; or

ii. Standards for a Restricted Discretionary Activity in the respective Environmental Zone in Rule 0.

20.1.7Non-Complying Activities

The following are Non-Complying Activities:

rence source

Rural (Primary Production) Zone

(a) Any subdivision that does not comply with the minimum standards for Discretionary Activities in Rule 20.1.6.

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Rural (Special) Zone

(b) Any subdivision that does not comply with the minimum standards for Restricted Discretionary Activities in Rule 20.1.4(a).

All Environmental Zones

(c) Any subdivision with access to a State Highway, Limited Access Road, Masterton Heavy Traffic Bypass or over or under the Wairarapa Railway, which does not meet the relevant Environmental Zone's minimum standards for a Controlled Activity (Rule 20.1.2).

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Assessment Criteria

Non-complying activities will be assessed against, but not limited to, the relevant assessment criteria set out in Section 22.

PART C – CONSENT PROCESS AND GENERAL PROVISIONS

Last Amended: 25 May 2011

21 ASSESSMENT CRITERIA

22.1Consents under District Wide Rules

These criteria are not exclusive, as other criteria may be considered when assessing a discretionary activity.

22.1.1Subdivision

(d) Greytown Villas Character Area

(i) Whether subdivision provides for lots that accord with the development shown on the Greytown Villas Indicative Concept Plan (Appendix 9), and provide for buildings that meet the special development requirements for buildings under Rule (b).

(e) The Orchards Retirement Village Character Area

(i) Whether subdivision provides for lots that meet the operational requirements of the Orchards Retirement Village that accords with the development shown on the Concept Plan at Appendix X..

22.2Consents under Zone Rules

Note: These criteria are not exclusive as other criteria may be considered when assessing discretionary and non-complying activities.

22.2.17 Greytown Villas Character Area

i. The extent to which all buildings and site development conform with the indicative Concept Plan in Appendix 9, which shows the broad overall concept for the development of Greytown Villas (including stages of development).

ii. The extent to which the development maintains the integrity of the overall landscape and amenity values of the area.

iii. The safety, effectiveness and efficiency of utilities and services.

iv. The compatibility of new buildings with existing buildings in terms of design and appearance.

v. The extent to which the needs of retirees are met by:

   i. Siting new residential villas so that their principal rooms (lounge and main bedroom) are generally oriented between 270° and 45°;

   ii. Spacing external walls with windows to habitable rooms a minimum of 5 metres apart;

   iii. Ensuring the minimum distance between the main glazing of the main living room and the windows to secondary rooms of another unit is generally at least 7 metres.

vi. Whether the external appearance of buildings relocated to the Greytown Villas Character Area are compatible with the existing character and amenity of the area, and whether any adverse effects on amenity values are adequately mitigated.

vii. Whether buildings and land for advanced residential health care purposes, grounds maintenance and community facilities are generally located within the areas indicated for such purposes in the Indicative Concept Plan in Appendix 9.

viii. The extent to which buildings and land for advanced residential health care and community facilities are designed to be compatible with the existing character and amenity of the area, and provide for the needs of retirees.

ix. The relationship of the facilities with the surrounding open space and residential uses, and the use of planting and landscaping to maintain and enhance the amenity values of the site and the vicinity.

22.2.18 The Orchards Retirement Village Character Area

i. The extent to which the buildings and site development conform with the indicative Concept Plan in Appendix X, which shows the broad overall concept for the development of the Orchards Retirement Village Character Area.

ii. The extent to which the development maintains the integrity of the overall landscape and amenity values of the area.

iii. The safety, effectiveness and efficiency of utilities and services.

iv. The compatibility of new buildings with existing buildings on the site in terms of design and appearance.

v. Whether buildings and land for advanced residential health care purposes, grounds maintenance and community facilities are generally located within the areas indicated for such purposes in the Indicative Concept Plan in Appendix X.

vi. The relationship of the facilities with the surrounding environment, and the use of planting and landscaping to maintain and enhance the amenity values of the site.

26 INFORMATION TO BE SUPPLIED WITH RESOURCE CONSENT APPLICATIONS

26.3.5 Information Schedule 5: Controlled Activities

Additional information requirements relating to controlled activities shall be supplied as appropriate to the nature of the activity and will address those matters specified in the Plan over which Council has retained control.

(e) Greytown Villas Character Area

i. Information regarding the relationship of the proposal for which consent is sought with the Indicative Concept Plan in Appendix 9.

(f) The Orchards Retirement Village Character Area

i. Information regarding the relationship of the proposal for which consent is sought with the Indicative Concept Plan in Appendix X.

27 DEFINITIONS

Community Activity – means the use of any land or premises purpose built for any activity or service which has an individual or community health, welfare, care, safety, educational, recreational, cultural, ceremonial, spiritual, art or craft purpose.

Community Facility – means any land, building or premises which provides any community activity; and includes educational facilities, places of worship, libraries, hospitals, ~~retirement homes and rest homes,~~ community halls, kohanga reo, and childcare centres, but excludes entertainment facilities.

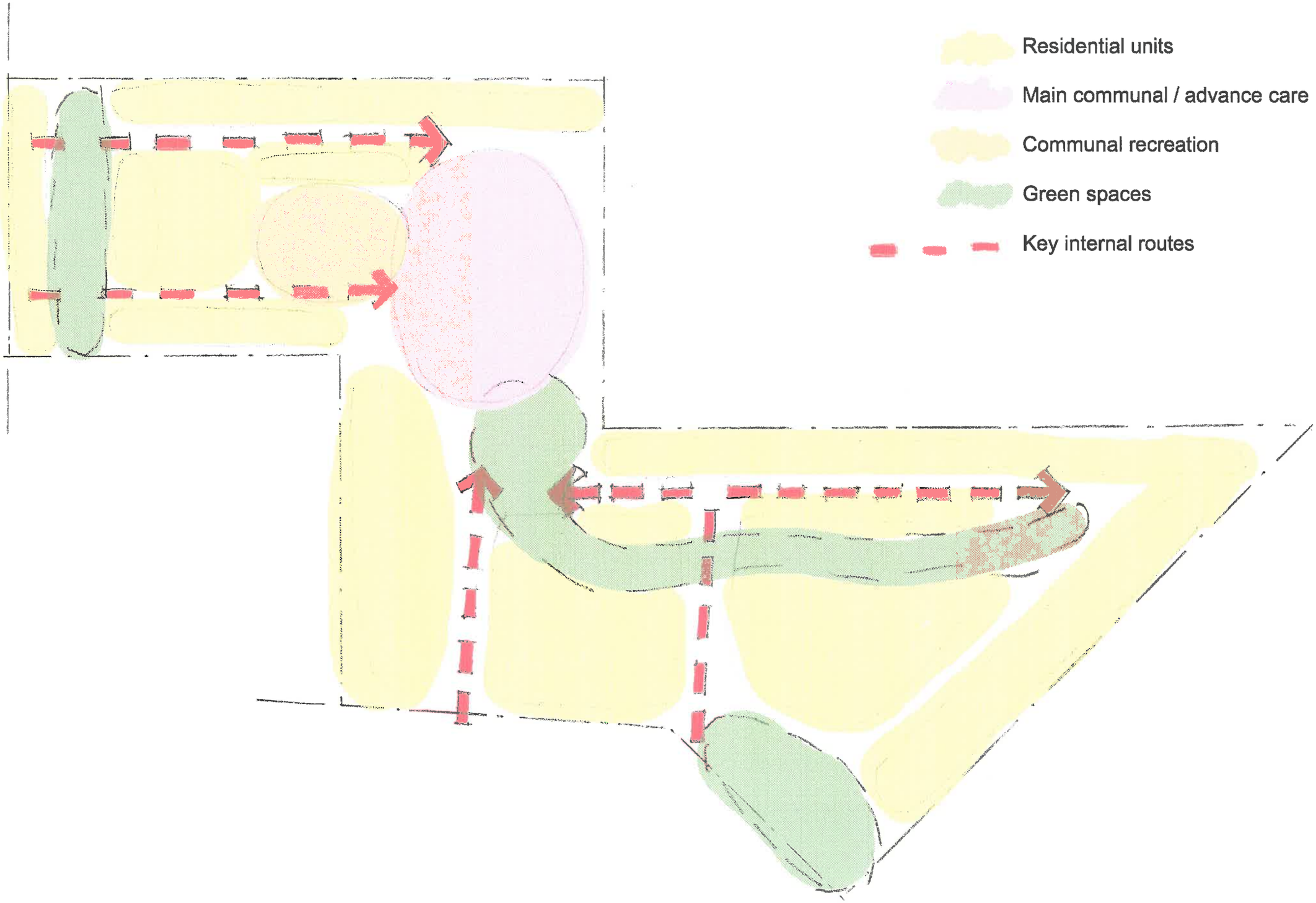
Retirement Villa – any residential unit development within the site of the Greytown Villas Character Area, with design features particularly suited to the needs of retirees, but does not include advanced residential health care facilities. A retirement villa may be a single or multi-unit.

Retirement Village – means any land, building or site used for a comprehensive residential development that contains two or more residential units, together with services and/or facilities for on-site residents and staff and which may include staff accommodation, advanced residential care facilities, such as nursing, medical, hospital or dementia care, recreation, leisure, welfare facilities and activities, and other non-residential activities ancillary to the retirement village, predominantly for persons in their retirement and their spouses or partners.

APPENDIX X – THE ORCHARDS RETIREMENT VILLAGE CHARACTER AREA CONCEPT PLAN

Appendix 6

Concept Plan


Residential units
Main communal / advance care
Communal recreation
Green spaces
Key internal routes

Appendix 7

Email from Russell Hooper re Greytown Villas

From: **Russell Hooper- Planning Manager** Russell.Hooper@swdc.govt.nz
Subject: RE: The Orchards, Greytown
Date: 6 July 2018 at 1:36 PM
To: Lucy Perception lucy@perceptionplanning.co.nz
Cc: Russell O'Leary - Group Manager Planning and Environment russell.oleary@swdc.govt.nz

Hi Lucy,

The Greytown Villas Character Area is an overlay within the residential zone where a retirement development was provided for. This came through in Plan Change 10 to the South Wairarapa District Plan. The site is undergoing a residential subdivision and is not taking up the retirement development option leaving the concept plan obsolete.

Attached is Plan Change 10 and background docs.

Regards,

Russell Hooper
Planning Manager

From: Lucy Cooper [mailto:lucy@perceptionplanning.co.nz]
Sent: Friday, 6 July 2018 12:53 p.m.
To: Russell O'Leary - Group Manager Planning and Environment
Cc: Russell Hooper- Planning Manager
Subject: Re: The Orchards, Greytown

HI there

Can either of you give me a potted idea of the status of the Greytown Villas Character Area? The front portion has been developed for residential dwellings (Orchard Road?) and I can see from the maps that the balance of the land is held in one title. Is the indicative concept plan in the Appendix of the WCDP still a live issue for the Council/Community? I'm conscious I've got a gap in my understanding and so if you are able to give me any info, that would be great!

Thank you

Lucy

On 6/07/2018, at 9:11 AM, Russell O'Leary - Group Manager Planning and Environment <russell.oleary@swdc.govt.nz> wrote:

Hi Lucy

Okay thanks for the update-yes for meeting Wed 11th, I suggest 2.00pm. Hope it suits, will send an invite.
Russell

Russell O'Leary
Group Manager Planning and Environment

<image001.png>

South Wairarapa District Council

06 306 9611 x 843
PO Box 6 Martinborough 5741
19 Kitchener Street Martinborough 5711
www.swdc.govt.nz

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From: Lucy Cooper [mailto:lucy@perceptionplanning.co.nz]
Sent: Friday, 6 July 2018 8:27 a.m.
To: Russell O'Leary - Group Manager Planning and Environment <russell.oleary@swdc.govt.nz>
Subject: The Orchards, Greytown

Hi Russell

We are progressing our thinking around an appropriate resource management path for the project. It would be great to catch up with you and share our thoughts, get your feedback. Are you free next week at all for a meeting, say Wednesday 11 July in the afternoon?

Thank you, look forward to hearing from you

Lucy

Lucy Cooper

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Appendix 8

Table of existing aged care facilities in Wairarapa

Appendix 8: Existing aged care facilities in Wairarapa

Premises Name	Service Types	Total Beds	Total No. Independent Units	Unit Vacancy?	Purchase or Rental	Premises Address	Town/City	MoH Certification
Arbor House Rest Home	Rest home care, Geriatric, Medical	26	N/A	N/A	N/A	48 Main Street	Greytown	Yes
Aversham House	Rest home care	21	N/A	N/A	N/A	88 Cole Street	Masterton	Yes
Carter Court Rest Home	Medical, Rest home care, Geriatric	42	6	Unclear	Both	95 Pembroke Street	Carterton	Yes
Lansdowne Park Village	Geriatric, Medical, Rest home care	79	93	Unclear	Purchase	100 Titoki Street	Masterton	Yes
Lyndale Manor	Dementia care	20	N/A	N/A	N/A	95 Cole Street	Masterton	Yes
Lyndale Villa	Rest home care	36	8 (studio rooms)	Yes, number unknown	Rental	52 Cole Street	Masterton	Yes
Cornwall Rest Home	Rest home care	27	N/A	N/A	N/A	3 Cornwall Street	Masterton	Yes
Glenwood Masonic Hospital	Rest home care, Medical, Geriatric	48	?	?	?	74 Upper Plain Road	Masterton	Yes
Kandahar Home	Medical, Rest home care, Geriatric	63	14	Yes, number unknown	Rental	8 Roberts Road	Masterton	Yes
Ultimate Care Lansdowne Court	Rest home care, Geriatric, Medical	38	7	No	Purchase	1 Oxford Street	Masterton	Yes
Wairarapa Village	Rest home care, Geriatric, Medical, Physical	47	Unclear	Yes, 2	Purchase	140 Chapel Street	Masterton	Yes

Wharekaka Rest Home	Medical, home care	Rest	20	10	Yes, 1	Purchase	20 Oxford Street	Martinborough	Yes
Roseneath Lifecare				14	No	Purchase	22 High Street South	Carterton	
Wairarapa Masonic Village				107 (+ 6 being built)	Yes, 2	Both	35 Edith Street	Masterton	
Salvation Army (incl. Day care and meal service)				?	?	?	210 High Street South	Carterton	
Abbeyfield House				?	?	?	39 Church Street	Masterton	

Appendix 9

Consultation Documentation

First letter to immediate neighbours

«Title»

«Address1»

«City»

27th June 2018

Dear «Title»,

We are writing to inform you that we have purchased Murphy's Orchard with the intention of developing a continuing care retirement village. The retirement village is to be developed in a Partnership between Tumu Group and established retirement village operator Craig Percy. As a close neighbour of the site, we wanted to inform you before we communicated our intentions with the wider South Wairarapa community.

We are excited about this potential opportunity to provide world class retirement facilities and services for the people of South Wairarapa and the wider Wellington region. The location of the site is ideal being in an established residential area and within walking distance to Greytown's fantastic amenity. The Tumu Group is a reputable Hawkes Bay based business with interests in timber remanufacturing, property development and ITM building supply stores, including an established business in Masterston. Craig has 20 year's experience in the aged care and retirement sectors both in New Zealand and the UK.

The retirement village will provide a continuum of care with independent villas and apartments through to the full care services of resthome, hospital and dementia care. The benefits to the region are many and include; full and part time jobs, meeting the aged care needs of the region, providing permanent residents to the town with disposable incomes and the freeing up of family housing in the region as people downsize their properties to move into the retirement village.

There is a severe lack of provision of retirement and aged care services in the wider South Wairarapa district, and the closure of Ultimate Care Groups resthome in Greytown in 2017 has really compounded the issue. The South Wairarapa has a significant aged population particularly Greytown where 21% of the population is over the age of 70 compared with nationally 10%. Initial discussions with Paul Crimp CEO of South Wairarapa District Council, their planners and Mayor Vivien Napier have been encouraging and supportive, however we understand we will need to navigate the Council planning process and address infrastructure challenges of the site and surrounding area.

We are very much looking forward to engaging with you, and being part of the local community as we progress our proposal. We see Greytown as a sophisticated town with a relaxed lifestyle and we feel it is ideal for a retirement community. We are still very much in our early planning stages and will be in contact with you with regards opportunities to meet with us in the coming months. Should you wish to get in contact please use info@theorchardsatgreytown.co.nz.

Yours Sincerely

CBP

Craig Percy

List of neighbours consulted

Title	Address1	City
Mr John Cantwell	20 McMaster Street	Greytown
Mr and Mrs Van Zanten	24 McMaster Street	Greytown
Hawkstone Property Limited	24A McMaster Street	Greytown
Ms Dawn Stichbury	26 McMaster Street	Greytown
Mr Thomas Beetham	26A McMaster Street	Greytown
Ms Helen Sargent	28 McMaster Street	Greytown
Mr Gregory Williams	28A McMaster Street	Greytown
Mr Steven Bailey	30 McMaster Street	Greytown
Starborough Limited	30A McMaster Street	Greytown
Riverfern Properties Limited	32 McMaster Street	Greytown
Mr and Mrs Graves	32A McMaster Street	Greytown
Mr and Mrs Lundon	34 McMaster Street	Greytown
Homeowner	34A McMaster Street	Greytown
Ms Rosemary Johnson	36 McMaster Street	Greytown
Homeowner	36A McMaster Street	Greytown
Mr and Mrs Owen	38 McMaster Street	Greytown
Mr and Mrs Williams	38B McMaster Street	Greytown
Mr and Mrs Clark	40 McMaster Street	Greytown
Mr Schubert	57 Cambridge Road	Martinborough
Mr and Mrs Knowsley	44 McMaster Street	Greytown
Mr and Mrs Newell	34B McMaster Street	Greytown
Ms Elizabeth Bondy	40A McMaster Street	Greytown
Mr Taiawhio Gemmell	42 McMaster Street	Greytown
Homeowner	48 McMaster Street	Greytown
Mrs Garrity	50A McMaster Street	Greytown
Homeowner	50B McMaster Street	Greytown
Mrs Appleman	50C McMaster Street	Greytown
Homeowner	50D McMaster Street	Greytown
Mangaroa Investments Limited (homeowner of 54 McMaster St Greytown)	3 Streets Way, Timberea	Upper Hutt 5018
Mr and Mrs Taumoepeau	52 McMaster Street	Greytown
Mr Jeremy Foster	54A McMaster Street	Greytown
New Zealand Consulting Services Limited (homeowner of 56 McMaster St, Greytown)	PO Box 166	Greytown
Mr and Mrs Sadlier (homeowners of 56A McMaster St, Greytown)	B47/10 Ebor Street, Te Aro	Wellington 6011
Michael Courtney & Derek Dilks (homeowners of 56B McMaster St, Greytown)	32 Lincoln Terrace	Palmerston North 4410
Mr and Mrs Paine	58 McMaster Street	Greytown
Mr and Mrs Leggett	58A McMaster Street	Greytown

Title	Address1	City
Mr Graham Suisted & Ms Janet Pope	62 McMaster Street	Greytown
Mr and Mrs Borland	62A McMaster Street	Greytown
Ihaka Property Holdings Limited	665 Dalefield Road	RD1, Carterton
Mr and Mrs Dinniaon	73A Reading Street	Greytown
Ms Higgins and Mr Inwood	75 Reading Street	Greytown
Mr and Mrs Willis	77 Reading Street	Greytown
Ms Karolyn Prior	79 Reading Street	Greytown
Warren Archibald	81 Reading Street	Greytown
Sija Spaak & Ashley Lienert (homeowners of 81A Reading St, Greytown)	75 Sefton Street, Wadestown	Wellington
Mr and Mrs Stephens	83 Reading Street	Greytown
Mr and Mrs Norman	81B Reading Street	Greytown
Mrs and Mrs Schrader	81C Reading Street	Greytown
Mr and Mrs Couston	10 Church Street	Greytown
Mr and Mrs Waygood	12 Church Street	Greytown
Mr and Mrs Gray	20 Market Road	Greytown
Mr Martin Stevens & Ms Cathryn Kerr	26 Market Road	Greytown
Mr and Mrs Falleni	30 Market Road	Greytown
Errolyn Saywell (homeowner of Church St, Greytown)	130 Hobson Street, Rythdale	VIC 3810, Australia
Silvio Van Tol (homeowner of 8 Church St, Greytown	11B Kennett Place, Dawesville	WA 6211, Australia
Mr and Mrs Westhead	103 East Street	Greytown
Mr and Mrs Pritchard	14 McMaster Street	Greytown
Greytown District Trusts Land (owner of 10 McMaster St, Greytown)	PO Box 16	Greytown 5742
Whanau Manaaki Kindergartens (owner of 16 McMaster St, Greytown)	PO Box 51143, Tawa	Wellington

THE ORCHARDS
AT GREYTOWN
Lifestyle Retirement

10 October 2018

«Title»
«Address1»
«City»

Dear «Title»

I wrote to you in June this year to tell you about our intention to develop and operate a continuing care retirement village at Murphy's Orchard, 67 Reading Street.

The project team is currently progressing well with the masterplanning stages of the development process, and we would like to share our concept plans for the site with you and hear your thoughts and views. To provide an opportunity to do that, we are hosting three 'drop in' sessions for immeidate neighbours to the site on Tuesday 16th October in the conference rooms at the back of the South Wairarapa Working Men's Club, 120 Main Street, Greytown at the following times:

- 1pm
- 3pm
- 5pm

At these sessions, the latest concept plans will be available for you to view. I will be there to help explain our proposal and the on-going operation and answer any questions you may have. Lucy Cooper, the planning consultant for the project, will also be on hand to discuss the development and answer questions about the planning process.

As you are our immediate neighbours we are giving you priority viewing of our proposed masterplan. However if these times do not suit you then please come along to the wider community drop in day to be held on 17th October at the WBS Rooms, Greytown Town Centre/Library from 11am to 5pm.

We very much look forward to meeting you.

Kind regards

CBP

Craig Percy
The Orchards At Greytown

craig@theorchardsatgreytown.co.nz

THE ORCHARDS
AT GREYTOWN
Lifestyle Retirement

THE ORCHARDS AT GREYTOWN
WELCOMES FEEDBACK
ON THE CONCEPT PLAN

We'd like to hear your thoughts on The Orchards at Greytown retirement village concept plan. What do you like about it? Is it missing anything? How could it be improved?

Experienced, progressive and thoughtful professionals (architects, retirement village operators, landscape architects and engineers) are helping to shape the retirement village concept plan. We want to break from the traditional gated retirement village. Our plan offers comprehensive and continuous accommodation and care for residents, in a very attractive environment that is well connected with the Greytown community.

The concept plan includes:

- A full range of accommodation options: from independent villas and apartments, to full hospital and dementia care
- Communal facilities and public spaces
- Easy access to the town centre
- Integrated landscape and living
- Future proof design and flexibility to adapt to residents needs

You can tell us your thoughts by filling out the survey while you are here today, or visit:

https://www.surveymonkey.com/r/2NZ3BBV

Alternatively, take a snap of the QR code below to complete the survey from your phone. It is open until **16 November 2018**. We are very grateful for your feedback.

MEMO

To: **Suzanne Clarke**

From: **Lucy Cooper**

Date: **06 November 2018**

Subject: **The Orchards – presentation to Community Boards and Māori Standing Committee**

Kia ora Suzanne

Thank you for including The Orchards Retirement Village development on the agenda for the upcoming Community Board and Māori Standing Committee meetings. This memo provides some background to the development, the consultation we have undertaken to date, and the proposed resource management process we intend to follow to authorise the development. The latest plans will be tabled on the evening of the respective meetings.

The Development

The Orchards is located at 67 Reading Street in Greytown, at the site known locally as Murphy's Orchard. The retirement village is to be developed in a Partnership between Tumu Group and established retirement village operator Craig Percy. It will provide high quality, comprehensively designed retirement facilities and services for the people of South Wairarapa and the wider Wellington region. It will comprise:

- Approximately 150 Independent living units comprising villas, duplex and small terraces;
- Approximately 30 serviced apartments; and
- A 60-bed retirement home and hospital, including dementia care.

The development will include comprehensive landscaping, including retention of some of the orchard trees.

The Need

There is a severe lack of provision of retirement and aged care services in the wider South Wairarapa district, and the closure of Ultimate Care Groups resthome in Greytown in 2017 has really compounded the issue. The South Wairarapa has a significant aged population particularly Greytown where 21% of the population is over the age of 70 compared with nationally 10%. Initial discussions with Paul Crimp CEO of South Wairarapa District Council, their planners and Mayor Vivien Napier have been encouraging and supportive, and the Orchards team is working closely with Council to navigate the resource management process and ensure infrastructure challenges related to the development of the site are addressed.

Consultation

The Partnership have consulted early and widely, including with South Wairarapa Rotary Club, Greytown Primary School, Rangitane O Wairarapa and Kahungunu ki Wairarapa iwi, Wairarapa

DHB, Arbor House rest home and the Greytown Bowling Club. In October 2018, the Greytown community was invited to a series of workshops at the South Wairarapa Working Men's Club and the Greytown Town Centre to view and discuss the latest masterplan. An online survey is also available for the community to provide feedback and commentary on the proposal. As part of The Orchards engagement and consultation process, Craig Percy and/or Lucy Cooper (Perception Planning) will present the proposal at each of the district's community boards and Māori Standing Committee.

The Process

The Orchards Design team is currently revising the masterplan to take into account community feedback and to address constraints and opportunities with respect to infrastructure, landscaping and urban design. The latest version of the masterplan will be tabled at the Community Board Meetings and Māori Standing Committee.

The resource management process to authorise The Orchards Retirement Village consists of two key elements:

- A private plan change to rezone the Orchards site from Rural (Primary Production) to Residential, with a specific Orchards overlay; and
- A resource consent for the development of the site.

We intend to lodge the two resource management components concurrently either late 2018 or early 2019. The proposed planning framework and resource consent will be designed to give the Orchards partnership a degree of flexibility in order to be able to respond to the market and maintain financial viability and security throughout the construction period and also give the Council and wider community certainty that the environmental outcomes are consistent with the aspirations described in the District Plan and Regional Policy Statement.

We look forward to this opportunity discuss The Orchards development proposal with the Community Board and committee members.

Ngā mihi

Lucy Cooper

THE ORCHARDS
AT GREYTOWN
Lifestyle Retirement

21 December 2018

«Title»
«Address1»
«City»

Dear «Title»

This letter is to let you know that a tree felling company has been engaged to fell the large trees along the Reading Street boundary of the Orchards site. The name of the company is Treescape, and they will be on site from Monday 14 January 2019. Felling the trees and stump grinding will take around 2-3 weeks to complete. The aim is to complete the work before the new school term starts. Working hours will be 7am - 5pm, Monday to Friday. There will be no work at the weekends or on Wellington Anniversary Day.

Pope and Gray has been engaged to generally tidy up the site around the trees, and will be on site during the end of December and possibly early January.

The tree felling work will be noisy at times, and there will be a traffic management plan in place along part of Reading Street to ensure the safety of people using the road and Treescape. We appreciate your cooperation while this work is carried out.

Please contact Lucy if you have any questions or concerns. Her email address is below, and her mobile number is 0210 22 11 414.

Kind regards

CBP

Craig Percy
The Orchards At Greytown

craig@theorchardsatgreytown.co.nz

Lucy Cooper
Perception Planning Ltd

lucy@perceptionplanning.co.nz

Q1 What do you like about the concept plan? (please describe)

Answered: 17 Skipped: 3

ANSWER CHOICES	RESPONSES	
Landscaping	94.12%	16
Accessibility	88.24%	15
Continuum of care	82.35%	14
Keeping parts of the orchard	82.35%	14
Integration with town and the wider environment	70.59%	12
Road Layout	58.82%	10
Building variety	58.82%	10
Other (please specify)	35.29%	6

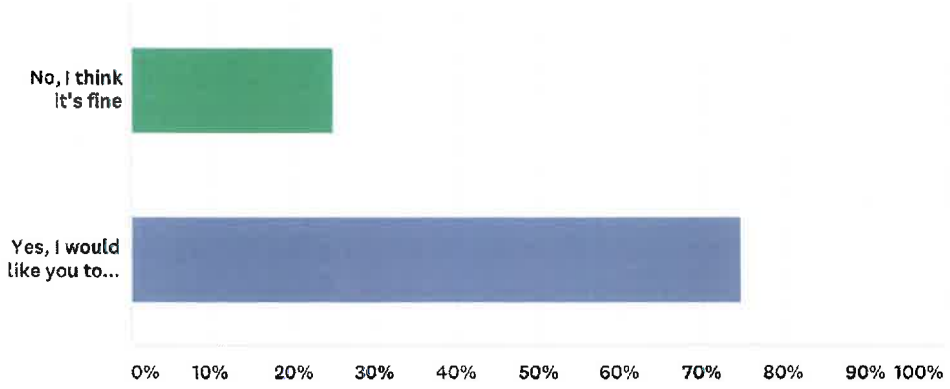
Q2 Is there anything you don't like about the concept plan? (please describe)

Answered: 11 Skipped: 9

ANSWER CHOICES	RESPONSES	
Landscaping	45.45%	5
Accessibility	18.18%	2
Continuum of care	18.18%	2
Keeping parts of the orchard	27.27%	3
Integration with town and the wider environment	18.18%	2
Road Layout	36.36%	4
Building variety	9.09%	1
Other (please specify)	54.55%	6

Q3 Would you add anything to the concept plan?

Answered: 16 Skipped: 4



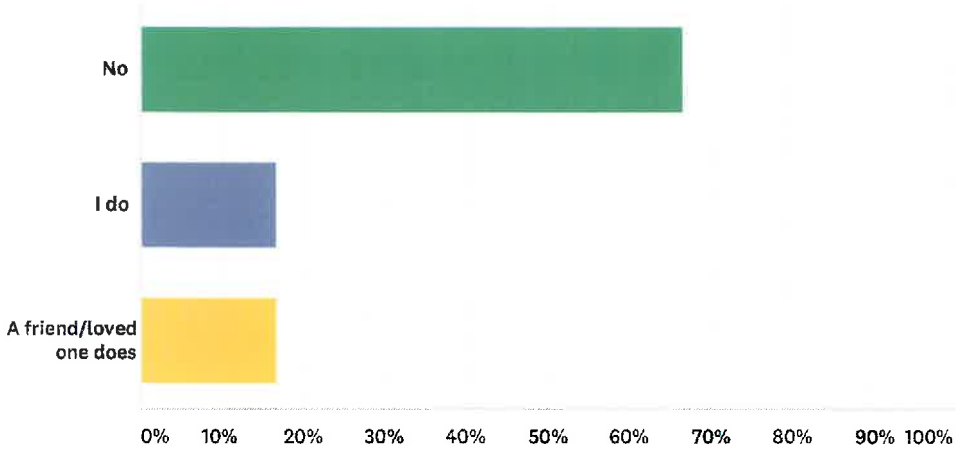
ANSWER CHOICES	RESPONSES	
No, I think it's fine	25.00%	4
Yes, I would like you to add:	75.00%	12
Total Respondents: 16		

Q4 Any other feedback?

Answered: 13 Skipped: 7

Q5 Do you or a loved one/friend live in a retirement village, rest home or hospital?

Answered: 18 Skipped: 2



ANSWER CHOICES	RESPONSES	
No	66.67%	12
I do	16.67%	3
A friend/loved one does	16.67%	3
TOTAL		18

Q6 What do you like about your/loved one's retirement village, rest home or hospital?

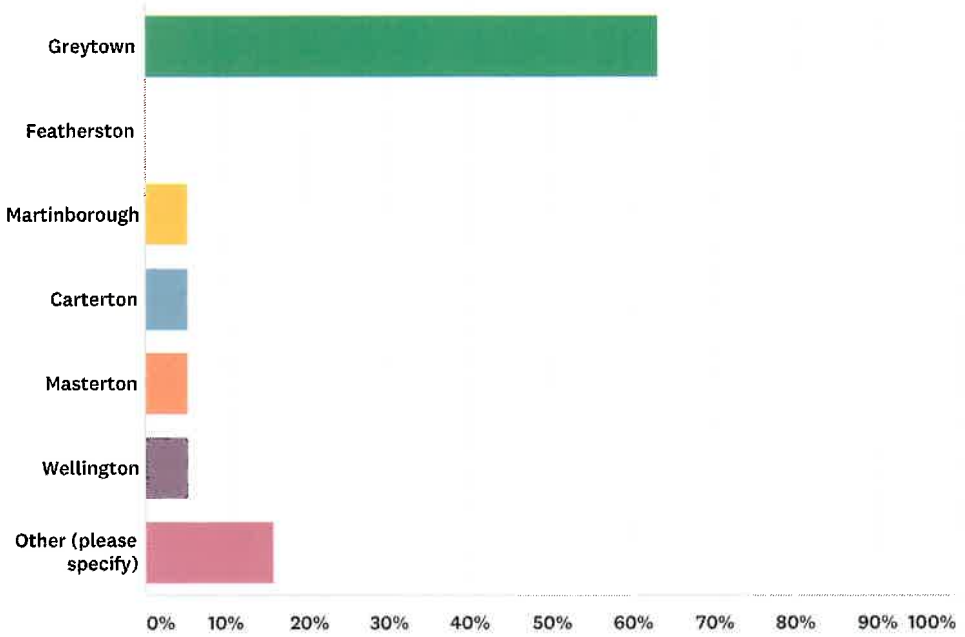
Answered: 5 Skipped: 15

Q7 What do you wish your/your loved one's retirement village, rest home or hospital had?

Answered: 4 Skipped: 16

Q8 Where do you live?

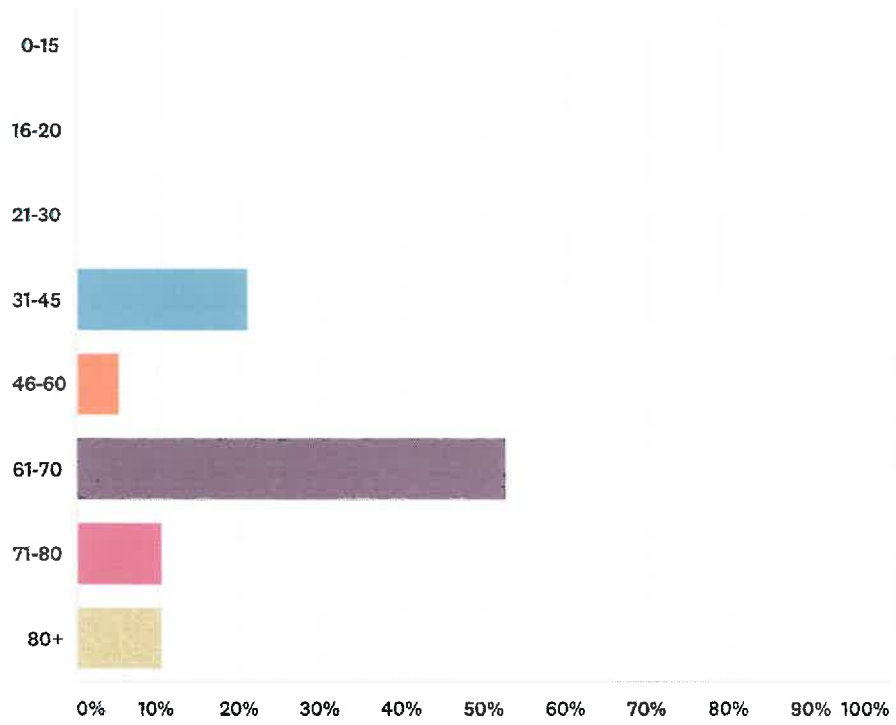
Answered: 19 Skipped: 1



ANSWER CHOICES	RESPONSES	
Greytown	63.16%	12
Featherston	0.00%	0
Martinborough	5.26%	1
Carterton	5.26%	1
Masterton	5.26%	1
Wellington	5.26%	1
Other (please specify)	15.79%	3
TOTAL		19

Q9 What is your age?

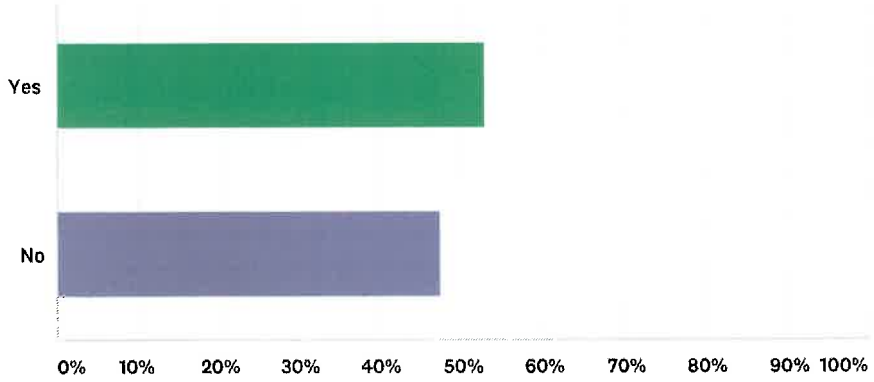
Answered: 19 Skipped: 1



ANSWER CHOICES	RESPONSES	
0-15	0.00%	0
16-20	0.00%	0
21-30	0.00%	0
31-45	21.05%	4
46-60	5.26%	1
61-70	52.63%	10
71-80	10.53%	2
80+	10.53%	2
TOTAL		19

Q10 Are you considering living at The Orchards at Greytown?

Answered: 19 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	52.63%	10
No	47.37%	9
TOTAL		19

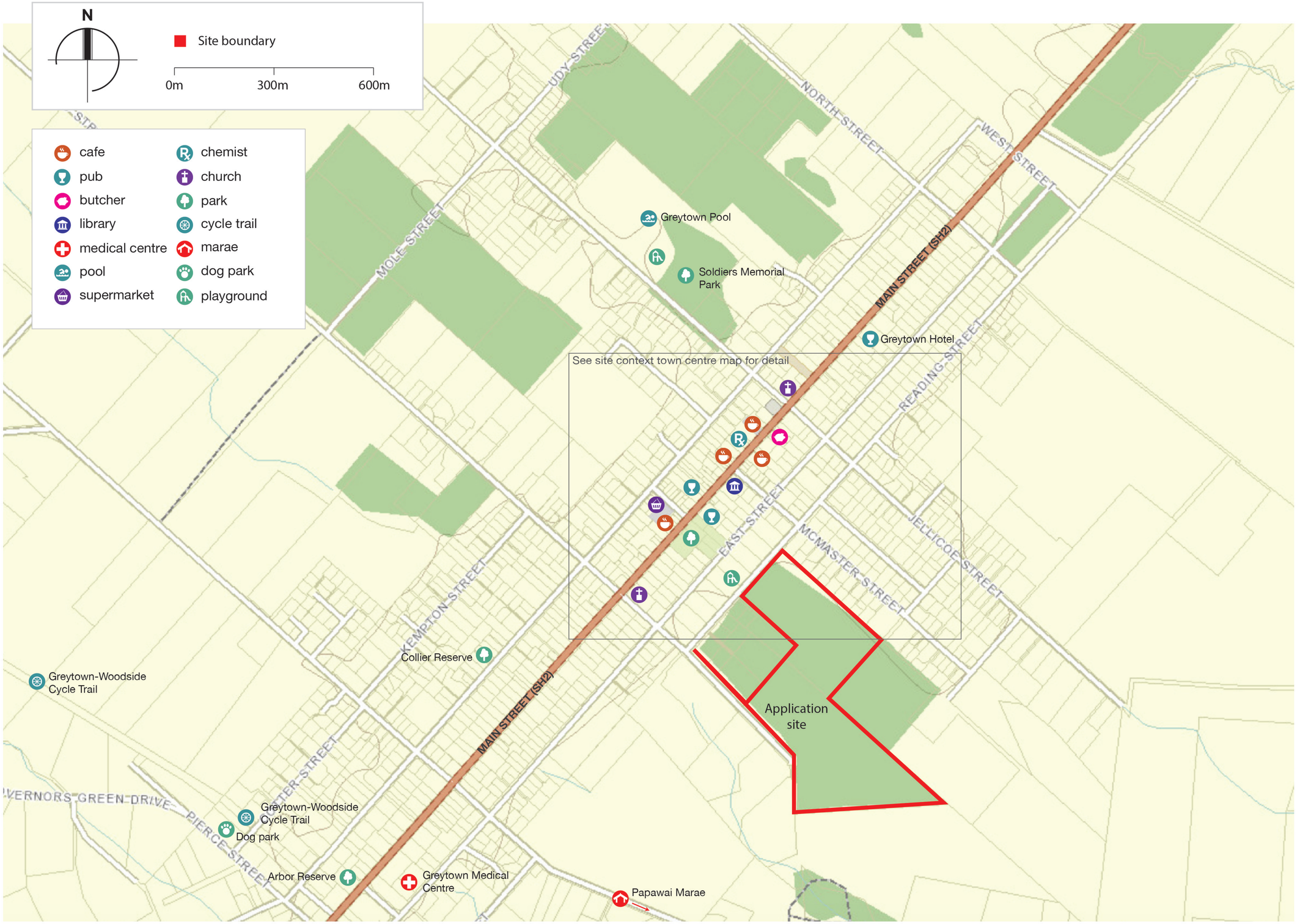
Q11 If you are considering living at The Orchards, what attracts you about it?

Answered: 10 Skipped: 10

Q12 Please enter your email address if you would like to receive updates on the development. Or just click "done" to complete the survey. (Your email will only be used to send you updates on The Orchards at Greytown. You can ask to be removed from the mailing list at any time)

Answered: 15 Skipped: 5

ANSWER CHOICES	RESPONSES	
Name	100.00%	15
Company	0.00%	0
Address	0.00%	0
Address 2	0.00%	0
City/Town	0.00%	0
State/Province	0.00%	0
ZIP/Postal Code	0.00%	0
Country	0.00%	0
Email Address	100.00%	15
Phone Number	0.00%	0



PERCEPTION PLANNING
your connection with the environment

11 Jellicoe Street Martinborough 5711
127 Tongariro Street Taupo 5330
150 Lichfield Street Christchurch 8011
www.perceptionplanning.co.nz

Project
The Orchards at Greytown Retirement Village

Client
The Orchards Limited Partnership

01.03.2019
Scale approximate

Site context plan wider area

REV 1.0



PERCEPTION PLANNING
your connection with the environment

11 Jellicoe Street Martinborough 5711
127 Tongariro Street Taupo 5330
150 Lichfield Street Christchurch 8011
www.perceptionplanning.co.nz

The Orchards at Greytown Retirement Village

Project

Client
The Orchards Limited Partnership

01.03.2019
Scale approximate

Site location

REV 1.0



PERCEPTION PLANNING
your connection with the environment

11 Jellicoe Street Martinborough 5711
127 Tongariro Street Taupo 5330
4 Ash Street Christchurch 8011
www.perceptionplanning.co.nz

The Orchards at Greytown Retirement Village

Project

The Orchards Limited Partnership

01.03.2019
Scale approximate

Boundary identification

REV 1.0

Appendix 11

Staging Plan



PERCEPTION PLANNING
your connection with the environment

11 Jellicoe Street Martinborough 5711
127 Tongariro Street Taupo 5330
150 Lichfield Street Christchurch 8011
www.perceptionplanning.co.nz

Project
The Orchards at Greytown Retirement Village

Client
The Orchards Limited Partnership

01.03.2019
Scale approximate

Staging

REV 1.0



PERCEPTION PLANNING
your connection with the environment

11 Jellicoe Street Martinborough 5711
127 Tongariro Street Taupo 5330
150 Lichfield Street Christchurch 8011
www.perceptionplanning.co.nz

Project
The Orchards at Greytown Retirement Village

Client
The Orchards Limited Partnership

01.03.2019
Scale approximate

Surrounding properties

REV 1.0

Appendix 13

Certificates of Title

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

R.W. Muir
Registrar-General
of Land

Guaranteed Search Copy issued under Section 172A of the Land Transfer Act 1952

Identifier	**437963**
Land Registration District	**Wellington**
Date Issued	12 November 2010

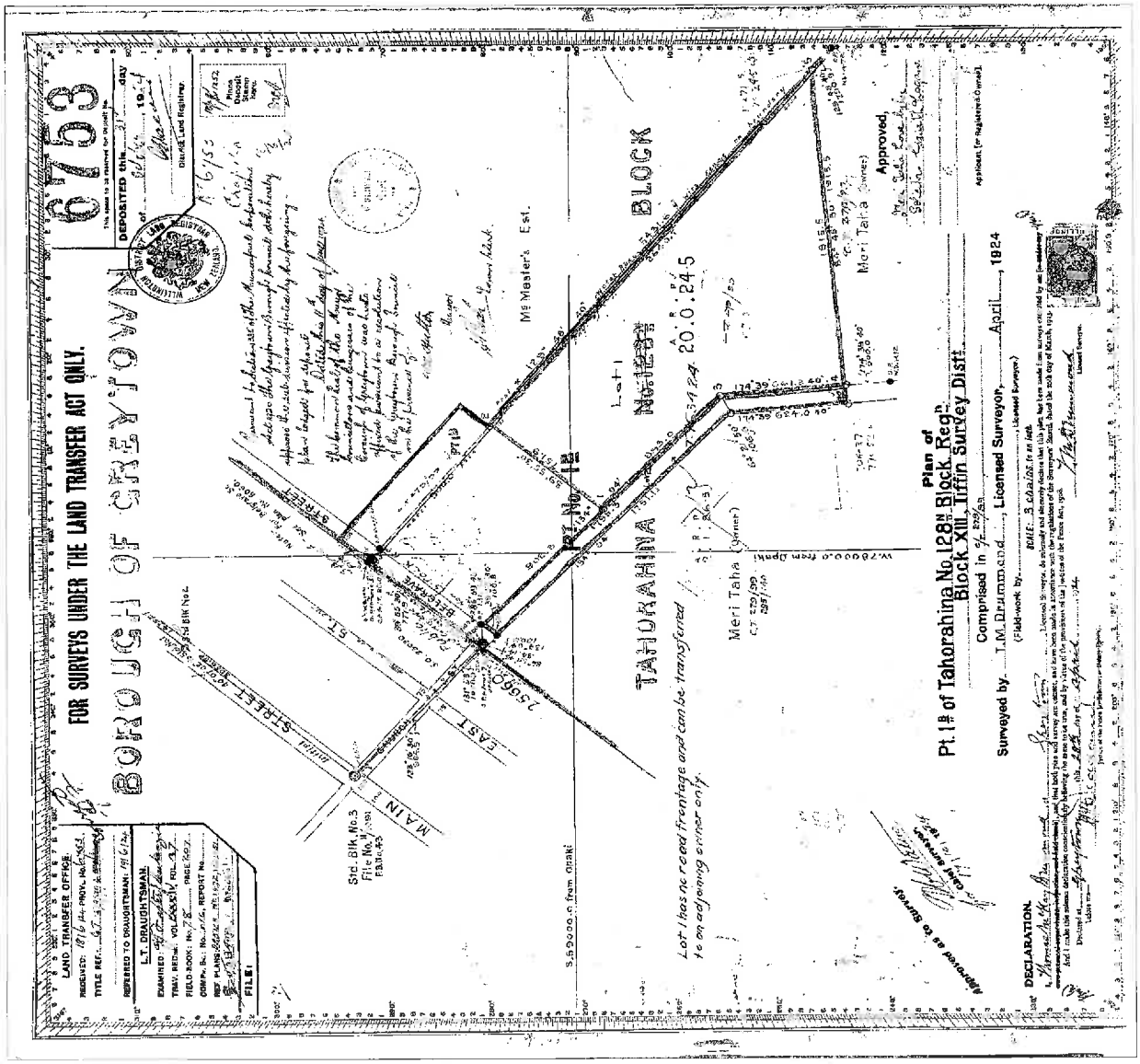
Prior References
WN19D/404 WN19D/405

Estate	Fee Simple
Area	8.2857 hectares more or less
Legal Description	Lot 4 Deposited Plan 410283 and Lot 1 Deposited Plan 6753

Proprietors
Andrew Gordon Murphy and Heather Anne Murphy

Interests
Subject to Section 241(2) Resource Management Act 1991 (affects DP 410283)

Identifier **437963**



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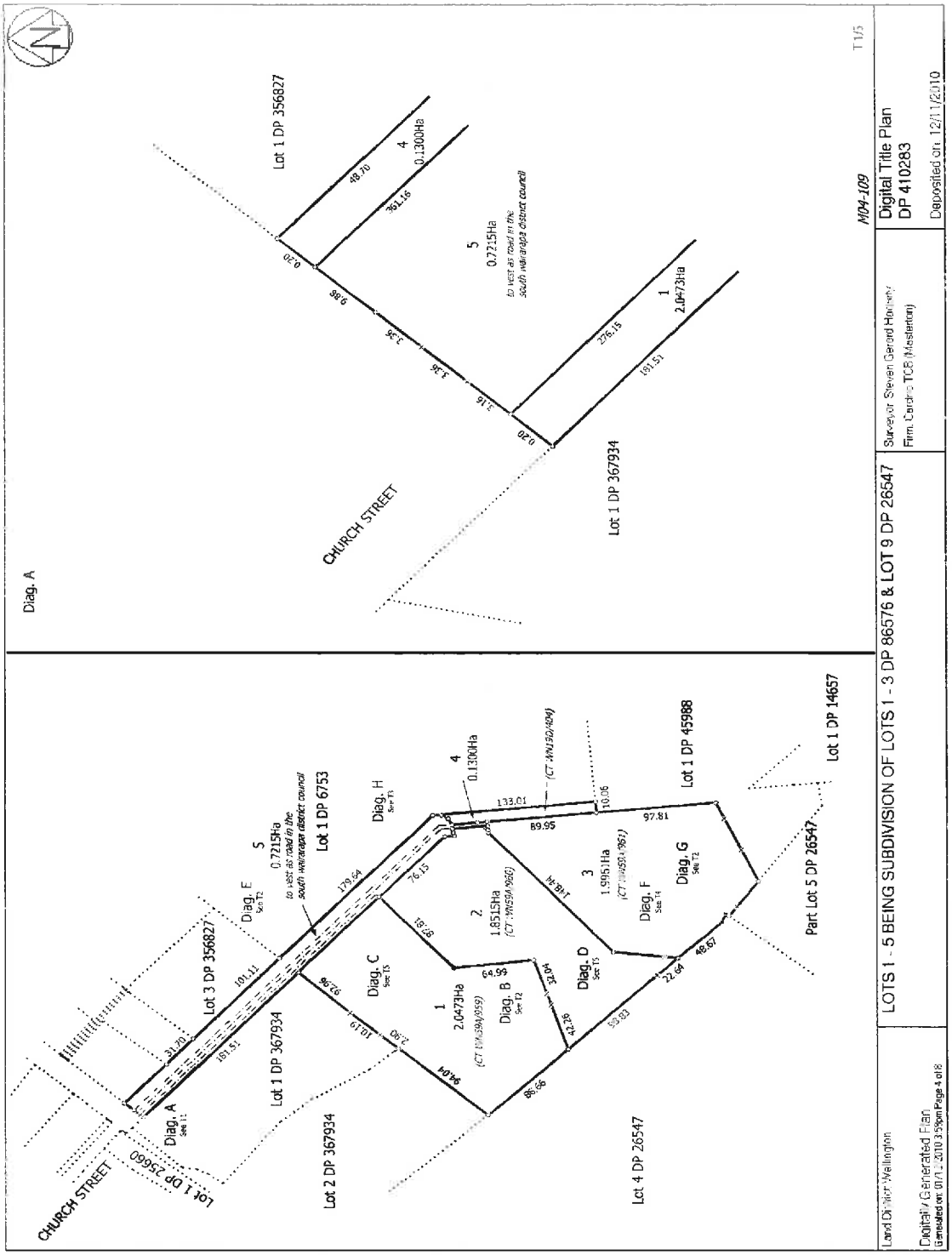

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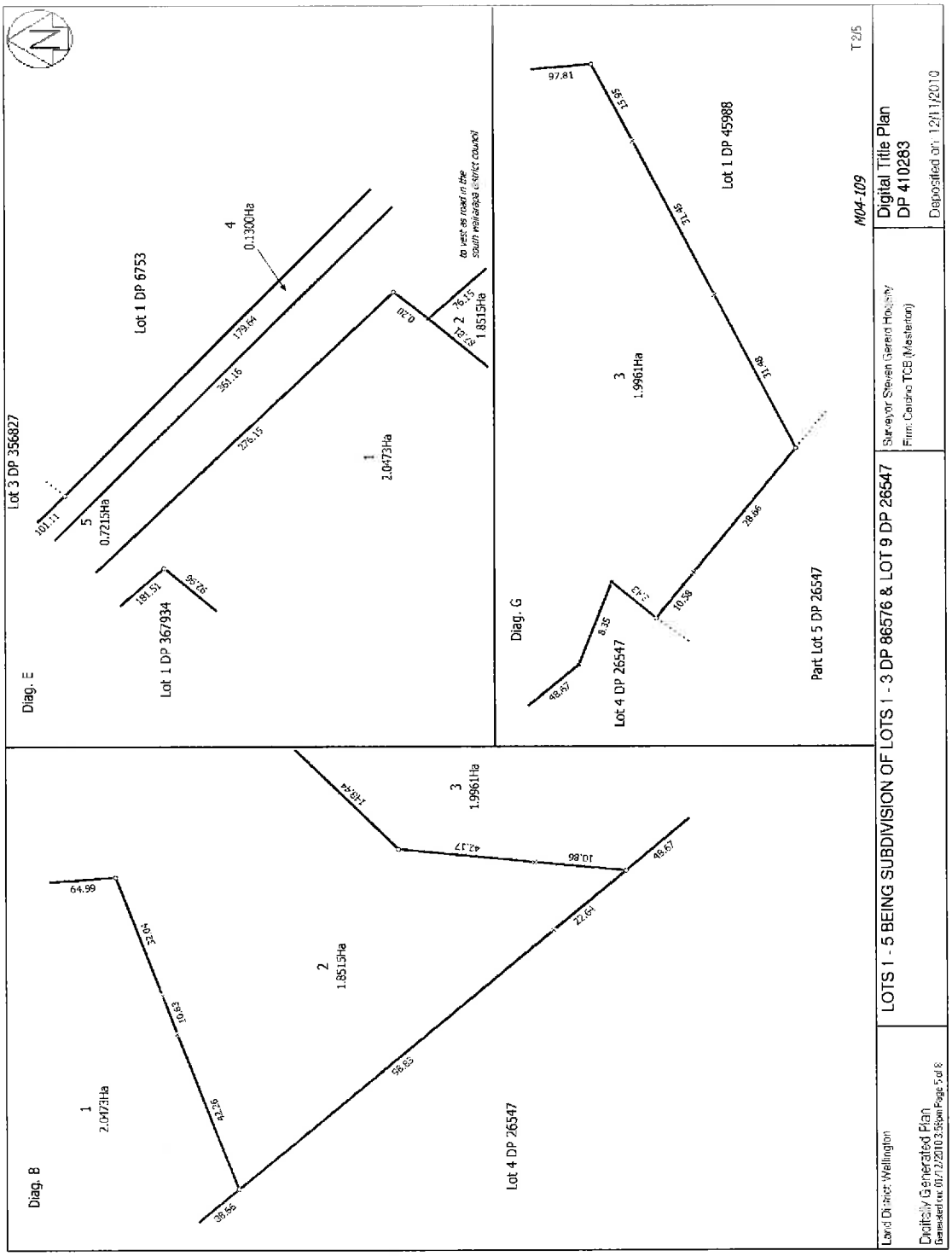

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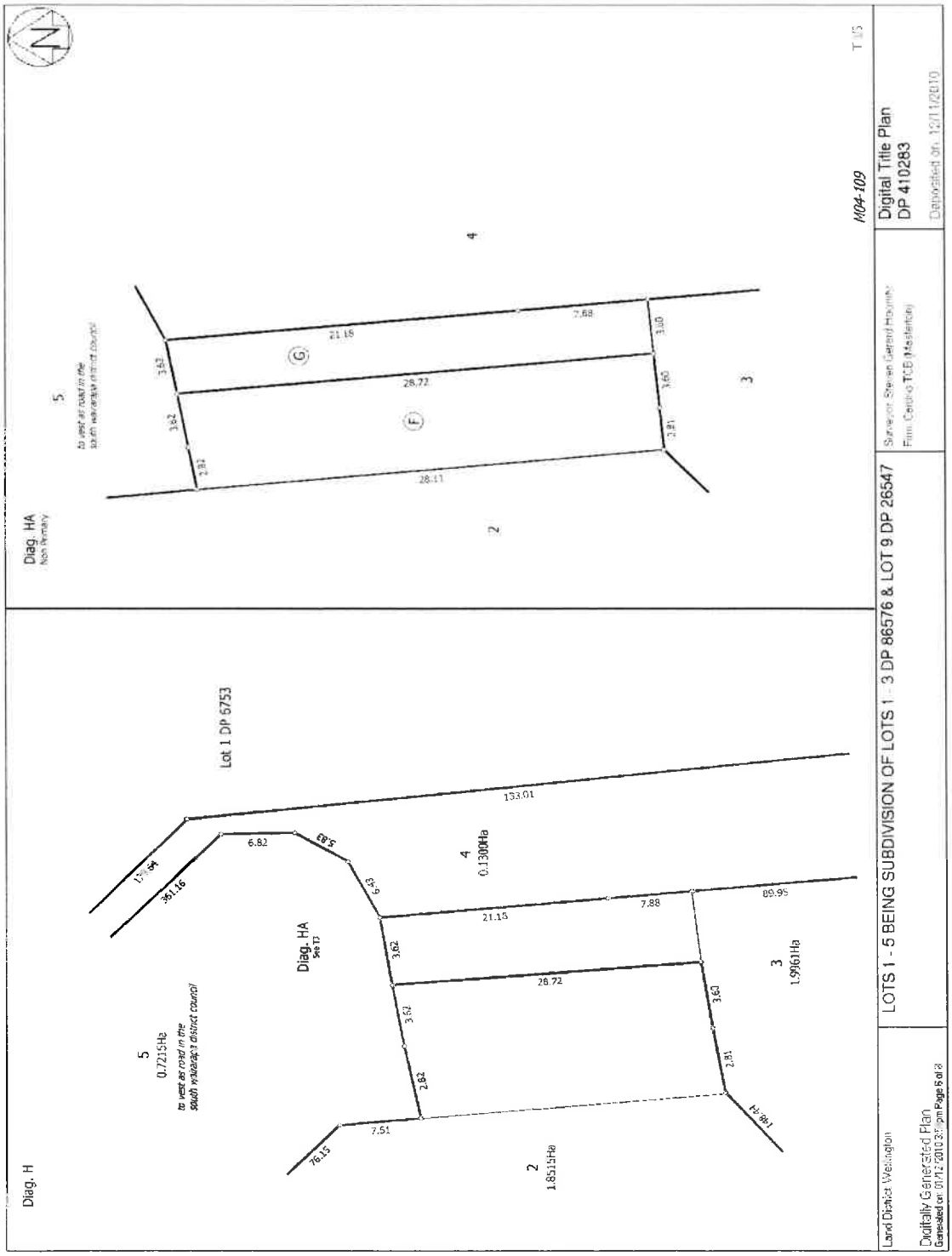

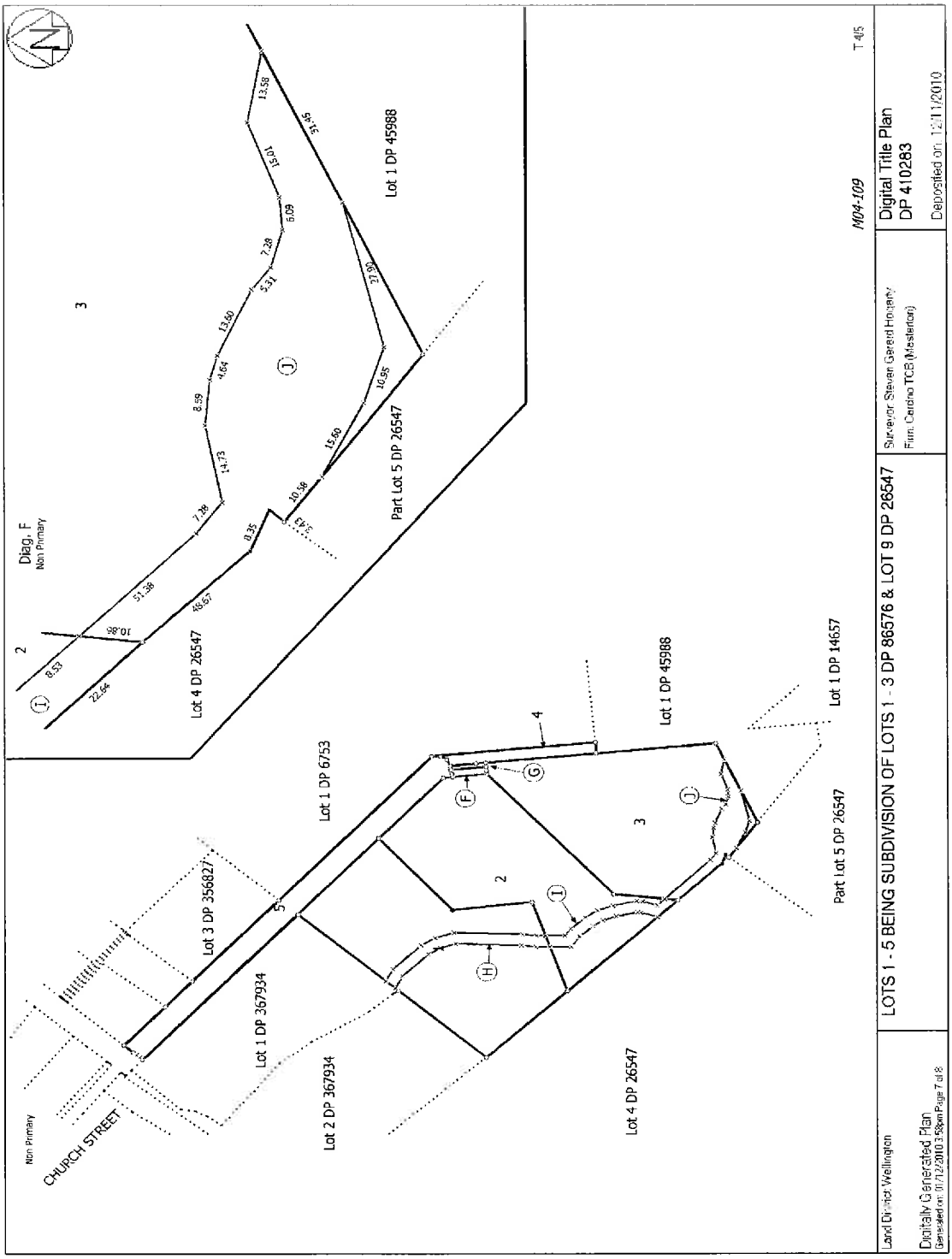
LOTS 1 - 5 BEING SUBDIVISION OF LOTS 1 - 3 DP 86576 & LOT 9 DP 26547
Digital Title Plan
DP 410283
Deposited on 12/11/2010
Land District Wellington
Digitally Generated Plan
Surveyor Steven Gerard Hodgetts
Firm Cardno TCB (Masterton)
M04-109
T 485
CHURCH STREET
Non Primary
Lot 3 DP 356827
Lot 1 DP 367934
Lot 2 DP 367934
Lot 1 DP 6753
Lot 4 DP 26547
Lot 1 DP 45988
Part Lot 5 DP 26547
Lot 1 DP 14657
Diag. F
Non Primary
Lot 4 DP 26547
Part Lot 5 DP 26547
Lot 1 DP 45988
8.53
22.64
10.86
51.38
49.57
8.35
7.38
14.73
8.59
4.64
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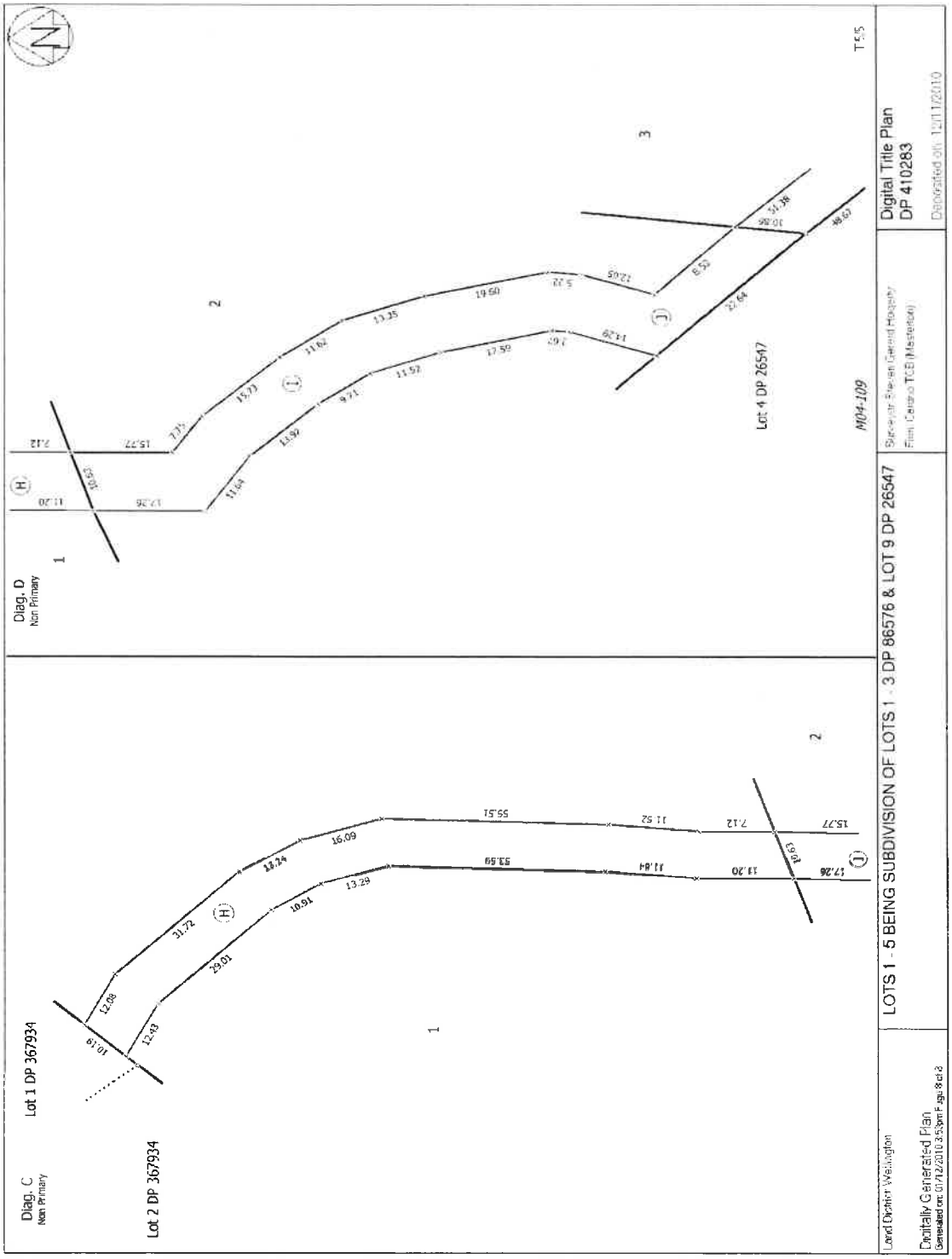
15.60
10.38
5.49

Identifier **437963**



COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952
Limited as to Parcels

Guaranteed Search Copy issued under Section 172A of the Land Transfer Act 1952

R.W. Muir
Registrar-General of Land

Identifier	**WN403/156**
Land Registration District	**Wellington**
Date Issued	18 September 1931

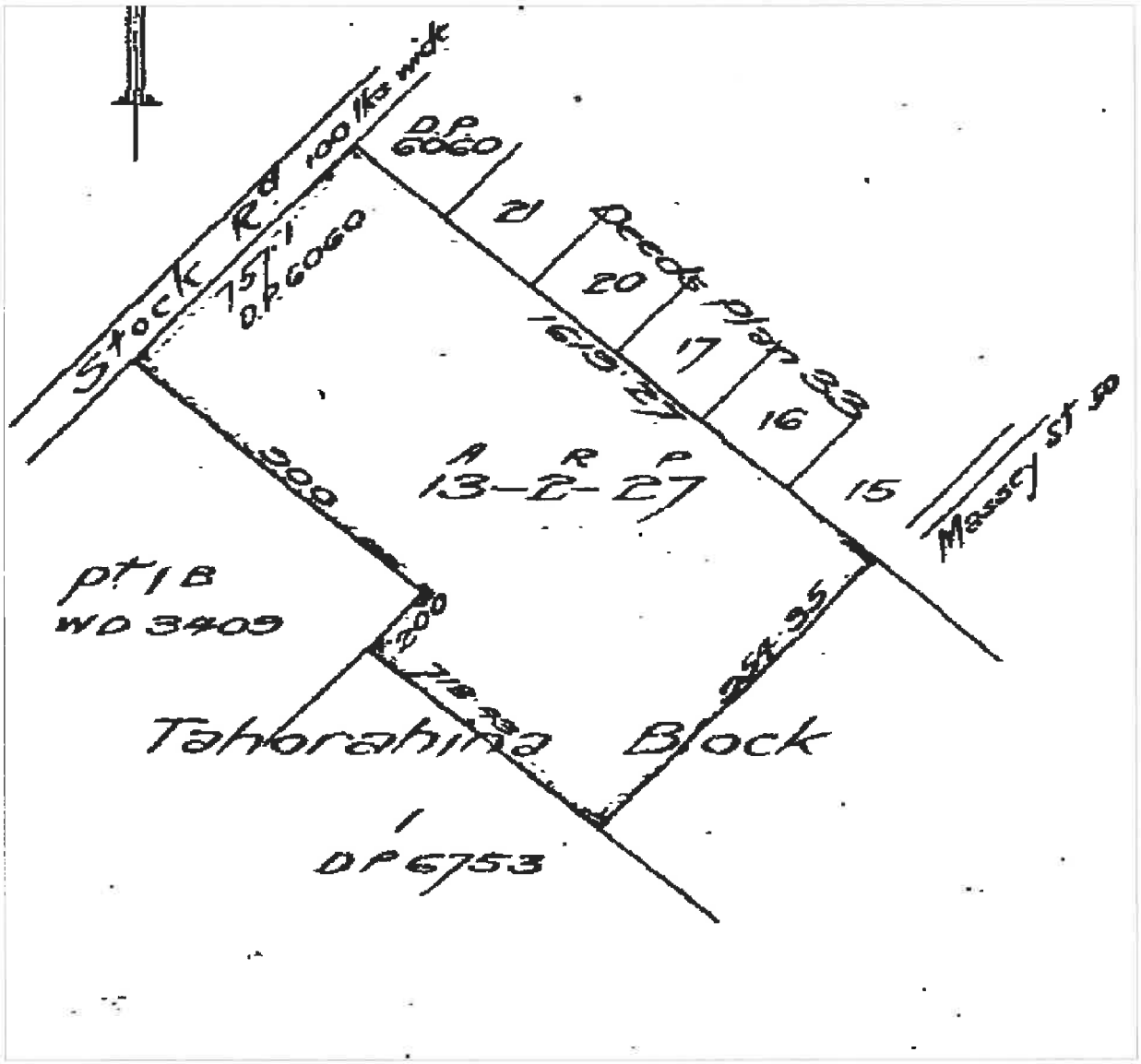
Prior References
DI 28/798

Estate	Fee Simple
Area	5.5315 hectares more or less
Legal Description	Part Tahorahina Block

Proprietors
Andrew Gordon Murphy and Heather Anne Murphy

Interests
B689648.3 Mortgage to Bank of New Zealand - 19.10.1998 at 9.40 am

Identifier **WN403/156**



Appendix 14

Statement from The Orchards Limited Partnership

THE ORCHARDS

AT GREYTOWN

Lifestyle Retirement



THE PROPOSAL

The South Wairarapa has an under provision of retirement housing and aged care services. It is a sophisticated community and deserves a corresponding retirement and aged care solution.

The Partnership that is developing "The Orchards At Greytown" highlighted the need for a continuing care Retirement Village in the South Wairarapa and purchased 13.8 ha of land formerly known as Murphy's Orchard. It is a small uneconomic orchard and cropping site, largely surrounded by residential and semi-rural properties. Murphy's Orchard is a stones throw from all of the magnificent amenity and infrastructure that Greytown offers which will allow residents of the retirement village to be able to walk, bike, e-bike or use electric buggies to reach most things on offer in the community.

We are incredibly excited about our vision for the site which is to:

"Develop and operate a best in class continuing care retirement community for the people of South Wairarapa and the wider Wellington region"

We believe the following considerations are important in achieving our vision:

- The creation of an aspirational environment;
- Incorporating timeless design that compliments the setting and attributes of the site;
- Effective use of form and function to ensure the efficient delivery of quality care services;
- Creating a seamless connection with the fabric of the Greytown community, with thoughtful consideration of how the development relates to neighbours and integrates with existing facilities and infrastructure;
- Maintaining the legacy of the orchard through incorporating features that retain, maintain and maximise the site's intrinsic values;
- A strong commitment to integrating landscape and architectural design;
- Innovative use of design and technology that future proofs the operation and provides flexibility to adapt to resident's expectations and requirements as they change over time 5, 10, 20 years from now;
- Careful consideration and provision of a wide range of communal facilities and public spaces to support strong relationships amongst not only residents but the wider community;
- Recognising and working within planning policies, including an understanding of low impact design;
- Maximising the opportunity provided by the large site to create a unique market offering and differentiate "The Orchards at Greytown" from the run of the mill retirement village;
- Providing exceptional care and hotel style services to the residents of the retirement community.

The proposal includes independent Villas and Terraced housing, serviced Apartments, Rest Home, Hospital and Specialist Dementia levels of care. Clubhouse facilities will include amenities such as a café, theatre, library, lounges, gym and indoor pool. We will also provide publicly accessible facilities to the local community, including a bowling green, children's playground and walking tracks through our retirement community. We are also focused on keeping as much of the orchard intact as possible and this is reflected in the retirement village's name.

It is extremely important that the development integrates and benefits the wider community as well as the village itself. To this end we have been working very closely with the wider Greytown and South Wairarapa communities. This includes the Greytown Bowling Club and Arbor House Resthome and Hospital in Greytown. Under our proposal it is planned that Arbor House residents and staff will move into our care facility once it is complete and we will therefore maintain continuity of service and will keep the name Arbor House. In addition, the Greytown Bowling Club will move to our new all-weather bowling green.

Arbor House is struggling as the care facility is not fit for purpose, is an uneconomic unit and does not provide an integrated retirement housing solution to support the aged care provision.



The economic and community benefits of a retirement village are significant and we will be bringing upwards of 320 residents to The Orchards and Greytown. There is not only the employment created through the construction phase but also the creation of substantial long-term employment with approximately 95 full time equivalents as part of the onsite operation. In addition there will be significant upstream and downstream employment resulting from The Orchards development.

It has also been highlighted that people in retirement have more time available and therefore they increase their volunteering and participation within their community. This adds to the fabric of Greytown and will engrain The Orchards as a key part of the community.

THE PARTNERSHIP'S BACKGROUND

The Orchards at Greytown partnership is 50:50 venture between Tumu Group and Craig Percy. The Tumu Group (**www.tumugroup.co.nz**) bring to the partnership a strong balance sheet, experience in both horizontal (civil works including roading, water and sewerage) and vertical construction (building works), and the ability to provide building materials to the development via their building supply businesses. Craig's skillset is complimentary having spent over twenty years in the retirement village and aged care industries in New Zealand and the United Kingdom, working both in the development and management of villages and care facilities. Over this time Craig has established a sound understanding and knowledge of the needs of the retirement and care sectors.

Together the partnership provides a very strong skill set to confidently pursue the development and operation of The Orchards at Greytown Retirement Village.



THE NEED

We need to provide South Wairarapa retirement residents choices. The South Wairarapa District is experiencing an unusual phenomenon where its aging population are leaving the area due to under supply of retirement and care choices. Many of them are leaving because they have no alternative. It maybe they require being close to medical specialists and support, or they feel the need to be in a Retirement Village. There is just no suitable fully integrated retirement village accommodation available in the South Wairarapa. Our local residents are having to move away from their family and friends and their familiar surroundings to a new town, like Masterton or the wider Wellington region.

We have to address and reverse this migration trend. We need to plan for the future to keep up with the demand. This can only be achieved by providing the appropriate retirement village accommodation with ongoing care and support services.

There is a very serious crisis developing in regards to accommodation for our elderly. It is commonly acknowledged, and well documented that over the next ten years we will experience a major shortage of adequate accommodation for our aging population (caused by baby boomers).

Many retirees currently live in homes that were not built for the extremes of the local climate. They need warm dry homes built to modern standards and building code with double glazing, insulation and modern heating etc.

We need to provide retirement accommodation to a standard and quality to meet the expectation of the new retiree generation and their children, who also want the very best for their parents.

The South Wairarapa area currently has a considerable shortage of care and retirement options.

PUBLIC CONSULTATION

The Orchards is a very large project for both Greytown and the Southern Wairarapa. BERL estimate The Orchards will add around 500 people to the local population and boost GDP for the region by 1.4% of its current level once completed (see the attached Economic Impact Assessment report).

We are mindful of the perceptions (both positive and negative) that come with a development of this scale and have ensured that our consultation has been as wide as possible to give affected parties an opportunity to provide meaningful feedback. Key stakeholder consultation to date has included:

- South Wairarapa District Council
- Wairarapa District Health Board
- Greytown Rotary

- Greytown Community Board
- Martinborough Community Board
- Featherston Community Board
- Local Iwi
- SWDC Maori Standing Committee
- Immediate Neighbours
- Greytown Community (Open Days)
- Arbor House Rest home & Hospital (Greytown)
- Wharekaka Care Facility (Marinborough)
- Greytown Lands Trust
- Greytown Bowling Club
- Greytown Primary School

In addition we have provided press releases and updates for the Wairarapa Times Age and the Greytown Grapevine community magazine. We will be meeting with Papawai Marae to understand how we can work more closely together, including looking at employment and training opportunities.

The consultation process has been meaningful and we have adapted our masterplan to address areas of concern that have been raised e.g. the development will now be one level throughout the site and provide appropriate setbacks from neighbouring properties. The community have been appreciative of our open process and the feedback has been overwhelmingly positive.

During our consultations there was an incredible immediacy, with many retirees wanting to select and sign up for a home. Although there has been no direct marketing undertaken demand through the consultation process and expressions of interest through our website have been significant and there is a feeling of relief by many retirees and their families that a retirement village is coming to Greytown. People like the way that we are proposing to maintain the orchard character and adding the swale parkland area. There is a general excitement at the prospect of having such a village in the South Wairarapa, that would cater to the specific needs of the elderly, while maintaining the village's unique lifestyle values – spacious homes with orchard trees and plenty of open spaces for the grandchildren to run around.

STATISTICS

There is an under provision of retirement villages and aged care beds in the South Wairarapa region and particularly those that provide modern accommodation and facilities. In addition, there are no operators providing specialist dementia care. The market is becoming more discerning and the lack of available options is seeing Masterton, Wellington and the Kapiti Coast as a default option for the South Wairarapa region. The Southern Wairarapa has no retirement villages of any notable scale and there are no known plans for any of the established operators to setup in the foreseeable future. It is understood that Arbor House will close if a replacement facility is not built in the immediate future.

In addition Wellingtonians who have a strong affiliation with the South Wairarapa district have not viewed the South Wairarapa as a fully viable retirement destination and instead have chosen the Kapiti Coast.

In terms of the South Wairarapa there is an ageing population with 27.5% of the residents over 60 years of age, comparing to the national average of 23.3%. In Greytown alone 19.0% of the population are over 70 years of age which compares to the national average of just 9.7%. There continues to be a strong demand for retirement accommodation as the effects of 'baby boomers' retiring is felt through the industry. Given both the appeal of the region and the ageing demographic there is a definite gap in the retirement village market in South Wairarapa. Due to our meticulous planning and consultation we are confident The Orchards at Greytown will meet this market need.

The Orchards will register under the Retirement Villages Act early in 2019. Up until this point we are unable to commence marketing the village. However we are encouraged with the positive response to date which has been generated through media articles, consultation, and word of mouth. This has resulted in us receiving three to four enquiries per week through expressions of interest on our website from people who are interested in living at The Orchards.

CONCLUSION

We are in this for the long term and understand that The Orchards at Greytown must provide a high quality offering that meets the needs of retirees not only today but well into the future. We aspire to build sustainable and desirable housing and provide industry leading care and services. It is important to us that The Orchards is an integral part of the Greytown community and that we generate a positive legacy. By providing a best in class facility we see the ability to reverse the current retirement migration trend and make the South Wairarapa an aspirational place to retire.

We thank you in advance for taking the time to consider our exciting proposal.

Craig Percy
DIRECTOR

Paul Reeve
DIRECTOR

Appendix 15

The Orchards at Greytown – Impact on the Four Wellbeings in South Wairarapa

Prepared by Business and Economic Research (BERL)

















berl

The Orchards at Greytown

Impact on the Four Wellbeings in South Wairarapa

Final report – March 2019

Authors: Mark Cox and Merewyn Groom

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March 2019

Executive summary

This report is intended to complement BERL's earlier economic impact assessment of *The Orchards at Greytown* retirement village (The Orchards). It takes a broad view of the effect of the village on different aspects of wellbeing. The report strives to be unbiased, by acknowledging that not all the effects on wellbeing will be unequivocally positive.

The concept of wellbeing is embedded in existing government policy and proposed local government legislation, and it has four aspects: Social, Economic, Environmental and Cultural. The legislation does not define each of the wellbeing components, so this report is based on some common sense definitions.

The report concludes that the positive effects of The Orchards on wellbeing far outweigh the negative effects.

Looking at the Four Wellbeings individually, BERL believes that the positive effects of The Orchards on Social, Economic and Cultural wellbeing will outweigh the respective negative effects by a significant extent. In the case of Environmental wellbeing, the balance between the positive and negative effects is not so clear cut. Inevitably, there will be some negative effects, but they can be largely mitigated. And, in addition, the construction of the facility will remove some environmental problems that currently affect the site.

The various positive and negative effects of The Orchards on the Four Wellbeings are summarised in the following table.

	Positive effects	Negative effects
Social Wellbeing	• More available volunteer hours • Less necessary for people to leave the District to find work • Elderly in the district will have a high quality rest home, dementia and hospital level care in their area meaning they won't have to relocate away from family • Many in the 70+ age group will be active and engaged in the community, enriches social fabric. • Development includes public amenities including accommodating the local Bowls Club, ensuring the club's ongoing operation • Extensive fruit trees to be maintained and will be a focus	• Loss of enjoyment from PYO fruit • Change in age demographics – town is already ageing but will be accelerated • Implications for council spending and service provision from increased elderly population

	for village residents at harvest time	
Economic Wellbeing	• Enlarged population and more spending power • Dynamic effect: businesses and services attracted to Greytown that wouldn't locate in a smaller town • Other economic effects (particularly increased employment and GDP) noted in the EIA report	• Loss of GDP and employment from the orchard (current use supported only 1.5 FTEs) • Opportunity Cost – alternative potential uses of the land • Increased Council spending needed for infrastructure and services
Environmental Wellbeing	• Many significant trees to be retained including parts of the orchard • Contaminated soil to be sealed • Dangerous oversized tress to be removed • Design of the new buildings to be sympathetic to the townscape • Design includes walking/cycling path which will be open to the public	• Loss of amenity value • Increased traffic, especially near the development • Increased general busyness in town centres (could be considered positive due to additional vitality and viability) • Potential for traffic and noise effects during construction phase
Cultural Wellbeing	• Institutions such as libraries, clubs and cultural groups are likely to have a boost in members • Increased patronage at events such as performances, flower shows etc • Potential for inter-generational connections to be made through relationship with the primary school	• Incoming population might have different views and preferences from the existing population

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1 Introduction

1.1 Purpose of this report

This report is the second part of an evaluation, by BERL, of the likely effects of the development of *The Orchards at Greytown* (The Orchards), a retirement village in the South Wairarapa District.

In our first report we evaluated the economic impact of building and operating the village on the economies of South Wairarapa, the Wairarapa sub-region, and the Wellington Region.

This report takes a broader view of the likely impacts, taking account of how The Orchards is likely to affect different aspects of the wellbeing of the community.

1.2 The Orchards at Greytown

The proposed development comprises a village of 177 villas, 30 serviced apartments and a 60 bed care facility with dedicated rest home, dementia and hospital level care people. The Village will have communal facilities and extensive landscaping, including a walking path, orchard and community gardens and a swale parkland area. It is proposed that the new care facility will incorporate an existing aged care facility in the town. An MOU has been signed to facilitate this.

The site has been purchased by the prospective developer, but the development will require a change to the District Plan. Planning and design is well underway. Currently the site is a pick-your-own orchard employing approximately 1.5 Full Time Equivalent (FTE) employees. The design of the new development aims to retain as many of the fruit trees as practicable, as well as the park-like atmosphere of the site.

1.3 The Four Wellbeings

New legislation called The Local Government (Community Well-being) Amendment Bill (the Bill) is currently in select committee in Parliament. This bill is very likely to be passed into law in 2019. The principal relevant provisions of the Bill are that it will restore the purpose of local government to be "to promote the social, economic, environmental, and cultural well-being of communities"; to restore territorial authorities' power to collect development contributions for any public amenities needed as a consequence of development; and to make a minor modification to the development contributions power.

The Four Wellbeings referred to in the Bill are the same as the four wellbeings identified in Section 32 of the Resource Management Act 1991 (RMA). This means that it is appropriate to consider new developments in the planning stages with regard to the Four Wellbeings.

1.4 Approach to assessing the impact on the Four Wellbeings

In this report, we examine the likely effect of The Orchards on each of the Four Wellbeings in turn. Where possible, we quantify the effects, although many of them cannot be quantified meaningfully. Where this is the case, we describe and assess the effects qualitatively.

Recognising that no development will be without at least some drawbacks, we also examine the negative, as well as the positive, effects of The Orchards. At the end of the report, we also present a "Balance Sheet" to enable the overall effect of the village to be assessed.

It should be noted that the Four Wellbeings are not specifically defined in either the Bill or the RMA, so we have taken what we believe is a common sense view of their meaning. We also note that there

is not necessarily a clear distinction between one wellbeing and another. This is particularly the case with Social wellbeing and Cultural wellbeing. Again, therefore, we made some judgements about where particular effects fit best.

2 Social wellbeing

Social wellbeing is about people feeling a sense of belonging and inclusion in the place where they live. It is also about the ability of people to participate in groups, activities and events. A state of social wellbeing can be important for individuals' health, as well as their life satisfaction and happiness.

We found in our economic impact assessment report that the growth of the population in South Wairarapa is currently tracking more-or-less along the trajectory implied by Statistics New Zealand's high projection. We also concluded that, taking account of the number of people who are likely to live in The Orchards, and the number of people who are likely to move into the District because of the employment and business opportunities the village will bring, South Wairarapa population growth will be accelerated further.

Statistics New Zealand's latest estimate indicates that South Wairarapa's population was 10,450, as at 30 June 2018. This compares with a high projection for the same date of 10,5001. The medium projection, which Statistics New Zealand regard as the most likely was 10,250. We concluded from this that, in the absence of The Orchards, the District's population would grow in line with the high projection. This would take it to 11,450 in 2028 and to 11,850 in 2033.

We estimated that, once it is fully occupied, The Orchards will increase the population by up to an additional 500 people. This population boost, over and above what is likely to happen anyway, will have an effect on Social wellbeing. The effect will be felt mainly in Greytown, because that is where most of the additional population will live, but some smaller effects are likely to be felt in Featherston and Martinborough, as well as elsewhere in the Wairarapa.

2.1 Positive effects

The absolute size and share of the population of South Wairarapa in the 65 years and over age group will increase regardless, but the addition of 320 people living in the village will intensify the population ageing effect. This might cause consternation in some quarters, but there will also be an upside to having a considerably greater number of older people living in the district.

The upside is related to the fact that older people spend significantly more time, than younger people, on unpaid work outside the home. This includes cultural, civic, church-related and other activities that add to what is often called the "social fabric". Bearing in mind that the majority of the additional 320 people will be relatively fit and healthy individuals, living independently, there will be significant potential to enrich the social fabric.

Table 2.1 is based on findings from Statistics New Zealand's Time Use Survey, and it illustrates the differences in unpaid time use by different age groups. It shows that people aged 65 years and over spend substantially more time on unpaid activities as people in the other age groups.

1 The latest estimate was published in October 2018, and the projection was published in February 2017.

Table 2.1 Time spent daily on voluntary and community activities[2], by age group (h:mm)

Age	Time spent
12-24	0:21
25-44	0:22
45-64	0:29
65+	0:39

Source: Statistics New Zealand

39 minutes a day amongst 65+ year olds may seem small but, when multiplied up by the number of days in a year and the number of 65+ year olds in question, the total becomes significant. In fact, it is 39 x 365 x 320 = 4,555,200 minutes, or 85,410 hours during the course of a year. This equates to roughly 55 people operating on a full-time, full year basis.

It cannot be predicted on exactly which community and voluntary activities the additional population might spend their time, but the activities could include helping with reading at the primary school opposite The Orchards, working in charity shops, and helping to run existing or new affinity groups.

However, the time that could be available for community and voluntary activities merely represent a potential that might only be realised if measures are taken to encourage the additional adults in the population to engage with the activities that are already happening, or to work to develop new activities.

There are also several other ways in which The Orchards is likely to have a positive social effect. At one end of the age range, a growing local economy (see section 3) is likely to bring with it a larger number and range of employment opportunities than would otherwise occur, and this would reduce the pressures on young people to leave the District to find work. At the other end of the age range, the fact that The Orchards is intended to incorporate a new, fit for purpose and larger Arbor House facility mean that old people will have the benefit of a high quality rest home and hospital level care in their area, so making it less likely that they will have to relocate away from their family and social connections. The new facility includes dementia and hospital level care. At the current time there is no specialised dementia care facility in the Wairarapa.

It is also intended that The Orchards will incorporate the local Bowls Club which hopes to relocate into the village. Both the Bowls Club and the existing Arbor House are facing challenges which affect their long term viability. By including these institutions into the design of the retirement village, these problems will be alleviated, ensuring that the population of Greytown and the wider District continue to enjoy the related employment and wider community contributions.

2.2 Negative effects

By contrast the negative effects appear to be relatively modest. In its present use, the site operates as a commercial orchard that invites customers to come and pick their own fruit. This has provided local people with a certain amount of enjoyment, and this benefit will be lost, once the site is developed. This negative effect is mitigated in part, as the residents will have access to the many fruit trees which are to be retained, and there is potential to celebrate them with a harvest festival.

[2] Voluntary and community activities includes two components of the Time Use Survey; Religious, cultural and civic participation and Other Unpaid Work (excludes child care and household work)

There is also the potential that a population that is increasingly dominated by older people will make Greytown, in particular, unappealing for younger people. However, as we noted above, older people also have the potential to enrich the social fabric and, indeed, support younger people in the population. Accordingly, we believe that, with appropriate service delivery and community development work, the ageing population need not be a problem. Moreover, additional service delivery and community development work is likely to be needed anyway, because the population of older people will grow significantly, even without The Orchards.

3 Economic wellbeing

Economic wellbeing is about the ability of people to create their own livelihoods by running a business, or to access rewarding employment opportunities. It is also about households being able to purchase goods and services that go beyond merely meeting the bare necessities of life.

Our economic impact assessment report found that constructing The Orchards will provide a sizeable temporary boost to the economies of the South Wairarapa District and the wider Wairarapa sub-region. It was also estimated that, when the village is fully occupied, its operational expenditure and the day-to-day local spending of the residents and village employees, will boost employment in the District by 94 full-time equivalent (FTE) jobs in the South Wairarapa District and 178 FTE jobs in the wider sub-region. In this section, we identify how The Orchards could boost employment still further[3].

3.1 Positive effects

We observed in our earlier report the extra population associated with the village, could well have a dynamic effect, especially in Greytown. This is because a town that grows significantly could start to attract businesses that would not consider locating in a town with a static population. The businesses in question might include speciality retailers, restaurants and professional service providers. Significant population growth would also enhance the viability of existing businesses.

Residents would also benefit from more competition between providers and the emergence of economies of scale. In other words, they would probably enjoy better quality and lower cost services than they would with a smaller population.

Similarly, a richer and more varied social fabric of the sort hinted at in section 2, could enhance the attractiveness of Greytown as a place that is even more appealing, than it is already, to live and set up a business. Again, this dynamic effect cannot be quantified, but it would be over and above the impacts explicitly estimated from the economic impact assessment.

3.2 Negative effects

A larger population and local economy will have implications for spending and service provision by South Wairarapa District Council. For example, the Council may need to spend more on footpath and road crossings, and on street furniture. The Council is also likely to need to spend more on a range of services, including such things as rubbish and recycling, and libraries. However, some increased spending will be needed, even without The Orchards as the town's population is expected to continue to grow. The increased spending is likely to be offset by a growing rateable base and the financial contributions which will come from the development.

In terms of negative effects, it is also appropriate to consider the opportunity cost of developing The Orchards; that is to say, the economic value that might be attached to an alternative use for the site. Potentially, the site could continue in its current use, although we were informed that the current operation generated only 1.5 FTEs of employment over the course of a year.

The soils on the site are of a high quality and as such may be suitable for a more intensive type of agriculture or horticulture, but the small size of the site limits this possibility. The previous owners had instead reduced the intensiveness of their production to lower costs, removing fruit trees and

[3] In this section we describe or allude to economic effects in terms of employment because that it is the measure that is most widely understood. However, our earlier report on the economic impact of The Orchards also assessed the impact in terms of GDP.

bushes. That part of the property was then used for maize production. This would indicate that the investment required for intensive horticulture was not cost effective on the site.

The site could also be used for some other kind of residential development, although we consider this to be insufficiently different from The Orchards, in terms of land use, to count it as an opportunity cost. Using the site for some kind of industrial or commercial activity is also theoretically possible, although we believe that this sort of development is more likely to happen away from the town centre. This would be outside of the current rules in the District Plan and is unlikely to secure council support given the proximity to residential areas, a school and the town centre.

4 Environmental wellbeing

Environmental wellbeing is about the health of the flora and fauna in a locality. It is also about water and air quality. A state of environmental wellbeing exists when people can live harmoniously and sustainably with nature.

In the case of environmental wellbeing the negative effects are, arguably, likely to be as great, or greater than the positive effects. As we show, however, the negative effects can be mitigated to a large extent, and some existing environmental issues can be resolved.

We are aware that the environmental effects of The Orchards are being investigated in-depth by other consultants with expertise in the field, so we note them only briefly here. For detailed information relating to effects we direct you to the following documents:

- Design Statement prepared by Design Group Stapleton Elliot
- Transportation Assessment report prepared by Stantec entitled 'Murphy's Orchard Retirement Village, 67 Reading Street, Greytown'
- 'The Orchards – Civil Design for Resource Consent' prepared by Calibre Consulting Ltd
- Landscape concept plan prepared by Mark Newdick of Local Landscape Architecture Collective
- Landscape and Visual Assessment prepared by Rachael Annan of Perception Planning Ltd
- Assessment of Environment Effects prepared by Lucy Cooper of Perception Planning Ltd

4.1 Positive effects

The new buildings are designed to be sympathetic to the neighbouring townscape, and the site will be accessible to the general public who will be able to enjoy the landscaping, footpaths, and cycleways.

Several existing environmental problems will also be removed. The large macrocarpa pine trees fronting Reading Street are in a generally poor condition, and we understand that they have recently shed large branches. These trees are a significant hazard and they will be removed as part of the development.

We are also aware that there are several hotspots on the site where there is agro-chemical contamination. We understand that the contamination will not be removed, but that the hard surfacing components of the development will seal the hotspots in question, preventing these from causing harm. Details of the measures taken to resolve this issue are set out in the relevant council application.

4.2 Negative effects

Even though The Orchards will retain some of the fruit trees and other specimen trees, and even though there will be a considerable amount of soft landscaping on the site, we believe there will be a net loss of vegetation. There might also be a loss of fauna, at least until the plants added to the site mature.

There will also be an increase in road traffic near the development, both during the construction phase and when the village is occupied. There will also be some construction–related noise at times. Once occupied the use of walking, biking and shared transportation will be encouraged by the location

of the development, through the provision of a village van and driver, and by the layout of the village itself.

There will be increased general busyness in the centre of Greytown, particularly on the main road and footpaths. However, owing to the town's popularity and an increase in-through traffic, this is a problem that occurs at times already and is likely to worsen independent of the new development. Accordingly, the Council will need to deal with this problem regardless of the development of The Orchards.

5 Cultural wellbeing

Cultural wellbeing is an ambiguous term that can refer either to the customs of a group in society, or to artistic and intellectual activities. Cultural wellbeing is sometimes treated as being synonymous with Māori cultural wellbeing.

We are not aware of any potentially positive or negative effects on the wellbeing of tangata whenua in the locality of The Orchards. The developers have met with Rangitane and Kahungunu, the Māori Standing Committee, and have established a relationship with Papawai Marae to open dialogue and ensure that any arising issues can be addressed. Iwi engagement will be ongoing as the development progresses.

There are some other cultural effects to take into account. We note that there is often a large cross over between social and cultural effects.

5.1 Positive effects

As we implied in Section 2, a larger population, especially of older people who are retired from work, is likely to boost the membership of institutions such as libraries, clubs and cultural groups. There is also likely to be increased patronage at local events such as concerts, theatrical shows, talks and lectures, and exhibitions.

5.2 Negative effects

The only negative cultural effect we can envisage is that the incoming population might have different views and preferences from existing population. However, this effect is likely to be very small, if it occurs at all. We believe that an incoming population is more likely to add to, rather than diminish or hinder, the breadth of cultural activities in South Wairarapa.

6 Conclusions

In this report we have attempted to take a broad and unbiased view of effects of constructing and operating The Orchards. In particular, we have acknowledged that there will be some negative effects on the different aspects of wellbeing that need to be weighed against the positive effects.

Our conclusion, however, is that the positive effects far outweigh the negative effects.

Looking at the Four Wellbeings, we believe that the positive effects of The Orchards on Social, Economic and Cultural wellbeing will outweigh the respective negative effects by a significant extent. In the case of Environmental wellbeing, the balance between the positive and negative effects is not so clear cut. Inevitably, there will be some negative effects, but we believe that they can be largely mitigated. And, in addition, the construction of the facility will remove some environmental problems that currently affect the site.

Appendix 16

The Orchards at Greytown – Economic Impact Assessment

Prepared by Business and Economic Research (BERL)

















berl

The Orchards at Greytown

Economic Impact Assessment

Final report – February 2019

Authors: Mark Cox and Merewyn Groom

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Reference No: 5981

February 2019

Making sense of the numbers

This report examines how the development of the proposed *Orchards at Greytown* Retirement Village will affect the economies of: the South Wairarapa District; the Wairarapa sub-region (defined as the sum of the Masterton, Carterton and South Wairarapa Districts); and the entire Wellington Region. The analysis is based on the assumption that the village, comprising a total of 177 independent living villas, and a 90 bed aged care facility, to be constructed and fully occupied between 2019 and 2027.

The economic impacts will be driven by the expenditures involved first in constructing the village, and then every year thereafter from operating it. The local spending by village residents will add to the ongoing impacts.

We estimate that the construction process will have a moderate impact on the South Wairarapa District economy. This is because many of the labour inputs and most of the other goods and services inputs used in the process will come from outside the District. Nonetheless, we estimate that the construction phase will create 151 full time equivalent jobs, and $12.1 million of Gross Domestic Product (GDP) in South Wairarapa. If it is possible for the development to intensify its use of local contractors, it would increase this effect further.

Many of the inputs come from within the Wairarapa sub-region, where the impact will be 827 full time equivalent jobs, and $67.4 million in additional GDP in the Wairarapa. This is a sizeable impact even on this much larger economy.

These construction phase impacts won't occur in a single year, but will be spread over the eight year construction phase.

The economic impacts of the village construction process will be temporary, but the economic impacts of the village will grow over time and will endure. When fully occupied, the village will bring around 320 older people into the District. Most independent living villages require only low level staffing, but this proposal includes a care facility which will provide serviced apartments, rest home facilities, a hospital, and dementia care. Accordingly, it is estimated that the village will directly employ 93 full time employees (FTEs).

The independent living residents are likely to be financially secure, and their spending on goods and services will give a significant boost to local businesses. The resulting increase in employment opportunities will also encourage some younger people to move into the area, or dissuade them from moving away in search of employment opportunities. We estimate that overall, the development of the village will eventually add up to 500 people to the local population.

Taking these factors into account, we estimate that once fully occupied, the village will boost employment in South Wairarapa by the equivalent of three percent of its current level. The boost to GDP will be the equivalent of 1.4 percent of its current level. The Wairarapa sub-region will experience increased employment of over one percent, a significant contribution for a single business.

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1 Introduction

The purpose of this report is to examine the economic changes that are likely to occur if a proposed retirement village development, *The Orchards at Greytown*, comes to fruition. These changes will be examined with respect to the South Wairarapa District, the Wairarapa sub-region (defined as the sum of the Masterton, Carterton and South Wairarapa Districts), and the Wellington Region.

The development in question is for older people, many living independently, and includes provision for aged care in serviced apartments and a hospital facility.

South Wairarapa District currently has a population of around 9,500 people. The development has the potential to add up to 500 people to the population of the District as new residents move in, staff come to take up the new jobs and bring their families with them. However, this does not allow for the likelihood that a large number of older people injecting money into the local economy, through their everyday spending, will generate further new employment. Employment growth will make it less likely that people will leave the District to seek work, and it will make it more likely that additional people will move in to take up job opportunities.

1.1 The Orchards at Greytown development

The proposed development comprises a village of 177 villas for people living independently; and a care facility with dedicated rest home, dementia and hospital level care for 90 people. The village will have communal facilities and extensive landscaping, including a walking and cycling path. It is proposed that the new care facility will incorporate the existing Arbor House facility in Greytown, and will itself be named Arbor House.

The land purchase is complete, but the development will require a change to the District Plan. Planning and design is well underway. Until recently, the site was a pick-your-own orchard employing approximately 1.5 Full Time Equivalent (FTE) employees. The design of the new development aims to retain as many of the fruit trees and other specimen, to preserve the park-like atmosphere of the site.

1.2 Structure of the report

In the next section, we examine how the economies of the South Wairarapa District and the Wairarapa sub-region might be expected to develop in the absence of the Orchards development.

In section 3, we estimate the likely economic effects on the District, the Wairarapa sub-region, and the Wellington Region, of constructing the development outlined above.

Section 4 explores the economic effects of the ongoing operation of the village once fully occupied, including the impact of spending by the residents.

Lastly, section 5 summarises the findings.

Throughout the report, the key assumption is that the development described in the outline in section 1.1 above will go ahead and that it will be fully occupied by 2027.

2 The development of the District under a BAU scenario

Under a business as usual (BAU) scenario, the future growth rate of the South Wairarapa District's economy, relative to that of the national economy, would be expected to be roughly the same as in the recent past. This section first examines the key performance indicators for the District's economy during the past decade. It then examines how the population has changed in the past, and how it is projected to change in the future.

2.1 Performance of the South Wairarapa District economy

Table 2.1 incorporates the eight standard indicators we use to track the growth of local economies, and it suggests that South Wairarapa District has lagged the national economy in terms of every indicator, apart from resident population and labour productivity growth. The relatively slow District GDP and employment growth shown in the table indicates that a new substantial business in Greytown will have a large impact on the area's economy.

The latest forecasts from the Treasury[1] suggest that the national economy will grow at an average rate of 2.9 percent per annum between 2018 and 2022. If the District's GDP growth rate, relative to the national rate, is maintained, then the District's GDP will grow at an average of around 2.1 percent per annum. This is significantly more rapid than during the past decade, and it is also likely to lift the employment and population growth rates further.

Table 2.1 Key Performance Indicators for South Wairarapa District economy, average annual growth rates

Growth of Key Performance Indicators	Annual average growth, %pa for 2008 - 2018	
	South Wairarapa District	New Zealand
Resident population	1.3	1.3
GDP	1.5	2.1
GDP per capita	0.3	0.8
Employment	0.8	1.9
Labour productivity	0.6	0.2
Business units	0.0	1.0
Business size	0.6	1.2

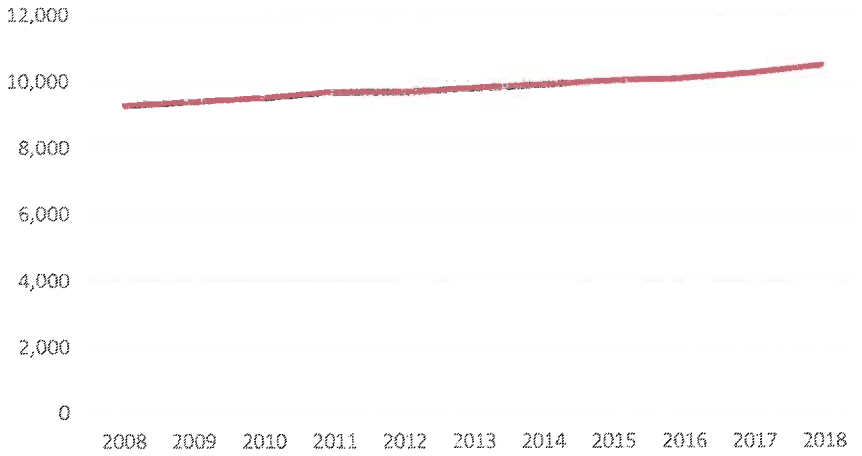
Source: BERL Regional Economic Database, 2018

2.2 Recent population change in South Wairarapa District

According to Statistics New Zealand population estimates, the population of the South Wairarapa District increased by 12 percent overall between 2008 and 2018. Results of the 2018 census are not yet available, but population estimates show a yearly increase of approximately 1 percent each year. Figure 2.1 traces the District's recent total population growth.

[1] https://treasury.govt.nz/publications/efu/budget-economic-and-fiscal-update-2018

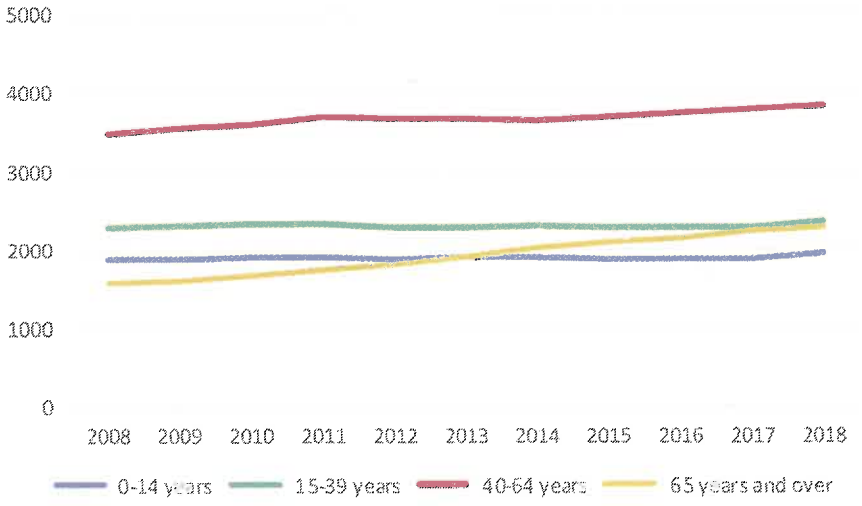
Figure 2.1 Population growth in South Wairarapa District



Source: Statistics New Zealand

Figure 2.2 shows how the District's population in different age groups has changed during the past 10 years. While the population increased by 12 percent in total, the population aged 0-14 increased only 3 percent, while the population aged 15-39 increased by just 2 percent. The population aged 40-64 increased by 10 percent, but the population aged 65 and over increased by a considerable 45 percent. As a share of the total, the population aged 65 and over increased from 17 percent in 2008 to 22 percent in 2018.

Figure 2.2 Population change in South Wairarapa District, by age group



Source: Statistics New Zealand

2.3 Statistics New Zealand population projections

Statistics New Zealand publishes high, medium and low population projections for district council areas. The high projection is based on the assumption of a high birth rate, low death rate and high net migration. The low projection is based on the assumption of a low birth rate, high death rate and low net migration. The national medium projections (which usually considered to be the most likely) assume a birth rate of 1.85 per woman, life expectancy continuing to rise at the historical rate, and net migration continuing at the long term average of 15,000. In total, the various district level projections are consistent with the national level projections. The projections do not take into account non-demographic factors (e.g. war, catastrophes, major government and business decisions) which may invalidate the projections.

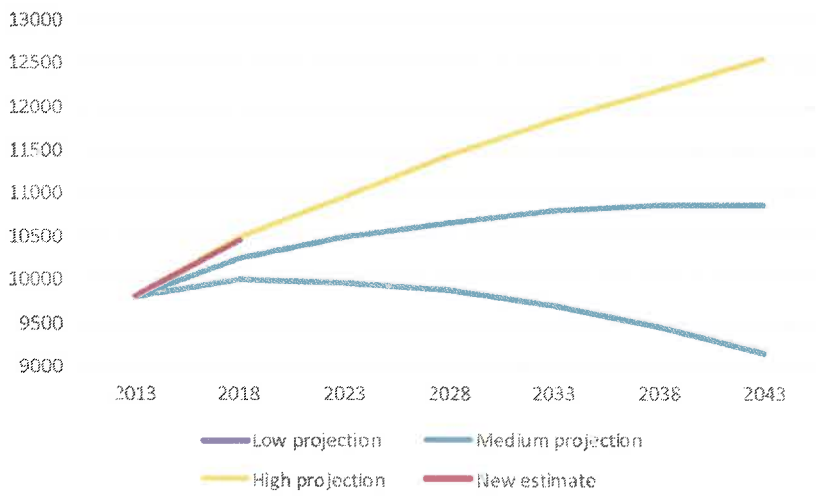
The economic performance of a district does not usually influence the projections explicitly. However, the assumptions about migration will implicitly reflect how past economic performance has affected people's decisions about moving into or out of the locality. It is generally assumed that past patterns of migration will continue into the future.

Figure 2.3 encapsulates the three Statistics New Zealand population projections for South Wairarapa District published in February 2017. Under all three projections, there is expected to be population growth between 2013 and 2018, but the growth paths diverge after 2013.

Under the high projection, the population grows steadily after 2018 (albeit at a slower rate than before), so that it reaches a total 12,550 by 2043 (compared to 10,500 in 2013). Under the medium projection, the population grows only slightly until 2038, before levelling off. Under this scenario, the total population will be 10,850 by 2043. Under the low projection, the population declines at an accelerating rate after 2018, so that it declines to just 9,160 by 2043.

The latest mid-year 2018 population estimates show the population of South Wairarapa District to be almost at the point of the high projection, even before the *Orchards at Greytown* is built, as shown in red in Figure 2.3. This indicates that actual population growth is more likely to be in the range of the high projection rather than the medium projection. This reflects the increasing gentrification of the area, and increasing numbers of residents living in the Wairarapa and commuting into Wellington to work, as well as the general attractiveness of the area as a place to live.

Figure 2.3 Alternative population projections for South Wairarapa District

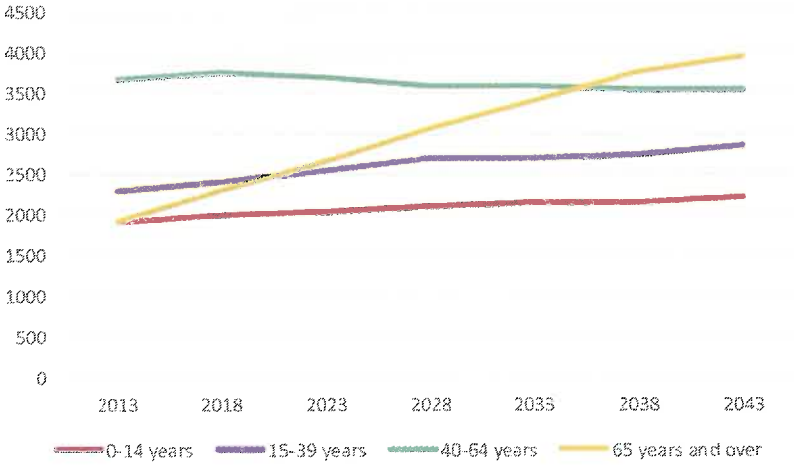


Source: Statistics New Zealand

Figure 2.4 breaks down the high projection, by age group, and it clearly illustrates the expectation of an ageing population. In 2013, 19 percent of the population of South Wairarapa District was aged 65 and over. By 2043, this proportion is projected to increase to 31 percent.

The graph also suggests that the age group of people aged 40-64 years is the only group likely to decline in size between 2013 and 2043.

Figure 2.4 High population projection for South Wairarapa District, by age group



Source: Statistics New Zealand

Table 2.2 presents the high population projection for South Wairarapa District in numerical format, and it highlights the dramatic change in the population structure that is expected to occur. Overall, the district's population is projected to grow by 28 percent over a 30 year period. The population aged 65+ is projected to more than double.

Table 2.2 High population projection for South Wairarapa District in numbers

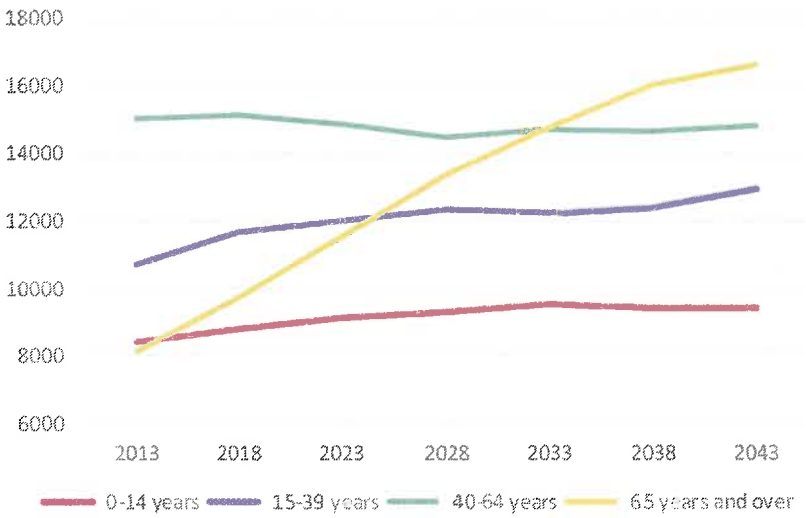
Age group	2013	2023	2033	2043	Percentage change 2013-2043
0-14	1,920	2,050	2,150	2,200	15
15-39	2,290	2,550	2,700	2,850	24
40-64	3,680	3,700	3,600	3,550	-4
65+	1,910	2,650	3,400	3,950	107
Total	9,800	10,950	11,850	12,550	28

Source: Statistics New Zealand

2.4 Population trends in the Wairarapa sub-region

The trends in population growth and demographic change described above for the South Wairarapa District are reflected very closely in those for the Wairarapa sub-region as a whole. With a population of 44,000 people the additional 500 or so people it is expected the retirement village will add will not have a large effect.

Figure 2.5 High population projection for the Wairarapa sub-region, by age group



Source: Statistics New Zealand

Table 2.3 High population projection for the Wairarapa sub-region in numbers

Age group	2013	2023	2033	2043	Percentage change 2013-2043
0-14	8,410	9,120	9,500	9,400	12
15-39	10,740	11,980	12,200	12,950	21
40-64	15,010	14,880	14,700	14,800	-1
65+	8,120	11,570	14,750	16,650	105
Total	42,280	47,550	51,150	53,800	27

Source: Statistics New Zealand

2.5 Prognosis under a BAU scenario

The data in this section imply that, as long as the national economy continues to grow at its long term rate of a little greater than 2 percent per annum, economic growth in South Wairarapa District will be sufficient to maintain moderate population growth. The national economic growth rate is expected to be above 2 percent per annum in the medium term, but it is probably unsafe to assume that above average growth will be sustained in the longer term.

Continued high levels of net migration at national level will tend to boost population growth in South Wairarapa District, but it would also be unsafe to assume that the levels of net migration into New Zealand that have been experienced since 2014 will necessarily be sustained in the long run. Should net migration return to the long term average, South Wairarapa District might well start to experience net outward migration.

Overall, the high population projection for South Wairarapa District, as illustrated in Figure 2.3 and Figure 2.4 seems credible. However, as will be seen in sections 4 and 5, we believe that the development of the village in the district, on the scale outlined in Section 1, will change the trajectories for population and economic growth, boosting the population of South Wairarapa District even further.

3 Construction phase impacts

The economic impact of the *Orchards at Greytown* will be driven initially by the expenditure on its construction; and later by the expenditure needed to operate it and the expenditures of the residents. In this section, we estimate the economic impact of the construction phase.

We understand that it will cost in the order of $102 million to construct the 177 villas and 90 aged care units referred to in the Introduction. This excludes land costs (but not site preparation and landscaping costs) because the purchase of land by one party from another is simply a transfer that does not, in itself, create any economic value.

Before presenting our impact estimates, we note that it is likely that only a moderate proportion of the value related to the construction work will be attributable to the South Wairarapa District. However, most of the value related to the construction work is assumed to be attributable to the Wairarapa sub-region. Some of the professional services required, particularly in the planning stage, and some specialised medical equipment and fittings will have to be sourced from elsewhere, and economic effects from the expenditure on these items has not been included as occurring within the sub-region. A slightly larger proportion is assumed to be sourced from the Wellington Region, which includes the Wairarapa sub-region.

3.1 Impact in the South Wairarapa District

Our estimates of the economic impact of the construction phase within South Wairarapa are based on the assumption that just 10 percent of construction labour and materials will be sourced from within the District. A larger proportion has been allowed for professional fees at the planning stage as, where possible, the developer has opted to use locally based professionals. In total we have assumed that $17.5 million of construction phase expenditure will occur within the South Wairarapa District.

Table 3.1 includes the assumed $17.5 million expenditure and our estimates of the GDP (or Value Added) and FTE employment that are likely to be generated by the expenditure. However, the $17.5 million expenditure, $7.2 million GDP and 96 full time equivalent jobs (FTEs) are only the direct effects. The totals shown in the table also take account of the fact that the direct effects will be multiplied by indirect and induced effects.

The indirect effects occur when local companies spend the $17.5 million on goods and services in the course of fulfilling their contracts. The local companies' purchases from suppliers within the district will tend to cause the suppliers of the goods and services to increase their own expenditure, etc. And the suppliers' own suppliers will then need to increase their expenditure etc; and so on, down the supply chain.

The induced effects will occur when the local companies' employees, and the extra employees of the businesses in the supply chain, spend their wages and salaries, so causing shops and consumer/household service providers to increase their employment.

Table 3.1 Impacts of the construction work on the South Wairarapa District economy

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	17.5	7.4	3.0	27.9
GDP (2018$m)	7.2	3.1	1.8	12.1
Employment (FTEs)	96	41	14	151

The direct, indirect and induced impacts of the construction of the retirement village on the local economy will be considerable. However, the impact of the construction phase will not occur in a single year, but will be spread across the entire period from planning through to final completion of the building, fit out and landscaping work. Full time equivalent employment shown in Table 3.1 is the total person-years of employment. At any point in time the intensity of the impact will vary with the intensity of the construction activity. At certain times there will be few people working on the site, while at other times there will be many.

3.2 Impact in the Wairarapa sub-region

Our estimates of the economic impact of the construction phase within the Wairarapa are based on the assumption that most of construction labour and materials will be sourced from within the sub-region. Where possible, the developer intends to opt to use locally based contractors. In total we estimate that $95.7 million of construction phase expenditure will occur within the Wairarapa.

Much of the induced and indirect effect from spending in the South Wairarapa District will leak out of that immediate area, but will be captured within the larger area of the Wairarapa sub-region. This means that spending in South Wairarapa will have benefits for the Carterton and Masterton districts. The table below shows the total expenditure expected to occur across the three districts, and the effects which flow from that spending into the sub-regional economy.

Table 3.2 Impacts of the construction work on the Wairarapa sub-regional economy

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	95.7	73.6	24.9	194.1
GDP (2018$m)	24.1	29.2	14.2	67.4
Employment (FTEs)	344	358	124	827

3.3 Impact in the Wellington Region

The Wellington Region includes the Wairarapa sub-region, so all expenditure and impacts already discussed are included in the totals for the Wellington Region. It assumed that almost all construction materials and labour inputs will be sourced from within the Wellington Region. In the interests of accuracy, allowance has been made for a proportion of the specialist medical equipment and fittings likely to be sourced from outside of the Wellington Region. In total we estimate that $99.5 million, or 96 percent of the total construction expenditure will occur within the Wellington Region.

Table 3.3 includes the assumed $99.5 million direct expenditure and our estimates of the GDP (or value added) and FTE employment that are likely to be generated by the expenditure, along with the indirect and induced effects as for Table 3.1 above.

Table 3.3 Impacts of the construction work on the Wellington Regional economy

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	99.5	84.5	34.2	218.2
GDP (2018$m)	24.8	34.5	18.8	78.1
Employment (FTEs)	357	392	146	895

3.4 Impact of a larger care facility

We understand that there is the potential, to expand the care facility component of the development to accommodate up to 120 beds. Should this option be progressed, the construction expenditure will be slightly higher. A rough estimate is that this would result in the construction phase impacts increasing by 10-15 percent.

4 Annual operational economic impacts

4.1 Sources of annual economic impacts

We showed in section 3 the impacts of the construction of the *Orchards at Greytown* on the local (District, sub-regional and Regional) economies. The construction phase and the associated benefits are temporary, but the impact of the retirement village being open and filled with residents will occur on an ongoing basis. As a business, the village will purchase goods, such as food, as well as services such as tradespeople and council services from the local area. Residents who come to live in the village will visit cafés, buy food, clothes, and other shopping, and engage in local activities. This expenditure added up becomes considerable, and as it occurs every year it will create a lasting benefit for the district. The likely size of this spending, and the flow on benefits are quantified and explained in this section.

4.2 Impact of village operational expenditure

Once operating, the *Orchards at Greytown* retirement village will be a sizeable business entity, and its operational expenditures will have an effect on the wider South Wairarapa District economy. The proposed village includes a care facility which will provide up to hospital level care for 90 residents, and the grounds and buildings will be landscaped and maintained to a high standard. The village will provide several communal facilities including an activities coordinator; a wellness centre with indoor pool, gym, and yoga; and a van with driver to enable the residents to get out and about. There will also be facilities which are open to the public, a restaurant and bar, and it is hoped to accommodate the local bowling club.

This section quantifies all the day to day running costs of these facilities, including staff wages and spending on goods and other services, and estimates the indirect and induced additional impact on the local economy. The annual expenditure of the village is likely to be over $6 million per annum, of which $2.7 will be spent within South Wairarapa. This directly results in an additional $2.4 million in GDP, and 47 full time equivalent jobs (FTEs) for the South Wairarapa District.

The direct operational expenditure estimates used for this analysis are based on information provided to BERL by the *Orchard at Greytown*. To estimate the impact of the expenditure from operating the village, we have assumed that services such as insurance, electricity, and telecommunications will be supplied from outside of the Wairarapa. We assume that 50 percent of the village staff will live in South Wairarapa District, with the remainder commuting from elsewhere in the sub-region (i.e. Masterton and Carterton Districts.

Table 4.1 below outlines the economic impact of the village once fully occupied. This annual impact occurs for every year that the village operates, providing a lasting economic benefit to the South Wairarapa economy. Once indirect and induced effects are included, the operation of the village will contribute a total of $3.4 million in GDP to the South Wairarapa economy and employment for 63 FTEs.

Table 4.1 Annual impacts on the South Wairarapa economy of village operation

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	2.7	0.6	0.7	3.9
GDP (2018$m)	2.4	0.4	0.6	3.4
Employment (FTEs)	47	8	9	63

For the Wairarapa sub-regional impact, figures shown in Table 4.2 below include those of Table 4.1., but also those goods, services and staffing which the village is not able to access from within South Wairarapa District and must be sourced from elsewhere in the sub-region, totaling $5.2 million of expenditure. These impacts are enduring, in that they are based on annual expenditure.

Table 4.2 Annual impacts of village operation on the Wairarapa sub-regional economy

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	5.2	1.7	2.1	9.0
GDP (2018$m)	3.5	1.0	1.3	5.8
Employment (FTEs)	93	19	19	131

The Wellington Region, being larger again, will capture a larger proportion of the spending, including that which is spent in South Wairarapa and in the wider Wairarapa sub-region. More specialised supplies and some utility costs are not attributable to the Wairarapa, but will be purchased within the Wellington Region. This expenditure is expected to amount to $5.4 million, resulting in an additional GDP of $6.5 million and an additional 134 FTEs within the Wellington economy.

Table 4.3 Annual impacts on the Wellington Regional economy of village operation

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	5.4	2.1	2.8	10.3
GDP (2018$m)	3.7	1.2	1.7	6.5
Employment (FTEs)	93	20	21	134

The remaining portion of expenditure, approximately $200,000 each year, will be spent on utilities and specialised medical products which are assumed to be purchased from outside of the Wellington Region.

4.3 Impact of residents' spending

Many of the residents themselves are likely to enjoy being out-and-about, and they are likely to be financially secure. This means that they could inject a sizeable amount of spending into the local economy. This spending will stimulate business and employment growth beyond that of the village business itself. Precisely how much spending the residents will inject into local businesses is uncertain. However, the size of the injection can be estimated in broad terms. Residents living in the care facilities have their food and utility costs accounted for within the operational expenditure of the village.

To estimate the expenditure from independent living residents of the village, we used the following datasets and assumptions:

1. Weekly household expenditure for a two person household in Wellington Region, from the Household Expenditure Survey 2016. This data provided the expenditure patterns for the new residents; for example, that around 25 percent of their weekly expenditure would be on food and beverages (including groceries).
2. Data for Wellington Region was used, as this is the largest metropolitan area close to the district, and expenditure data is not available for a smaller sub-region.
3. That around half of resident's discretionary expenditure will be spent within the South Wairarapa District. This estimate comes from the assumptions that independent living

residents will have the time and resources to travel, and that some expenditure will occur on goods and services not found in the District.

Overall we have estimated that around $4.97 million will be spent each year by village residents, of which $2.1 million or 48 percent will be spent in the South Wairarapa District. Based on data from the Household Expenditure Survey and the assumptions stated above, Table 4.4 provides an estimated breakdown of spending within South Wairarapa.

Table 4.4 Breakdown of spending in South Wairarapa District by village residents

	$ (2018)	Percentage share
Supermarkets and food retail	1,268,592	38.44
Food and beverage services	356,096	10.79
Transport	370,785	11.23
Clothing, personal services	132,423	4.01
Recreation	450,684	13.66
Household contents and services	277,755	8.42
Health	444,007	13.45
Total	3,300,342	100.00

Table 4.5 summarises the boost that will be given to the South Wairarapa economy by the spending, within the District by the independent residents of the village. We estimate that this expenditure will be associated with GDP of $1.1 million, which is the value local goods and service providers will add to the inputs they purchase in order to meet customer needs. Some of the inputs the goods and service providers add will be labour meaning they will require additional workers. Accordingly, we further estimate that the GDP will be associated with the creation of 30 FTE jobs within South Wairarapa.

Again, however, the $2.1 million expenditure, $1.1 million GDP and 26 FTEs jobs are only the direct effects. The totals shown in the table also take account of the fact that the direct effects will be multiplied by indirect and induced effects (flow-on effects), in the manner described in section 3. This impact is entirely due to the spending of those residents in the independent living portion of the village.

Table 4.5 Annual impacts of residents' spending on the South Wairarapa District economy

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	2.1	0.5	0.4	3.1
GDP (2018$m)	1.1	0.3	0.3	1.6
Employment (FTEs)	26	2	2	30

4.3.1 Spending impact in the Wairarapa sub-region

As it is a short drive to the larger centres of Carterton and Masterton, many residents will chose to drive out of South Wairarapa for grocery shopping and to buy items not available closer to the village. For this reason the impact on the Wairarapa economy is slightly larger than for South Wairarapa District alone.

Table 4.6 Annual impacts of residents' spending on the Wairarapa sub-regional economy

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	3.0	1.2	1.0	5.1
GDP (2018$m)	1.6	0.6	0.6	2.8
Employment (FTEs)	37	5	5	47

4.3.2 Spending impact on the Wellington Region

Because it is assumed that the residents are most likely to move to the new village from within the Wellington Region, spending which already occurs within the wider Wellington Region will not be additional, so it has not been included as an impact in this report.

4.4 Combined impact of village operational and residents' spending

Taken together, the village operational expenditure and the spending of the residents, form the enduring annual impact of the village. Within South Wairarapa District this amounts to $4.8 million which will directly generate 73 FTEs. Including the flow on effects of this spending the local economy will be expanded by $5 million annually.

Table 4.7 Combined annual impact of village operational and residents' spending in South Wairarapa District

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	4.8	1.1	1.1	7.0
GDP (2018$m)	3.5	0.7	0.8	5.0
Employment (FTEs)	73	10	11	94

The total impact on the Wairarapa sub-region is larger, as it includes all spending within South Wairarapa as well as procurement and staffing from outside of the district. The ongoing operation of the village can be expected to create an enduring $8.6 million additional GDP and 178 new jobs.

Table 4.8 Combined annual impact of village operational and residents' spending in the Wairarapa sub-region

	Direct	Indirect	Induced	Total
Expenditure (2018$m)	8.2	2.9	3.1	14.2
GDP (2018$m)	5.2	1.6	1.9	8.6
Employment (FTEs)	130	24	24	178

To put the totals into context, BERL's Local Authority Database indicates that GDP in South Wairarapa District was $367 million in 2018. This implies that once fully occupied, the annual impact of the village will increase GDP by the equivalent of 1.4 percent of its current level. Likewise, the database indicates that FTE employment in the district was 3,069 in 2018, which implies that as the village will increase employment by 94 new jobs, the impact will be equivalent of three percent of the current level. While these figures may appear moderate it is important to understand that this effect will be lasting, as it is due to the annual impact.

4.5 Impact of a larger care facility

As mentioned in Section 3.4 there is potential for the care facility component of the village to be scaled up to 120 beds. Should this option be progressed, the impacts of the ongoing operational expenditure could be noticeably higher as a result of the additional staffing a bigger facility will require.

5 Conclusions and next steps

5.1 The construction and operational phase economic impacts

Based on our analysis, we conclude that, without the *Orchards at Greytown*, the population of South Wairarapa District is likely to grow relatively quickly in the medium term (10 years). The economy will grow, but probably at less than the national rate, as it has done during the past decade.

Construction of the village will provide a moderate short term economic boost to the district economy, and the medium to longer term effect (when the village is fully built and occupied) will be significant. For example, we estimate that when it is fully developed, the village will boost employment in the South Wairarapa economy by 94 FTEs. The population growth path will shift to a higher plane, aggregate household expenditure will grow and this will stimulate local business development. This will happen because most of the village residents will be living independently, and are likely to be financially secure.

Benefits will flow beyond the South Wairarapa District and contribute to increased GDP and employment in the other districts in the Wairarapa sub-region.

In 2013, the population of the South Wairarapa District was 9,800. If the village is not developed, we expect the population to increase to 10,950 by 2023. However, if the village is developed, we expect the population to rise by around 500 people. Most of the population growth will occur in Greytown.

5.2 Next steps

The construction and operation of the village will have a range of other impacts, both positive and negative, that need to be taken into account.

In a further report we will identify and quantify these impacts as far as possible, and weigh them against each other. The impacts to be included will range from the dynamic economic impacts of a larger and older population to the social, cultural and environmental changes.

Appendix A Multiplier Analysis

We were provided with data on the *Orchards at Greytown's* projected expenditure. This data provided a basis for estimating the company's direct impact.

However, in the context of an impact assessment, the direct impacts tell only part of the story. As with any business, *Orchards at Greytown* has effects on the rest of economy that need to be taken into account. The company also has indirect effects by virtue of the fact that its expenditures on goods and services (other than labour) require other businesses and public sector service providers to increase their outputs and, hence, their inputs, including their employment. In turn, the providers' own providers need to increase their outputs and inputs. And, so on, down the supply chain.

The company also has induced effects, which arise when its employees, and the additional employees of the providers in the supply chain, spend their wages and salaries on consumer goods and services. This stimulates the consumer goods and service providers to increase their employment. Again, this effect is repeated all the way down the supply chain.

In the case of *Orchards at Greytown,* where people who are new to South Wairarapa will be attracted into the area to live, their spending of on consumer goods and services has an identical effect to that of the business operational expenditure.

Together, the indirect and induced effects are known as the multiplier (or flow-on) effects. These multiplier effects can mean that the total impacts of any economic activity (i.e. the direct plus indirect plus induced effects) are considerably larger than the direct effects alone.

How much larger depends on the size of the economy within which the effects are being measured. The impacts within a district or city will be smaller than those within a region, and those within a region will be smaller than at national level. This is because the smaller the economy, the less likely it will be that the supply chain for any business operation will be contained within that economy.

The multiplier effects were measured using input-output models of the South Wairarapa District, the Wairarapa, and Wellington Region economies. Input-output models summarise the complex inter-relationships in an economy and they can be used to show how changes in activity levels in one industry will have impacts on all other parts of the economy with which it interacts.

Appendix 17

Indicative Staffing Numbers

The Orchards at Greytown - Operating Expenses

Village income		Qty	Fee	Total		
	Villas	180	145	1,357,200		
	Apartments	30	145	226,200		
		210		**1,583,400**	Total village income	
Village expenses						
Rates estimate is updated, other expense figures are as for 143 Villas, 44 apartments						
- wages and salaries				647,000	13	FTEs
- rates and taxes	SWDC			119,076		
	GWRC			84,455		
- Insurance				400,000		
- building and grounds maintenance consumables				50,000		
- building and grounds maintenance wages					?	FTEs
- running costs of village van, cafe, pool and gym				98,692		
- utility costs for communal facilities				98,692		
Total Village OPEX				**1,497,915**	Diff	85,485

Care income	Total		Daily Fee	Current DHB	Total Revenue		Current Annual DHB Rat
Rest Home	20		146	53,110	1,062,204		48,282
Dementia	20		196	71,596	1,431,914		65,087
Hospital	20		230	83,954	1,679,084		76,322
Serviced Apartments	30		125	45,570	1,140,906		48,282
Total Income	**90**				**5,314,108**		
Care expenses							
Rates estimate is updated, other expense figures are as for 90 beds							
Salary & Wages	89%				4,750,763	106	FTEs
Property Costs (5%)					262,114		
		Utilities			76,812		
		Grounds			40,000		
		Services			38,406		
		Rates SWDC			10,900		
		Rates GWRC			53,734		
Consumables							
		Food			262,800		
		Medical			328,500		
Other (2%)					104,846		
Total Care OPEX					**5,928,875**		
Gross Profit Care				-	**614,767**	- 6,831	per bed
Total OPEX					**7,426,790**	**-6712**	Total FTEs
Total income					**6,897,508**		
Gross Profit				-	**529,282**		

Anticipated Staff Roster for The Orchards at Greytown

						FTE check	
Facility wide Staff							
	#		Hrs/week				
General Manager	1		40			1.0	
Sales	1.5		40			1.0	
Admin & Reception	2		96		(Includes 1 person on weekends)	2.4	
Finance	1.5		40			1.0	
Gardens & Maintenance	4		120			3.0	
Driver	1		40			1.0	
Activities Manager	1		40			1.0	
Catering/Café	2		112			2.8	
House Keeping Manager	1		40			1.0	
							14.2
Total Facility Wide	**15**			**568**	**14.2**		
Apportioned as follows:							
Independent Villas	70%			397.6	9.9		
Care Facility	30%			170.4	4.3		
Independent Villas							
	#		Hrs/week				
Activities Co-ordinator	1		40			1.0	
House Keeping Services	2		80			2.0	
Total	**3**			**120**	**3**		3.0
Care Facility Staff (to manage 120 care beds)							
	#		hrs/day	Total	Hrs/week		
Care Facility Manager	1				40	1.0	
Head of Care	2				40	1.0	
Laundry	3		8	24	168	4.2	
Activities	3		8	24	168	4.2	
Chef	1		8	8	56	1.4	
Cook	2		8	16	112	2.8	
Kitchen Assistant	3		8	**24**	**168**	4.2	
Total	**15**				**752**	**18.8**	18.8
On the Floor Staff (for 120 care beds)							
	#		hrs/day	Total	Hrs/week		
RN	4	7am-10pm	15	60	420	10.5	
	2.5	10pm-7am	9	22.5	157.5	3.9	
HCAs	21	7am-3pm	8	168	1176	29.4	
	13	3pm-11pm	8	104	728	18.2	
	9	11pm-7am	8	72	504	12.6	
Housekeeping	6	8am-4.30pm	7.5	45	315	7.9	82.5
							101.3
Total	**55.5**				**3301**	**82.5**	

	Hrs/week	FTEs	FTE check
Grand Total	4741	118.5	118.5

	Hours	FTEs	Av Salary	
Total staff	**4741**	**118.5**	**45,546**	**5,397,763**
Independent Villa	518	12.9	50,000	647,000
Care	4223	105.6	45,000	4,750,763
care as % of all staff	89%			

Anticipated Resident Numbers

Accommodation	#	Res/unit	Total
Independent Villas	180	1.3	234
Serviced Apartments	30	1	30
Care Beds	60	1	60
Total	**270**		**324**

Appendix 18, 18A

DGSE Design Statement including House Elevations, Floor Plans and appendices

THE ORCHARDS GREYTOWN DESIGN STATEMENT

05 MARCH 2019

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DATE. 05 MARCH 2019



Existing Orchard

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2 CONTEXT

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3 SITE

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PROJECT OVERVIEW

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GREYTOWN
DESIGN STATEMENT

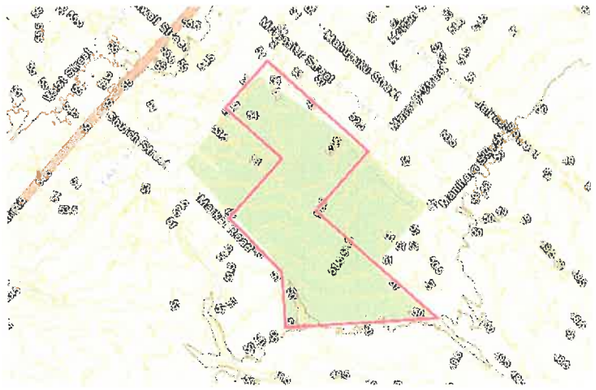
1.1
PROJECT No. T598



DISTRICT STREET MAP



AERIAL MAP



CONTOURS



Existing Orchard

The project site is the well-known 'Murphys Orchard' located on 67 Reading Street & 31 Market Road east of Main Street, Greytown. The site comprises of two lots of land equating to 138,200m² of total area.

Although zoned rural the site is within 5 minutes walking distance to the town centre of Greytown.

A key design driver in this project is to retain the memory of the Orchard as the special character that will define the sense of place for The Orchards development. This will be done by the retention of specific trees and groups of trees. The site's scale, flat contour and convenient location to Greytown High Street amenities offer the opportunity to develop a village that integrates into the heart of the existing township.

SITE ADDRESS

67 Reading Street and 31 Market Road, Greytown

SITE AREA

138,200m²

LEGAL DESCRIPTION

PT Tahorahina Blk (55,300m²)

Lot 4 DP 410283 Lot 1 DP 6753 (82,900m²)

DISTRICT PLANNING ZONE

Rural - Primary Production

CONTEXT - DISTRICT ANAYSIS

DATE. 05 MARCH 2019

THE ORCHARDS
GREYTOWN
DESIGN STATEMENT

2.1
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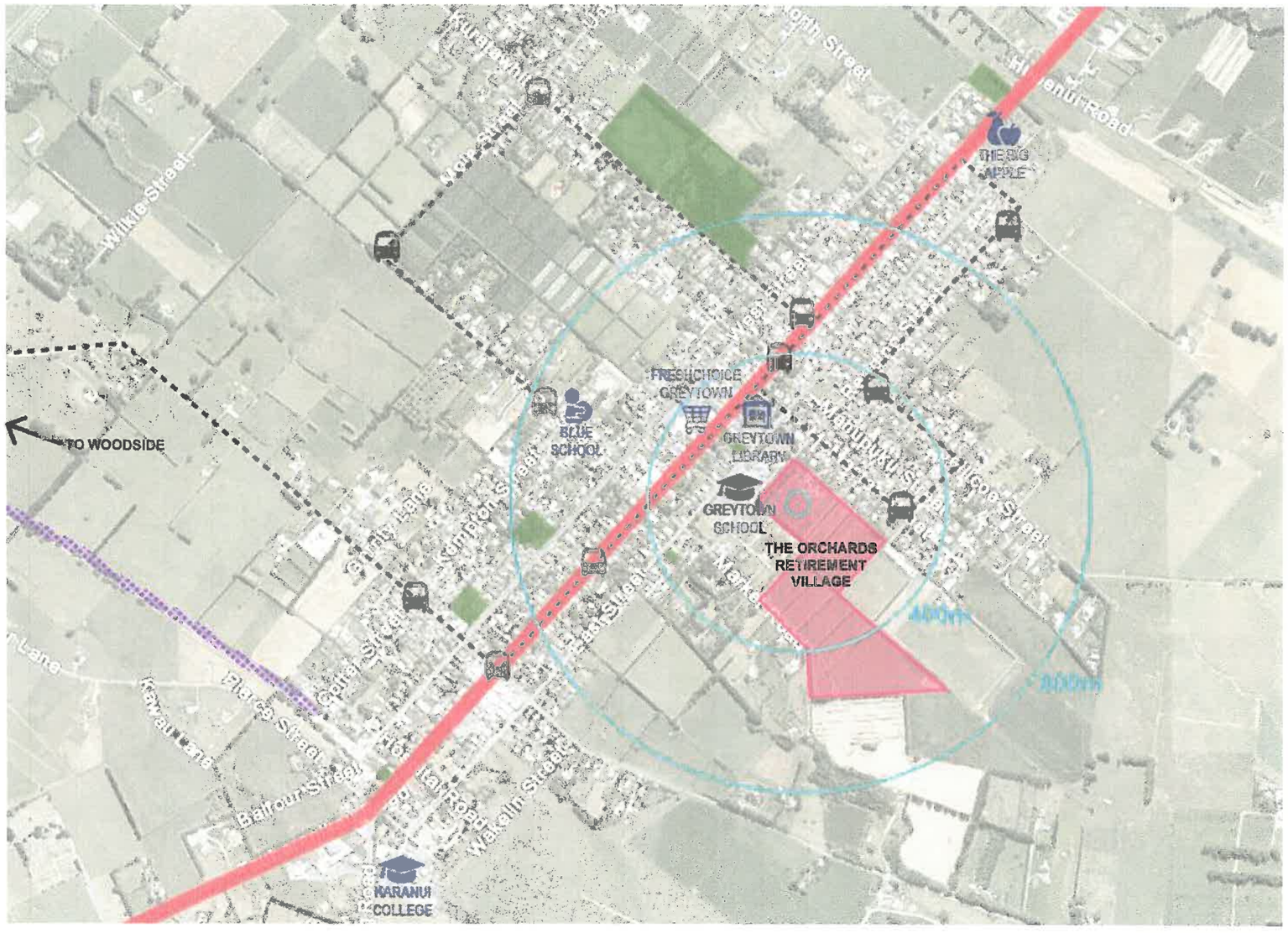

Connected to the Community
A site that is 'connected' and in close proximity to a wide range of amenities. Its location is a short walk to amenities such as the supermarket, library, cafes and shops located on Main Street (SH2). Greytown school is located on Reading Street opposite the site with the Kindergarten located within the same block.

'Safe - Walkable - Cycleable'

- Local Schools
- Preschool
- Library
- Supermarket
- Fruit Shop
- Bus Stops
- Open Space
  Parks and green areas
- Arterial Road
  Main St (State Highway 2)
- Greytown - Woodside Bus Route
  (Route operates both ways)
- Greytown - Woodside Trail

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SITE - EXISTING SITE

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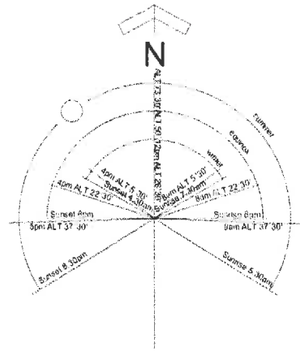

Existing dwelling

Outbuildings

THE ORCHARDS
GREYTOWN
DESIGN STATEMENT

3.1
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The Orchards site constitutes approximately 13.8 Hectares located to the South East of Greytown on the fringe of the Rural zone. Surrounded by a mixture of use types such as residential properties, rural residential lifestyle blocks and rural farmland, the site was previously being used as an orchard to the North and growing crops to the Southern portion. The site is generally flat sloping gently to the south with good solar access to most areas of the site.

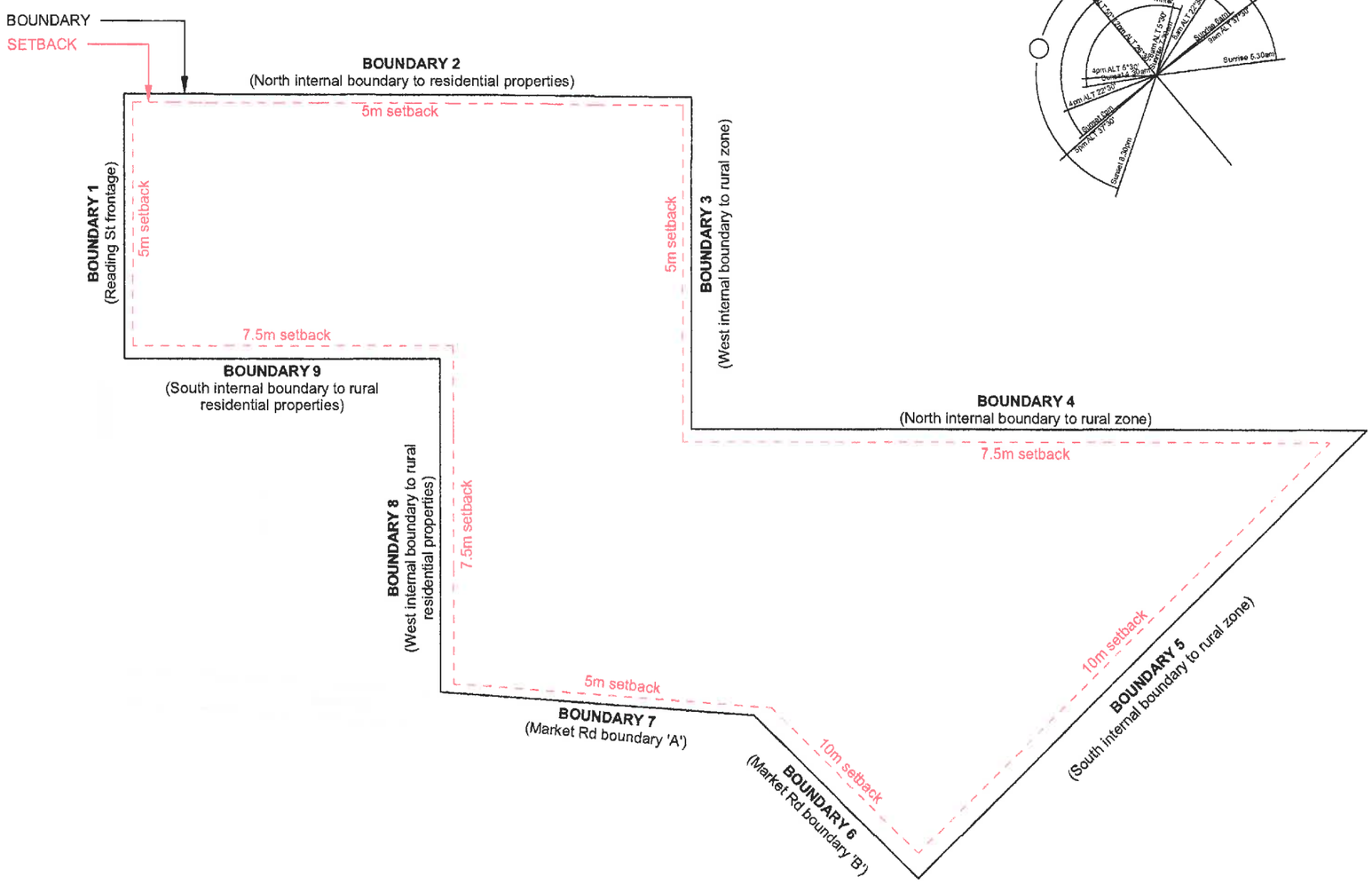
The site has an open street frontage to Reading Street and Market Road and a variety of aspects from street front, suburban boundary to expansive rural outlook.

SITE - PLANNING CONTROLS

DATE 05 MARCH 2019

THE ORCHARDS
GREYTOWN
DESIGN STATEMENT

3.2
PROJECT No. T598



The site is currently zoned Rural (Primary Production), it is proposed as part of this proposal to re-zone the site as residential with a retirement village character overlay. The planning constraints proposed as part of this proposal include site coverage, number of independant dwellings and generous boundary setbacks.

The following District Plan Provisons are proposed for The Orchards Village Character Area:

- Boundary Setbacks as shown in diagram to left
- The main advanced residential care facility must include doors, windows, building modulation or other architectural detail for no less than 50% of its total façade facing Boundary 3.
- The overall building coverage shall not exceed 26%
- Each independent residential unit shall have an exclusive paved outdoor living court of at least 15m².
- Minimum separation distances between independent dwelling units is 4.5m, except for duplexes.
- All buildings and activities within The Orchards Retirement Village Character Area shall comply with all Residential Zone and District-wide permitted activity standards, except where the following apply:The total number of independent residential units (including stand-alone, duplex and terrace dwellings but excluding advanced residential care facilities) shall not exceed 180.
- Advanced residential care facilities shall not exceed 120 beds.
- Non-residential activities within the Orchards Retirement Village Character Area shall be ancillary to the operation of the retirement village.

Traffic:
- All roads to be 5.5 metres with a footpath on one side for primary internal roads or 3 metres with pedestrian shared in the movement lane for secondary roads
- A maximum contiguous carparking area containing no more than 15 parking spaces, including access and manoeuvring areas.

Services:
- Buildings requiring wastewater disposal shall be connected to the reticulared sewerage system.
- Stormwater from buildings and hard surfaces shall be disposed of on site

Screening and Landscape:
- Any commercial storage, bin storage or service area shall be screened. The screening shall be no less than 1.8m in height, comprising either a densely planted buffer or a fence or wall.
- Not less than 10% of the Orchards Retirement Village Character Area shall be planted.

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SITE - LOCAL CHARACTER

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An important consideration in the design of the proposed village is for it to acknowledge and respond to its neighbouring context, which include the single story residential dwellings to Boundary 2, rural residential dwellings on Boundary 9 and the school opposite the Reading Street frontage, as well as opportunities which include rural views. The following assessment of the wider neighbourhood area informed design decisions at the Masterplanning and Concept stage.

The local neighbourhood is made up of a mixture of architectural styles, aesthetics, materials and ages. (Refer images 1-12).

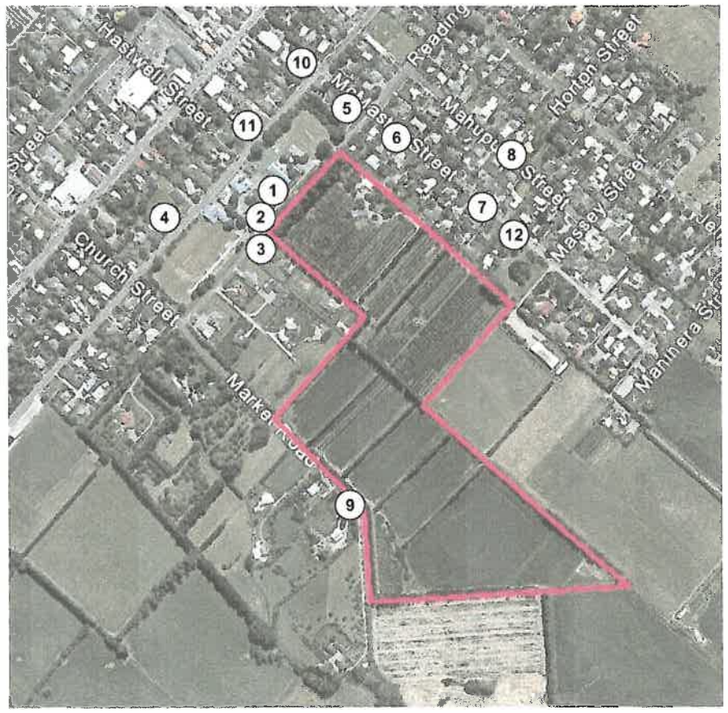
Materials: Cladding is predominantly painted weatherboard with brick used in some more recent dwellings.

Size: Houses most commonly single story with some 2 storey dwellings.

Style: The architectural style within Greytown is varied with the traditional dwellings comprising workers cottages & villas dating from the 1800's through to recent brick & tile pitched roof dwellings.

Landscape: Mature trees and generous front yards predominate in this area. Houses are sited in established landscape garden settings.

Lot Layout: Along with the generous setbacks sites are predominatly laid out with garages either at the rear or parrallel with the front of the dwelling in more modern houses. Side yards vary in size with rear yards also being generous.



SITE - TOPOGRAPHY

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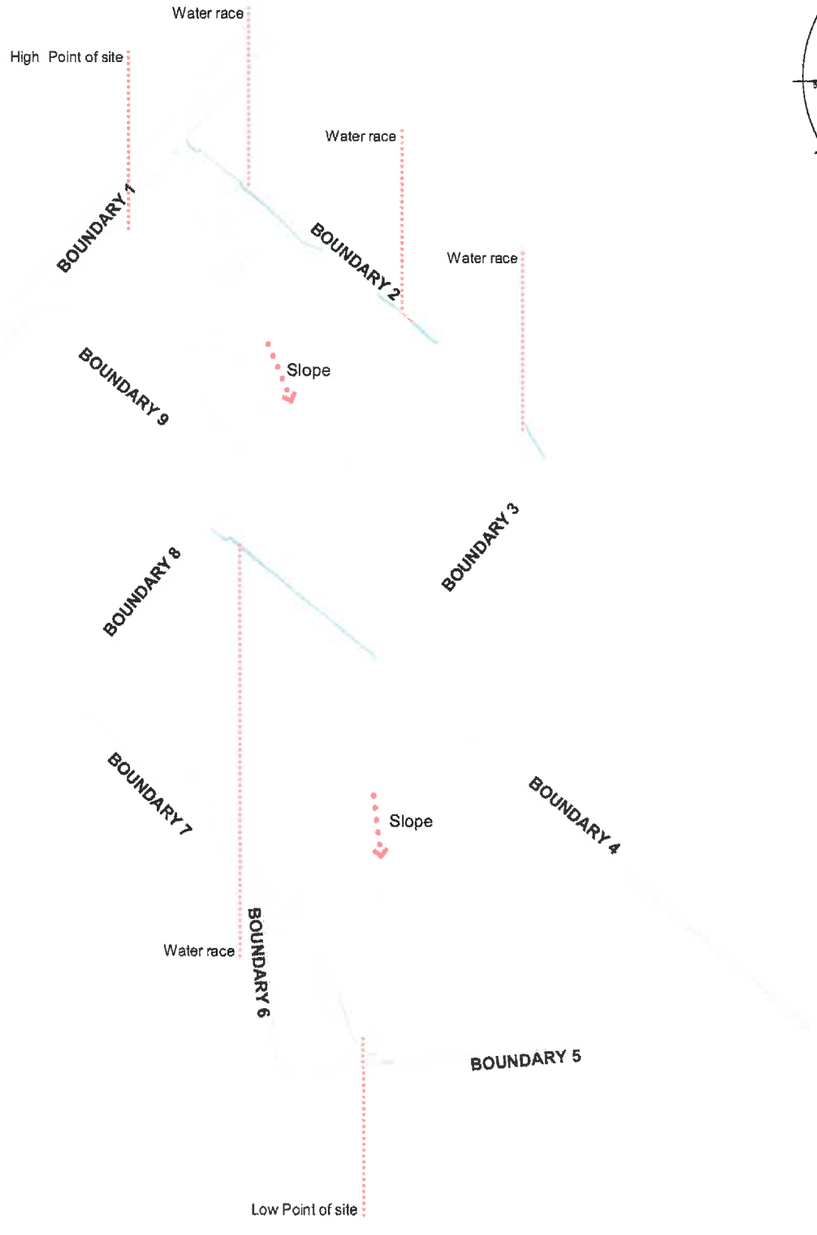

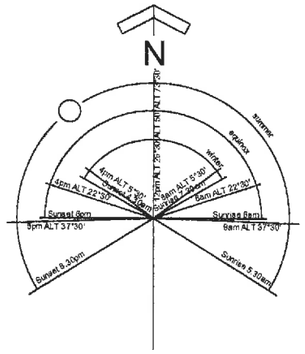

THE ORCHARDS
GREYTOWN
DESIGN STATEMENT

3.4
PROJECT No. T598

The site is well oriented for solar exposure with a long boundary to the north and the topography although appearing flat actually slopes to the South East by approximately 5m over the length of the site.

Two of the branches of the Moroa water race flow through the site one centrally and the other Northern boundary.

The site edges are generally landscaped with established planting and shelter belt. Existing orchard trees cover the Northern half of the site with a couple of planting rows also breaking the Southern part of the site.



Water Race running through the centre of the site

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DESIGN RESPONSE - LAYOUT

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Grid Roading Axis



Roading Hierarchy

The Brief for the village is to create a warm welcoming and vibrant retirement community which welcomes the wider Greytown community and becomes an integrated part of the community rather than an exclusive enclave. A mixture of unit types to suit a wide demographic are proposed. The environment created is to be aspirational with the design of buildings on the site including the villas to be of a timeless design. The former land use is represented in the landscape treatment of the site with a strong focus around the Orchard and the retention of existing established landscape.

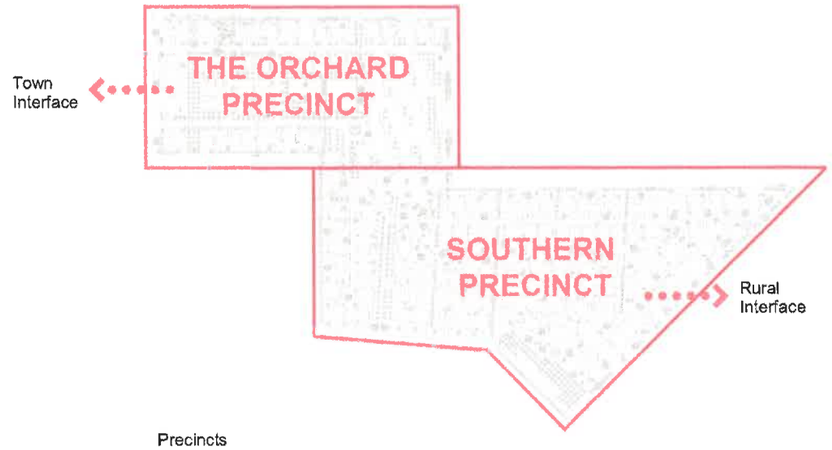
Accommodation types on the site will include 2 bedroom duplex and 3 bedroom stand alone houses in a mixture of sizes. The main communal building to be consented at a later date will include Hospital / Rest Home Care, Memory Care, Serviced Apartments and a host of communal facilities for the wider village.

The proposed village is designed in 2 distinct precincts, one being the orchard precinct with the town interface, has been laid out to follow the orchard rows and Greytown's strong town grid being more formal with tree lined roads leading to the centrally located main building as the focal point of the village. This precinct also includes a centrally located bowling green, wellbeing centre and village green creating a central focal point for the village.

The second precinct is the less formal southern precinct with its rural interface and a more organic layout than the Orchard precinct which relates to its rural surroundings. The central focus of this precint is a meandering swale which many of the villas are located to visually connect to. Other features of this precinct include a tree lined entry drive and motor home parking for storage of resident's motorhomes.

The roading heirachy is as follows, A Boulevard (primary road) links the Reading Street and Market Road frontages along with the main entry of the main communal building. Secondary roads futher connect the site with laneways provided where an increased priority on shared pedestrian access is intended.

The Housing is laid out to take advantage of the sun with Northern facing living spaces and covered outdoor areas.



Precincts

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DESIGN RESPONSE - SITE

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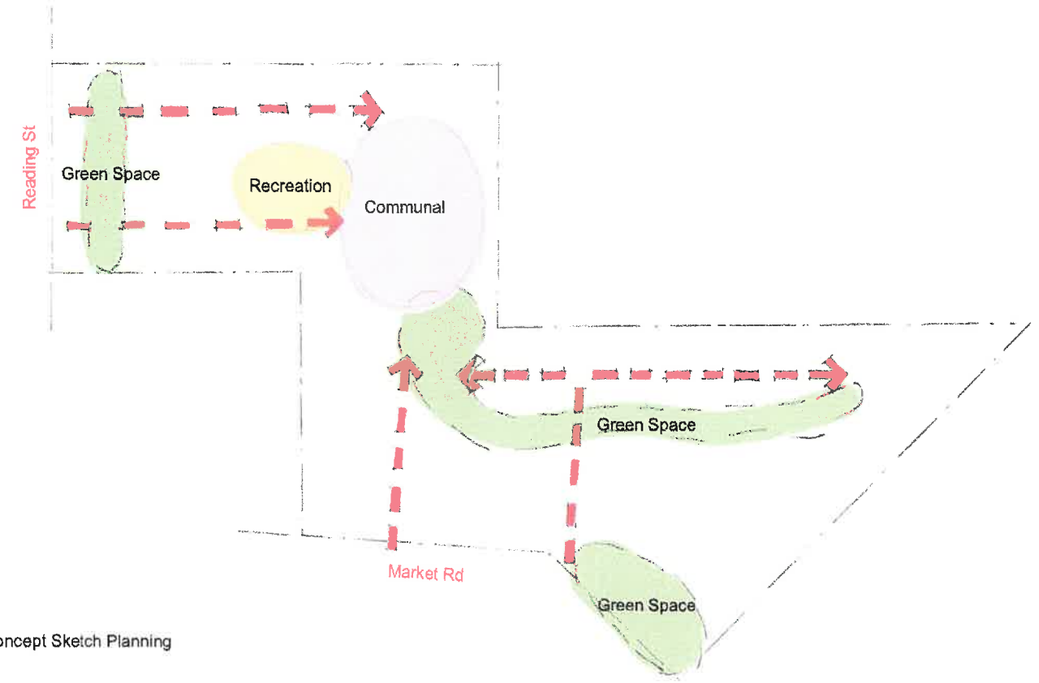

Concept Sketch Planning



Housing Typology Distribution

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GREYTOWN
DESIGN STATEMENT

4.2
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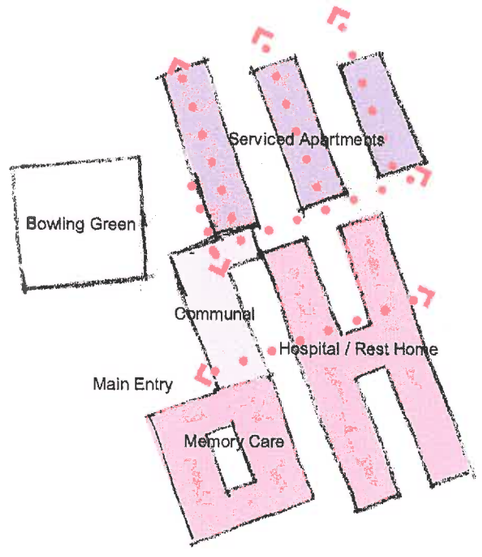
To create an integrated community village, the proposal locates villas fronting the streets, activating street frontages. Multiple road connections also link the existing roading network with the village. These strategies combined with no gates will create a village which seamlessly integrates with the surrounding neighborhood and wider community. Beyond this the possibility of the bowling club moving to the site has been discussed with the Greytown Bowling Club which would further forge connections with the wider community.

The housing has been carefully laid out to provide a variation of sizes and forms thoughout the village with the communal spaces located centrally.

The Wellbeing Centre is proposed to contain an indoor swimming pool, gym, changing rooms and multifunctional room for residents leisure and wellbeing.

The bowling green is proposed to be overlooked by both the Wellbeing centre and the main communal building containing a café with terrace opening out to the bowling green along with lounge, library and other amenities. To the North of the main communal building, serviced apartments will provide for the less independent residents with Hospital / Resthome facilities to the east and Memory Care to the west. Multiple entry's will provide direct connection to these functions along with internal circulation being provided. The Main Entry is proposed for the end of the primary road extending from Reading Street which will have a covered drop off, providing a legible entry point.



Main Communal Building Concept

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DESIGN RESPONSE - HOUSING DESIGN

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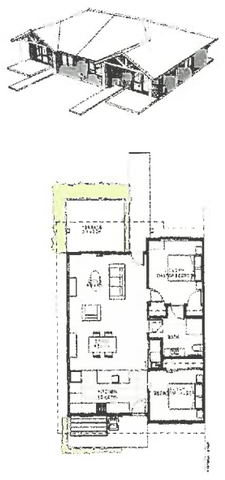
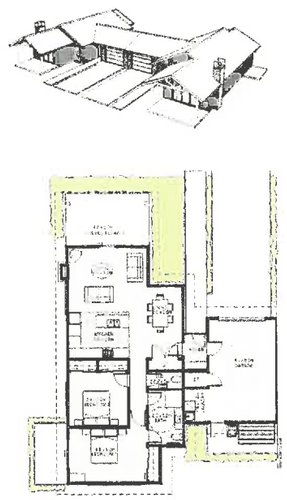
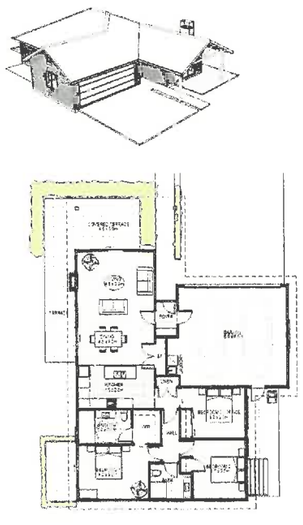
TYPE A - NORTH 84m²



TYPE B - NORTH 123m²

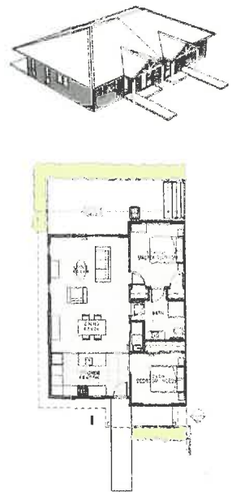


TYPE C - NORTH 160m²

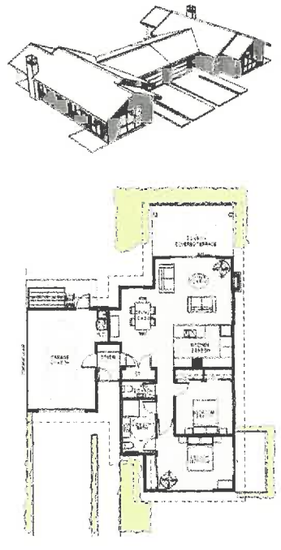


NOTE:
SEE APPENDICES FOR ENLARGED VILLA PLANS AND ELEVATIONS

TYPE A - SOUTH 84m²



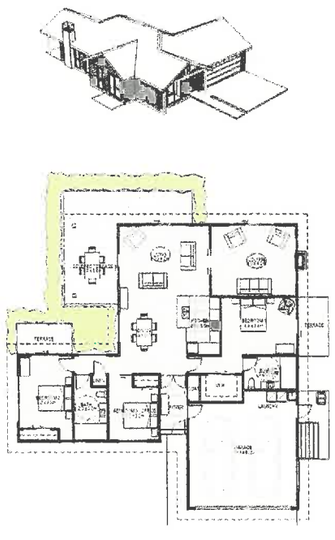
TYPE B - SOUTH 123m²



TYPE C - SOUTH 160m²



TYPE D - SOUTH 203m²



There are 4 Villa sizes with a total of 7 Typologies when designs for Northern access and Southern access are taken into consideration.

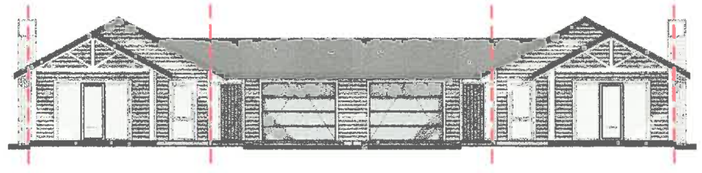
Floor Planning
Villas have been carefully designed to maximize amenity, efficiency and solar access. Each villa has been planned to minimize circulation space while maximizing usable space. This is coupled with generous floor areas to provide quality well planned homes.

Amenities incorporated in many of the typologies include:

- **Spacious living spaces** with indoor outdoor flow.
- **Covered outdoor areas** providing shaded space in summer for outdoor living and dining, along with all-weather outdoor space. These covered outdoor areas front streets where compatible with a Northern Aspect acknowledging the street front veranda common to early Greytown dwellings.
- **Generous bedroom sizes** to aid mobility.
- **Ample storage** to ensure practical livable environment is created.
- **Bathrooms with accessible principles** considered to ensure units are futureproofed.
- **Flexible bedroom / study / hobby / second spaces** with large sliding doors connected to living spaces are provided where practical to increase the living space and allow flexibility of use and amenity.
- **A mixture of garage sizes** are provided from doubles (6.5m wide) on 3 bedroom villas to single (4m wide) on 2 bedroom villas and smaller units without, recognizing many residents may have no need for a vehicle and a garage would be surplus to their requirements.

Building Form
The forms of the villas reference the traditional built form found in and around Greytown, with hips & gables clad with metal longrun roofing. The forms are broken down with careful articulation.

The duplex units are designed to read as separate dwellings with a linking garage with lower roof form providing articulation of the larger mass into smaller components.



Articulation of Duplex Type B Villas

DESIGN RESPONSE - EXTERIOR MATERIALS & COLOURS

DATE. 05 MARCH 2019

THE ORCHARDS
GREYTOWN
DESIGN STATEMENT

4.4
PROJECT No. T598

1. ROOFING - CORRUGATED

COLORSTEEL
Gull Grey


COLORSTEEL
Sandstone Grey


COLORSTEEL
Grey Friars


COLORSTEEL
Thunder Grey


COLORSTEEL
Karaka


COLORSTEEL
Ironsand

2. CLADDING - WEATHERBOARD


RESENE Double Alabaster


RESENE Alabaster


RESENE Thorndon Cream


RESENE Half Surrender


RESENE Grey Granite


RESENE Grey Friars


RESENE Bokara Grey

3. CHIMNEY - BRICK


NZ BRICK Madrid


MIDLAND BRICK Ceniza


NZ BRICK Pamplona


NZ BRICK Tenerife


MIDLAND BRICK Mora

4. WINDOW & DOOR FACING BOARDS / TRUSS & COLUMNS / CORNER TRIMS

RESENE Double Alabaster

RESENE Alabaster

RESENE Ceramic

RESENE Aqua Haze


RESENE Nocturnal


RESENE Bokara Grey

5. GARAGE DOOR

COLORSTEEL
Gull Grey


COLORSTEEL
Sandstone Grey


COLORSTEEL
Grey Friars

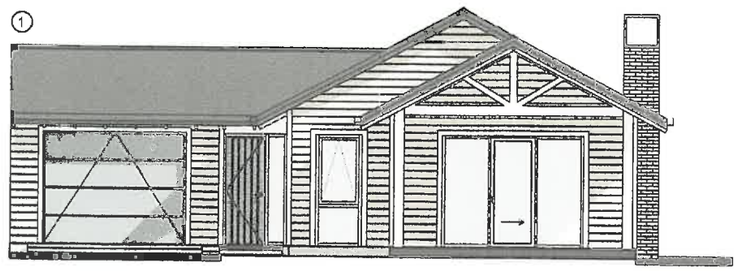

COLORSTEEL
Thunder Grey


COLORSTEEL
Karaka

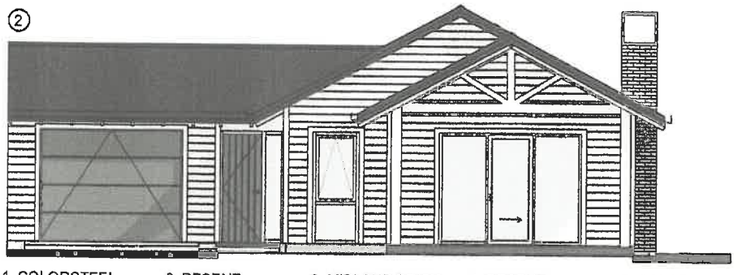

COLORSTEEL
Ironsand

Traditional materials which reflect the local architecture are utilized being predominantly painted weather board and corrugated metal roof's. These are coupled with traditional details such as corner boards, wide window facings and protruding rafter ends to create homes with a strong character and identity. A varied palette of colours shades are proposed providing variety of appearances. Brick chimneys are also incorporated in many of the villas, these are topped with a modern treatment that compliments the villas designs.

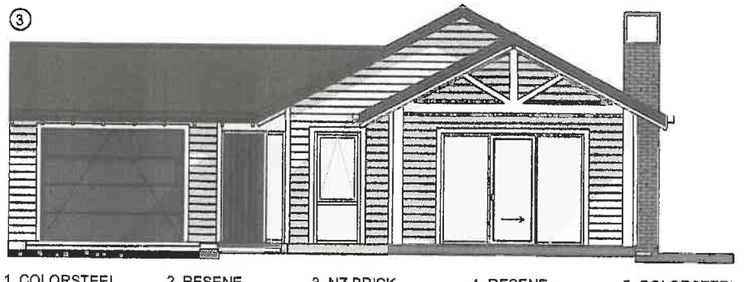
COLOUR COMBINATION EXAMPLES - TYPICAL VILLA FRONT ELEVATION

① 

1. COLORSTEEL Sandstone Grey
2. RESENE Thorndon Cream
3. NZ BRICK Madrid
4. RESENE Double Alabaster
5. COLORSTEEL Gull Grey

② 

1. COLORSTEEL Ironsand
2. RESENE Double Alabaster
3. MIDLAND BRICK Ceniza
4. RESENE Double Alabaster
5. COLORSTEEL Sandstone Grey

③ 

1. COLORSTEEL Karaka
2. RESENE Half Surrender
3. NZ BRICK Tenerife
4. RESENE Double Alabaster
5. COLORSTEEL Grey Friars

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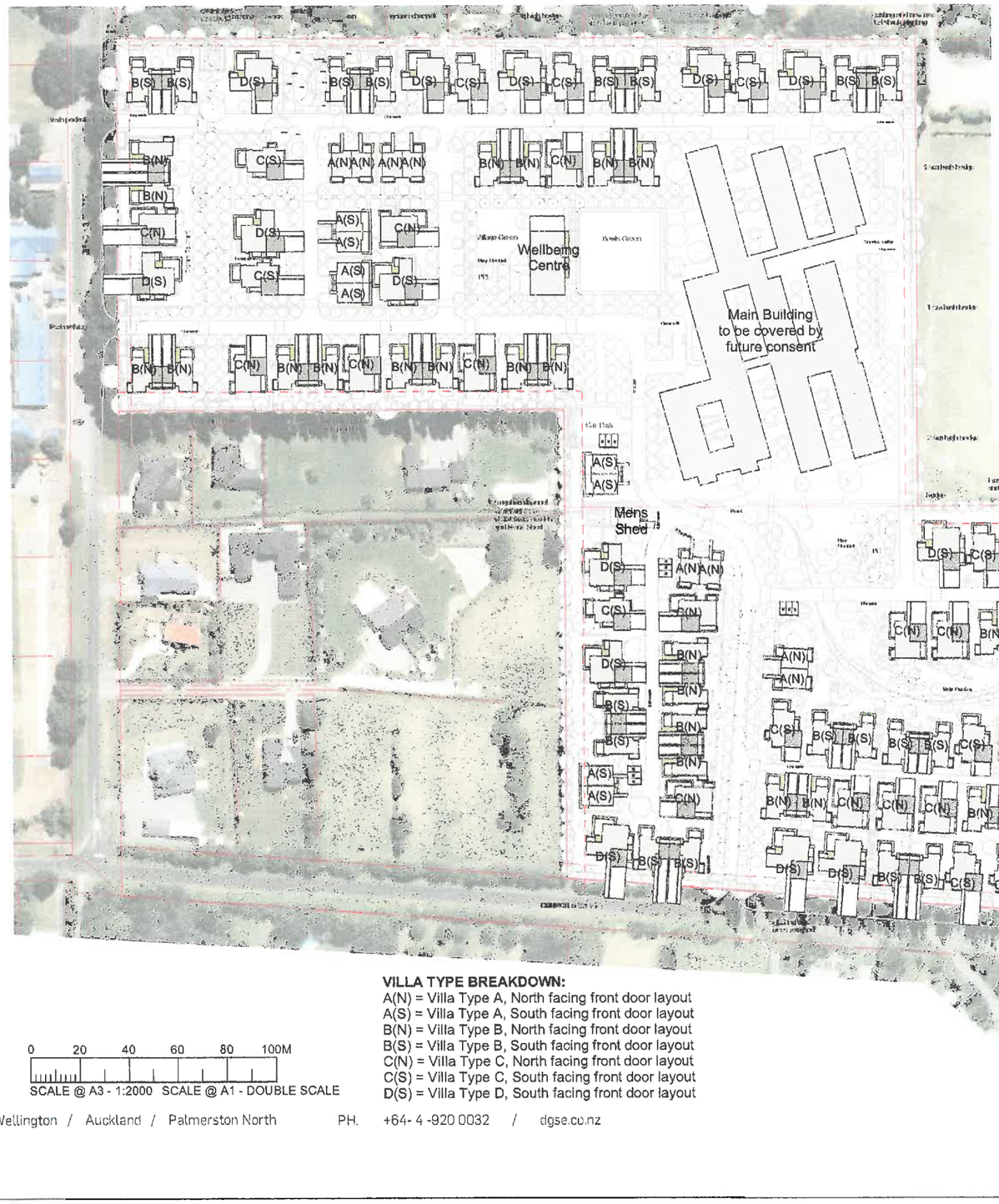
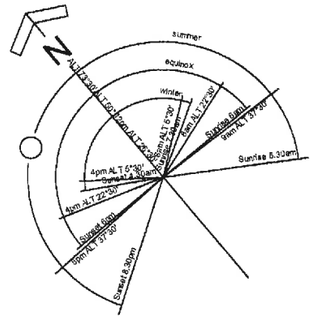
DESIGN RESPONSE - PROPOSED SITE PLAN

DATE. 05 MARCH 2019

THE ORCHARDS
GREYTOWN
DESIGN STATEMENT

4.5
PROJECT No. T598





ACCOMODATION SUMMARY

Independent Living

Type	*Number*	
Villa A	34	
Villa B	72	
Villa C	45	
Villa D	25	
Total Independent Living		**176**

Main Communal Building (part of future consent)

Care		
Serviced Apartments / Rest Home / Hospital / Memory Care	120	
Total Care		**120**
Total Independent Living & Care		**296**
Site Coverage	24.9%	

VILLA TYPE BREAKDOWN:
A(N) = Villa Type A, North facing front door layout
A(S) = Villa Type A, South facing front door layout
B(N) = Villa Type B, North facing front door layout
B(S) = Villa Type B, South facing front door layout
C(N) = Villa Type C, North facing front door layout
C(S) = Villa Type C, South facing front door layout
D(S) = Villa Type D, South facing front door layout

0 20 40 60 80 100M
SCALE @ A3 - 1:2000 SCALE @ A1 - DOUBLE SCALE

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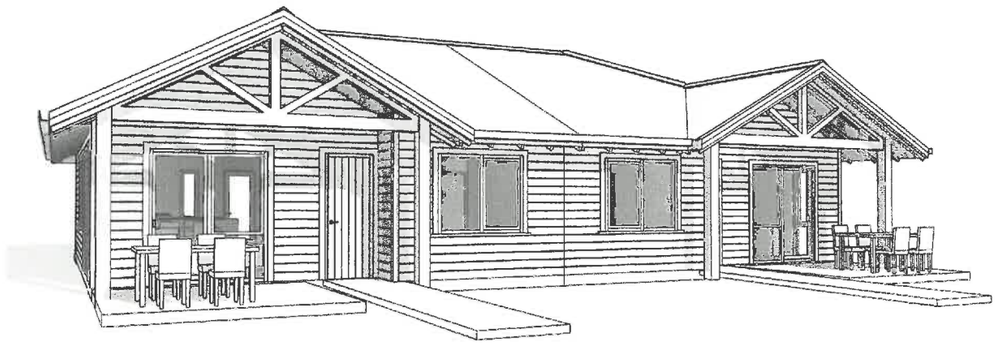
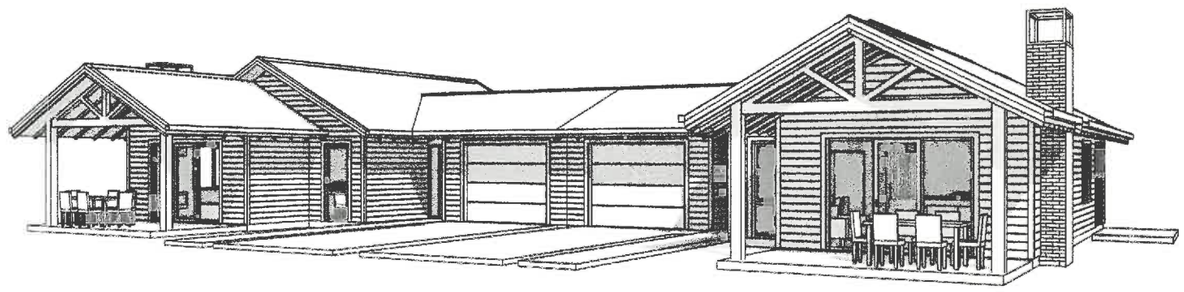
DESIGN RESPONSE - CONCLUSION

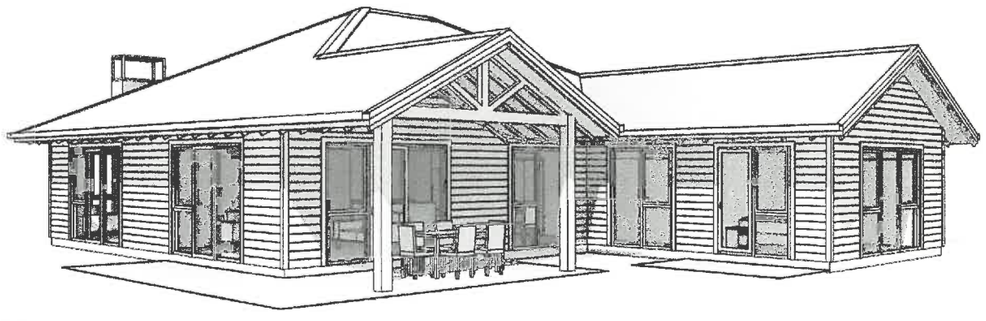
DATE: 05 MARCH 2019



Type A North



Type B North



Type D South

Our comprehensive proposal creates a holistic natural setting that will appeal to older people – not gated and separated but connected and growing out of the unique character of Greytown.

Our design promotes resident wellbeing to reflect the following:
- An interest in wellness, remaining active and staying connected across generations will be a key focus.
- Wellbeing in the community that is measured by – a sense of purpose, supportive relationships, financial security, pride in community and physical health
- Wellbeing that flows from people participating in the community

Our proposal develops a community in a pastoral setting made up of distinct precincts defined by landscape character and distinctive amenity:
- Boulevard,
- Laneways,
- Village Green,
- Swale,
- Organic Vegitable gardening,
- Orchard,
- Nature trails

A variety of fruit trees will be used to define precincts while reinforcing the legacy of Murphy's Orchard.

A strong relationship with the school will be pivotal to integrating with Greytown community. We propose to use Green Walkways within the development that could be used as nature trails for the schools physical and educational use.

Within the village town centre a wellness centre will offer state of the art exercise space, yoga studio, swimming pool.

Organic vegetable gardens will interface with the pastoral boundaries.

A variety of housing types will extend out from the village centre and be available to people aged 70+ to assist the integration of the new community into the intergenerational Greytown township.

All buildings are designed with Universal Design principals to respond to the needs of diverse users to enable aging in place for a maximum period for everyone.

Plans are efficiently arranged into service, living and bedroom areas to minimise circulation space and all space is carefully considered.

Our focus on community wellbeing is embedded in the design encouraging resident activity and connectivity via Green Walkways

The brief to create a welcoming and vibrant community, connected to the wider neighborhood of Greytown and beyond has been achieved in the proposal, with the combination of site planning, villa design and extensive communal facilities culminating in a village that will be make The Orchards a very positive contribution to the local area.

STAGING PLAN

DATE. 04 MARCH 2019

THE ORCHARDS
GREYTOWN
DESIGN STATEMENT

A1
PROJECT No. T598



Stage 1

Site Area	37,157m² *Approximately*
Site Coverage	22% *Approximately*
Type A Villas	8
Type B Villas	22
Type C Villas	11
Type D Villas	8
Total Villas	49
+ Wellbeing Centre	

Stage 2

Site Area	33,270m² *Approximately*
Site Coverage	24% *Approximately*
Type A Villas	10
Type B Villas	20
Type C Villas	14
Type D Villas	6
Total Villas	50
+ Mens Shed	

Stage 3

Site Area	49,880m² *Approximately*
Site Coverage	24.5% *Approximately*
Type A Villas	16
Type B Villas	30
Type C Villas	20
Type D Villas	11
Total Villas	77

Stage 4 *(to future consent)*

Site Area	16,440m² *Approximately*
Site Coverage	35% *Approximately*
Main Building	5831m² *Approximately*

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VILLA TYPE A (NORTH)

DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A2

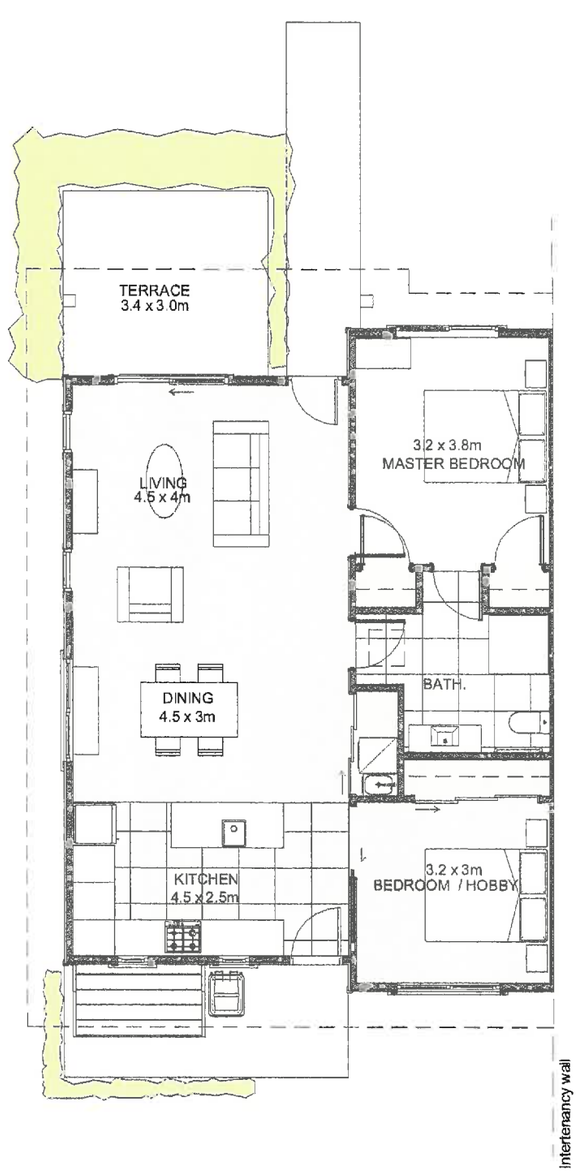
PROJECT No. T598

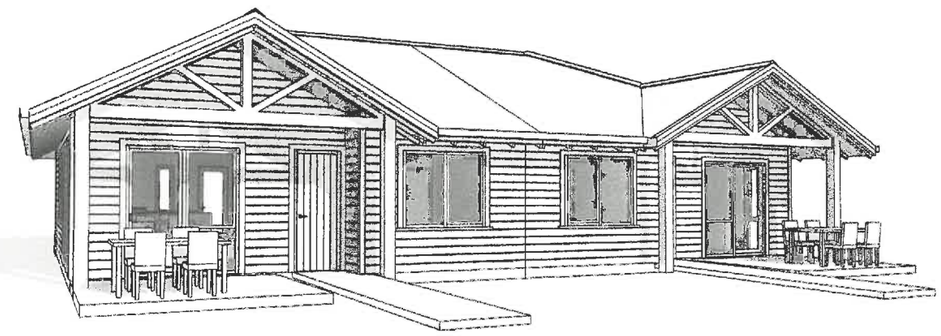
FLOOR AREA *84m²*

BEDROOMS *2*

BATHROOMS *1*

LIVING *1*





Floor Plan
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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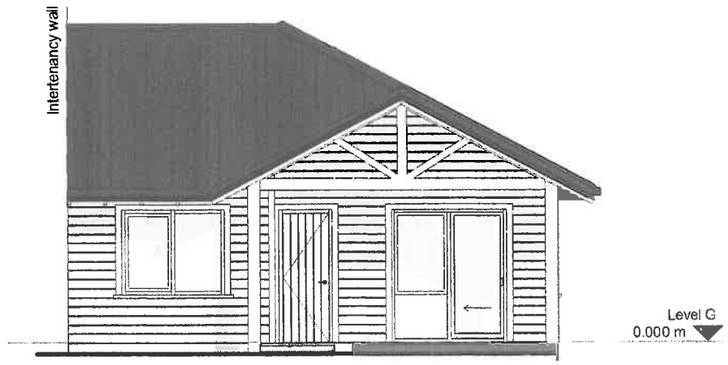
VILLA TYPE A (NORTH) - ELEVATIONS

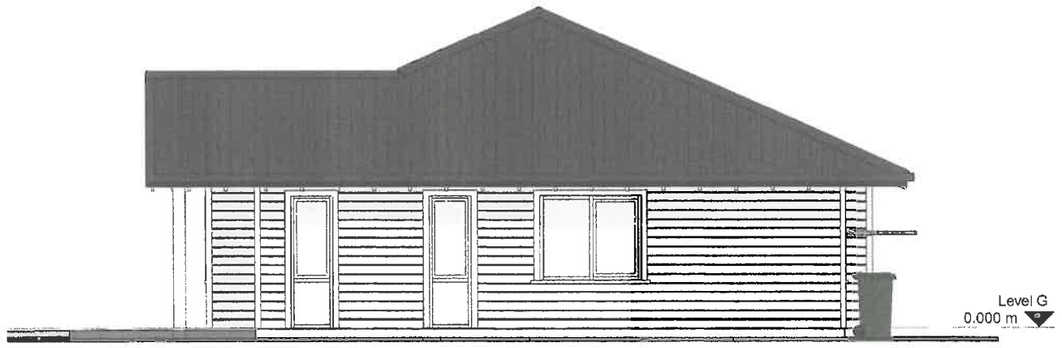
DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

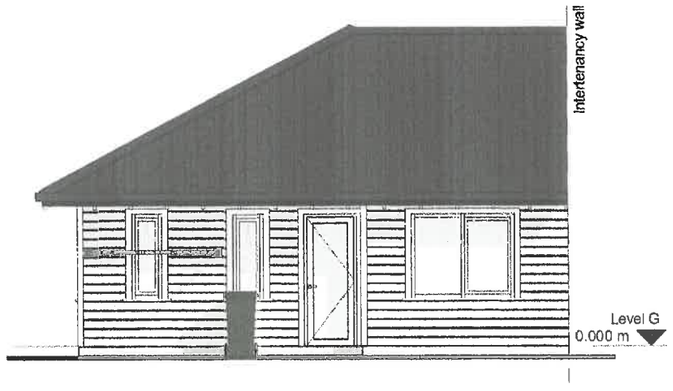
A3
PROJECT No. T598



3 **Front Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE



1 **R/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE



2 **Rear Elevation**
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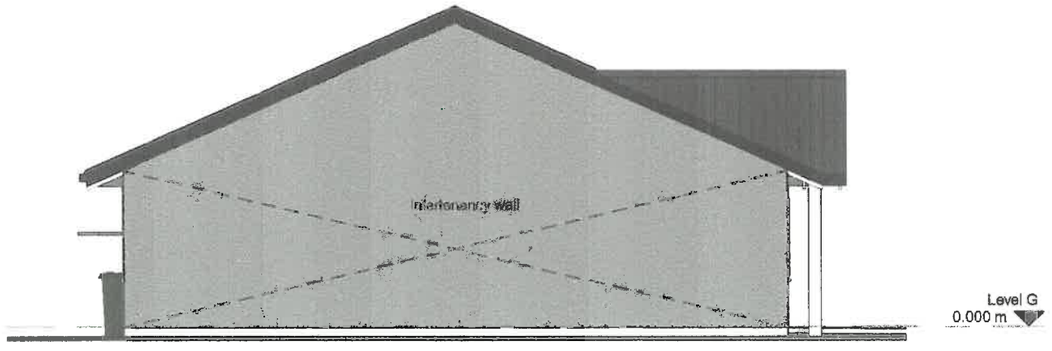

4 **L/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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VILLA TYPE A (SOUTH)

DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A4

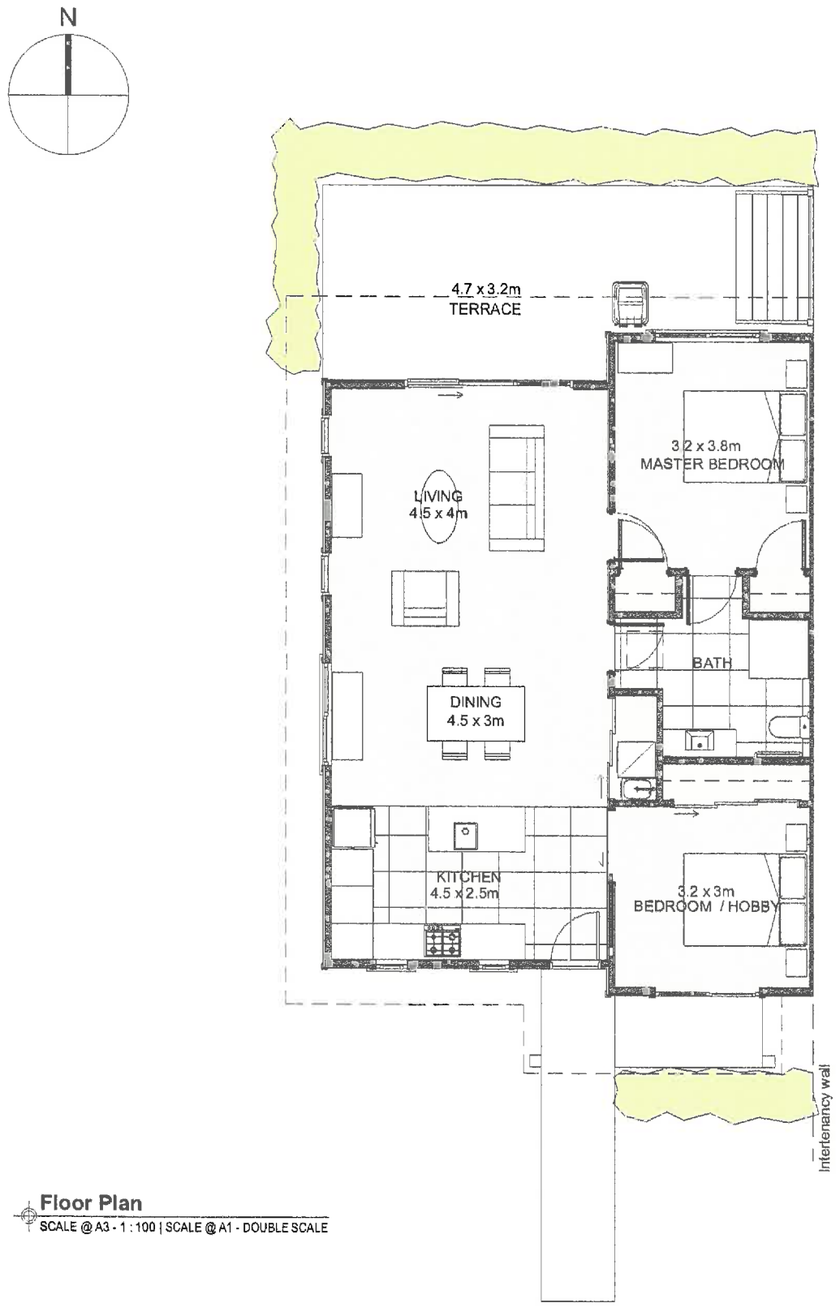
PROJECT No. T598

FLOOR AREA *84m²*

BEDROOMS *2*

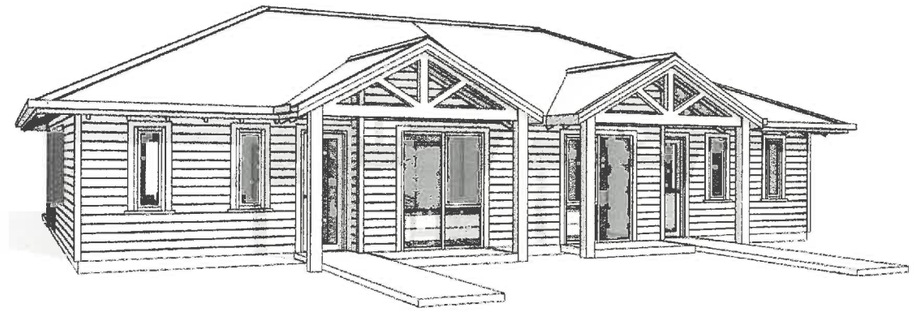
BATHROOMS *1*

LIVING *1*



Floor Plan

SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE



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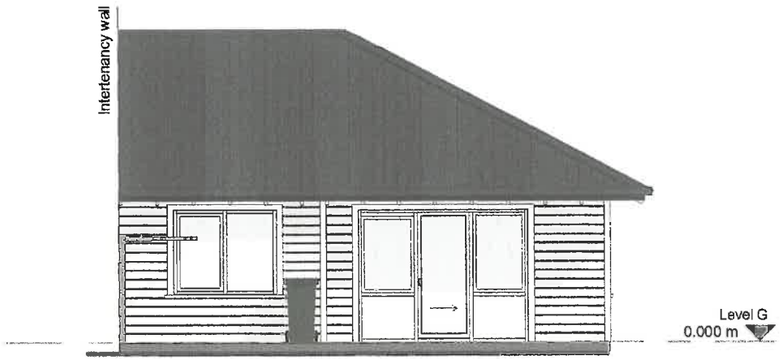
VILLA TYPE A (SOUTH) - ELEVATIONS

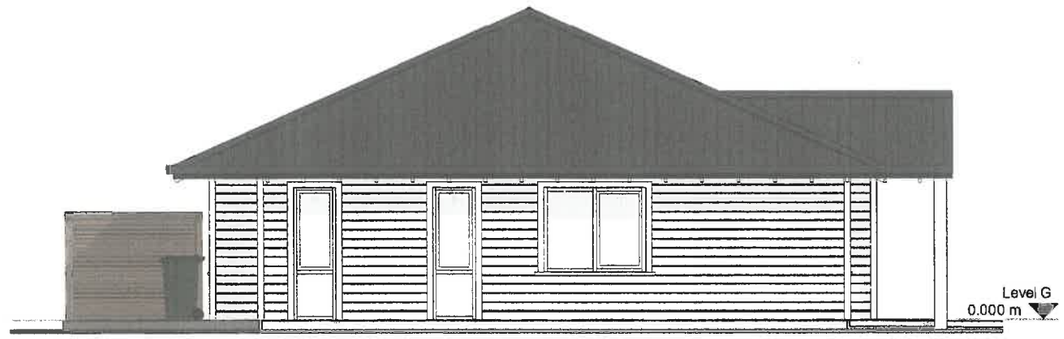
DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

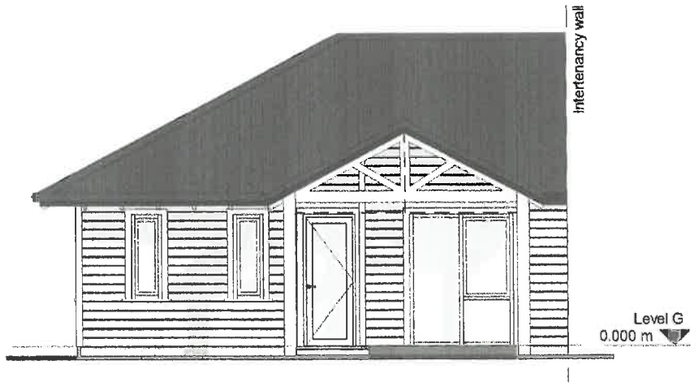
A5
PROJECT No. T598



3 **Rear Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE



1 **L/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE



2 **Front Elevation**
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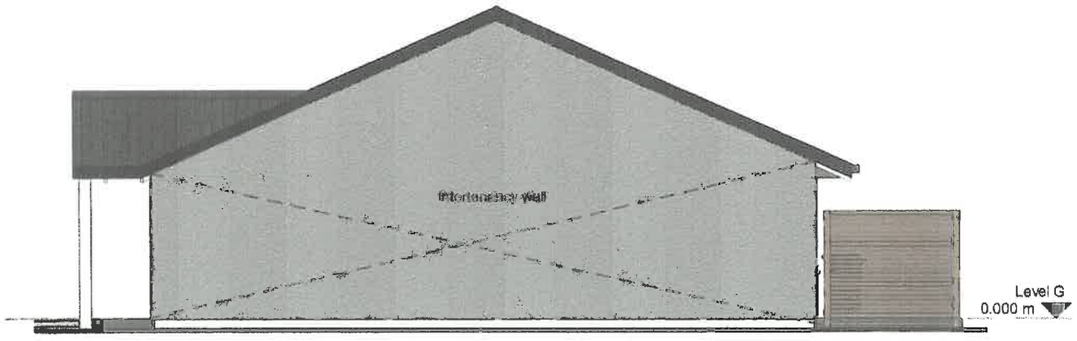

4 **R/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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VILLA TYPE B (NORTH)

DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A6
PROJECT No. T598

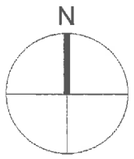
FLOOR AREA *123m²*

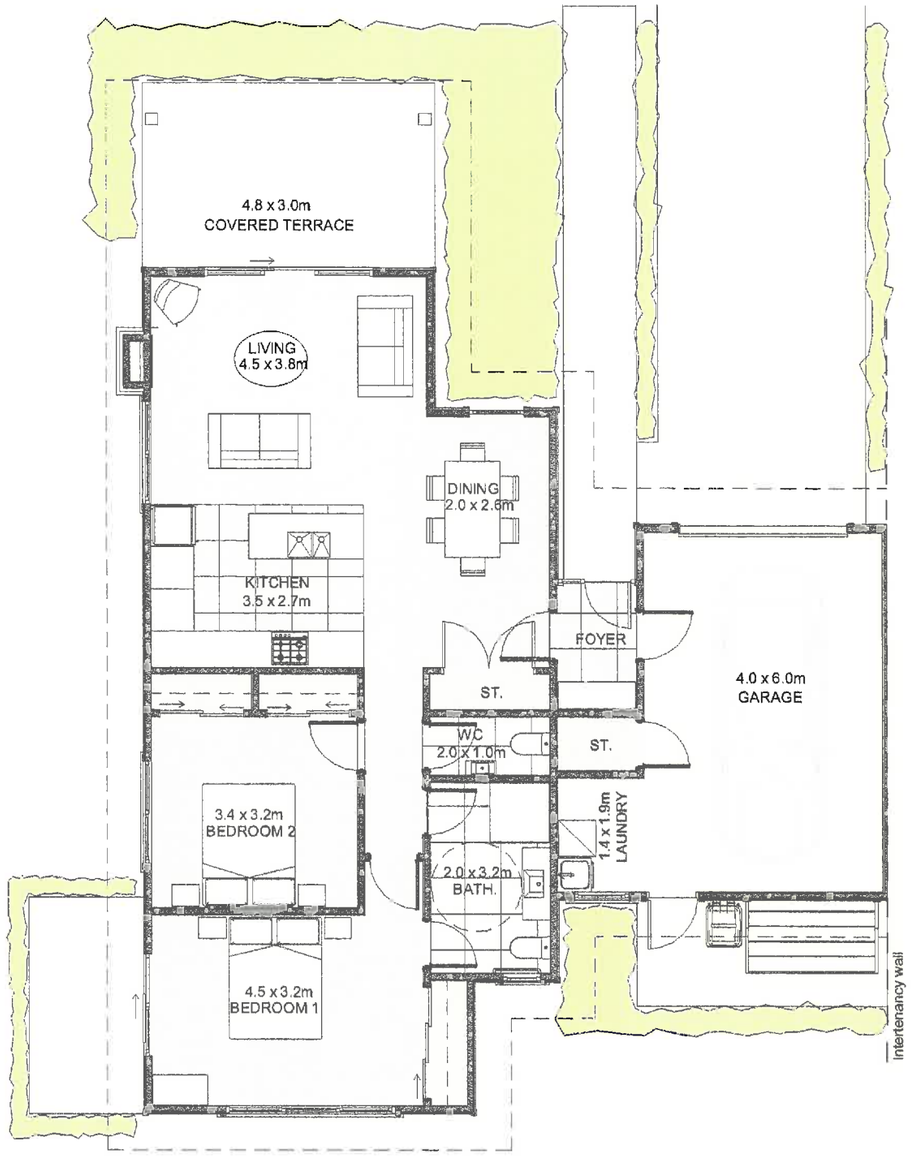
BEDROOMS *2*

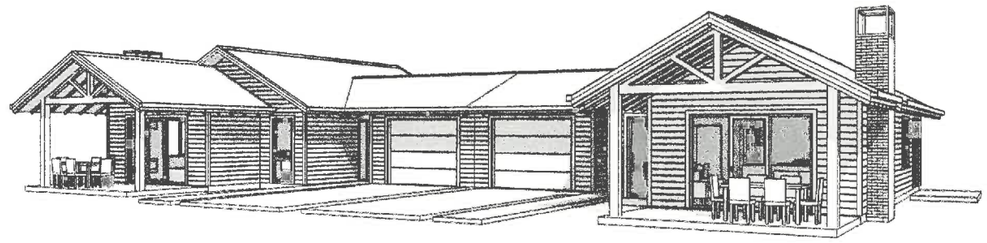
BATHROOMS *1.5*

LIVING *1*

GARAGE *1*







Floor Plan
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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VILLA TYPE B (NORTH) - ELEVATIONS

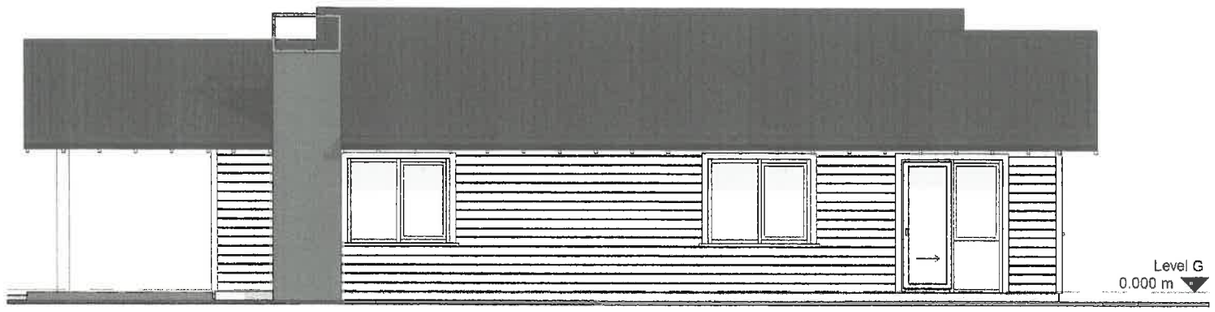
DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A7
PROJECT No. T598



3 **Front Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE



1 **R/H Side Elevation**
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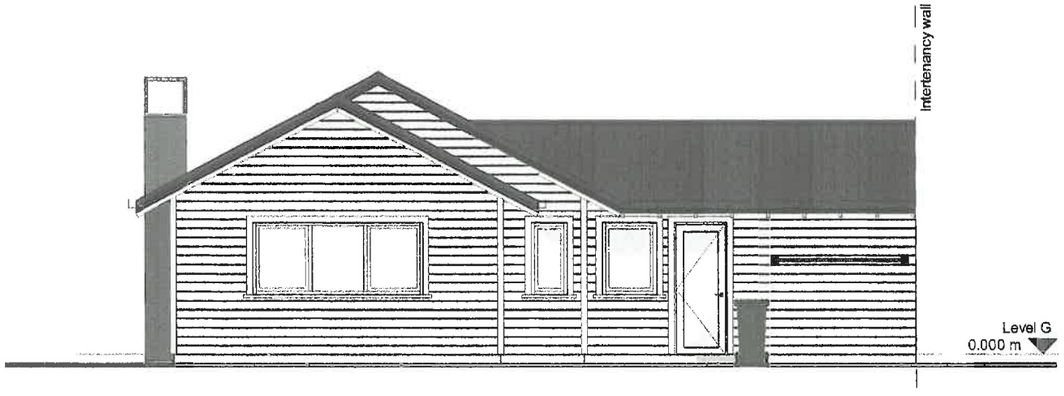

2 **Rear Elevation**
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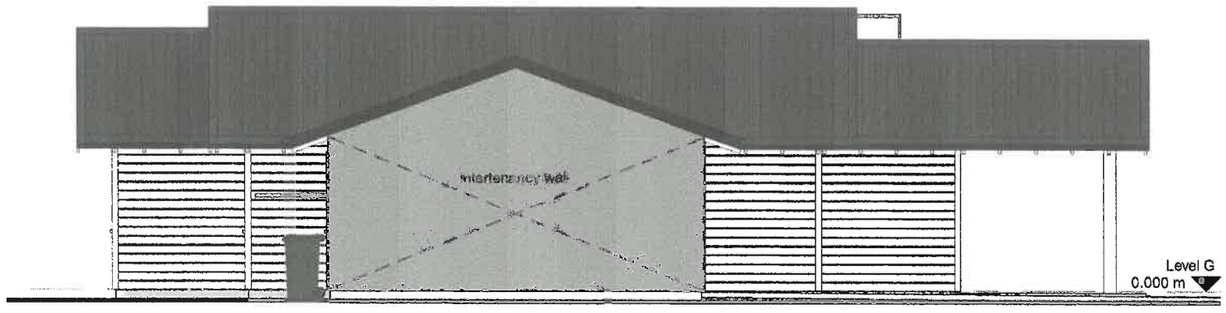

4 **L/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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VILLA TYPE B (SOUTH)

DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A8
PROJECT No. T598

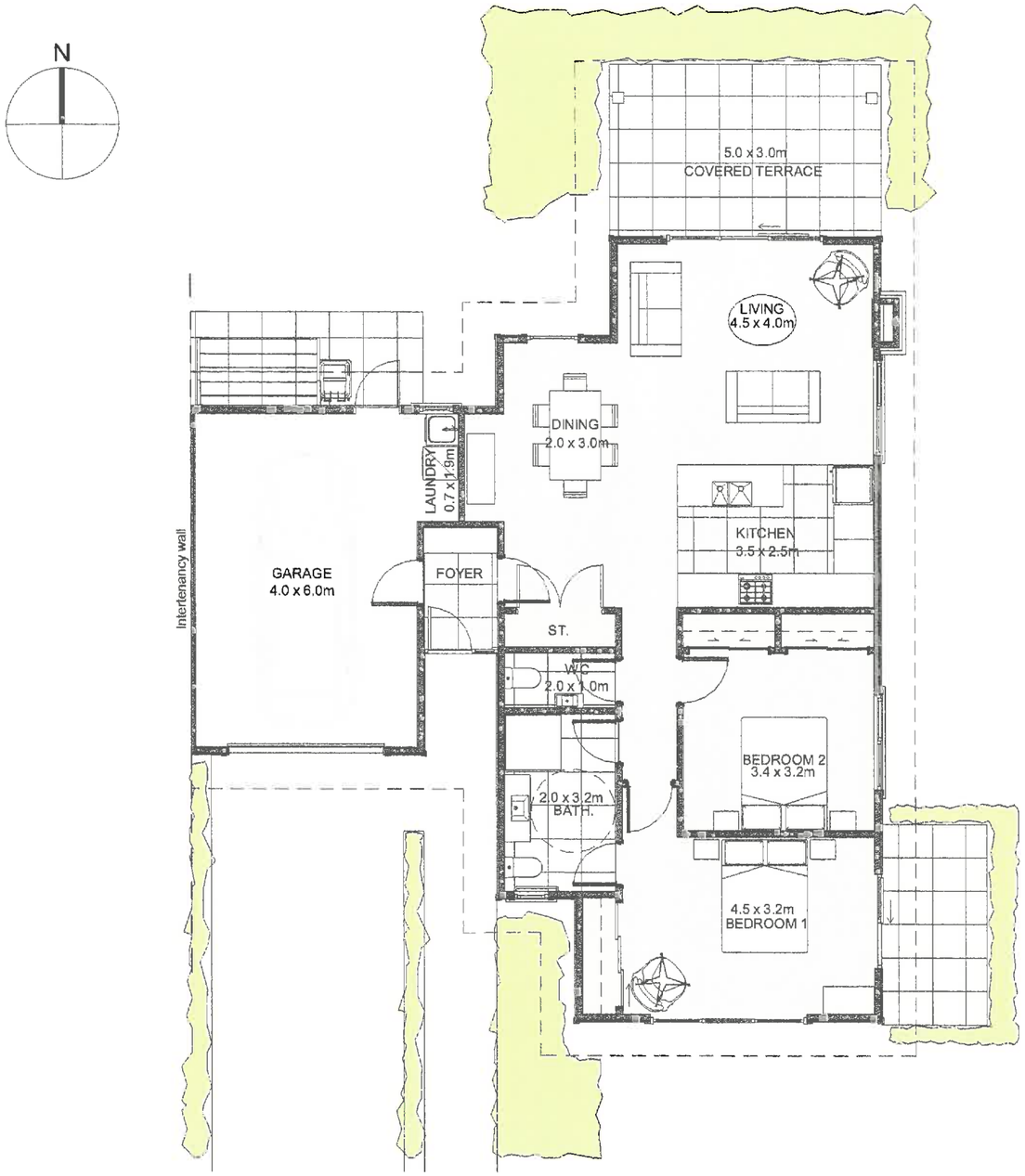
FLOOR AREA *123m²*

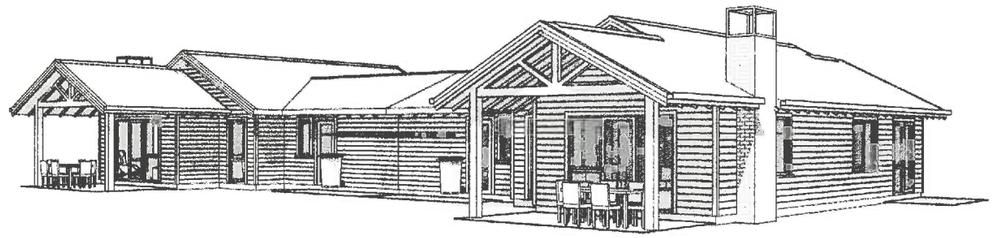
BEDROOMS *2*

BATHROOMS *1.5*

LIVING *1*

GARAGE *1*





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VILLA TYPE B (SOUTH) - ELEVATIONS

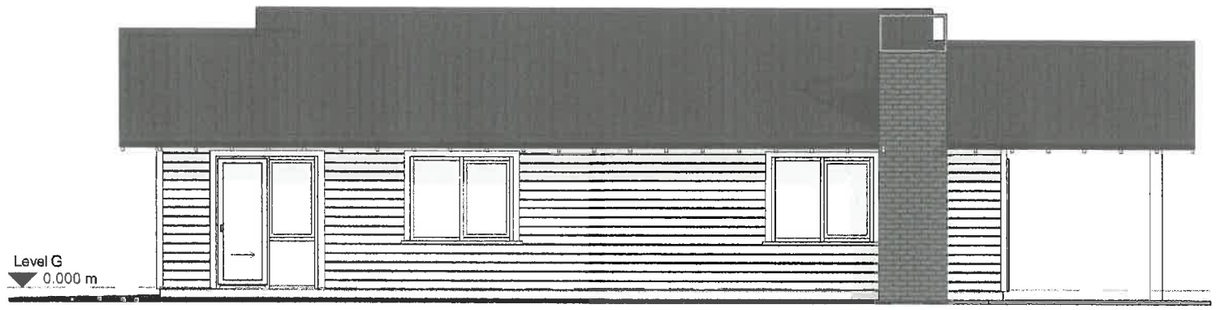
DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A9
PROJECT No. T598



2 **Front Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE



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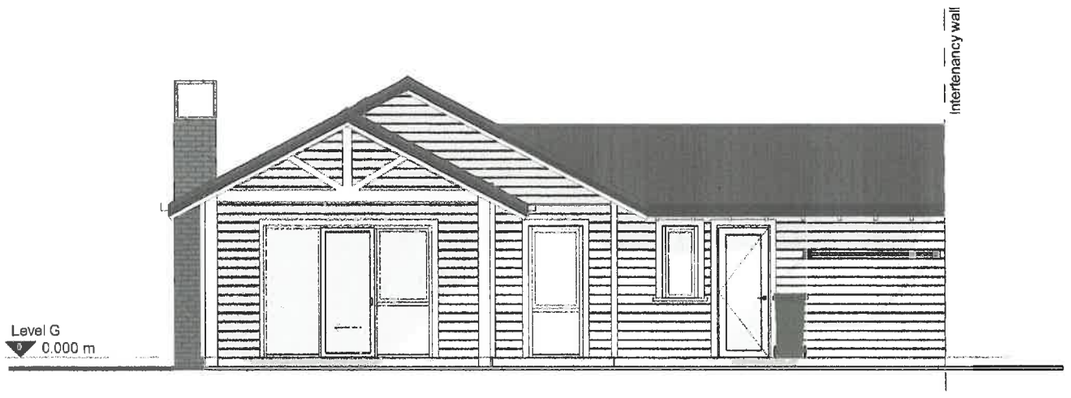

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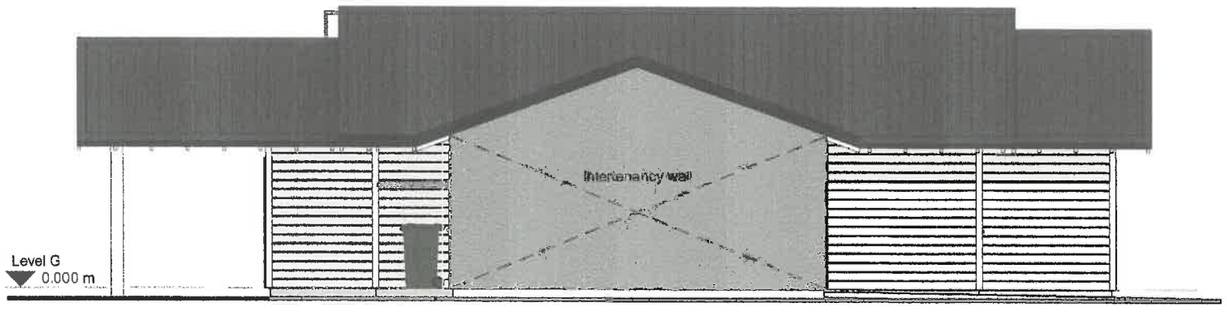

4 **L/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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VILLA TYPE C (NORTH)

DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A10

PROJECT No. T598

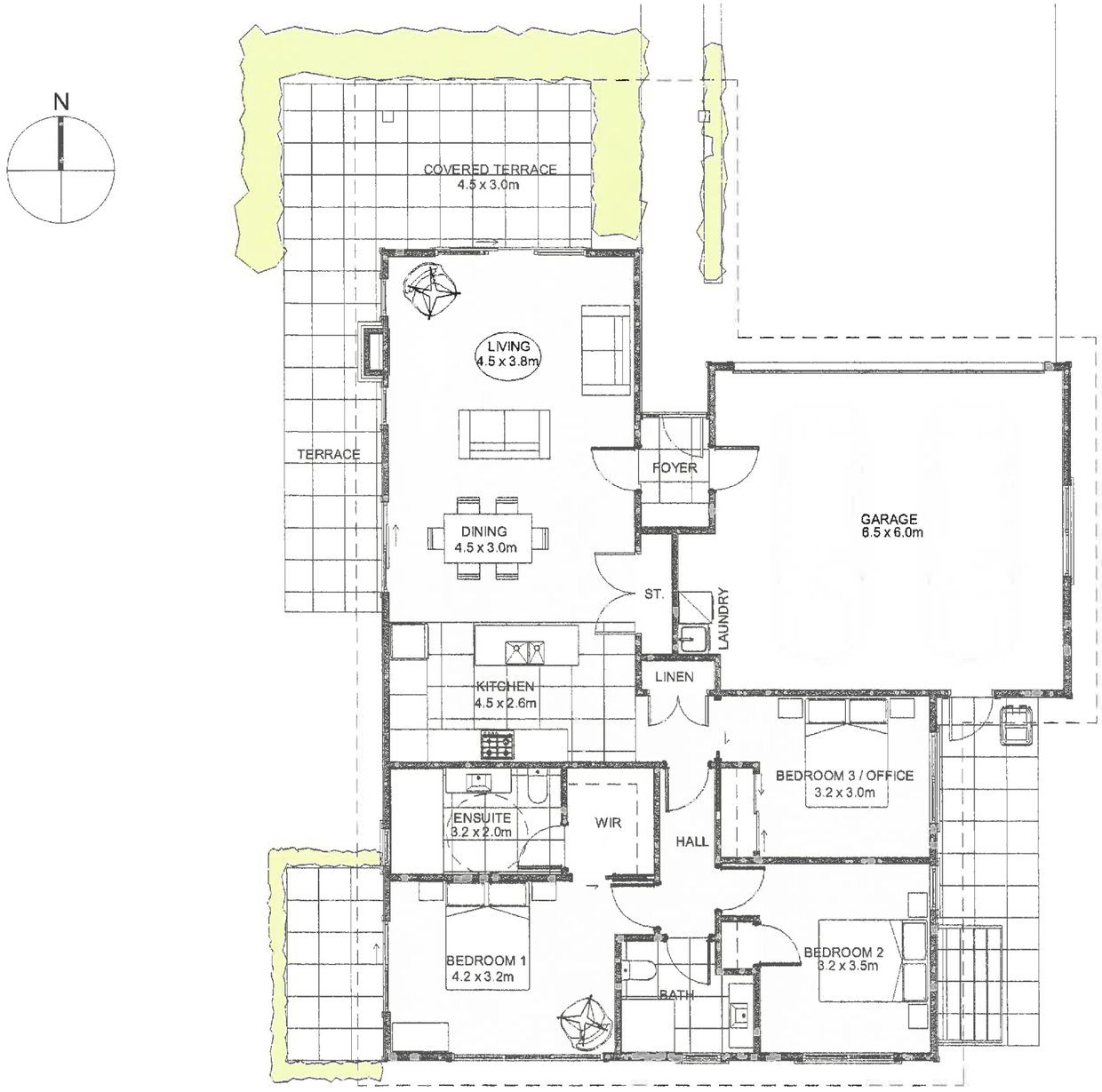
FLOOR AREA *160m²*

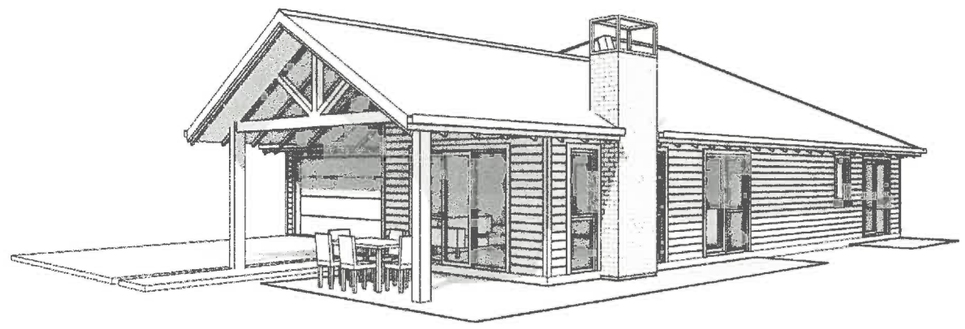
BEDROOMS *3*

BATHROOMS *2*

LIVING *1*

GARAGE *2*





Floor Plan
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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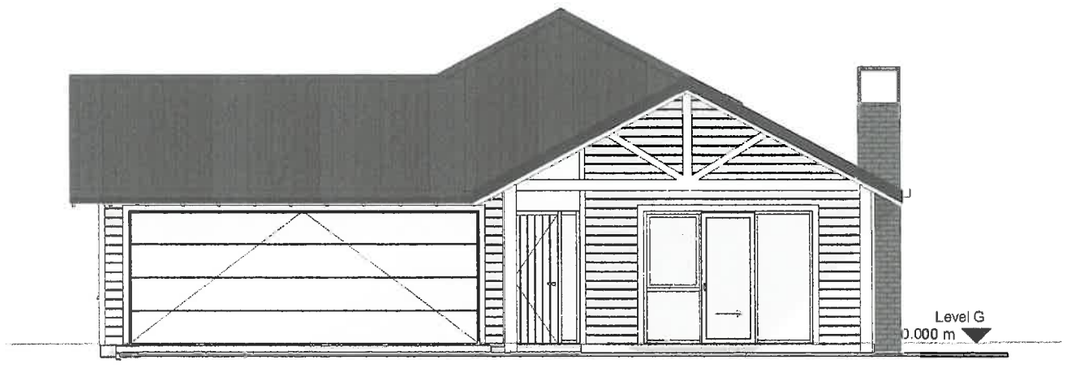
VILLA TYPE C (NORTH) - ELEVATIONS

DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A11
PROJECT No. T598



3 **Front Elevation**
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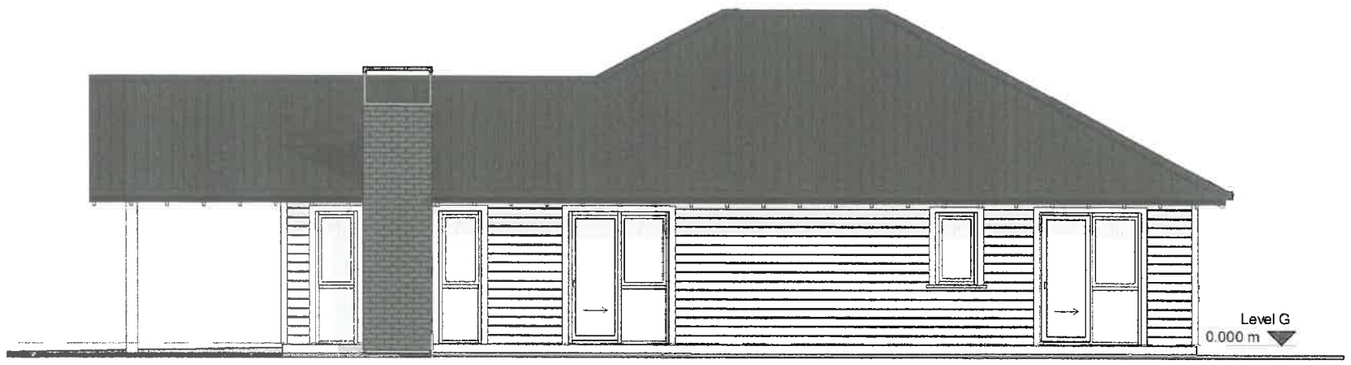

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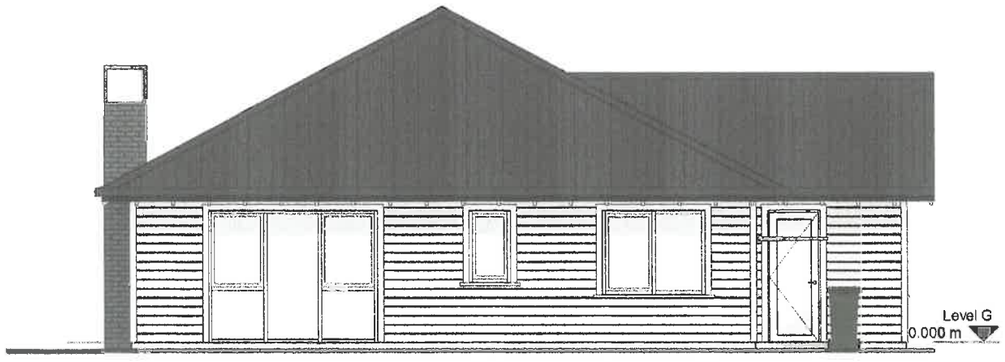

2 **Rear Elevation**
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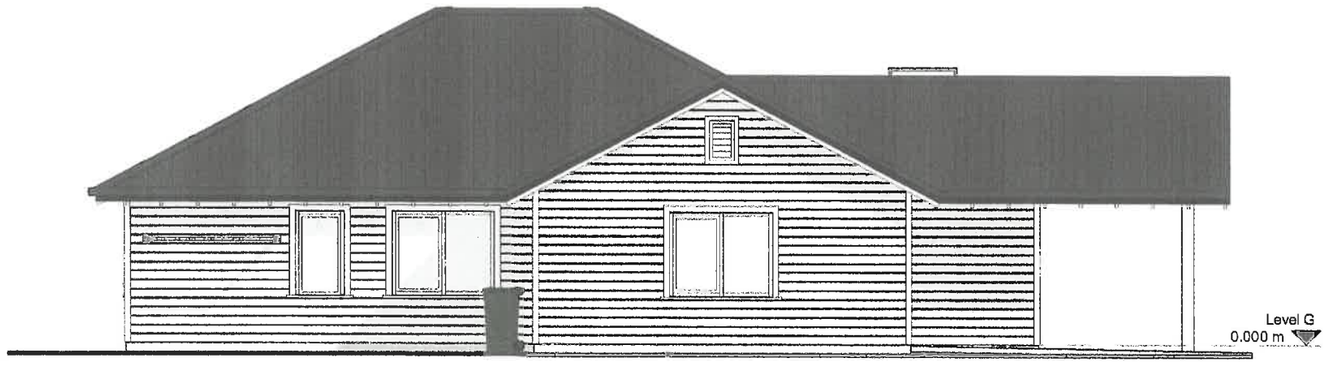

4 **L/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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designgroup
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VILLA TYPE C (SOUTH)

DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A12

PROJECT No. T598

FLOOR AREA *160m²*

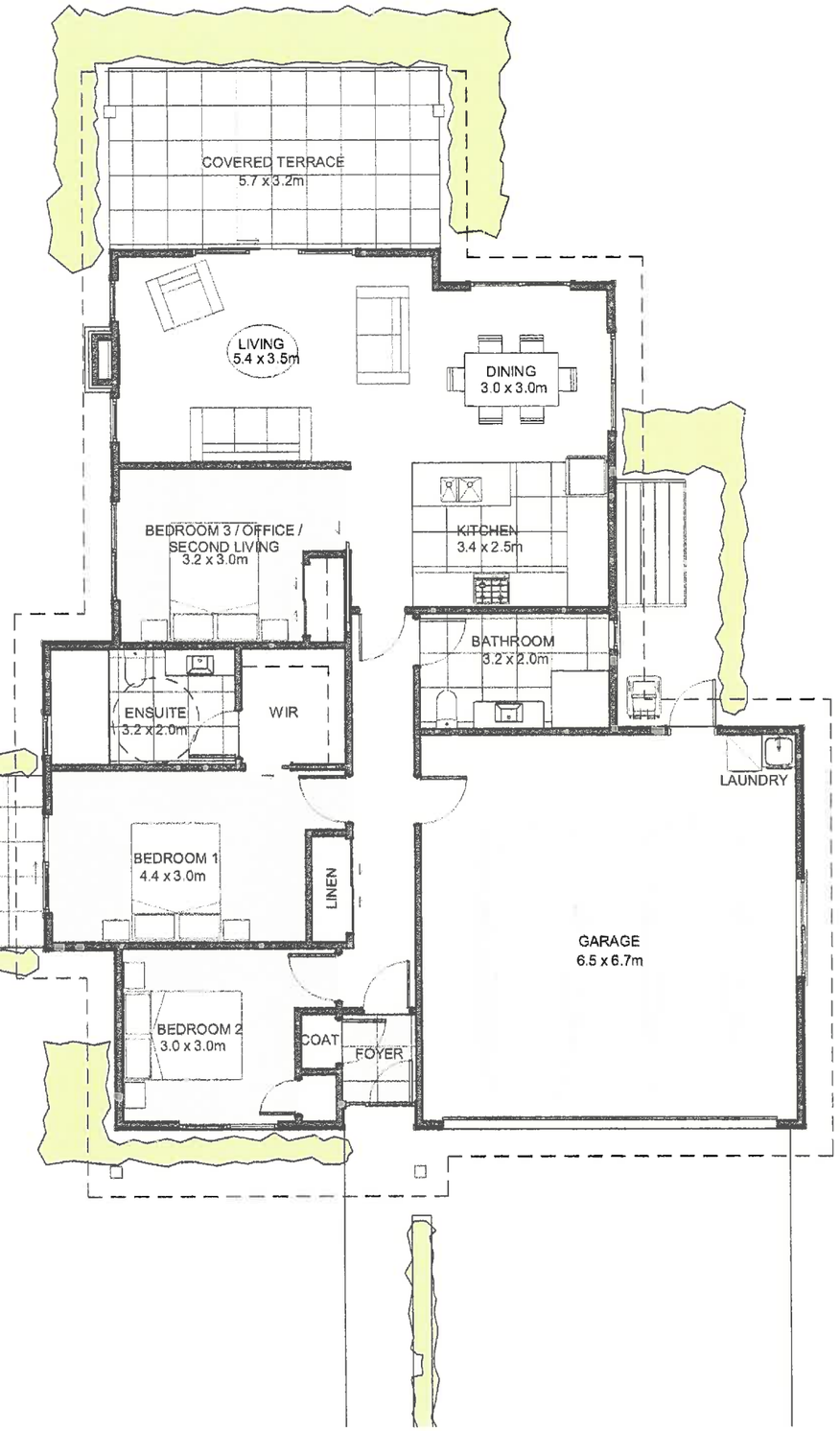
BEDROOMS *3*

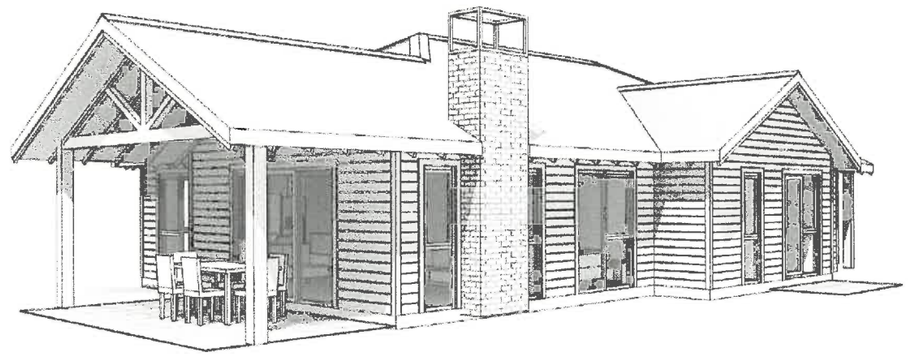
BATHROOMS 2

LIVING *1*

GARAGE *2*

N





Floor Plan
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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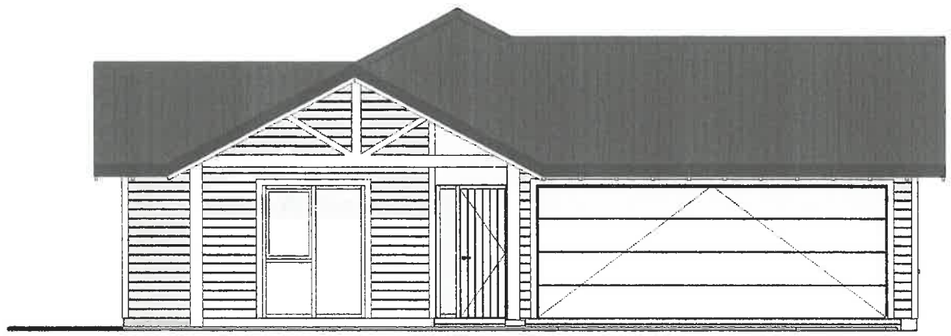
VILLA TYPE C (SOUTH) - ELEVATIONS

DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A13
PROJECT No. T598



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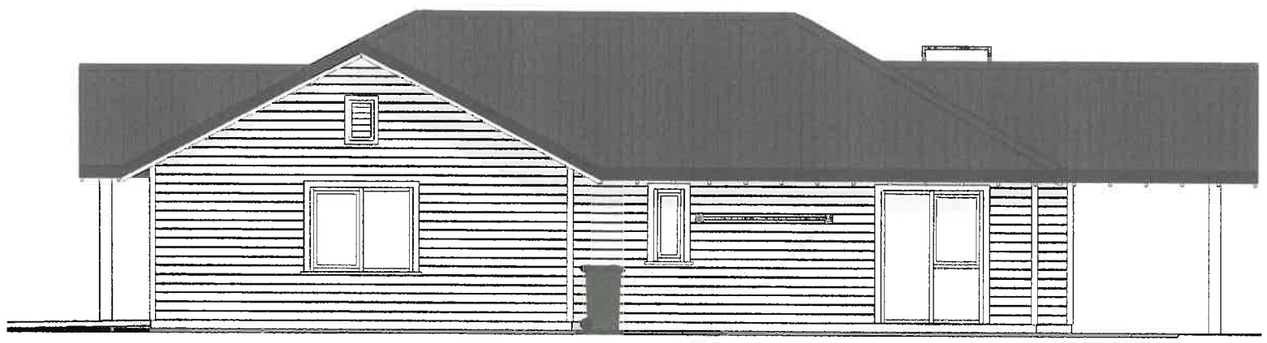

1 **L/H Side Elevation**
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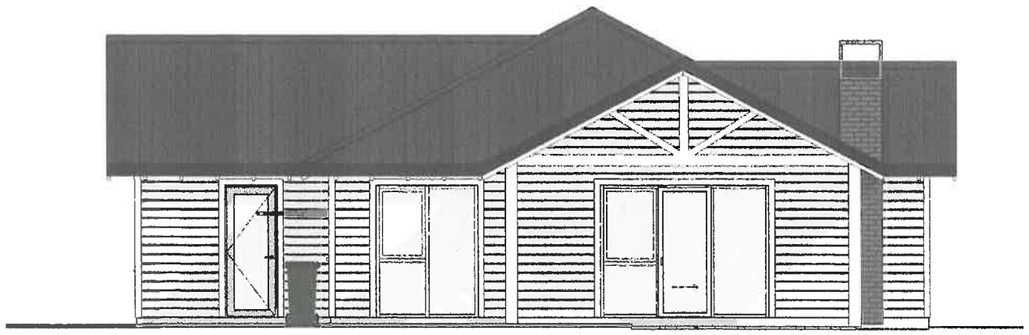

2 **Rear Elevation**
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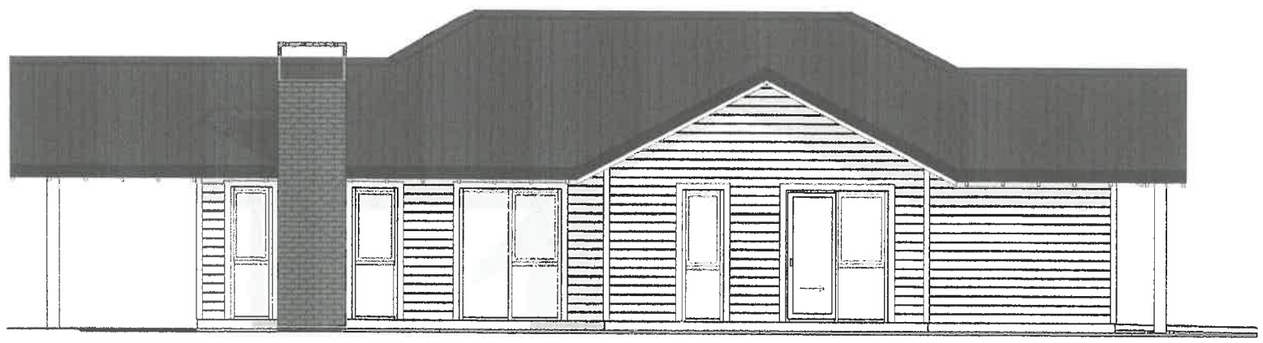

4 **R/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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VILLA TYPE D

DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A14
PROJECT No. T598

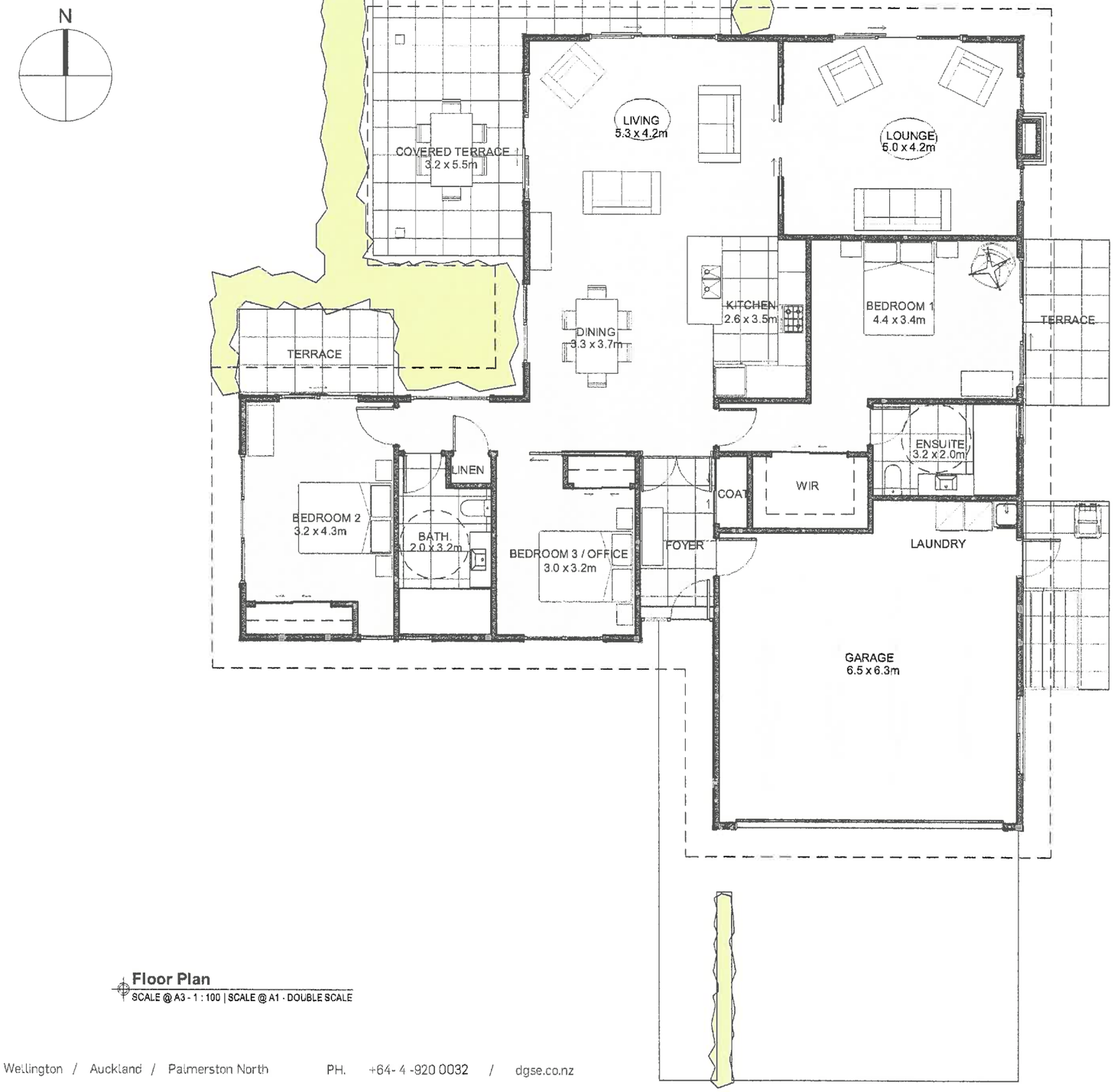
FLOOR AREA 203m^2

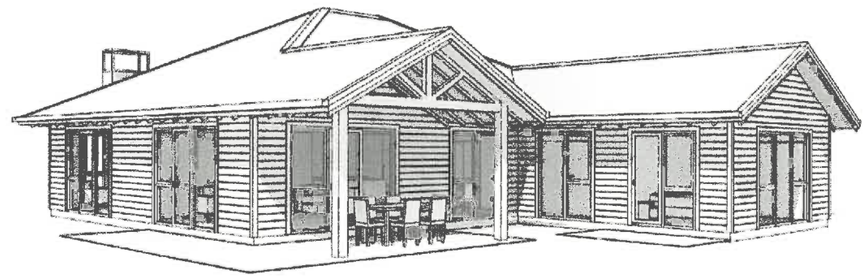
BEDROOMS 3

BATHROOMS 2

LIVING 2

GARAGE 2





Floor Plan
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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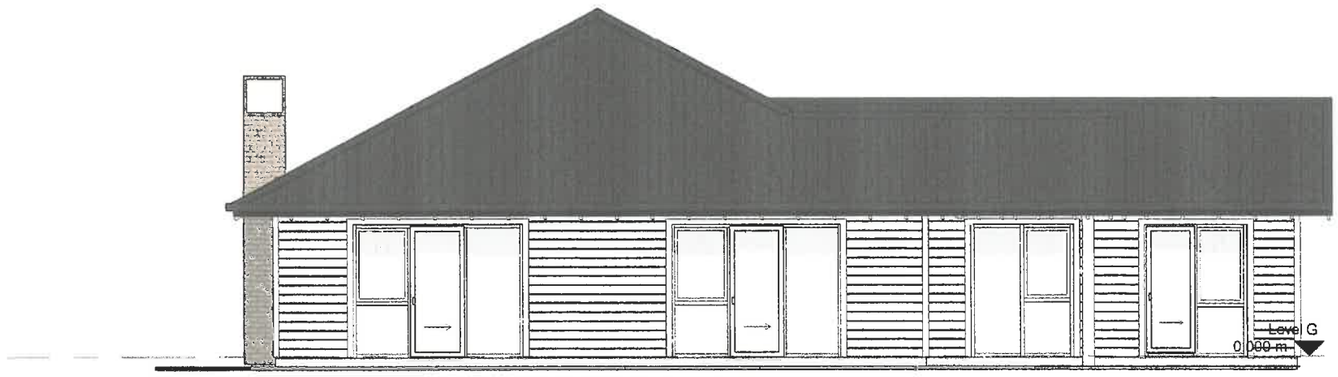
VILLA TYPE D - ELEVATIONS

DATE: 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A15
PROJECT No. T598



3 **Front Elevation**
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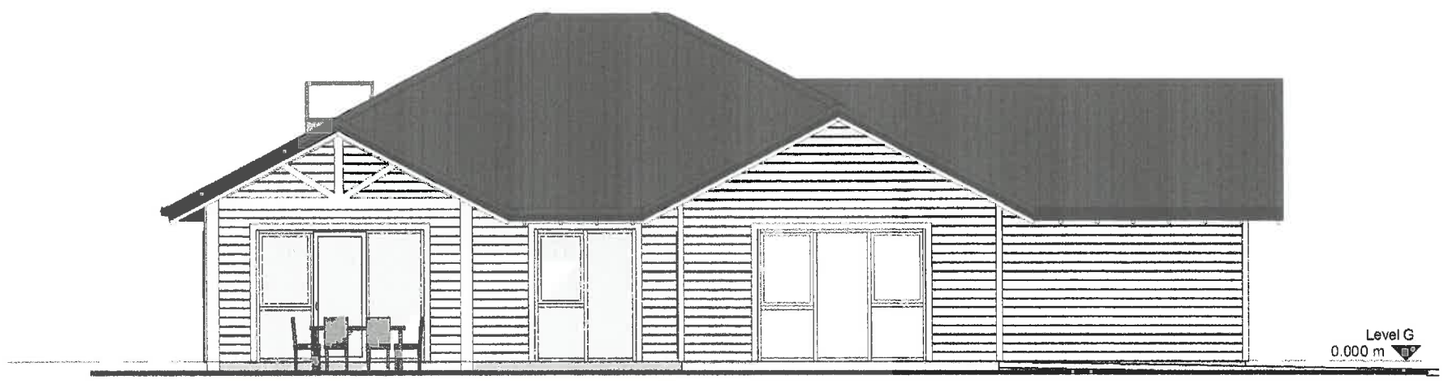

1 **R/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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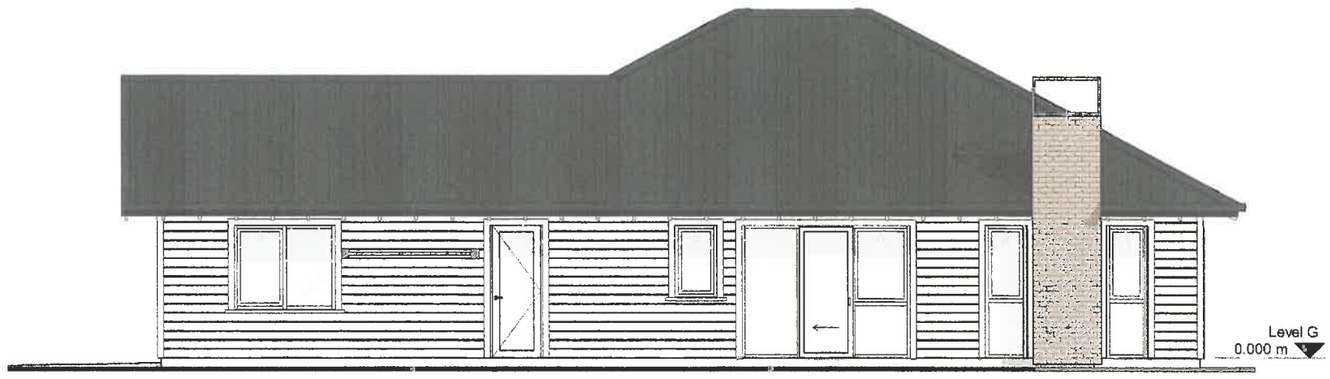
VILLA TYPE D - ELEVATIONS

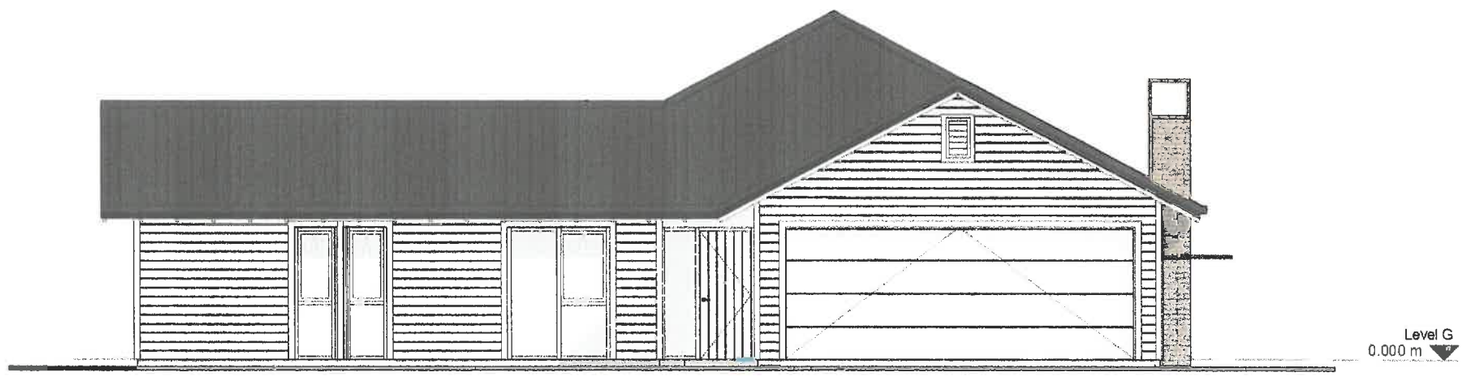
DATE. 04 MARCH 2019

THE ORCHARDS
RETIREMENT VILLAGE
GREYTOWN

A16
PROJECT No. T598



1 **L/H Side Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE



2 **Rear Elevation**
SCALE @ A3 - 1 : 100 | SCALE @ A1 - DOUBLE SCALE

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Appendix 19

Landscape Concept Plan and Design Statement
Local Collective



The Orchards Masterplan

AT GREYTOWN

MARCH 2019

designgroup stapleton elliott + PMA

PERCEPTION PLANNING

Stantec

calibre

local LANDSCAPE ARCHITECTURE COLLECTIVE

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Design Statement:

Background

Local landscape architecture collective were commissioned in September 2018 to collaborate with Designgroup Stapleton Elliot (DGSE), Perception Planning, Treecology Tree Consultants, Calibre and Stantec to develop the scheme for The Orchards Retirement Village, Reading Street, Greytown.

The landscape design and our work primarily focussed on the consolidation and location of shared green space through the efficient organisation of the proposed buildings on site to provide generous and useful recreational open spaces for the residents. In conjunction with this we developed the streetscape, boundary treatments, paving materiality, CEPTD, vegetation strategy, and water sensitive design.

Site Description

The site is located close to central greytown, just 150m to the east of Main Street / SH2. The Orchard in general terms can be characterised in two landscape character areas. The northern half of the site, to the north of the central irrigation race comprises of rows of orchard fruit trees, the gardens of the orchard house and outbuildings. The southern half of the site, to the south of the irrigation race has a stand of orchard trees but is principally paddocks with hedgerows. This is illustrated in the 'existing vegetation' landscape structure diagram on page 6.

Existing access & boundary conditions.

There is currently access from the northern boundary (boundary 1) which is on Reading Street and Market Road which is on the southwestern boundary (boundary 6 and 7). There are rural residential properties to the north east (boundary 2) and west (boundaries 8 and 9) and paddocks to the east (boundaries 3 and 4).

Topography

The site is relatively flat with a high point of RL 54.18 and a low point (excluding the water races) of RL49.90. The northern section of the site falls at about 1:130 from the northwest cover (RL 54.18) to the eastern boundary (RL 52.00) and the southern section of the site falls from the northernmost corner (RL 53.07) to the southern edge (RL50.00) at an approximately 1:120 fall. There is an overland flow path 65m from the southern corner of the site which is at a nominal RL 49.00.

The most prominent topographical feature on the site are the irrigation races that are about 1.8m wide and 0.5m below the adjacent land levels. These races have a nominal 1:1 slope to their sides.

The Irrigation races

There are two irrigation races on the site. There is a race on the northern boundary that comes into the site at the north west corner at RL 53.36, travels along the northern boundary, mostly to the north of the site, but comes up to 5m within the site at the site of the former house location, before exiting the site at the eastern boundary at RL 5140. The second irrigation race enters the site centrally at RL 52.23 and travels along the northern boundary of the southernmost section of the site where is exits at RL49.61.

The Orchard tree planting

In the northern half of the site there are 53 rows of fruit trees almost mostly plums along with nectarines and peacharines. Many of these trees are around 40 years old. Many of the rows comprise of impressive well-maintained heavy cropping trees. The rows are approximately five meters apart.

The Gardens of Murphy's House and Orchard outbuildings

About 6,000m2 at the top north corner of the site on Reading Street is where the house and orchard outbuildings are located. Here there is a mix of mature and semi-mature exotic and native individual trees that are characteristic of an established private residential property.

The southern paddocks

The southern half of the site has four cropping paddocks, the three western most being rectangular at about 150m x 65m with the narrow section adjacent to Church Street. The eastern most paddock is triangular and 260m on the eastern boundary, 285m on the southern boundary and 150m between the two. Each paddock is separated by a mature hedgerow of mainly Poplars but also some native and exotic trees and shrubs including pittosporum, kowhai, elderberry and walnuts. The to the south of the irrigation race has a stand of orchard trees but is principally cropping paddocks with hedgerows.

Existing flora and fauna

Although there is significant tree planting on the site, it is principally exotic species. Please refer to the tree survey report by Treecology for further details on the tree locations, condition and species. The fauna of the region including native birds and invertebrates benefit from the existing provision of vegetation, in particular the linear shelterbelts as green corridors where protection, habitat and food sources are provided.

Landscape design description

The proposed site design seeks to provide a new retirement village within, and responding to the existing site context, in particular the established orchard and hedgerow tree planting and the landscape structure that these provide. The design aims to integrate all landscape elements from roading to paving, drainage, amenity and mitigation planting to provide a coordinated, efficient and considered response which prioritises landscape quality both inside the site as well as consider the views and relationships with the boundaries outside the site.

Site layout principles

The housing has a minimum of 4.5m gaps between buildings which will be extensively planted. This density is offset with the provision of generous and high quality shared open space. The placement of dwellings is undulated to ensure built edges are not seen as regimented from within the site or from the boundaries. Large scale trees, hedges and existing (augmented) tree planting is also alternated to further soften and vary visible built edges. Views from the house to the landscape has been carefully considered and generous 'fingers of green' between houses include pedestrian / cycle pathways, seating and BBQ opportunities to allow for the character to feel rural and vegetated.

Roads and vehicular access

The main access points are from Reading Street and Market Road, along with an additional /secondary access from each of these streets. Larger deciduous trees (pin oaks) are proposed at vehicular entry points to provide variation in scale, shade in summer and extensive screening between dwellings. All trees within The Orchards have been selected to be hardy, easy care trees that are appropriately scaled for their surroundings and are detailed in the plant palette on pages 21-23.

Pathways and pedestrian networks

The design minimises the use of footpaths beside roads to encourage the use of paths through more pleasant landscape spaces. This will also minimise the amount of visible hard landscape in the main thoroughfares, avoid the suburban feel associated with them and allow for simple grass swales and flush kerbs to be accommodated on all roads. We feel this will not only promote a rural character but make the landscape more accessible.

Individual house landscape

All single villas and duplex's have; a garage, visitor parking; a minimum of 15m2 terraces or decks, a small garden at the front to help individualise each villa, as well as a small raised planter at the back for herbs and vegetables. The terrace houses have the same provision apart from the parking where there is no garage, but dedicated off street parking provision.

Deciduous specimen trees such as pin oaks, plane trees and ornamental pears (as detailed on the plant palette on pages 21-23) are to be planted adjacent to private gardens to avoid winter shading while providing a scale to balance the proposed buildings, particularly when viewed from the street and adjacent properties. Some native species such as kowhai, and food providing species such as elderberry are also proposed to support and encourage local fauna.

Detailed landscape design

Please refer to the Masterplan (pages 7-9) for a detailed description of the landscape and built form. In addition, this masterplan document provides annotated detailed plans and sections for key public spaces that are provided at The Orchards. These include:

- Murphy's Garden (refer to page 10)
- Orchard Garden (refer to page 11)
- Swale Parkland (refer to page 12)
- Gardens & Playgrounds (refer to page 13)
- Southern Entrance Walk (refer to page 14)

Community gardens

Four community gardens are provided within the site, each of about 100m2 in area and located close to the road for easy access for residents to transport materials such as compost to the gardens and working bees to have easy access. A larger central community garden is proposed and may contain a glass house (TBC) to capture winter sun.

Planting strategy gardens

The planting throughout the site adopts a rural style to blend the development into its setting with a mixture of native and exotic plants which is consistent with Greytown's plant palette. More formal garden beds and use of colourful flowering species are located where they are of most benefit to the residential community, including Murphy's Garden, and those spaces close to the residential care centre.

Parking

The Orchards Retirement Village is located close to central Greytown allowing for walking, cycling and mobility vehicles being viable transport options for a majority of the residents. Onsite parking is kept minimal to avoid the adverse visual effects from within and outside of the site. A central visitor and staff car park is created in a well screened, central location near the residential care building where parking is most needed. Additional staff parking to the east side of the residential care building will be provided as shown on the Masterplan.

Playgrounds

The development recognises that children will be visiting the residents and two playgrounds are proposed, one next to the village green and one to the south of the residential care facility and adjacent to the flower gardens. It is the intention that the playgrounds include nature play and shall be designed to meet the NZS standard 5828:2015

Village green, bowling green & wellness centre

Central to the site is a cluster of community facilities. The wellness centre will be a unique asset to the development where facilities are available to complement the village green and village activities. The wellness centre also has covered terraces on 3 sides so that this building may provide for multiple functions at any one time. The wellness centre has a bowling green to its east that can be viewed from the residential care centre and a village green to the west which is a multipurpose and flexible open space for the community and the events that it will hold. There are multiple path connections to this cluster of facilities, and they are located in a prominent visual location on the main entry street.

WSUD and stormwater treatment

The masterplan has considered and integrated sustainable principles. The stormwater is detailed within this application by the engineer and onsite retention and treatment is achieved through a number of methods and strategies.

The flatness of the site limits the ability to transport the water over distance, so localised collection and treatment is achieved with roadside swales. The swale parkland is a large raingarden located centrally to the southern section of the site and will collect water from the adjacent houses, roads and hard standing areas.

Boundary treatments and views into the site

The design of the The Orchards has been particularly cognisant of its local setting and neighbours. The boundary has been carefully considered in conjunction with the placement, and staggering setbacks of houses. Fences are not proposed as these are not in keeping with the required rural character. Typical boundary treatments are illustrated on the elevations on pages 18-20.

As illustrated a variety of methods in a varying sequence include hedges, tree planting and high planting where visual screening is desirable. Sufficient space has been provided throughout the site for larger trees which can foreshorten views across the site

Conclusion

We are confident that the quality and quantity of landscape elements outlined above and illustrated in the landscape masterplan will provide for a vibrant rural community and make The Orchards an exemplar project for retirement living in New Zealand.



Location Plan







Existing site character



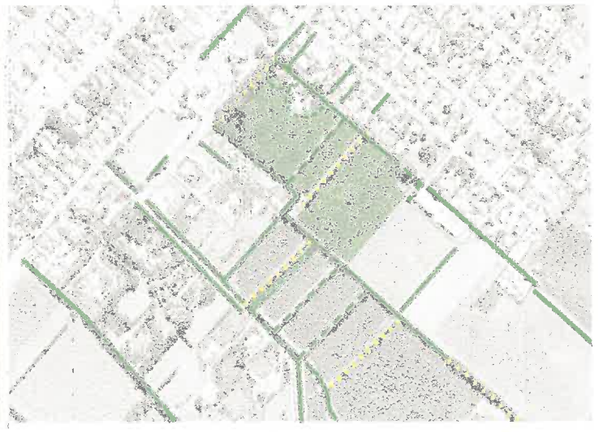
Roading analysis



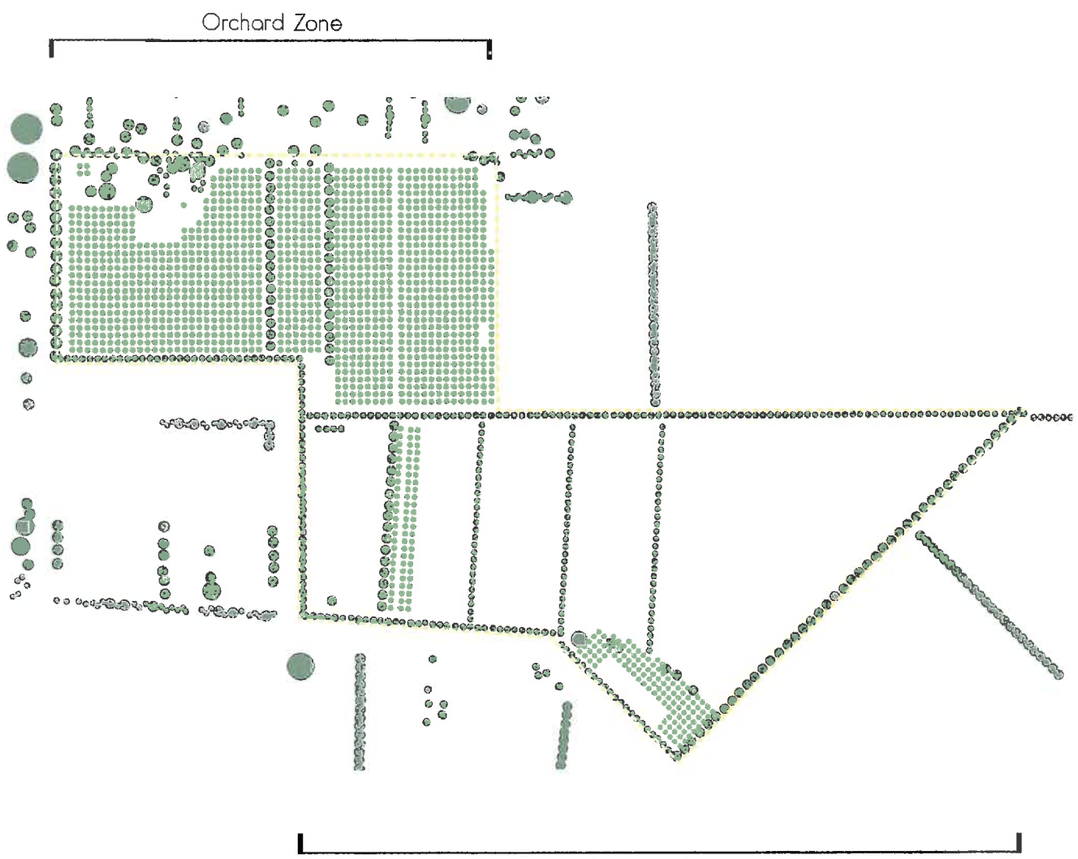
Context hydrology analysis



Site hydrology analysis



Existing site vegetation





Existing Vegetation

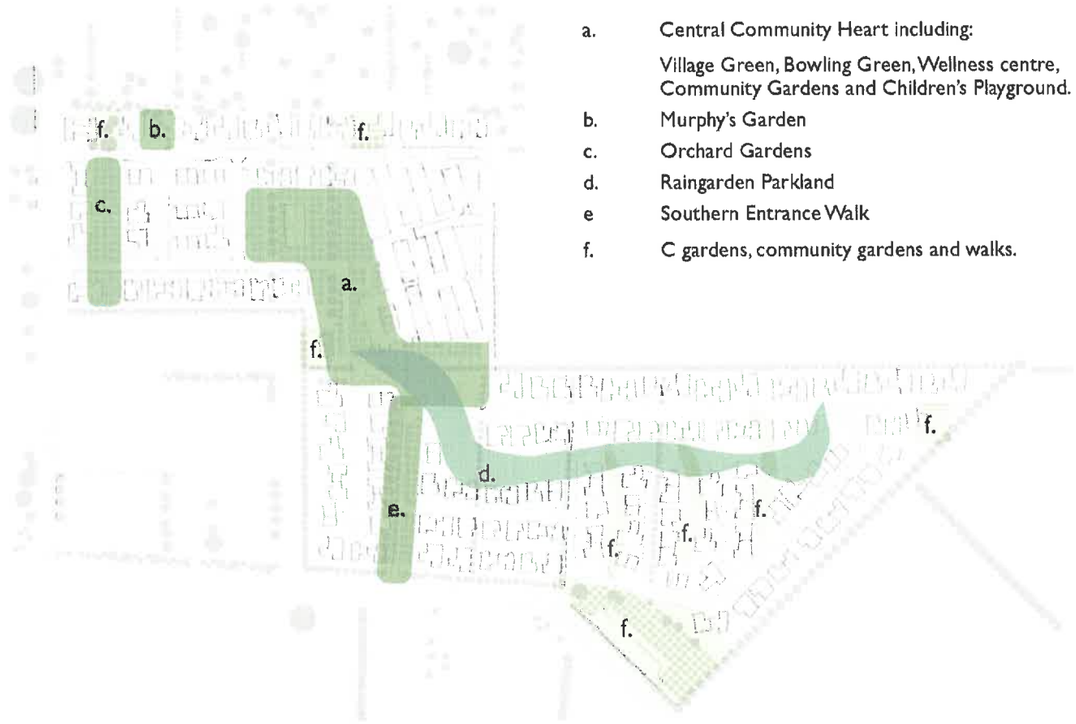
Placement of Carriageways

Landscape Structure Diagrams

Orchard Zone: Tree placement considered within grid structure



Paddock Zone: More organic layout retained



a. Central Community Heart including:
Village Green, Bowling Green, Wellness centre, Community Gardens and Children's Playground.

b. Murphy's Garden

c. Orchard Gardens

d. Raingarden Parkland

e Southern Entrance Walk

f. C gardens, community gardens and walks.

Placement of Buildings

Placement of water courses, and community open space

Landscape Structure



AREAS:

Independent living:	177
Roads:	15600m2
Driveways:	6413m2
Unit Paving:	7783m2
Total impervious surface: (excluding buildings - refer DGSE plans)	29796m2
Car parks:	134 No
Existing trees retained:	736 No
Proposed trees:	616 No
Proposed shrub planting:	15815m2

KEY:

- Existing trees
- Proposed trees
- Grass
- Shrub planting
- Hedge planting

NOTE:
Refer detail plans and sections for more information

Landscape Plan - Site Wide

North

plan 1:1,000@A3

Reading Street

Murphy's garden with existing trees retained with new shrub planting under

Secluded seating area

Lawn

Pond

Playground

Wellness centre with covered terraces on three sides

Existing and new tree and shrub planting to provide complete screening along bdry

Tall hedging to create variation along bdry

Pedestrian crossing

Main pedestrian entry

Entry feature walls potentially with security gates

Crushed limechip paved area for petanque, events, BBQ etc.

Hedges on boundary (no fencing)

Bowls lawn

Specimen trees at terminus of road view

Visitor parking screened by 1.4m high hedging on both sides to retain rural character

Tree planting to screen building where orchard trees are not possible

Courtyards with retained orchard trees in new shrub planting

1.4m high hedging to screen cars

Drop off area with entry feature eg wall or simple trough pond

Main vehicular entry

Rows of agricultural flowering planted eg. lavender, roses, rosemary, alliums (flowering onions), sunflower etc.

Nature playground area with seating

Long grass under existing orchard trees

Short grass

Focal feature

Existing and new tree and shrub planting to provide complete screening along bdry

Treed open space opposite main entry to care building with petanque court in orchard trees

Staff / visitor car park

Community garden and men's shed

Simple pond fed by irrigation channel

Rumble strips

Pedestrian paths through swale parkland

KEY:

- Existing trees
- Proposed trees
- Grass
- Shrub planting
- Hedge planting

Landscape Plan - North



Viewpoint location



Sketch Perspective: Main Entry Road Looking East



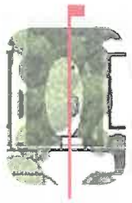
Landscape plan - Paddock Black





Viewpoint location

Sketch Perspective: Swale Parkland Looking East



location plan 1:1,000@A3

North

Murphy's Garden

Located on the northern boundary of the site, Murphy's Garden retains part of the gardens of the former farm house and utilises the existing mature exotic and native trees, principally the elegant Japanese Maple but also the Rimu, Liquidamber and Totora.

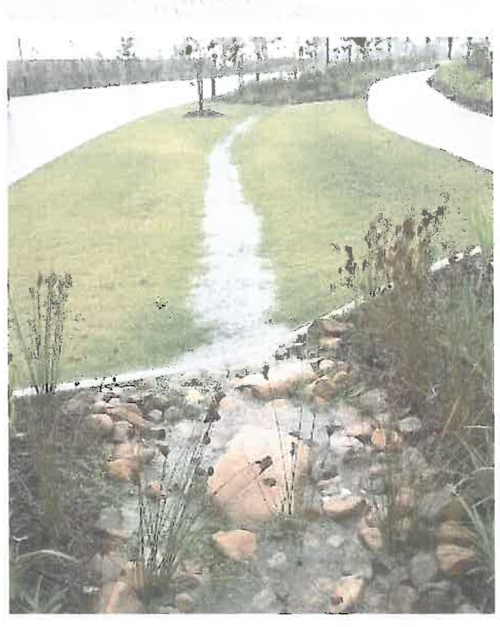
Murphy's Garden embraces one of the principal aims of the landscape design to use the existing site character to provide new opportunities for reflective and relaxing gardens spaces, as well as softening the boundary condition. The garden is enclosed by soft and scented planting and is a organic shaped lawn. A raised reflection pool will mirror the tree canopies and adjacent seating designed for individual to sit, relax and reflect.







section 1 1:150@A3

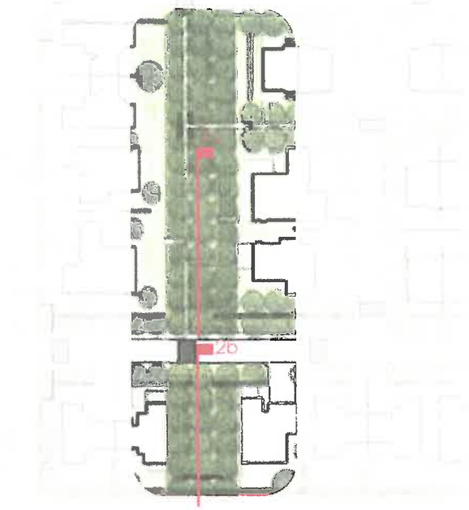


Detailed Area 01 - Murphy's Garden

Orchard Gardens

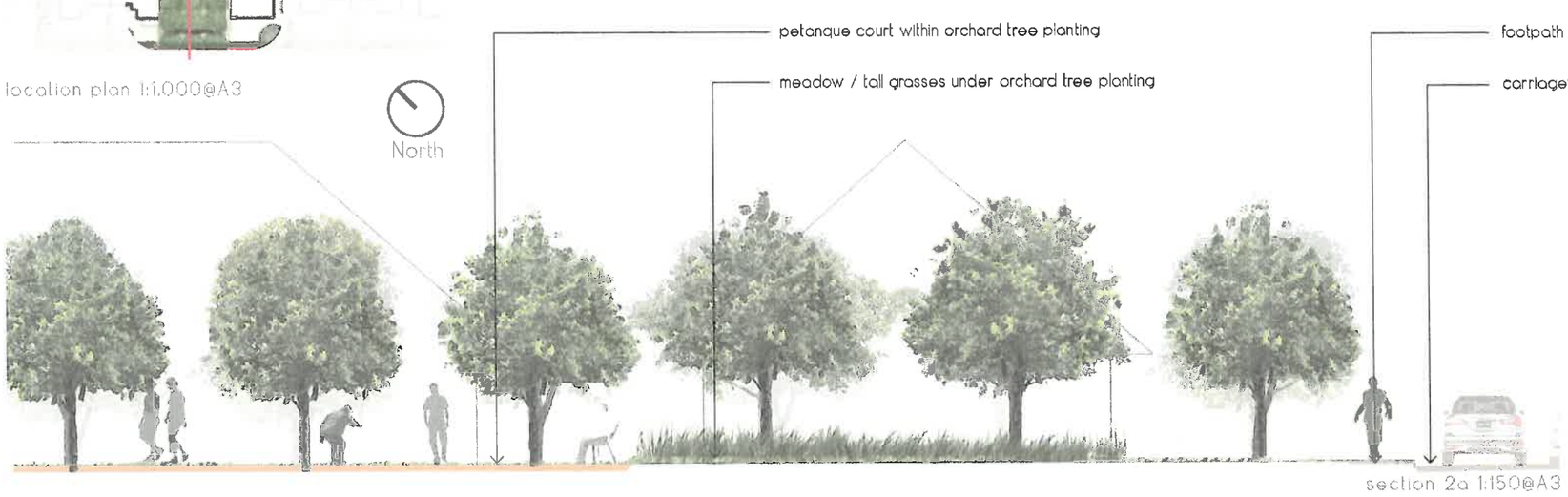
The Orchard Gardens provide a pleasant pedestrian link between the northern streets and inner village through three rows of the existing Orchard trees. These rows are supplemented with matching new tree planting where gaps currently exist to give a large block of Orchard that provide a strong reference to the orchard character of the site, visual screening between housing and a usable, lime-chip surfaced space inside the grid for petanque, BBQ, and small gatherings.

Within the smaller southern Orchard garden there is a linear lawn with edge seating and an end feature wall. Both areas are surrounded by a meadow of taller grasses that will encourage fauna and provide informal pathways and routes for residents amongst the Orchard trees while minimising lawn mowing and providing an alternative to higher maintenance shrub planting.



location plan 1:1,000@A3

North



section 2a 1:150@A3



section 2b 1:150@A3

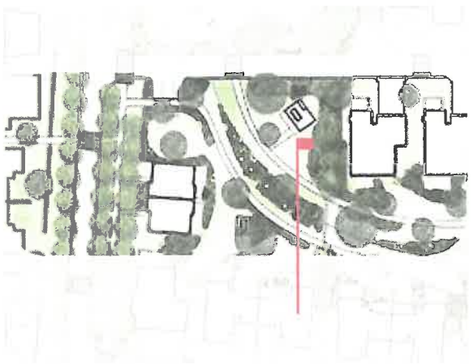








Detailed Area 02 - Orchard Garden



location plan 1:1,000@A3

North

Swale Parkland

The swale parkland provides an alternative character area to the gridded orchard area with a curvilinear parkland based around a central raingarden which will receive the stormwater collected from rooves, roads and pavements and use it to irrigate native plantings along its curvilinear route. Weirs are used to attenuate the flow of this stormwater and maximise the soakage for the wet tolerant plantings behind them.

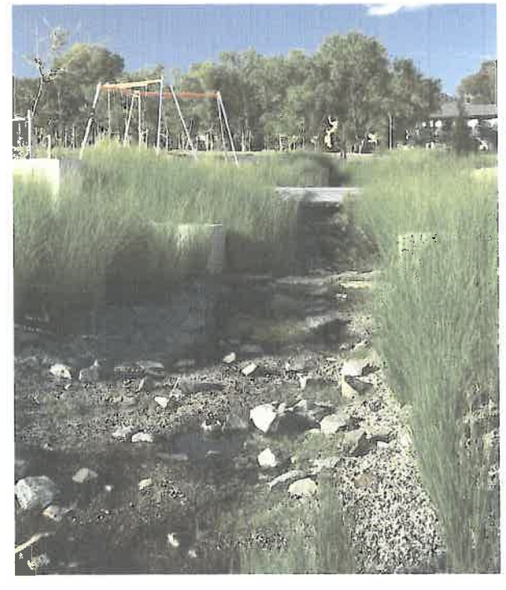
Walkways on both side of the swale provide a circular walking trail as well as pedestrian connections to the various amenities inside and outside of the site instead of using roadside footpaths which are minimised in order to accommodate grass swales and avoid a suburban feel.

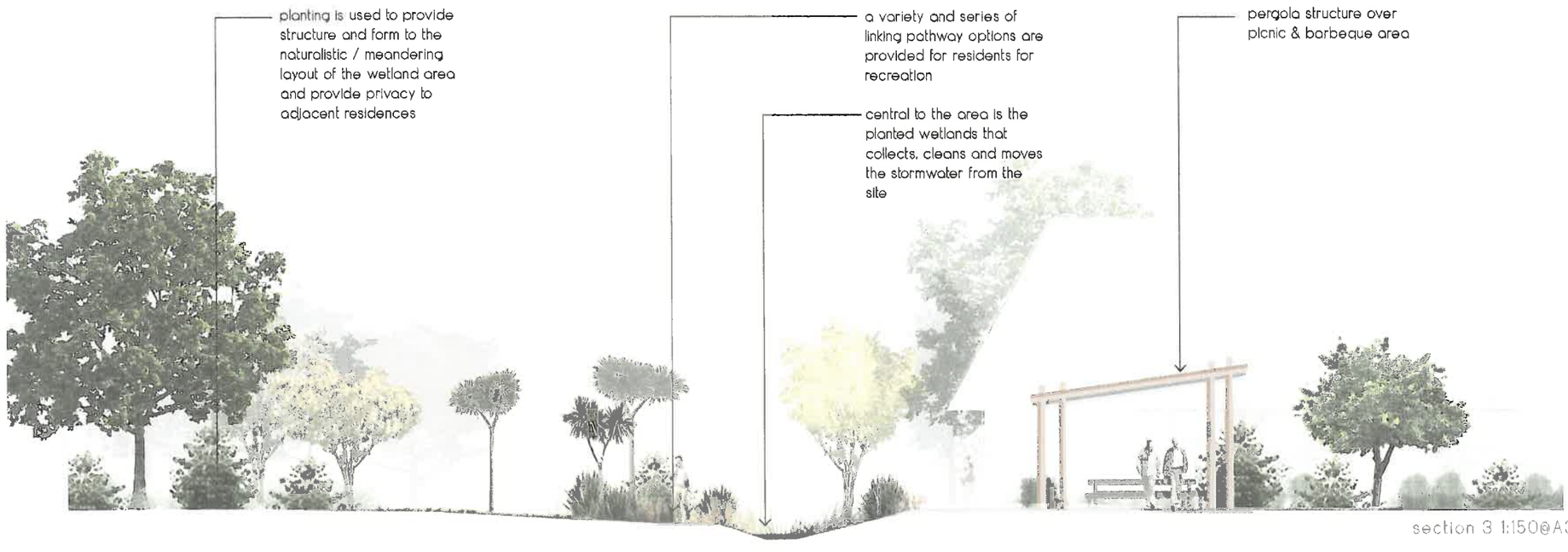
Fingers of parkland extend from the swale into "mini communities" of housing which have been re-orientated so that views into the parkland and swale beyond are maximised. Shared BBQ and recreational facilities are located throughout the parkland including low key nature play areas where grandparents can entertain their younger visitors.

The memory of the former shelter belts which cut through this area is retained. While the poplars which currently dominate the make-up of these rows are not suitable close to residential housing but some may beable to be retained, along with the myriad species which have been under planted and which can be added to preserve this memory. Species such as elderflower (used to make cordial and "champagne") can be retained and similar species such as hazelnut bushes and walnut trees, berries and figs can be added in to provide a rich and low maintenance food source for residents.



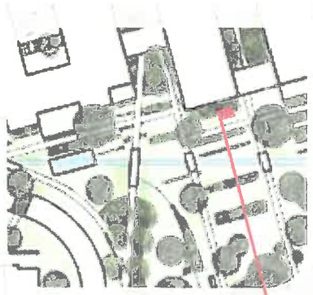






section 3 1:150@A3

Detailed Area 03 - Rain Garden Parkland



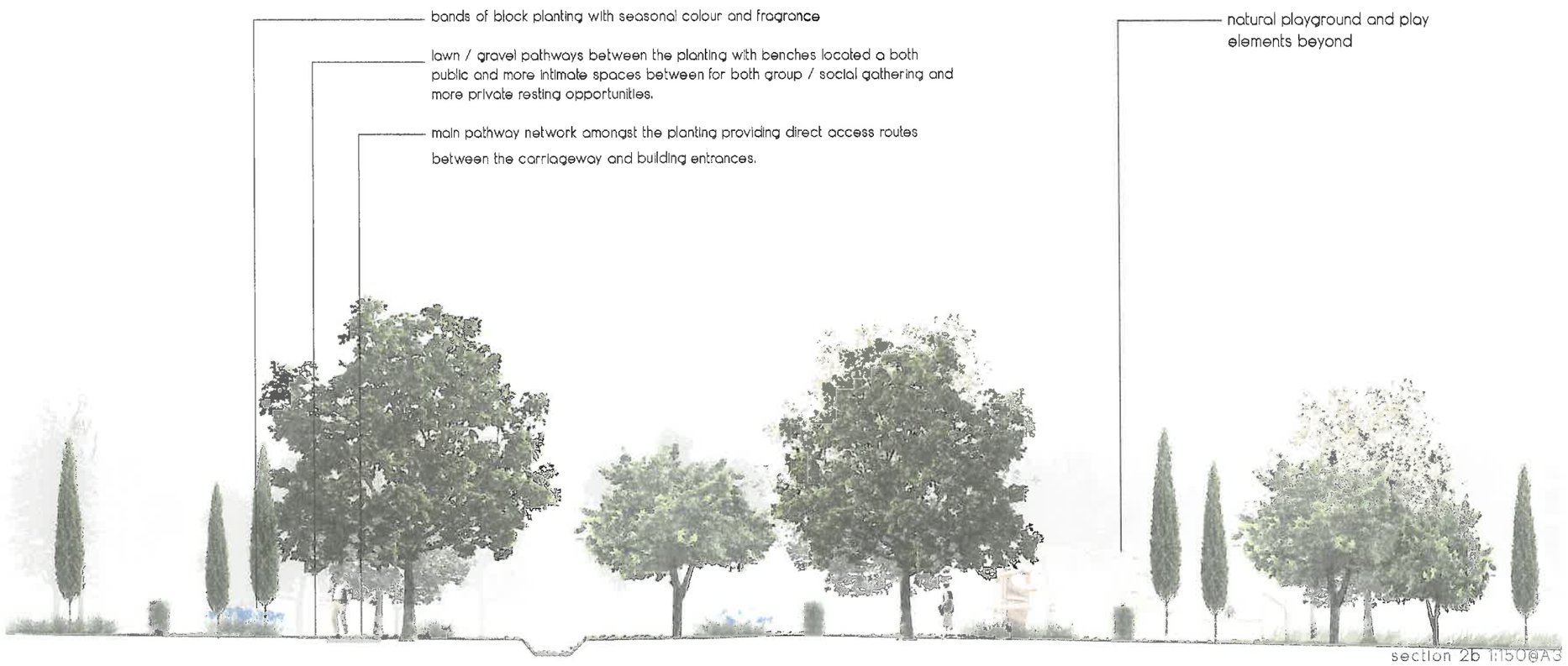
location plan 1:1,000@A3

North

Gardens & Playgrounds

The gardens on the orchard block and care centre are restrained, simple, mass planted areas or areas or long (occasionally mown) long grass and hedging to maintain the sense of rural character and echo the formality and orthogonality of the orchard rows. The village green and bowls club will be located in this area. These spaces have been kept deliberately simple to maximise the sense of space and tranquillity. The nature playground elements in this area are similarly restrained and formal so as not to detract from the character while also encouraging inventive play, a popular theme in contemporary playgrounds, as well as informal seating areas for adults.

The gardens between the care building and swale parkland use rows of rural flowering plants like lavender, ornamental onion (alliums) and roses to provide long lasting displays of colour which are easily accessed by the less abled. The existing irrigation race is retained through this area and a simple pond is placed in line with it to further emphasise this valuable and unusual resource.



section 2b 1:150@A3

village green play elements





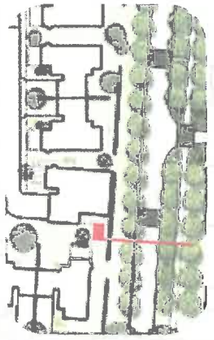
swale parkland elements







Detailed Area 04 - Gardens & Playground



location plan 1:1,000@A3

North

Southern entrance walk

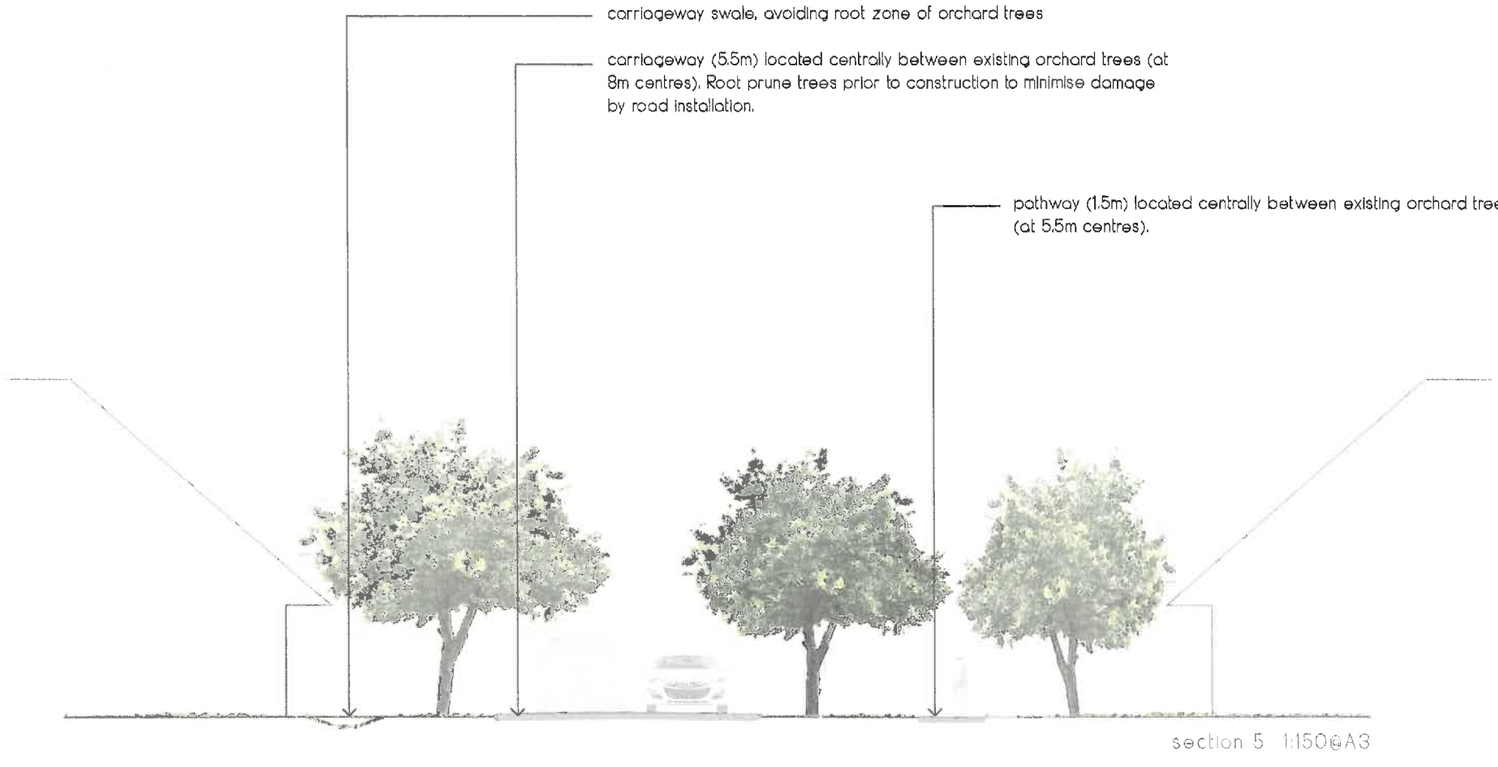
The southern entrance walk retains and occupies the existing orchard rows in the southern area of the site to provide a strong and ready-made first impression which reinforces the orchard name character which is the namesake of the village upon entry into the site from Market Street. The carriageway is centrally located between the easternmost two rows which are 8m apart and the footpath in the next row which is 6m apart.

Simple entry walls are provided at the edge of the site which will contain signage. The road will be built up from existing ground heights so as not to impact the existing tree roots which will be root pruned and canopy shaped prior to construction to ensure vehicular weights and heights will not adversely affect them.









section 5 1:150@A3

Detailed Area 05 - Southern entrance walk



Boundary 1:
Reading Street frontage: main entry, detail elevation



Boundary 1:
Reading Street frontage: full elevation



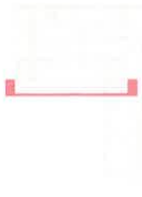
Elevation location



Boundary 2:
North internal to rural residential: detail elevation



Boundary 2:
North internal boundary to rural residential: full elevation



Elevation location



Boundary 9:
North internal boundary to residential properties: Detail elevation



Boundary 9:
North internal to boundary residential properties: full elevation

Orchard Block Plant Palette


Pinoak


Orchard trees


Ornamental pear


Fastigiate hornbeam


Laurel hedge


Corokia hedge


Long grass


Mass planting

Rain Garden Portland Plant Palette


Kowhai


Kanuka and manuka


Hebes


Cabbage trees


Flax


Rushes


Sedges


Dwarf kowhai

NOTE:
These palettes are intended to illustrate planting character but are intended to be expanded upon to provide variation and respond to site specific requirements.

Core Building Flower Garden Plant Palette


Ornamental cherries


Olives


Roses


Lavender


Rosemary


Allium (ornamental onion)


Artichoke


Irises

Boundary Screening with Planting Palette


Elder


Walnut


Hazelnut


Feijoa


Fig


Red currant


Berries


Citrus

NOTE:
These palettes are intended to illustrate planting character but are intended to be expanded upon to provide variation and respond to site specific requirements.

Orchard Block Street Trees


Orchard trees


Ornamental pear


Pin oak


Fastigate hornbeam

Paddock Block Street Trees


Kowhai


Titoki


Pin oak


Rewarewa


Ornamental pear

NOTE:
These palettes are intended to illustrate planting character but are intended to be expanded upon to provide variation and respond to site specific requirements.

Appendix 20

Landsape and Visual Assessment

Prepared by Rachael Annan – Perception Planning Ltd

PERCEPTION PLANNING

your connection with the environment

Landscape and Visual Assessment

THE ORCHARDS RETIREMENT VILLAGE

GREYTOWN, SOUTH WAIRARAPA

Prepared for The Orchards Limited Partnership

06 March 2019



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1 Summary

Perception Planning Limited (PPL) have been engaged by The Orchards Partnership Limited (The Partnership) to provide a landscape and visual assessment for 'The Orchards Retirement Village' private plan change request and resource consent application. The site is also known as 'Murphy's Orchard', with street addresses of 67 Reading Street and 31 Market Street, Greytown. The 13.82-hectare property comprises of two adjoining titles, as identified in the table below and is referred to within this report as the 'application site'.

TABLE 1: SITE DESCRIPTION – UNDERLYING ALLOTMENTS

Legal Description	Title	Site Area	Occupier	Owner	Street Address
Lot 4 DP 410283 and Lot 1 DP 6753	437963	8.2857	Vacant	The Orchards Limited Partnership	1215 Maraekakaho Road, Hastings 4175
Part Tahorahina Block	WN403/156	5.5315	Vacant	The Orchards Limited Partnership	1215 Maraekakaho Road, Hastings 4175

I carried out a visit and appraisal of the site and its surrounds on the 6th December 2018.

1.1 Assessment Methodology

In this assessment, I have set out to:

- Outline the proposal's landscape and visual statutory matters;
- Describe the proposal;
- Appraise the application site and the surrounding environment;
- Assess the application site's visibility and the site's relationship with its surrounding environment;
- Compare the landscape and visual 'shift', and associated effects of the proposal;
- Provide an assessment of the appropriateness of the proposal with regards to landscape character;

- Describe proposed mitigation and enhancement measures and structuring elements to address potentially adverse landscape and visual effects and to improve amenity.

2 The Proposal

The proposed activity involves an application for land use consent to develop and operate the independent residential components of the proposed Orchards Retirement Village. The resource consent is lodged concurrently with a Private Plan Change to SWDC.

The Application's Assessment of Environmental Effects (AEE) describes the application in full. In summary, the application involves the following key components:

- Up to 180 independent dwelling units consisting of 4 basic typologies;
- 3 stages of development for the residential component;
- Internal roading network throughout the development, and connecting to the public roading network at Market Road and Reading Street;
- Provision of cycling and pedestrian paths throughout the site;
- Provision for one independent dwelling unit to operate as a show home;
- Wastewater, potable water and stormwater collection and disposal infrastructure;
- Retention of significant number of orchard and other trees throughout the development site;
- Construction of a bowling green and village green;
- Construction of community garden spaces throughout the site;
- Comprehensive landscaping throughout the site.

This landscape and visual assessment is based on the proposal as set out by:

- 'The Orchards Greytown Design Statement', March 2019, by the architectural firm Design Group Stapleton Elliott (DGSE),
- 'The Orchards at Greytown Master Plan', March 2019, by the landscape architectural firm Local, Landscape Architecture Collective (LOCAL).

I have made my assessment based on the application as put forward by the above design documents.

3 Statutory Context

This section summarises the planning context for the application site and its surrounds regarding landscape and visual matters. This involves identifying planning policies and rules (both for the plan change and resource consent matters) relevant to understanding the proposal's landscape and visual effects.

3.1 The Wairarapa Combined District Plan

The 13.82-hectare application site is under Rural (primary production) Zoning of the South Wairarapa District and subject to the planning provisions of operative Wairarapa Combined District Plan, 2011 (district plan).

Overall, the application has discretionary activity status. However, from a planning perspective, at a more strategic level the application is considered inconsistent with the district plan objectives and policies for the Rural (Primary Production) Zone. On this basis a plan change application to rezone the property to residential zoning forms part of the application. Therefore, this application involves both:

- a plan change request to rezone the site from Rural (Primary Production) Zone to the Residential Zone with a new special character area overlay to establish and operate a retirement village, and;
- a resource consent for land use for the establishment and operation for a retirement village.

The application non-compliances and relevant issues, objectives and policies under the current Rural zoning and proposed Residential zoning (which relevant to landscape and visual effects) are summarised in the **Appendix 1.**

3.1.1 Permitted Baseline

The permitted baseline for the development is explored below and in further detail in the AEE report accompanying the application.

The WCDP provides for any activity as a permitted activity, whether listed in the District Wide Activities in Section 21 of the Plan or not, in the Rural (Primary Production) Zone provided it meets the performance standards of the Rural Zone and is not otherwise provided for as a controlled, restricted discretionary, discretionary or non-complying activity.

Permitted activity performance standards in the Rural (Primary Production) Zone require activities to adhere to matters such as:

- Yard setbacks
- Activity setbacks

- Dwelling numbers based on site size
- Maximum height for dwellings and other buildings

The dimensions, natural features, and neighbouring environment of the application site's two lots are such that the setback and other standards of the Rural (Primary Production) Zone would be unlikely to impose significant constraints on the ability to build up to two homes and a minor dwelling on each allotment (six dwelling units in total across the site) as allowed by the Plan.

Commercial, retail and industrial activities of any scale are not permitted in the Rural (Primary Production) Zone by the WCDP. However, plantation forestry and intensive and non-intensive primary production activities are provided for as permitted activities, as well as the establishment of non-residential buildings, for which there is no maximum permitted threshold. Primary production activities that could be undertaken on the site by right as permitted activities include:

- the removal of existing vegetation including existing trees;
- introduction of fence lines and stock; and
- establishment of farm buildings, glass houses or growing tunnels.

The non-residential permitted activities provided for within the Rural (Primary Production) Zone could reasonably be expected to result in visual, amenity and traffic effects on neighbouring allotments and residences. Furthermore, any change to the type of permitted activity, for example from orcharding to dry stock farming or market gardening or greenhouses, is likely to have visual and other effects that would be noticeable and experienced from neighbouring allotments and land holdings.

3.2 Greater Wellington Regional Policy Statement (2013)

Under chapter 3, of the Regional Policy Statement (RPS), two sections address issues relevant to landscape and visual matters, and urban form.

Section 3.7 Landscape.

RPS landscape related Objectives 17 and 18 address the region's Outstanding Natural Landscapes and Special Amenity Landscapes respectively. In a third group, the RPS addresses all other landscapes, contributing to

> *'the amenity and character of the region and are managed through the general amenity provisions in local authority plans, impacts on these landscapes are not considered to be a regionally significant issue' (p.56)*

Section 3.9 Regional Form, Design and Function.

> *'Objective 22*
> *A compact well designed and sustainable regional form that has an integrated, safe and responsive transport network'.*

Policy 31:
Identifying and protecting higher density and mixed use development – district plans

Policy33:
Supporting a compact, well designed and sustainable regional form – Regional Lands Transport Strategy'

3.3 Non-Statutory Documents

The Regional Policy Statement's Appendix 2 'Regional Urban Design Principles' provides non-regulatory urban design guidance adapted from the New Zealand Urban Design Protocol (2005).

In relation to the application site's development, the adapted '7 c's' approach seeks consideration of *context, character, choice, connections, creativity, custodianship* and *collaboration.*

The Wairarapa Landscape Study (Boffa Miskell, August 2010) was produced for the regional and district councils (Masterton, Carterton and South Wairarapa). This document was *'initiated to assist in developing planning measures for managing change in the Wairarapa District'.*

The landscape study notes that the complexity of factors contributing to urban character as beyond the scope of the document, which instead focuses on rural areas.

In relation the application site, the landscape character descriptions broadly explain the plains and lowlands of the Wairarapa. The northern/central plans are described as

> *'where most of the Wairarapa towns are located... and consequently a smaller subdivision and settlement has occurred around each of the towns'* (p. 19).

> *'Land parcels on the plains tend to follow a regular linear pattern, with drainage ditches and shelterbelts creating a distinctive pattern'* (p. 34).

4 Existing Landscape Context

4.1 Landscape Setting

The application site is located in Greytown, a town of approximately 2000 residents located centrally in the Wairarapa Planes. The alluvial and gravel-based planes are framed to the west by the Tararua and Remutaka Ranges and to the east by hill country.

Located towards the north end of the South Wairarapa District, Greytown (approximately 75km north-east of Wellington) is set within a rural landscape in mixed use pastoral landcover. This setting involves a rural patchwork of typically gridded pattern of land parcels, and shelterbelts.

The Waiohine River loosely winds through the rural landscape around the north of Greytown (then feeding into the Ruamahanga River east of Greytown, beyond Papawai Marae). To the south, and closer to Featherston, is the Tauherenikau River, also a braided river.

Greytown is an attractive country village, both with regards to its architecture and established notable trees. These combine to provide a picturesque setting offering shared and recognised amenity and heritage values. The town offers a relaxed and creative character, with a built form vernacular of weatherboard villas. SH2 provides the main street central axis of Greytown.

The Greytown area is not considered to be within an outstanding natural landscape area (ONL) or significant amenity landscape (SAL) – ref to 2010 Boffa Landscape Study informing RPS and I concur with this.

The application site's setting is illustrated by Appendix 2: **Landscape Context Plan**. The application site abuts residential zoning to the north and is located opposite Greytown School (a full primary school to year 8) on Reading Street.

Generally, the site has rural-residential neighbours to the southwest and more productive scale rural land use to the east. While the density of these property holdings varies, the adjacent rural residential development is also rurally zoned.

This composite landscape setting illustrates the site's peri-urban location roughly midway down the eastern edge of Greytown. The town's layout is narrow in width, in the vicinity of the site. Therefore, although the site is located at the town's 'built edge', it is only a short walk from the town centre.

In the vicinity of the site, through both rural and rural residential areas, extensive tree planting along property and paddock boundaries creates a 'compartmentalised' landscape setting and sense of enclosure.

4.2 Baseline Site Appraisal

The 13.82-hectare application site is irregular is shape with 9 boundary faces, as illustrated by **the Landscape Context Plan**. While the site has road frontages to both Reading Street and Market Road, the boundaries do not extent to the intersection itself, with the exception of a 5m wide 'spite strip' fronting Market Road.

Aerial photography illustrates the site's primary division into two different productive land use areas, with orchards to the north-east area of the site and crop paddocks to the south-west. These are referred to in DGSE Design Statement as the 'Orchard Precinct' and 'Southern Precinct'.

A single existing dwelling and ancillary buildings associated with the orchard are located to the north-east corner of the site, with access from Reading Street. Established specimen trees and manicured lawn areas in the vicinity of the dwelling afford a more rural residential character to this top corner of the application site. The site also has gated vehicle access from points on the Market Road frontage.

Existing structural vegetation patterns are described in full in the arborist report and plans, which also denotes the health of different trees and which trees should be retained or removed as part of the application.

Two shallow water races run through the site. These are branches of the Moroa Water Race, with one following the northern boundary and the other running more centrally through the site.

While the site is primarily level, it slopes very gradually southeast across the site (affording an overall change in height of roughly 5m over the site length). There is a small visible drop in level and contour change to the southern corner of the site, where a small orchard area is located (fronting 'boundary 6').

I have taken a series of **Site Appraisal Photographs** which illustrate the existing character of the application site. These photographic viewpoints are illustrated by **The Landscape Context Plan.** All photographs are provided as **Appendix 3** of this report.

Site Appraisal Photograph A (taken by Lucy Cooper, subsequent to my site visit) illustrates the view northeast towards the Reading Street site frontage. This photograph was taken following the removal of the large Pinus radiata trees lining this road boundary. With these trees gone, there are now open views afforded into the first few rows of mature orchard trees within the site. However, these orchard trees themselves now truncate deeper views into the property. The view is heavily vegetated with taller boundary planting to the north and south of the property framing the outlook.

Site Appraisal Photograph B illustrates an internal site view looking north towards existing specimen trees and lawn area, affording a high level of vegetative amenity and dense screening of views beyond the site to this aspect.

A represented view of the northeast orchard area of the site is illustrated by **Site Appraisal Photograph C.** Also visible here is an internal Lombardy poplar shelterbelt,

mixed boundary planting, a vehicle access route and orchard sheds. The characteristic sense of enclosure afforded by shelterbelts, mixed tree rows, and even the mature fruit tree rows themselves, is evident in this image.

From the southernmost corner, looking north into the site, **Site Appraisal Photograph D** illustrates a small pocket of orchard trees in the foreground. This orchard area is distinct from a wider pattern of paddock areas to the southwest area of the site. In this low-lying area, the ponding of recent rainfall (December 2018) is also visible. Beyond, and framing this orchard area, a long and low 'ridgeline' is visible towards the background of the image. To the left of the view, internal tree rows are also visible, truncating deeper views beyond the immediate paddock.

Site Appraisal Photograph E illustrates one of the sites more open spaces, a paddock area to the south of the site; planted in corn at the time of my site visit. Internal and boundary tree rows truncate views beyond this immediate paddock, there is limited variation in tree species, though the existing rural character demonstrated by this outlook is clear.

4.3 Visual Catchment and Viewing Audience

The visual catchment and viewing audience for the Application Site is the area of land from which all or part of the Site may be visible. The extent of the visual catchment is largely determined by landform or topography that may block or curtail views towards the Application Site. In addition, land cover plays a role in determining the visibility of the Site, as buildings or vegetation may also block or filter views.

Landscape Context Photographs

I carried out an assessment of the visibility of the Application Site from the surrounding landscape was carried out to determine the approximate extent from which the Site is visible at eye level. A series of representative panoramic photographs were taken from points of public access as illustrated by the Landscape Context Plan. These **Landscape Context Photographs** are included as part of Appendix 3.

Views towards the Application Site are defined as:

- Open views: which indicate clear, unobstructed views towards the Site;
- Partial views: which indicate that some intervening elements prevent clear views of the Site being obtained;
- Glimpse views: where only a small proportion of the Site is visible;
- Truncated views: where intervening elements completely curtail or block views towards the Site.

All photographs taken are recorded on the plan, and discussed in this report in order, in a clockwise direction around the site.

Landscape Context Photograph 1 illustrates an outlook from Reading Street looking northeast towards the site, with neighbouring rural residential properties in the

foreground. From here, views into the site are truncated by the adjacent neighbouring dwellings and beyond that by internal boundary planting.

As illustrated by **Landscape Context Photograph 2**, some neighbouring residential properties have an existing visual connection and, in places also a physical link to the application site (along the site's north internal boundary). Adjacent the site's internal access route, this view shows gated pedestrian access and reciprocal partial to open views into the application site.

Landscape Context Photograph 3 illustrates an open view northeast towards neighbouring rural land. Central to the view is a large white shed, characteristic of a working rural landscape and set beyond an otherwise pastoral foreground. In the background the layering of structural vegetation truncates wider views of the surrounding landscape, extending into areas of both residential and rural land use.

An outlook to the south from a location along 'Boundary 5' is illustrated by **Landscape Context Photograph 4.** In the foreground, and immediately adjacent the site crop land cover is contiguous with this end the site.

Landscape Context Photograph 5 illustrates a view looking southeast along Market Road, taking in rural properties opposite the application site (opposite Boundary 6). Views into the application site will typically vary between partial to fully truncated for these residences, primarily due to intervening vegetation. Given rural zone building setbacks, views are more distant than those from residential neighbours.

Summary

Broadly, the application site is well contained within it's landscape setting. The common landscape pattern of intervening layered tree rows and groups foreshortens wider views including views into and right through the site. Due to the application site's irregular shape (along with the pattern of surrounding and dissecting tree planting), the site cannot be viewed in it's entirety from any one location in the immediate surrounds.

5 Assessment of Landscape and Visual Effects

This section of the assessment considers the potential effects of the proposal on landscape features and landscape character, as well as assessing potential visual effects.

Landscape effects include effects on physical, aesthetic, and perceptual aspects of the landscape. Landscape effects derive from changes in the physical landscape, which may give rise to changes in the character of the landscape and how it is experienced. Physical changes may involve changes to the landform, its land cover or land use.

Visual effects are a narrower subset of landscape effects encompassing changes that arise in composition of available views as a result of changes to the landscape and overall effects on visual amenity.

Specifically, landscape and visual effects relating to this proposal involve:

- the extent to which the landscape can accommodate the proposal:
- the extent to which the proposal will integrate with the landscape, and
- the specific (visual amenity) effects such as those experienced by neighbours and from public places such as roads and walking tracks.

These effects include direct, indirect, cumulative, temporary and permanent effects.

5.1 Landscape Effects

Physically, the application will involve a shift of the current edge of residential development in this part of Greytown.

Within the site, there will be a loss of rural land use, open space areas and permeable ground area associated with the proposed development (dwellings, roading network, and later facilities buildings).

Proposed site contouring is understood to involve 8,590m2 of cut and 12,860m2 of fill and is described in further detail by the Calibre report.

With regards to landcover, some existing structural planting (including internal shelterbelts) will be removed to enable development onsite. In addition, some trees are proposed to be removed for safety reasons, or their failing health. Of the trees that are retained for the proposal, these include some Orchard areas, boundary planting, and notably the amenity trees of Murphy's Garden Area. Positively however, the proposed planting scheme provides for a greater plant species diversity.

5.2 Visual Effects

The context of the application site and sensitivity of the viewing audience are key considerations with regard to visual effects.

There are some limiting factors with regards to the application site's visual catchment and viewing audience. The site is not visible in its entirety from any one location in the immediate surrounds. This is a factor of shape, scale and mature vegetation patterns both within and surrounding the site.

While vegetation cannot be the sole mitigation measure relied on, shelterbelts and tree groups, truncate wider views of the landscape at level, foreshortening views and visually compartmentalising the landscape. Trees located outside the application site cannot be relied on for mitigation, as they are outside the control of the applicant. Further to this, vegetation has a dynamic lifecycle and will face removal at some point (as evident in the now more open views to the site with the Reading Street frontage pine trees now removed) as illustrated by **Site Appraisal Photograph A**.

Structural vegetation patterns will, however, be a key factor in softening the visual effects of the change from rural site use to denser residential villas and the future care facility use as a retirement village. The level of vegetation in the vicinity of the site and the enclosing nature this sets up is a notable aspect of the existing landscape character.

It is not simply the availability of views which denotes negative visual effects, but both the level of visual prominence and the extent to which the subject detracts from amenity. Section 19. General Amenity Values, of the district plan notes that amenity:

> *'values derive from a range of environmental characteristics, including the built form (the scale, density, appearance, condition, age and other values of buildings), as well as from the absence of buildings – open space, planting, and the naturalness of an area.'* (p. 19-1)

The district plan also anticipates the higher density of retirement village complexes, but also notes the importance of a sympathetic design approach.

> *'These more intensive forms of residential development* [retirement villages and housing complexes] *need good design to ensure they fit well with the residential character'.* (p. 5-1)

Public views to the site are typically considered less sensitive than that from neighbouring properties, as road user's views are typically transient and oblique.

The visual effects of the development will be mitigated by the boundary setbacks and an overall design approach, responsive to the existing amenity and character of adjacent residential development. I consider that while the site will change in character with the proposal in place, visual amenity will still be afforded (from a different source) by 'The Orchards' retirement development. I set this out further in the application's mitigation and design measures (Section 6 of this report).

5.3 Landscape Character Effects

The appropriateness of the development is considered both at the immediate scale of the site itself, and its contribution to and relationship with the wider landscape setting. The density of the proposed development seeks to maintain a level of residential character compatible with its landscape context.

The site itself will go through a 'shift' from its predominantly rural open space character. However, proposed boundary setbacks and retained vegetation patterns, including some orchard areas will soften appearance of the proposed development. Proposed built form design reference to the local vernacular of weatherboard villas further provides a design approach sympathetic to the setting.

Landscape Capacity to Absorb Change

There is some complexity to the landcover and mixed land use surrounding the site which affords the landscape setting capacity to absorb the level of change proposed by the application. Layered tree patterns compartmentalise landscape vistas and provide visual anchoring. This is further supported by the composite landscape character of this peri-urban setting.

Abutting an urban area, the application site's proposed change to this residential zoning is less dramatic than it would be if surrounded entirely by a rural landscape. The site is within a setting of property parcels with varying density. This composite landscape setting reflects the surrounding area comprising of both rural and residentially zoned land.

This is not a stretch of a purely rural working landscape but a zone boundary setting at the existing urban edge of Greytown. The mixed characteristics and densities of the surrounds afford capacity for a level of landscape change on the application site to be absorbed here.

In considering the existing urban form of Greytown, the site is somewhat 'nestled in' along the town's mideast edge. The site is tucked below a stretch of residential land accessed from McMaster Street. In this way, the site's development would not sit prominently 'out on a limb into the rural environment'.

5.4 Onsite Amenity

The propsal's design provides for amenity onsite from a change in land use, to establish a retirement village. Spatial considerations include retention of orchard and some open space, including boundary setbacks. I consider that the landscape design approach providing a more rural and less fussy aesthetic will be positive and sympathetic to the landscape character of the setting.

As already noted, while the site character will change, amenity afforded onsite will be provided from a different type of land use and the provisions of the application.

5.5 Consistency with Statutory Policy and Rules

This section provides and assessment of the proposal against the relevant sections of the district plan (relating to landscape and visual amenity) contained within **Appendix 1**.

Rural Character and Natural Character (Section 4 of the District Plan)

As already noted, the site context is not purely rural in current land use, and therefore does not exhibit a level of natural character associated with the open space of a purely working rural landscape. In this way the setting does not express as great a sensitivity to the proposed land use for the site.

Residential Amenity and Character (Section 5 of the District Plan)

The district plan notes the sensitivity of residential character and amenity to higher density development. I acknowledge that as density increases, a sympathetic design approach becomes more paramount; more so again for larger scale development.

The palette of design measures to provide mitigation to potential residential character and amenity effects are discussed through Section 6 of this report.

Matters for Tangata Whenua (Section 8 of the District Plan)

The site does not involve specific known value to Tangata Whenua. However, the Rangitāne o Wairarapa Resource Management Officer raised concerns regarding water. An outcome was sought, whereby water leaving the site, is an at least as good, if not in better condition, than when it entered the site. Subsequently, best practice stormwater management has been incorporated into the design approach.

Subdivision, Land Development and Urban Growth (Section 18 of the District Plan)

The proximity of the application site to Greytown's town centre provides an accessible development location, suited to retirement village development. Character and amenity considerations are integral to the proposal's design approach.

The location does not establish ad hoc urban development nor as already noted, create notable adverse character or amenity effects on the setting.

For commercial reasons, the Partnership has decided on a single storey development. However, through the inclusion of duplex units and serviced apartments, I consider that the proposal in this location will still contribute somewhat to a compact urban form for Greytown.

General Amenity Values (Section 19 of the District Plan)

'*Landscape amenity is the natural and physical quality and character of an area (landscape) that contributes to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes*' (RMA 1991).

The design approach seeks to maintain and enhance the level of amenity associated with the application site. Amenity, as associated with residential zoning, will be provided for with a palette of design measures (site layout, built form and landscape design) incorporated in the proposal.

No street trees will be affected or removed by the application. There is a design intent includes seeking Council permission for berm planting (i.e. on public land). This approach would add street trees along the Reading Street frontage.

Summary

On balance I consider the application is consistent with provisions of the district plan relevant to landscape and visual effects.

6 Mitigation and Design Measures

I consider that a robust approach to design mitigation should cover:

- site layout,
- built form design, and
- landscape design.

I have had the opportunity to provide design and mitigation feedback through the concept design's development.

6.1 Proposed Site Layout

In recognition of the variable density and zoning surrounding the application site, differing boundary setbacks are proposed (DGSE Design Statement, Section 3.2). A minimum setback of 5m is proposed from residential zoning, exceeding the minimum 3m setback required by the district plan. The greater setback approach, acknowledges the greater scale of the development (than adjacent single dwelling lots), as does the variable setback afforded by the staggered setbacks of proposed villas.

Greater setbacks adjacent rural zoning of up to 10m provide an appropriate response to the more open space character of this zone. While I consider that further consideration should be given to setback (and modulation) of the proposed main building (the subject of a future consent application), on balance I support the boundary setbacks as proposed.

The two precincts of the proposal, the grid form Orchard Precinct and the more organic Southern Precinct, respectively reflect the character of the town and rural areas (DGSE Design Statement, Section 4.1 and LOCAL Master Plan, p. 6-7).

Areas of parking through the site are broken up, this design measure reduces a more commercial character; avoiding larger hard stand areas. Visitor and staff parking are centrally located, away from boundaries.

Dispersed green space areas through the site help break up built form development though the site.

6.2 Built form design

The design approach for the residential units reflects Greytown's architectural vernacular of the traditional villa. This extends through to consideration of proportions, roof line and pitch, cladding and colour palette. This design response is sympathetic to local built character.

> *'The forms of the villas reference the traditional built form found in and around Greytown, with hips and gables with metal long run roofing. The forms are broken down with careful articulation'* (DGSE, Design Statement 4.3).

A positive mix of the building typologies, supports visual interest and variety through the site. This also contributes to the varied building setbacks from adjacent internal boundaries, helping to 'visually breaking up' repetition of built form.

I note that the villas' covered patio areas extend the bulk of the area beyond the floor area of the building footprint. The potential visual effects of this increased roof bulk are more relevant for neighbours adjacent boundary 2. However, this is effectively offset by the 5m minimum setback to this boundary and intervening planting. On balance, I support the level of design mitigation afforded by the design of the proposed villas.

I understand that entrance signage is proposed at a scale more consistent with that permitted for the rural zone rather than residential zoning. Given that within the residential zone, the site is directly opposite Greytown School rather than residential dwellings, there is less sensitivity of the receiving environment regarding the location where the signage is proposed.

6.3 Landscape Design

Key landscape design mitigation measures include retention of existing trees, notably tracts of orchard fruit trees. This retains existing site characteristics and associated amenity to help integrate the proposal within its setting.

Areas of boundary planting are also retained, and where provided their vegetative character and established screening will also provide readily effective mitigation. Variation to boundary planting treatment is proposed provided with mixed tree species interspersed with hedge sections. I consider this is more responsive to residential development grain, especially separately owned titles adjacent the site (notably to boundaries 2, 8 and 9) than a more continuous approach to boundary planting species was used.

It is not confirmed if the central swale area (LOCAL's 'Swale Parkland') will involve the take and use of water from the existing water races. However, this central curvilineal park will provide a major internal greenspace amenity feature and onsite stormwater treatment. The design incorporates native plant species, increasing the overall biodiversity of planting onsite, a move away from rural land use being associated with typically more of a monocultural planting approach.

Throughout the site, the inclusion of dispersed larger tree species, exceeding the roof height of villas, is an important tool to break up longer views into the site. I consider it is essential through subsequent design stages, that this design aspect is retained.

As also prioritised by the Treecology Report, the existing trees of the proposed 'Murphy's Garden' area offer a high level of already established vegetative amenity for the site's development.

7 Conclusions

While the character of the site will change, the future amenity provided will be appropriate to the setting. The proposal's amenity will be derived from design measures to soften and enhance the proposal's appearance

as a suitable development pattern for this location.

I support the plan change and proposed site development with regards to landscape and visual effects. This is both with regards to the capacity of the receiving environment and mitigation measures put forward to soften the effects of the proposed increased development density in this setting.

Appendix 20A

Landscape and Visual Assessment Context Map



PERCEPTION PLANNING
your connection with the environment

11 Jellicoe Street Martinborough 5711
127 Tongariro Street Taupo 5330
150 Lichfield Street Christchurch 8011
www.perceptionplanning.co.nz

Project
The Orchards at Greytown Retirement Village

Client
The Orchards Limited Partnership

01.03.2019
Scale approximate

Landscape context

REV 1.0

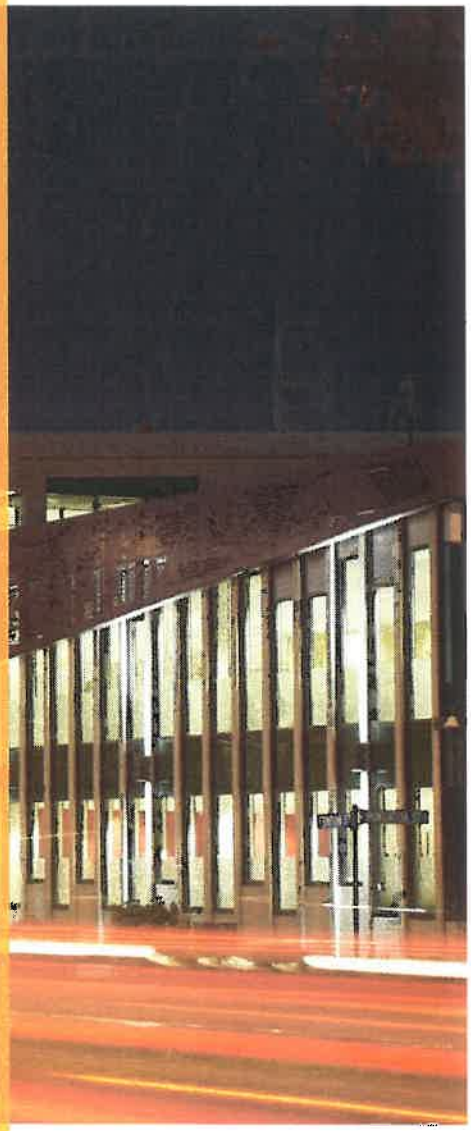
Appendix 21

Resource Consent Report and High Level Civil Assessment

Prepared by Calibre Consulting Ltd

Design Report

The Orchards - Civil Design for Resource Consent



PREPARED FOR THE ORCHARDS LIMITED PARTNERSHIP

QUALITY ASSURANCE STATEMENT

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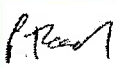
Approved for Issue by	Phil Read	

DOCUMENT CONTROL

ISSUE	DATE	ISSUE DETAILS	AUTHOR	CHECKED	APPROVED
A	28/02/2019	Resource Consent Report REV A	JW	PR	PR

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1 Introduction

The following report outlines the civil design undertaken by Calibre on behalf of The Orchards Limited Partnership for 'The Orchards at Greytown' proposed development. The design includes stormwater reticulation and soakage, wastewater reticulation, and a Council supplied water reticulation system. The purpose of this report is to accompany an application for resource consent to the South Wairarapa District Council, and to demonstrate that the proposed development meets the requirements set out under the New Zealand Building Code (NZBC) and other relevant standards.

Situated on 35 acres of countryside property adjacent to Reading Street, 'The Orchards at Greytown' will add valuable retirement and aged care facilities to the South Wairarapa District. Ultimately, the proposed development will include up to 180 villas, being a mix of 2 bed and 3 bed properties; up to 120 care beds to be made up of serviced apartments, a rest home, hospital, and dementia care beds. The initial resource consent to be lodged will provide for the establishment and operation of the independent residential component, comprising the 180 villas. Accompanying this will be a request for a private plan change to rezone the land, which is currently zoned Rural (Primary Production), to Residential with a character area overlay to specifically provide for the establishment and operation of a continuous care retirement village. A resource consent to establish the care home, hospital and dementia facility as well as the communal facilities and the wellbeing centre will be lodged separately at a later date. The development is currently intended to be constructed in four stages.

Current utility infrastructure around the proposed site consists of a reticulated water supply ('trickle feed'), a gravity sewer system, and limited open drainage for stormwater. There are also several water races that run through the site. South Wairarapa District Council (SWDC) are currently investigating Greytown's water supply capacity to facilitate the required demand of the proposed development. Upgrades are proposed for the gravity sewer system and treatment facilities to the same effect.

Considering the limitations of the current stormwater infrastructure and current best practice, low-impact urban design principles will be applied to stormwater drainage where possible. The design system consists primarily of roadside swales which will convey runoff to soakage devices in the form of soakage basins, raingardens, and subsurface soakage modules. A large feature soakage basin will be constructed through the middle of the site and will be referred to as the 'central swale'. Potable water will be supplied via an internally pressurised reticulation network with storage provisions for fire demand. The sanitary sewer system will consist of a combination of conventional gravity reticulation and pumped reticulation to the external Council network.

2 Development Specifications

The proposed development includes the following:

- Maximum of 180 villas (2-3 bedroom) – design capacity of 270 people as per masterplan dated 5 February 2019;
- Up to 120 bed care facility – design occupancy of 1 person per bed;
- Allowance for 100 staff;
- On-site soakage of primary stormwater flow for the design storm event;
- Reticulated sanitary sewer to external Council network
- Reticulated mains water supply from Council network

3 Stormwater

3.1 Design Parameters

3.1.1 Design Criteria

On-site stormwater reticulation and soakage is designed as per the New Zealand Building Code (NZBC) Clause E1: Surface Water and NZS4404:2010 (Land Development and Subdivision Infrastructure). The following criteria are applicable:

- The 10% annual exceedance probability (AEP) storm must be conveyed within the designed infrastructure to avoid the likelihood of damage or nuisance to property;
- The 2% AEP storm must be conveyed such that it will not enter buildings;
- Freeboard above any flood water level to the floor level shall be a minimum of 150mm. Where floodwater extents meet any building and is greater in depth than 100mm, the freeboard shall be 500mm;
- Effort will be made to ensure the 1% AEP storm will be conveyed such that it will not enter buildings;
- Maximum stormwater velocity of 3.0m/s within pipes;
- Minimum stormwater velocity of 0.6m/s*.

*Except in cases where it can be shown that self-cleansing takes place (by adhering to minimum gradients set out in Table 2, Paragraph 3.4.1 of NZBC E1.

3.1.2 Assumptions

- Soakage rate of 210 L/m^2/hour – silty sand and gravel as per TP10
- Runoff coefficient for roof area: 0.95 (Wellington Regional Standard for Water Services 2012 (RSWS)),
- Runoff coefficient for road and paved surface: 0.90,
- Runoff coefficient for gardens and lawns: 0.35.

3.2 Options Considered

The main alternative option considered was to convey all surface water to soakage modules via swales and rain gardens. However, this did not align with the intentions of the landscape architects to have surface water acting as an amenity beyond that of simple conveyance. The central swale/soakage channel proved an effective balance between functionality and amenity.

Another option considered was to convey surface water to the existing water race. However, to achieve the surface gradients required to convey surface water to the water race, the site levels would need to be altered so significantly that the associated earth working cost would be prohibitive. In addition, the preference to maintain existing trees would be unworkable.

Initial intentions with the proposed design included having all stormwater conveyed entirely via roadside swales. This would involve diverting downpipes into the swales. However, to achieve the required cover for dwelling downpipes, the swale inverts would need to be deeper than what the design road corridors would allow for (with shallow swale side slopes maintained). As such, downpipes will primarily be connected to collector pipes that will discharge into the swales via bubble-up sumps.

3.3 Preferred Solution

The absence of existing stormwater reticulation infrastructure means the proposed development must provide for soakage of surface water for the primary storm event (10% AEP). Currently, surface water exits the site at 6 release points as shown on Drawing C431. For each of the associated catchments, the soakage design will limit volume discharges to at least pre-development levels for the primary storm event. For all storm events, the soakage system will reduce the total discharge volume and flow from the property from pre-development levels.

The 10% AEP system design consists primarily of shallow berm swales to allow collection, treatment and soakage of surface runoff. Runoff from residential roofs will primarily be conveyed to the berm swales via pipes and bubble-up sumps. Due to constraints on berm swale widths, swales with large contributing catchments will not have adequate capacity. Therefore, rain gardens and proprietary soakage modules will be constructed at appropriate intervals to control the flow within these berm areas. Two larger soakage swale basins will also be constructed to provide amenity to residents and extra soakage of runoff. The largest of these will be constructed through the middle of the site and will be referred to as the 'central swale'.

Secondary flow will be conveyed via the primary 10% AEP system, albeit outside the confines of the berm swale cross sections. Therefore, the wider roadside cross section will be designed such that a 1% AEP secondary flow can be conveyed without reaching building platforms. The total soakage system will be sized to adequately attenuate secondary flow such that the pre-development peak flows and total discharge from the site are not exceeded.

The stormwater infrastructure for each stage of development can largely be constructed within the associated stage boundaries. The only current expected exception to this is the soakage basin in the south western corner of the site that will need to be constructed during stage three despite being located within stage four. The stormwater design layout can found on Drawings C401-C403, Appendix D. Stormwater calculations can be found in Appendix A, B, and C.

3.3.1 Berm Swales

The berm swales have been designed with the intention of maintaining a sense of rural living. They provide a visual amenity to residents while facilitating treatment and soakage of stormwater runoff. Flush kerbs will aid in this effort and will allow runoff to enter the swales un-impeded from the carriageway.

The swale cross-sections will vary slightly across the development but will largely adhere to two design sizes – one for main roads (2.2m wide) and one for minor roads (1.7m wide). Each will be a minimum of 0.25m deep, deepening slightly at vehicle crossings to maintain capacity. The maximum side slope will be 1:3 to allow for mowing of the grass. The longitudinal slope will vary but will have an average of 0.5%. This is a shallow slope for conventional swales (usually 1-5% slope) and is a constraint resulting from the design site levels. This means the swales will act more as short-term soakage basins than conveyance devices except in high intensity storm events. However, this promotes the sense of rural living during rainfall.

Analysis of the design swales was undertaken to ensure their flow capacity meets the peak runoff demand for a 10% AEP storm. This analysis assumed a 50mm freeboard to the top of the swales. It was discovered that there will be several large catchments that will exceed the capacity of the swales. Where this occurs, a combination of raingardens and proprietary soakage modules will be constructed to capture the excess runoff. Raingardens will also be constructed at the termination point of the swales (where runoff is to be piped under roads).

3.3.2 Reticulation

A conventional gravity reticulation network will convey all roof runoff to the swales up to flow rates corresponding to a 10% AEP, 10-minute storm. The pipes will also collect water from swale termination points via raingardens. For water to enter the next downstream swale, the pipes will allow water to exit via bubble-up sumps. The exact positions of these will be determined by hydraulic requirements – ensuring the necessary driving head is achieved.

The pipes will be sized to convey the design flows within the acceptable velocity bounds. Where minimum velocity cannot be achieved, the pipes will adhere to minimum gradients to facilitate self-cleansing. For storms of greater intensity refer to section 3.3.5 – Secondary Flow Analysis.

3.3.3 Raingardens

Raingardens will be constructed at the termination point of each berm swale or at any point where the expected peak primary flow will exceed the capacity of a swale. The specific design of these raingardens will be undertaken during the detailed design stage but a typical cross section can be found on Drawing C480

Swales will terminate at points where the flow will need to be piped under roads. Here, raingardens will allow runoff to soak through to the appropriate subsurface pipe while providing a level of treatment beyond that of the grass swales alone. They will also present a seamless visual transition between the landscape conveyance and piped conveyance.

Where the runoff demand exceeds the swale flow capacity, raingardens will allow runoff to soak through to proprietary soakage modules. The raingardens will supply the necessary treatment and silt removal to minimise the risk of the soakage modules becoming clogged.

3.3.4 Soakage

The design soakage rate is 210 L/m^2/hour. This is the minimum infiltration rate for sandy soil as per TP10 and is a conservative assumption based on on-site test pits that showed the soil to be predominantly silty sand and gravel.

For swales, the design soakage rate is applied over an effective width of 1 meter – outside which the soakage is assumed to be less effective. A factor of 0.5 is applied to account for reduced holding capacity due to the longitudinal slope of the swale. A freeboard of 50mm is also allowed for. The larger soakage basins have the soakage rate applied over their base footprint. Check dams will allow maximum ponding volume to be achieved in the central swale, however, a factor of 0.5 is also applied to be conservative.

Supplementary soakage via raingardens and proprietary soakage modules will be provided where swale capacities do not meet the demand of its relative catchment. Modules such as Cirtex Civil's Rainsmart® Stormwater Modules (Figure 1) slowly release the retained water to the surrounding earth via a permeable geotextile membrane. They also provide volume storage that will reduce peak flow and total volume discharges. The modules come with an expected 50-year design life. Approximate positioning of soakage clusters has been indicated on Drawing C400 but exact sizes and locations will be determined during the detailed design phase. Consideration will be given to accessibility for maintenance and setbacks from buildings. The physical configuration of the modules can be seen on Drawing C481.



Figure 3.1 RainSmart® Underground Stormwater Management System

3.3.5 Secondary Flow Analysis

Secondary flow will be conveyed in much the same way as primary flow. Stormwater runoff of greater intensity than that of a 10% AEP, 10-minute storm, will be conveyed via the wider roadside cross section. Specific design of this cross section will ensure that a 1% AEP secondary flow can be conveyed without reaching building platforms. The design aims to maintain or reduce secondary flows and volume discharges to surrounding properties compared with pre-developed levels. For determination of runoff balances, all soakage systems are conservatively deemed to operate at the same rate as for the primary flow.

Secondary flow currently exits the site in 6 locations. These, along with the corresponding catchments, are shown on Drawing C431. Post-development, secondary flow will exit the site in 3 locations. Catchment 1 currently discharges into a water race on the boundary of the site. Runoff into this swale post-development will be negligible and the analysis assumes all runoff from this catchment drains into catchment 2. Catchment 3 drains into the water race that runs through the centre of the site - SWDC have agreed that post-development secondary flow can be discharged into the water race. Catchments 2, 4, 5, and 6 discharge into ephemeral flow paths in downstream rural property but only catchments 2 and 4 will discharge post-development. Table 1 and Table 2 compare existing stormwater discharges to the expected post-development discharges for 10% AEP and 2% AEP storms. Rainfall data was obtained using HIRDS (High Intensity Rainfall Data System) and includes a climate change adjustment of 16%. Calculations can be found in Appendix B.

Table 1. Comparison of Existing to Post-Development Overland Flow (10% AEP, 1 in 10 year)

Catchment	Existing Peak Flow off Site	Post-development Peak Flow off Site	Flow Difference Off Site	Net Maximum Volume Off Site
1 - Northern Water Race	0.24m^3/s	Nil	-0.24m^3/s	-481m^3
2 – 42A McMaster Street	1.06m^3/s	1.43m^3/s	+0.37m^3/s	-1505m^3
3 – Central Water Race	0.19m^3/s	0.39m^3/s	+0.20m^3/s	-199m^3
4 – Papawai Road Rural Lot	1.50m^3/s	Nil	-1.50m^3/s	-2321m^3
5 & 6 – Papawai Road Rural Lot	0.47m^3/s	Nil	-0.47m^3/s	-944m^3
Totals	**3.46m^3/s**	**1.82m^3/s**	**-1.64m^3/s**	**-5,450m^3**

Table 2. Comparison of Existing to Post-Development Overland Flow (2% AEP, 1 in 50 year)

Catchment	Existing Peak Flow off Site	Post-development Peak Flow off Site	Flow Difference Off Site	Net Maximum Volume Off Site
1 - Northern Water Race	0.34m^3/s	Nil	-0.34m^3/s	-656m^3
2 – 42A McMaster Street	1.50m^3/s	2.08m^3/s	+0.58m^3/s	-1662m^3
3 – Central Water Race	0.27m^3/s	0.57m^3/s	+0.30m^3/s	-184m^3
4 – Papawai Road Rural Lot	2.13m^3/s	2.80m^3/s	+0.67m^3/s	-2657m^3
5 & 6 – Papawai Road Rural Lot	0.67m^3/s	Nil	-0.67m^3/s	-1288m^3
Totals	**4.91m^3/s**	**5.45m^3/s**	**+0.54m^3/s**	**-6,447m^3**

As shown above, both the total peak flow and total volume discharge will be reduced significantly from existing levels for a 10% AEP event (1 in 10 year). The localised increases in peak flow are considered to be minor and will mitigated with the use of erosion control measures. This could include the use of riprap for energy dissipation and geotextiles for soil stabilisation. These measures will determined during the detailed design phase.

For a 2% AEP event (1 in 50 year), the total volume discharge reduction remains substantial. This is in large part due the extensive soakage and attenuation capacity of the design. However, the total peak flow will increase by 0.54m^3/s post development. This is considered minor in respect of the downstream land use (rural) and the low annual exceedance probability. Furthermore, the increase in percentage terms is only 11%, due to the substantial existing runoff from the site.

The required freeboards stated under section 3.1.1 Design Criteria have been incorporated into the design of secondary flow paths along roadways, as well as consideration for vehicle access into dwelling garages.

3.3.6 Central Swale

The central swale will be the focal point for the development. The swale and surrounding parkland are intended to provide a space for residents to relax, enjoy nature and feel removed from the urban environment. Key to the character of the space is a regular flow of water through the channel of the swale, both to maintain the desired foliage and enhance the sense of rural living. However, the relatively small size of the contributing catchment and the high soil permeability mean that the swale is likely to remain dry except during larger storm events.

In an effort to realise the aspirations for the central swale, specific design of the underlying soil will be undertaken to reduce permeability and allow the swale to retain more runoff. This may include the use of impermeable clay barriers or geotextile liners. The proposed weirs will provide the necessary constraints on flow. Furthermore, effort will be made during subsequent stages of design to increase the size of the catchment by adjusting variables such as the depth of the central swale, surrounding contours, and the arrangement of the pipes.

3.3.7 Roof capture

The current intent of The Orchards Partnership is to harvest rainwater from the roofs of its main facilities. It is currently unknown what the extent of this intention is or what the uses of the water will extend to and these decisions are likely to be made as part of a separate design process. Capture of roof runoff from the main facilities will also reduce the effective catchment area for catchments 2 and 3 and aid in the overall reduction of runoff from the site.

4 Wastewater

4.1 Design Parameters

4.1.1 Design Criteria

Sewer reticulation will be designed as per NZBC Clause G13: Foul Water and NZS4404:2010 (Land Development and Subdivision Infrastructure. The following criteria are applicable:

- Design flow of 220 L/person/day (L/p/d) for residents;
- Hydraulic design based on Manning's formula (Manning's 'n' for uPVC of 0.011)
- Minimum pipe size of DN 150, excluding laterals (DN 100)
- Minimum cover for uPVC pipe of 900 mm
- Minimum grade for DN 150 of 0.55%

4.1.2 Assumptions

- Design flow of 300 L/p/d for in-care residents;
- Design flow of 50 L/p/d for staff;

4.2 Options Considered

A fully gravity forced reticulation system was initially proposed but a survey of the adjacent Council network found the inverts to be too shallow. The first proposed solution to this was to have the whole development drain to the southern end where a pump station would pump the effluent into the Council network. Subsequently, it was discovered that approximately 50% of the development can drain to the Council network via gravity if some parts of the network are constructed above the stormwater network. This is not usually a preferred solution due to the risk of wastewater leaking into the stormwater network. However, seeing that stormwater runoff primarily drains via soakage, the risk to public health of this option is considered low. This risk can be reduced further with sound construction quality assurance and regular maintenance of the network.

An alternative to the preferred staging of the network was to construct the network complete during stage one to eliminate the need for temporary pumping of flow. However, in the interest of deferring significant construction cost and reducing risks associated with future plan changes, the temporary pumping option was preferred.

4.3 Preferred Solution

The design system consists almost entirely of gravity reticulated sewer main that will discharge into the Council network at two locations on Market Road. However, approximately 50% of the development will not be able to drain directly into the Council network due to level constraints. Therefore, a sewer pump station and rising main will be designed and constructed at the southern end of the development to pump effluent into the direct gravity portion of the internal network. The invert of the incoming pipe to the pump station will be approximately 2.94m deep and will be the deepest point anywhere in the system. The system layout can be found on Drawing C400-C402, Appendix D.

In terms of staging, the current intentions of the Partnership are to construct the northern most Market Road sewer connection during stage one. This will allow a significant portion of gravity reticulation for the first three stages of development. For all buildings that cannot be conveyed directly via this gravity connection, a temporary pump station and riser will be installed. This can then be positioned appropriately for each stage of development until the southern Market Road gravity connection is completed in stage four.

5 Water Supply and Treatment

5.1 Design Parameters

5.1.1 Design Criteria

The mains water supply is designed in accordance with the NZBC G12: Water Supplies, NZ4509: New Zealand Fire Service Firefighting Water Supplies Code of Practice and NZS4404. The following criteria are applicable:

- Design flow of 260 L/person/day (L/p/d) for residents;
- Peaking factor of 2 for peak daily demand;
- Peaking factor of 5 for peak hourly demand;
- Minimum pressure at lot boundary of 30m (300kPa);
- FW2 fire risk classification;
- 45,000 litres of firefighting water storage on site at all times;
- Sprinkler flow of 360 L/min (6.0 L/s) for 30 minutes as per NZ4509 for an extra-light hazard;
- 12.5 L/s fire flow required within 135 meters of all buildings;
- Additional fire flow of 12.5 L/s required within 270 meters of all buildings;
- Two thirds of normal peak flow required during fire flow.

5.1.2 Assumptions

- Design flow of 300 L/p/d for in-care residents;
- Design flow of 50 L/p/d for staff;
- No rainwater harvesting
- Council supply limited to average daily flow (1.17 L/s) – potential to reduce storage requirements if flow can be increased during peak demand and/or during a fire

5.1.3 Outcomes

Based on the above criteria, the total design flows are as follows:

- Average daily flow: 1.29 L/s;
    - (270 villa)(260 L/p/d) + (120 in-care)(300 L/p/d) + (100 staff)(50 L/p/d) / (86500 sec/day);
- Peak non-fire flow: 6.45 L/s;
    - 5 x Average daily flow;
- 3-hour peak flow draw-down: 57,000 L;
    - (6.45 L/s – 1.17 L/s)(3600 sec/hour)(3 hours);
- Sprinkler flow: 6.0 L/s;
- Firefighting flow: 25 L/s;

- Total peak fire flow: 35.3 L/s;
    - Two thirds of the peak potable demand + sprinkler flow + firefighting flow;
- 120,000 litres of storage for firefighting and sprinkler supply (30 minute firefighting time);
    - 45,000 L (firefighting) + 10,800 L (sprinkler) + 7,700 L (2/3 of peak flow) + 57,000 L (3-hour peak draw-down) – 2,000 L (draw-in during fire);
    - Indicative stage requirements:
        - Stage 1 – 43,000 L (peak flow influences not significant);
        - Stage 2 (Main Facilities) – Approximately 80,000 L;
        - Stage 3,4 – Up to 120,000 depending on peak flow influences;
    - Can be reduced to 56,000 L at a minimum if council network can meet peak flow.

5.2 Options Considered

SWDC have not yet confirmed any details regarding the supply of water to the proposed development. The site is currently zoned as rural, and is therefore only supplied with a trickle feed. A re-zoning is expected which, for the purposes of this design report, is assumed to allow adequate flow to service the average daily potable demand (1.29 L/s) of the proposed development. Therefore, alternative options to a Council supplied system have not been considered.

5.3 Preferred Solution

The design system consists of a Council supplied but internally pressurised network. The Council supply will feed into on-site storage tanks via an extension of the council main along Reading Street (by approximately 100 meters) before being pumped to users via an internal pipe network. The minimum required rate of supply is equal to the average daily demand (1.29 L/s). It is preferable that the peak non-fire demand (6.45 L/s) can be drawn from the Council supply as required as this will reduce the required storage for firefighting significantly.

The storage tanks are proposed to be buried to eliminate the visual impact of above ground tanks. They will be designed to hold at least the firefighting and sprinkler supply at all times (56,000 L). A volume buffer in addition to the 56,000 L may be required to account for peak flow draw down (64,000 L) if the Council network cannot supply peak flow. This gives a maximum required storage volume of 120,000 L. The pumps will be designed to adequately pressurise the network and provide for daily and fire peak flows. The design layout can be found on Drawing C510, Appendix D. Specific design of the tanks, pumps and pipe network will be undertaken during the detailed design phase.

6 Limitations

This design is not intended for construction and does not stipulate part details, exact locations of services, or any other aspect of detailed design. Site levels are subject to change along with the layout of infrastructure. This report is only intended to accompany an application for resource consent and should not be used for any other purpose without written permission from Calibre.

THE ORCHARDS - CIVIL DESIGN FOR RESOURCE CONSENT

Appendix A Stormwater Attenuation and Soakage Calculations

THE ORCHARDS LIMITED PARTNERSHIP

THE ORCHARDS - CIVIL DESIGN FOR RESOURCE CONSENT

Appendix B Stormwater Secondary Flow Calculations

THE ORCHARDS LIMITED PARTNERSHIP

Stormwater Runoff Increase

Project: The Orchards Greytown — Catchment 2 - Stage 1 & 2 — *By:* JGW
Job No. 711288 — *Date:* 12/02/2019
Rainfall = HIRDS - Greytown — *Reviewed:*
System Design Return Period = 50 Years — *Date:*

Surface Run Off Predevelopment

Effective Areas:
Total Effective Area: **15897m²**

Surface Run Off Postdevelopment

Effective Areas:
Total Effective Area: **22954m²**

Pre Development Exclusions

Flooding Volume = **0.00m³**
Rate = **0.00m³/h**

Post Development Exclusions

Road Flooding Volume = **0.00m³**
Swale and Storage Module Volume = **58.20m³**

Total Volume = **182.69m³**
Swale and Storage Module Infiltration Rate = **92.38m³/h**

already included
Climage Change Adjustment: 15%

Rainfall Intensity Data:
Source : HIRDS - Greytown — *Units : mm/h*

Duration (min) NB: in hours below									
Return Period Years	10min 0.2hr	20min 0.3hr	30min 0.5hr	60min 1.0hr	120min 2.0hr	360min 6.0hr	720min 12.0hr	1440min 24.0hr	2880min 48.0hr
2	41.41	28.19	22.74	15.89	11.17	6.30	4.29	2.84	1.81
5	55.56	37.70	30.39	21.11	14.73	8.28	5.63	3.71	2.37
10	66.47	45.01	36.19	25.17	17.52	9.79	6.62	4.36	2.77
20	77.95	52.78	42.34	29.35	20.42	11.36	7.68	5.05	3.19
50	94.54	63.68	51.04	35.26	24.48	13.57	9.13	5.99	3.78
100	107.76	72.50	58.00	40.02	27.72	15.31	10.28	6.72	4.23

Predevelopment Flows Offsite: — *Units : m³/h*

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	658.33	448.10	361.43	252.64	177.58	100.13	68.23	45.18	28.77
5	883.30	599.32	483.14	335.62	234.19	131.67	89.44	59.01	37.62
10	1056.64	715.49	575.34	400.16	278.45	155.64	105.30	69.34	44.07
20	1239.20	839.04	673.08	466.55	324.55	180.53	122.08	80.22	50.71
50	1502.90	1012.38	811.38	560.59	389.09	215.75	145.13	95.15	60.12
100	1713.12	1152.53	922.03	636.20	440.73	243.41	163.38	106.77	67.31

Predevelopment Volumes Offsite: — *Units : m³*

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	109.72	149.37	180.72	252.64	355.16	600.79	818.76	1084.30	1380.83
5	147.22	199.77	241.57	335.62	468.39	789.99	1073.24	1416.23	1805.70
10	176.11	238.50	287.67	400.16	556.90	933.83	1263.54	1664.07	2115.50
20	206.53	279.68	336.54	466.55	649.11	1083.20	1464.91	1925.19	2434.15
50	250.48	337.46	405.69	560.59	778.19	1294.52	1741.52	2283.67	2885.57
100	285.52	384.18	461.01	636.20	881.46	1460.49	1960.60	2562.49	3230.78

Postdevelopment Flows Offsite: — *Units : m³/h*

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	0.00	554.65	429.50	272.40	164.03	52.20	0.00	0.00	0.00
5	1183.04	772.99	605.24	392.22	245.78	97.73	36.76	0.00	0.00
10	1433.33	940.73	738.37	485.42	309.68	132.35	59.66	7.74	0.00
20	1696.93	1119.13	879.49	581.27	376.25	168.29	83.89	23.45	0.00
50	2077.69	1369.42	1079.19	717.07	469.44	219.15	117.17	45.01	0.00
100	2381.23	1571.79	1238.95	826.24	544.00	259.09	143.53	61.79	4.81

Postdevelopment Volumes Offsite: — *Units : m³*

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	-39.66	2.19	32.06	89.71	145.38	130.53	-109.03	-834.16	-2623.13
5	14.48	74.97	119.93	209.53	308.87	403.72	258.42	-354.88	-2009.65
10	56.20	130.89	186.50	302.73	436.67	611.40	533.21	2.98	-1562.32
20	100.13	190.35	257.06	398.58	569.81	827.08	823.97	380.01	-1102.21
50	163.59	273.78	356.91	534.38	756.19	1132.22	1223.37	897.63	-450.39
100	214.18	341.24	436.79	643.55	905.30	1371.86	1539.69	1300.23	48.06

Stormwater Runoff Design

Project:	The Orchards Greytown	Catchment 3 - Stage 1 & 2 (Water Race)	*Date:*	12/02/2019
Job No.	711288		*By:*	JGW

Rainfall = HIRDS - Greytown

Reviewed:

Date:

Storm Return Period = 10 Years

Surface Run Off

Surface:	Catchment Areas:	Runoff Coefficients:	Effective Areas:
Roof Area	A1=	C1= 0.95	0m²
Road and paved surface	A2= 1275m²	C2= 0.9	1148m²
Green area	A3= 3731m²	C3= 0.35	1306m²
Residential Lots	A4= 5964m²	C4= 0.65	3877m²
	A5=	C5=	0m²
		Total Effective Area:	**6330m²**

Exclusions

0.44*0.4*0.715

Soakage Trench:

No. Modules =	0	
Trench Width =	0.00m	(20 wide)
Trench Length =	0.00m	(0 long)
Trench Depth =	0.88m	(2 deep)
Net Void Ratio =	0.95	
Trench Volume =	0.00m³	
Void Volume =	0.00m³	
Infiltration Rate =	0.21m/h	
Total Infiltration =	0.00m³/h	

Swales:

Swale Width =	1.00m	(Effective for soakage)
Swale Length =	270.00m	
Cross Section Area =	0.20m²	
Ponding Volume =	27.00m³	
Infiltration Rate =	0.21m/h	(TP10)
Total Infiltration =	28.35m³/h	

Soak Holes:

Number of Soakholes =	
Ring Diameter =	
Depth =	
Net Void Ratio =	
Soakhole Volume	0.00m³
Void Volume	0.00m³
Infiltration Rate per m =	
Infiltration Area =	0.00m²
Total Infiltration Rate =	0.00m³/h

Additional Volume:

Volume =

Additional Flow:

Flow =

Total Exclusion: Volume = **27.00m³**

Rate = **28.35m³/h**

Stormwater Runoff Design

Project: The Orchards Greytown — Catchment 2 - Stage 1 & 2 — *Date:* 12/02/2019
Job No. 711288 — *By:* JGW

Rainfall = HIRDS - Greytown — *Reviewed:*
Storm Return Period = 10 Years — *Date:*

Surface Run Off

Surface:	Catchment Areas:	Runoff Coefficients:	Effective Areas:
Roof Area	A1= 3215m²	C1= 0.95	3054m²
Road and paved surface	A2= 6632m²	C2= 0.9	5969m²
Green area	A3= 5071m²	C3= 0.35	2125m²
Residential Lots	A4= 18163m²	C4= 0.65	11806m²
	A5=	C5=	0m²
		Total Effective Area:	**22954m²**

Exclusions

0.44*0.4*0.715

Soakage Trench:

No. Modules =	1040	
Trench Width =	8.00m	(20 wide)
Trench Length =	18.61m	(26 long)
Trench Depth =	0.88m	(2 deep)
Net Void Ratio =	0.95	
Trench Volume =	131.04m³	
Void Volume =	124.49m³	
Infiltration Rate =	0.21m/h	
Total Infiltration =	31.27m³/h	

Soak Holes:

Number of Soakholes =		
Ring Diameter =		
Depth =		
Net Void Ratio =		
Soakhole Volume	0.00m³	
Void Volume	0.00m³	
Infiltration Rate per m =		
Infiltration Area =	0.00m²	
Total Infiltration Rate =	0.00m³/h	

Swales:

Swale Width =	1.00m	(Effective for soakage)
Swale Length =	582.00m	
Cross Section Area =	0.20m²	
Ponding Volume =	58.20m³	
Infiltration Rate =	0.21m/h	(TP10)
Total Infiltration =	61.11m³/h	

Additional Volume:
Volume =

Additional Flow:
Flow =

Total Exclusion: Volume = **182.69m³**
Rate = **92.38m³/h**

Stormwater Runoff Increase

Project: The Orchards Greytown — Catchment 4 - Stage 3 & 4 — *By:* JGW
Job No. 711288 — *Date:* 12/02/2019
Rainfall = HIRDS - Greytown — *Reviewed:*
System Design Return Period = 50 Years — *Date:*

Surface Run Off Predevelopment

Effective Areas:
Total Effective Area: 22511m²

Surface Run Off Postdevelopment

Effective Areas:
Total Effective Area: 31067m²

Pre Development Exclusions

Flooding Volume = 0.00m³
Rate = 0.00m³/h

Post Development Exclusions

Road Flooding Volume = 0.00m³
Swale and Storage Module Volume = 366.56m³

Total Volume = 326.56m³
Swale and Storage Module Infiltration Rate = 137.30m³/h

already included
Climage Change Adjustment: 15%

Rainfall Intensity Data:
Source : HIRDS - Greytown
Units : mm/h

Return Period Years	10min 0.2hr	20min 0.3hr	30min 0.5hr	60min 1.0hr	120min 2.0hr	360min 6.0hr	720min 12.0hr	1440min 24.0hr	2880min 48.0hr
2	41.41	28.19	22.74	15.89	11.17	6.30	4.29	2.84	1.81
5	55.56	37.70	30.39	21.11	14.73	8.28	5.63	3.71	2.37
10	66.47	45.01	36.19	25.17	17.52	9.79	6.62	4.36	2.77
20	77.95	52.78	42.34	29.35	20.42	11.36	7.68	5.05	3.19
50	94.54	63.68	51.04	35.26	24.48	13.57	9.13	5.99	3.78
100	107.76	72.50	58.00	40.02	27.72	15.31	10.28	6.72	4.23

Predevelopment Flows Offsite:
Units : m³/h

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	932.23	634.54	511.61	357.74	251.47	141.79	96.62	63.98	40.74
5	1250.80	848.66	684.15	475.25	331.63	186.45	126.65	83.56	53.27
10	1496.26	1013.18	814.72	566.65	394.30	220.39	149.10	98.18	62.41
20	1754.78	1186.13	953.12	660.65	459.58	255.64	172.87	113.59	71.81
50	2128.19	1433.59	1148.98	793.83	550.98	305.52	205.51	134.74	85.13
100	2425.88	1632.05	1305.64	900.89	624.09	344.69	231.36	151.19	95.31

Predevelopment Volumes Offsite:
Units : m³

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	155.37	211.51	255.91	357.74	502.93	850.75	1159.41	1535.43	1955.32
5	208.47	282.89	342.08	475.25	663.26	1118.67	1519.76	2005.45	2555.96
10	249.38	337.73	407.36	566.65	788.61	1322.35	1789.25	2356.42	2995.66
20	292.46	396.04	476.56	660.65	919.17	1533.86	2074.40	2726.17	3446.88
50	354.70	477.86	574.48	793.83	1101.96	1833.12	2466.09	3233.80	4086.12
100	404.31	544.02	652.82	900.89	1248.19	2068.13	2776.31	3628.63	4574.96

Postdevelopment Flows Offsite:
Units : m³/h

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	0.00	0.00	0.00	356.42	209.74	58.36	0.00	0.00	0.00
5	0.00	1033.93	806.89	518.59	320.38	120.01	37.48	0.00	0.00
10	0.00	1260.96	987.08	644.72	406.87	166.86	68.48	0.00	0.00
20	2284.43	1502.42	1178.08	774.45	496.96	215.51	101.27	19.46	0.00
50	2799.77	1841.17	1448.36	958.25	623.10	284.34	146.32	48.65	0.00
100	3210.60	2115.06	1664.59	1106.00	724.00	338.40	181.99	71.36	0.00

Postdevelopment Volumes Offsite:
Units : m³

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	-135.02	-80.42	-42.04	29.86	92.93	23.75	-374.09	-1502.74	-4218.46
5	-61.74	18.08	76.88	192.03	314.20	393.50	123.24	-854.06	-3388.15
10	-5.28	93.76	166.98	318.16	487.18	674.59	495.14	-369.72	-2782.71
20	54.18	174.25	262.48	447.89	667.37	966.50	888.68	140.58	-2159.98
50	140.07	287.16	397.62	631.69	919.63	1379.49	1429.24	841.15	-1277.78
100	208.54	378.46	505.73	779.44	1121.44	1703.83	1857.37	1386.04	-603.15

Stormwater Runoff Increase

Project: The Orchards Greytown
Job No. 711288

Catchment 3 - Stage 1 & 2 (Water Race)

By: JGW
Date: 12/02/2019
Reviewed:
Date:

Rainfall = HIRDS - Greytown
System Design Return Period = 50 Years

Surface Run Off Predevelopment

Effective Areas:
Total Effective Area: 2810m²

Surface Run Off Postdevelopment

Effective Areas:
Total Effective Area: 6330m²

Pre Development Exclusions

Flooding Volume = 0.00m³
Rate = 0.00m³/h

Post Development Exclusions

Road Flooding Volume = 0.00m³
Swale and Storage Module Volume = 27.00m³

Total Volume = 27.00m³
Swale and Storage Module Infiltration Rate = 28.35m³/h

already included
Climage Change Adjustment: 16%

Rainfall Intensity Data:
Source : HIRDS - Greytown
Units : mm/h

Return Period Years	10min 0.2hr	20min 0.3hr	30min 0.5hr	60min 1.0hr	120min 2.0hr	360min 6.0hr	720min 12.0hr	1440min 24.0hr	2880min 48.0hr
	Duration (min) NB in hours below								
2	41.41	28.19	22.74	15.89	11.17	6.30	4.29	2.84	1.81
5	55.56	37.70	30.39	21.11	14.73	8.28	5.63	3.71	2.37
10	66.47	45.01	36.19	25.17	17.52	9.79	6.62	4.36	2.77
20	77.95	52.78	42.34	29.35	20.42	11.36	7.68	5.05	3.19
50	94.54	63.68	51.04	35.26	24.48	13.57	9.13	5.99	3.78
100	107.76	72.50	58.00	40.02	27.72	15.31	10.28	6.72	4.23

Predevelopment Flows Offsite:
Units : m³/h

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	116.37	79.21	63.89	44.66	31.39	17.70	12.06	7.99	5.08
5	156.13	105.94	85.40	59.32	41.40	23.27	15.81	10.43	6.65
10	186.78	126.47	101.70	70.73	49.22	27.51	18.61	12.26	7.79
20	219.05	148.31	118.98	82.47	57.37	31.91	21.58	14.18	8.96
50	265.66	178.95	143.42	99.09	68.78	38.14	25.65	16.82	10.63
100	302.82	203.73	162.98	112.46	77.90	43.03	28.88	18.87	11.90

Predevelopment Volumes Offsite:
Units : m³

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	19.39	26.40	31.94	44.66	62.78	106.20	144.73	191.66	244.08
5	26.02	35.31	42.70	59.32	82.79	139.64	189.71	250.34	319.18
10	31.13	42.16	50.85	70.73	98.44	165.07	223.35	294.15	373.94
20	36.51	49.44	59.49	82.47	114.74	191.47	258.94	340.30	430.27
50	44.28	59.65	71.71	99.09	137.56	228.82	307.84	403.67	510.06
100	50.47	67.91	81.49	112.46	155.81	258.16	348.56	452.95	571.08

Postdevelopment Flows Offsite:
Units : m³/h

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	233.79	150.08	115.57	72.25	42.36	11.52	0.00	0.00	0.00
5	323.37	210.29	164.03	105.29	64.90	24.08	7.26	0.00	0.00
10	392.39	256.55	200.75	130.99	82.53	33.62	13.58	0.00	0.00
20	465.09	305.75	239.66	157.42	100.88	43.54	20.26	3.59	0.00
50	570.09	374.77	294.73	194.87	126.58	57.56	29.44	9.54	0.00
100	653.80	430.58	338.79	224.98	147.14	68.57	36.71	14.16	0.00

Postdevelopment Volumes Offsite:
Units : m³

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	11.96	23.03	30.78	45.25	57.72	42.13	-41.18	-275.64	-837.97
5	26.90	43.10	55.02	78.29	102.81	117.47	60.15	-143.47	-668.79
10	38.40	58.52	73.37	103.99	138.05	174.74	135.93	-44.79	-545.43
20	50.51	74.92	92.83	130.42	174.77	234.22	216.11	59.19	-418.55
50	68.01	97.92	120.37	167.87	226.17	318.36	326.25	201.93	-238.80
100	81.97	116.53	142.40	197.98	267.29	384.45	413.49	312.96	-101.34

Stormwater Runoff Design

Project: The Orchards Greytown — Catchment 6 - Stage 3 & 4 — *Date:* 12/02/2019
Job No. 711288 — *By:* JGW

Rainfall = HIRDS - Greytown — *Reviewed:*
Storm Return Period = 10 Years — *Date:*

Surface Run Off

Surface:	Catchment Areas:		Runoff Coefficients:		Effective Areas:
Roof Area	A1=		C1=	0.95	0m²
Road and paved surface	A2=	2408m²	C2=	0.9	2167m²
Green area	A3=	7965m²	C3=	0.35	2788m²
Residential Lots	A4=	19812m²	C4=	0.65	12878m²
	A5=		C5=		0m²
				Total Effective Area:	17833m²

Exclusions

0.44*0.4*0.715

Soakage Trench:

No. Modules =	0	
Trench Width =	0.00m	(20 wide)
Trench Length =	0.00m	(0 long)
Trench Depth =	0.88m	(2 deep)
Net Void Ratio =	0.95	
Trench Volume =	0.00m³	
Void Volume =	0.00m³	
Infiltration Rate =	0.21m/h	
Total Infiltration =	0.00m³/h	

Soak Holes:

Number of Soakholes =		
Ring Diameter =		
Depth =		
Net Void Ratio =		
Soakhole Volume	0.00m³	
Void Volume	0.00m³	
Infiltration Rate per m =		
Infiltration Area =	0.00m²	
Total Infiltration Rate =	0.00m³/h	

Swales:

Swale Width =	1.00m	(Effective for soakage)
Swale Length =	405.00m	
Cross Section Area =	0.20m²	
Ponding Volume =	880.00m³	(Incl 1m deep central swale)
Infiltration Rate =	0.21m/h	(TP10)
Total Infiltration =	218.82m³/h	

Additional Volume:
Volume =

Additional Flow:
Flow =

Total Exclusion: Volume = 880.00m³
Rate = 218.82m³/h

Stormwater Runoff Design

Project: The Orchards Greytown — Catchment 4 - Stage 3 & 4 — *Date:* 12/02/2019
Job No. 711288 — *By:* JGW

Rainfall = HIRDS - Greytown — *Reviewed:*
Storm Return Period = 10 Years — *Date:*

Surface Run Off

Surface:	Catchment Areas:		Runoff Coefficients:		Effective Areas:
Roof Area	A1=		C1=	0.95	0m²
Road and paved surface	A2=	6466m²	C2=	0.9	5819m²
Green area	A3=	7962m²	C3=	0.35	2787m²
Residential Lots	A4=	34555m²	C4=	0.65	22461m²
	A5=		C5=		0m²
				Total Effective Area:	31067m²

Exclusions

0.44*0.4*0.715

Soakage Trench:

No. Modules =	470	
Trench Width =	8.00m	(20 wide)
Trench Length =	8.41m	(12 long)
Trench Depth =	0.88m	(2 deep)
Net Void Ratio =	0.95	
Trench Volume =	59.22m³	
Void Volume =	56.26m³	
Infiltration Rate =	0.21m/h	
Total Infiltration =	14.13m³/h	

Swales:

Swale Width =	1.00m	(Effective for soakage)
Swale Length =	853.00m	
Cross Section Area =	0.20m²	
Ponding Volume =	270.30m³	(Incl. dry basin)
Infiltration Rate =	0.21m/h	(TP10)
Total Infiltration =	123.17m³/h	

Soak Holes:

Number of Soakholes =		
Ring Diameter =		
Depth =		
Net Void Ratio =		
Soakhole Volume	0.00m³	
Void Volume	0.00m³	
Infiltration Rate per m =		
Infiltration Area =	0.00m²	
Total Infiltration Rate =	0.00m³/h	

Additional Volume:
Volume =

Additional Flow:
Flow =

Total Exclusion: Volume = **326.56m³**
Rate = **137.30m³/h**

Stormwater Runoff Increase

Project: The Orchards Greytown — Catchment 6 - Stage 3 & 4 — *By:* JGW
Job No. 711288 — *Date:* 12/02/2019
Rainfall = HIRDS - Greytown — *Reviewed:*
System Design Return Period = 50 Years — *Date:*

Surface Run Off Predevelopment

Effective Areas:
Total Effective Area: 7094m²

Surface Run Off Postdevelopment

Effective Areas:
Total Effective Area: 17833m²

Pre Development Exclusions

Flooding Volume = 0.00m³
Rate = 0.00m³/h

Post Development Exclusions

Road Flooding Volume = 0.00m³
Swale and Storage Module Volume = 880.00m³

Total Volume = 880.00m³
Swale and Storage Module Infiltration Rate = 218.82m³/h

already included
Climage Change Adjustment: 16%

Rainfall Intensity Data:
Source : HIRDS - Greytown
Units : mm/h

Return Period Years	10min 0.2hr	20min 0.3hr	30min 0.5hr	60min 1.0hr	120min 2.0hr	360min 6.0hr	720min 12.0hr	1440min 24.0hr	2880min 48.0hr
2	41.41	28.19	22.74	15.89	11.17	6.30	4.29	2.84	1.81
5	55.56	37.70	30.39	21.11	14.73	8.28	5.63	3.71	2.37
10	66.47	45.01	36.19	25.17	17.52	9.79	6.62	4.36	2.77
20	77.95	52.78	42.34	29.35	20.42	11.36	7.68	5.05	3.19
50	94.54	63.68	51.04	35.26	24.48	13.57	9.13	5.99	3.78
100	107.76	72.50	58.00	40.02	27.72	15.31	10.28	6.72	4.23

Predevelopment Flows Offsite:
Units : m³/h

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	293.78	199.97	161.29	112.74	79.25	44.68	30.45	20.16	12.84
5	394.18	267.45	215.61	149.77	104.51	58.76	39.91	26.33	16.79
10	471.53	319.29	256.75	178.57	124.26	69.45	46.99	30.94	19.67
20	553.00	374.43	300.37	208.20	144.83	80.56	54.48	35.80	22.63
50	670.68	451.78	362.09	250.17	173.64	96.28	64.76	42.46	26.83
100	764.49	514.33	411.46	283.91	196.68	108.63	72.91	47.65	30.04

Predevelopment Volumes Offsite:
Units : m³

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	48.96	66.66	80.65	112.74	158.49	268.11	365.38	483.88	616.20
5	65.70	89.15	107.80	149.77	209.02	352.54	478.94	632.00	805.80
10	78.59	106.43	128.38	178.57	248.52	416.73	563.87	742.60	944.06
20	92.17	124.81	150.18	208.20	289.67	483.38	653.73	859.13	1086.26
50	111.78	150.59	181.04	250.17	347.27	577.69	777.17	1019.11	1287.71
100	127.42	171.44	205.73	283.91	393.36	651.75	874.93	1143.53	1441.76

Postdevelopment Flows Offsite:
Units : m³/h

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Postdevelopment Volumes Offsite:
Units : m³

	10min	20min	30min	60min	120min	360min	720min	1440min	2880min
2	-793.39	-785.38	-786.68	-815.42	-919.22	-1518.96	-2587.37	-4915.33	-9834.37
5	-751.32	-728.84	-718.42	-722.33	-792.21	-1306.72	-2301.90	-4542.97	-9357.76
10	-718.92	-685.40	-666.70	-649.93	-692.91	-1145.37	-2088.42	-4264.95	-9010.23
20	-684.78	-639.20	-611.89	-575.46	-589.48	-977.81	-1862.52	-3972.03	-8682.77
50	-635.45	-574.38	-534.81	-469.96	-444.68	-740.74	-1552.23	-3569.89	-8146.37
100	-596.18	-521.98	-472.25	-385.14	-328.84	-554.57	-1306.47	-3257.11	-7759.12

H:\WLG\711288 Perception Planning - The Orchards Ltd Retirement Village\310 Calculations\1. Resource Consent\711288 20190212 Pre & Post SW Comparison\711288 20190212 Pre & Post SW Comparison

Appendix C Swale Calculations

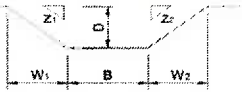
Swale Design

Project:	The Orchards Retirement Village, Greytown				
Job Number:	711128	By:	JGW	Checked:	
		Date:	10/02/19	Date:	

Revision	
By:	
Date:	

Utilising Manning's formula:

$$Q = \frac{A * s^{0.5} * R^{\frac{2}{3}}}{n}$$



Rainfall Intensity Data: *Units : mm/h*

Source: *HIRDS - Greytown (RCP4.5 2081-2100)*

Climage Change Adjustment:	15%	*(already included below)*

Return Period Years	Duration 10min 0.2hr	20min 0.3hr	30min 0.5hr	60min 1.0hr	120min 2.0hr	360min 6.0hr	720min 12.0hr	1440min 24.0hr	2880min 48.0hr
2	41.4	28.2	22.7	15.9	11.2	6.3	4.3	2.8	1.8
5	55.6	37.7	30.4	21.1	14.7	8.3	5.6	3.7	2.4
10	66.5	45.0	36.2	25.2	17.5	9.8	6.6	4.4	2.8
20	78.0	52.8	42.3	29.3	20.4	11.4	7.7	5.0	3.2
50	94.5	63.7	51.0	35.3	24.5	13.6	9.1	6.0	3.8
100	107.8	72.5	58.0	40.0	27.7	15.3	10.3	6.7	4.2

Major Road Swales

(250mm deep swale, 2.2m wide, 50mm freeboard)

Maximum effective catchment area of 6400m2

Major Swales	Return Period	TOC	Catchment Area	Runoff Coefficient	Intensity	Flow	
	10 years	10min	6400m²	1	66mm/h	118.17L/s	

s	n	B	W_1	W_2	D	z_1	z_2	P	R	A	Q	
Longitudinal Slope	*Manning's Roughness*	*Base Width*	*Side Width 1*	*Side Width 2*	*Depth*	*Side Slope 1 (V:H)*	*Side Slope 2 (V:H)*	*Wetted Perimeter*	*Hydraulic Radius*	*Swale Area*	*Flow Capacity*	
0.50%	0.027	0.20m	0.80m	0.80m	0.20m	1:4.00	1:4.00	1.85m	0.108m	0.200m²	118.90L/s	OKAY

Minor Road Swales

(250mm deep swale, 1.7m wide, 50mm freeboard)

Maximum effective catchment area of 5150m2

Minor Swales	Return Period	TOC	Catchment Area	Runoff Coefficient	Intensity	Flow	
	10 years	10min	5150m²	1	66mm/h	95.09L/s	

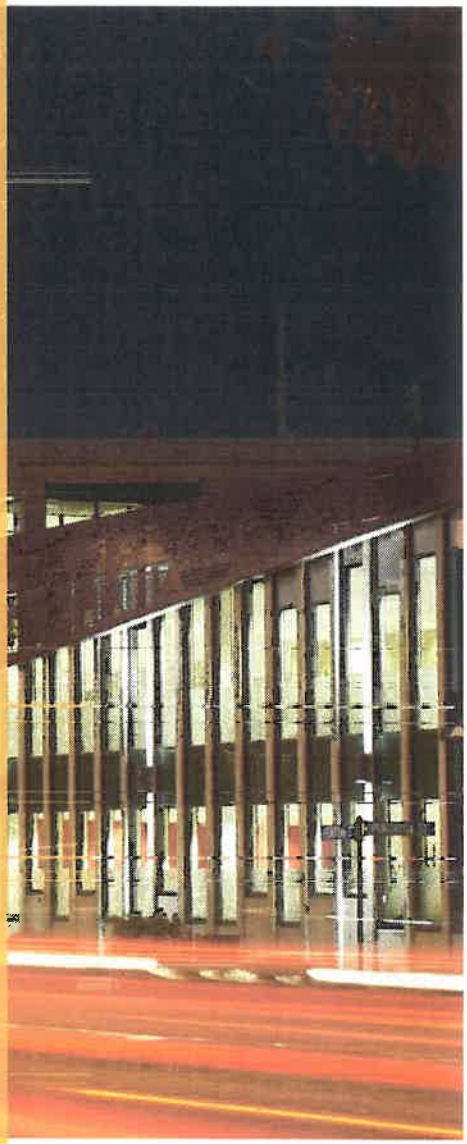
s	n	B	W_1	W_2	D	z_1	z_2	P	R	A	Q	
Longitudinal Slope	*Manning's Roughness*	*Base Width*	*Side Width 1*	*Side Width 2*	*Depth*	*Side Slope 1 (V:H)*	*Side Slope 2 (V:H)*	*Wetted Perimeter*	*Hydraulic Radius*	*Swale Area*	*Flow Capacity*	
0.50%	0.027	0.20m	0.60m	0.60m	0.20m	1:3.00	1:3.00	1.46m	0.109m	0.160m²	95.74L/s	OKAY

Note: Catchment areas will be adjusted by adding intermittent soakage modules.

Appendix D Calibre Drawing Set

Report

The Orchards Ltd Retirement Partnership Village – Civil Feasibility

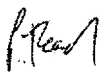


PREPARED FOR THE OCHARDS LIMITED PARTNERSHIP

Calibre Consulting Ltd

711053 | 19 November 2018

QUALITY ASSURANCE STATEMENT

TASK	NAME	SIGNATURE
Project Manager	Phil Read	
Prepared by	Joel Wallan	
Reviewed by	Phil Read	
Approved for Issue by	Phil Read	

DOCUMENT CONTROL

ISSUE	DATE	ISSUE DETAILS	AUTHOR	CHECKED	APPROVED
B	19/11/2018	High Level Civil Assessment REV B	JW	PR	PR

711288

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5.1 Site Assessment 5

Appendices

Appendix A Chorus Letter Dated 31 October 2018
Appendix B PRSL Email Dated 31 October 2018

1 Introduction

The Orchards Limited Partnership have engaged Calibre to undertake a high-level civil feasibility analysis for the proposed Orchards Retirement Village in Greytown. The following report outlines this feasibility analysis. The purpose of this report is to inform the Clients' ongoing investigation into the constraints and challenges facing the proposed development.

The proposed development includes 149 villas, 50 terraced houses, 30 apartments, and a 60 bed care home. The site is situated on land between Reading Street and Market Road and is made up of two titles; 'Part Tahorahina Block' and 'Lot 4 DP 410283 and Lot 1 DP 6753'. The land is currently zoned as 'Rural' and is used agriculturally. For water and wastewater flow demand calculations, the dwellings are assumed to be populated as follows:

- 2 or 3 persons per villa/terrace (mix determined by masterplan dated 9 November 2018)
- 2 persons per apartment
- 1 person per care home bed
- Allowance for 100 staff

To give an indication of the suitability of the site for development, a basic risk rating scale has been used. The risk involved in each aspect has been analysed by considering its complexity, potential cost, and the likelihood of inducing project delays. The scale is as follows:

GREEN	Low risk. Presents minimal issues and non-compliances or otherwise considered manageable to resolve. Low likelihood of inducing project delays or significant costs.
AMBER	Medium risk. Potential issues and non-compliances have been identified that have the potential to induce project delays and significant costs. However, the issues are within the control of the project team and it is likely that the residual risk can be managed appropriately.
RED	High risk. Major issues or non-compliances have been identified that are either out of the control of the project team or are unlikely to be appropriately managed. Highly likely to cause lengthy delays and considered uneconomical to overcome.
N/A	More information required to be able to make a call on risk level.

2 Water Supply

Overall Risk Rating: AMBER

2.1 Design Criteria

The following criteria are in accordance with SNZ PAS 4509:2008:

- FW2 fire water supply classification.
- Required total fire hydrant flow of 25 L/s (12.5 L/s within 135m of all dwellings and 12.5 L/s within 270m).
- Minimum water storage of 45,000 L if reticulated flow not sufficient for firefighting.
- Extra Light Hazard (ELH) sprinkler classification with flow of 6.0 L/s.

2.2 Assumptions

- 260L/p/day water demand for residents
- 300L/p/day for In-care
- 50L/p/day for staff

2.3 Specifications

- Average demand ~ 160,000 L/day
- Average flow ~ 1.86 L/s
- Peak flow ~ 9.3 L/s (peaking factor of 5)
- Fire flow ~ 37 L/s (2/3 of peak flow + 6.0L/s sprinkler flow + 25L/s fire fighting flow)
- Fire protection storage (for sprinklers) ~ 11,000 L (based on 30min operation)

2.4 Site Assessment

Infrastructure Matter	Comment	Risk
Proximity of council network	Current 100mm diameter pipe servicing northern end of lot (Reading Street), 50mm outside southern end of site (Market Road).	GREEN
Capacity of council pipe network	SWDC have confirmed that the pipe network is of sufficient diameter to supply the proposed design residential flows.	GREEN
Ability for council to supply water demand	The current water supply to the site is rural trickle feed only. The total water supply of the township is currently unknown. SWDC are currently undertaking an analysis of the network and upgrading water intakes. It is likely that the potable water demand of the development will be met pending a zone change.	AMBER
Fire storage requirements	On-site storage will be necessary to account for firefighting flow and sprinkler protection flow. This will carry a significant cost and space will need to be allocated on-site for the required volume (likely to be 56,000 L). There is potential for the Moroa Water Race to supply this demand but it will need to be reticulated to meet fire hydrant spacing requirements and would need to be approved by council.	AMBER

3 Wastewater

Overall Risk Rating: AMBER

3.1 Design Criteria

- 0.66% minimum slope for 150mm pipe
- Peaking factor of 2 for Peak Dry Weather Flow (PDWF)
- Peaking factor of 4 for Peak Wet Weather Flow (PWWF)

3.2 Assumptions

- 165 L/p/day for residents
- 220 L/p/day for in-care residents
- 50 L/p/day for staff

3.3 Specifications

- Average demand ~ 84,000 L/day
- Average flow ~ 1.22 L/s
- Peak dry weather flow ~ 2.44 L/s
- Peak wet weather flow ~ 4.90 L/s

3.4 Site Assessment

Infrastructure Matter	Comment	Risk
Proximity of council network	2 x 225mm pipelines at downstream end of site. The pipes are of unknown depth but are likely to be deep enough for a fully gravity conveyed system.	GREEN
Capacity of pipe network	Pipe network is generally in very good condition. Modelling is currently being undertaken to ascertain if any upgrades are required but it is expected that pipe capacity will not be an issue – upgrade of downstream pipe to treatment plant is planned to be upgraded in 2019.	GREEN
Capacity of treatment facilities	SWDC have confirmed that the current treatment plant is near capacity (capacity yet to be allocated ~ 50 people). Modelling is currently being undertaken to ascertain what upgrades in capacity need to be made to meet future demand. SWDC have verbally committed to handling the proposed development in stages.	AMBER
Level restrictions to gravity reticulation	Invert levels of the existing network downstream of the proposed development are unknown. GIS data indicates an average site gradient of 0.72% to the south which is conducive to a fully gravity operated sewer. However, it is not possible to say with certainty whether the downstream sewer is at an appropriate level or whether finished site levels will allow gravity reticulation for the whole site.	AMBER

4 Stormwater

Overall Risk Rating: AMBER

4.1 Design Criteria

The following design criteria are in accordance with NZS 4404:2010:

- The 10% annual exceedance probability (AEP) storm must be conveyed to soakage within the designed infrastructure (primary system) as per the New Zealand Building Code
- The 10% AEP, 1-hour duration storm volume is to be captured for soakage (as a minimum, or the critical storm event as modelled).
- The 1% AEP storm must be conveyed such that it will not enter buildings.
- Post-development discharges must not exceed current external discharges during all storms.

4.2 Site Assessment

Infrastructure Matter	Comment	Risk
Proximity of council network	Water races are the only stormwater conveyance infrastructure in the area.	AMBER
Capacity of council network	Water races can only be used for secondary flow. On site soakage of primary flow necessary.	AMBER
Level restrictions	GIS data indicates an average site gradient of 0.72% to the south which is conducive to adequate site drainage and secondary flow movement.	AMBER
Runoff balance	Site appears to not drain significantly into neighbouring properties currently. Properties to the west likely drain into the site. Low risk of post-development discharges increasing significantly, especially with the addition of on-site soakage and attenuation lakes.	GREEN
Soil type	Soil type and soakage rate is currently unknown. This is a significant variable in terms of on-site soakage in terms of the extent and cost of implementation. The site is likely to be conducive to soakage in principle.	AMBER
Groundwater Table	The Regional Standard for Water Services recommends a minimum clearance of soakage modules to the winter groundwater table of 500mm. The groundwater table is estimated at 3.5-4.0m below ground level (no season indicated). The estimated figures are not necessarily indicative of winter groundwater levels but the corresponding risk is at most moderate - it is likely that a suitable design will be able to accommodate the clearance requirements.	AMBER

5 Other Services

Overall Risk Rating: GREEN

5.1 Site Assessment

Infrastructure Matter	Comment	Risk
Power network	Powerco approved contractor Power Related Services Ltd (PRSL) have provided an estimated cost to service the development of $750,000.00. Powerco will invest a minimum of $135,750.00 which will be taken off the quoted price. They note that a project of this size will need to be designed in line with the Powerco network. They have not expressed any concerns about servicing the development. Refer to Appendix A for further details.	GREEN
Fibre network	Chorus have confirmed that they will be able to provide fibre for the subdivision. They have provided an estimated contribution to installation of $221,260.00 inc. GST. They recommend that we contact them at least 3 months prior to commencement of construction to initiate contract agreements. Refer to Appendix B for further details.	GREEN

THE ORCHARDS LTD RETIREMENT PARTNERSHIP VILLAGE – CIVIL FEASIBILITY

Appendix A PRSL Email Dated 31 October 2018

THE OCHARDS LIMITED PARTNERSHIP

Joel Wallan

To: Charles Grant
Subject: RE: Greytown Retirement Development - High Level Info Request

From: Charles Grant <charlie@prsl.net.nz>
Sent: Wednesday, 31 October 2018 11:10 AM
To: Joel Wallan <Joel.Wallan@calibregroup.com>
Subject: RE: Greytown Retirement Development - High Level Info Request

Most of the high voltage work involved with this estimate will be internal works. Won't really know how much external works will be required until an application is submitted but can tell you with the number of connections Powerco will invest a minimum $135,750.00 into this project which will be taken off the quoted price. Hope this helps.

Regards,
Charlie Grant
Director
| 027 257 7012 |

PRSL POWER TO YOU
POWER RELATED SERVICES LTD

From: Charles Grant <charlie@prsl.net.nz>
Sent: Monday, 29 October 2018 9:08 AM
To: Joel Wallan <Joel.Wallan@calibregroup.com>
Subject: RE: Greytown Retirement Development - High Level Info Request

Good morning Joel,

Based on your information I can provide an estimated cost of $750k to fully reticulate this Development. There will need to be a number of transformers and high voltage switch gear installed and a project of this size will need to be designed in line with Powerco network in mind. Thank you for your email and I hope this helps with your budgeting.

Regards,
Charlie Grant
Director
| 027 257 7012 |

PRSL POWER TO YOU
POWER RELATED SERVICES LTD

THE ORCHARDS LTD RETIREMENT PARTNERSHIP VILLAGE – CIVIL FEASIBILITY

Appendix B Chorus Letter Dated 31 October 2018

CRAIG PERCY

Chorus Network Services
PO Box 9405
Waikato Mail Centre
Hamilton 3200
Telephone: 0800 782 386
Email: tsg@chorus.co.nz

31 October 2018

Chorus Ref #: GN48999
Your Ref #:

c/o Calibre

Attention: **Joel Wallan**
Dear Sir / Madam

SUBDIVISION RETICULATION – GN: 67 Reading St, Greytown. Retirement Village: 100 Villas, 80 Apartments & 60 Bed Care - Estimate

Thank you for your enquiry regarding the above subdivision.

Chorus is pleased to advise that, as at the date of this letter, we would be able to provide ABF telephone reticulation for this subdivision. In order to complete this reticulation, we require a contribution from you to Chorus' total costs of reticulating the subdivision. Chorus' costs include the cost of network design, supply of telecommunications specific materials and supervising installation. At the date of this letter, our estimate of the contribution we would require from you is $221,260.00 (including GST).

We note that (i) the contribution required from you towards reticulation of the subdivision, and (ii) our ability to connect the subdivision to the Chorus network, may (in each case) change over time depending on the availability of Chorus network in the relevant area and other matters.

If you decide that you wish to undertake reticulation of this subdivision, you will need to contact Chorus (see the contact details for Chorus Network Services above). We would recommend that you contact us at least 3 months prior to the commencement of construction at the subdivision. At that stage, we will provide you with the following:

- confirmation of the amount of the contribution required from you, which may change from the estimate as set out above;

- a copy of the Contract for the Supply and Installation of Telecommunications Infrastructure, which will govern our relationship with you in relation to reticulation of this subdivision; and

- a number of other documents which have important information regarding reticulation of the subdivision, including - for example - Chorus' standard subdivision lay specification.

Yours faithfully

Reid McKenzie
Network Services Coordinator

calibre



CONTACT US

CALIBRE CONSULTING LTD

Level 13, Kordia House, 109-125 Willis Street, Wellington 6011
PO Box 6643, Wellington 6141
+64 4 384 2029

WWW.CALIBREGROUP.COM

Appendix 21A

Resource Consent Report and High Level Civil Assessment (part B)
Calibre Consulting Limited

THE ORCHARDS
AT GREYTOWN
Lifestyle Retirement

THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

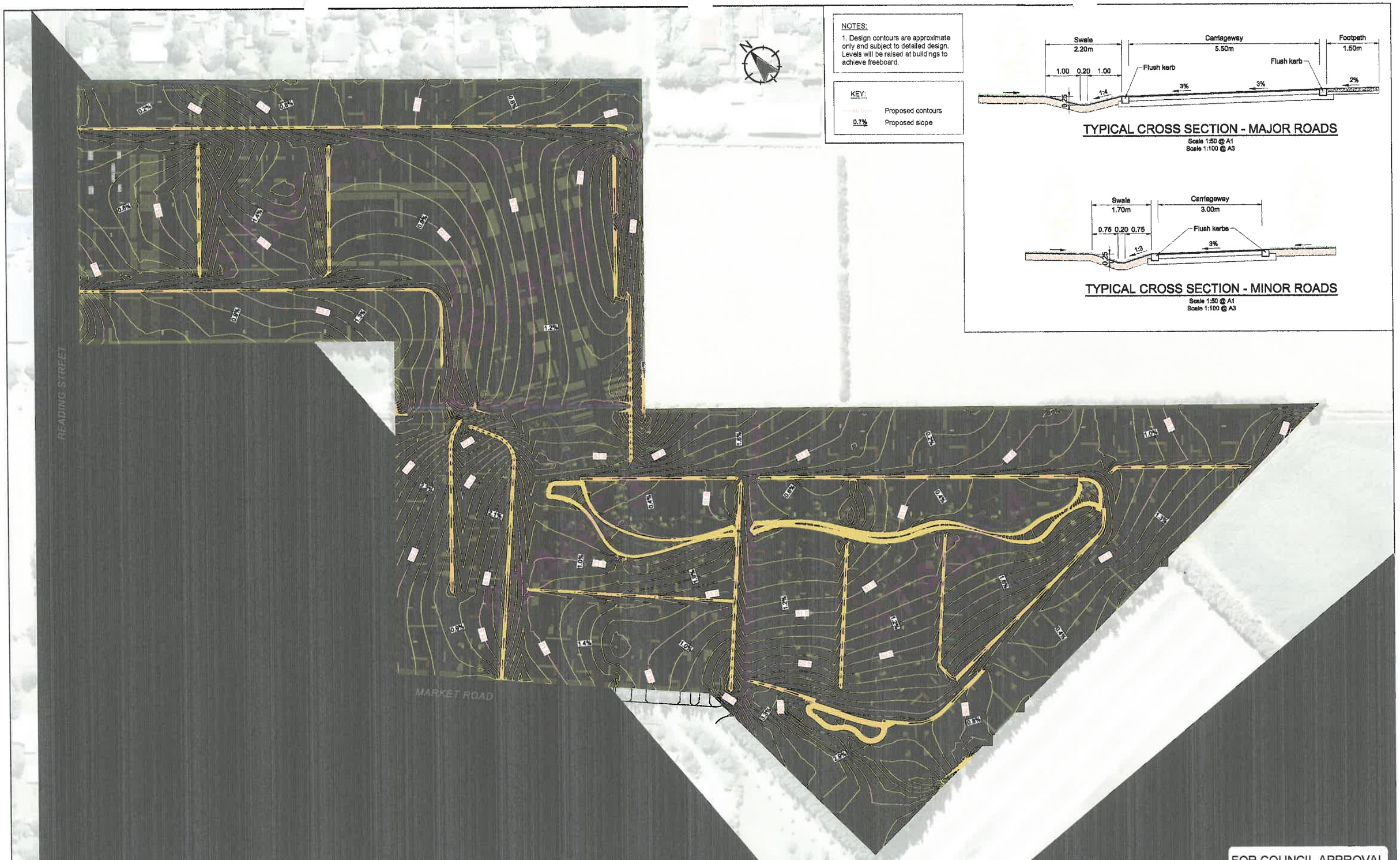
calibre



711288
DRAWING SCHEDULE

C000	Cover Sheet
C200	Site Layout & Proposed Contours
C210	Cut / Fill Levels
C400	Drainage Overall
C401-C403	Drainage Plans
C420-C422	Stormwater Longsections
C430	Overland Flowpaths
C431	Stormwater Catchments Predevelopment
C460-C462	Sewer Longsections
C480-C481	Drainage Details
C510	Water Supply

Surveying
Urban Development
Infrastructure Buildings | Energy | Transport | Water
Engineering Civil | Structural | Environment | Marine
Project Management
Asset Management



NOTES:

1. Design contours are approximate only and subject to detailed design. Levels will be raised at buildings to achieve freeboard.

KEY:

Proposed contours

0.7% Proposed slope

TYPICAL CROSS SECTION - MAJOR ROADS

Scale 1:50 @ A1
Scale 1:100 @ A3

TYPICAL CROSS SECTION - MINOR ROADS

Scale 1:50 @ A1
Scale 1:100 @ A3

FOR COUNCIL APPROVAL
NOT FOR CONSTRUCTION

Revision	App	Date
0 For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: SITE LAYOUT AND PROPOSED CONTOURS

Level 13
Kordia House
109-125 Willis Street
Wellington 6141
+64 4 384 2029
calibregroup.com

Scale (A1 Original) 1:1000 (A3) 1:2000

20 10 0 20 40 60 m

Project No	Sheet	Revision
711288	C200	0

H:\WLG\711288 Perception Planning - The Orchards Ltd Retirement Village\320 Drawings\711288-C200 Contours.dwg, Plotted By Paul Vautier at 28/02/2019 4:53:02 PM



KEY:

+0.1m — Level difference at existing trees that are proposed to remain

Stage 1:
Cut = 1,570m³
Fill = 2,830m³

Stage 2:
Cut = 2,050m³
Fill = 1,240m³

Stage 3:
Cut = 2,920m³
Fill = 2,050m³

Stage 4:
Cut = 2,050m³
Fill = 6,740m³

Total:
Cut = 8,590m³
Fill = 12,860m³

NOTE: VOLUMES ARE INDICATIVE ONLY AND SUBJECT TO DETAILED DESIGN

Figures compare proposed surface to existing surface, and do not take into account subgrade depths, compaction factors, bad material, etc. Figures also do not account for raising levels at buildings.

Earthworks			
Number	Color	Min. Elevation (m)	Max. Elevation (m)
1		-1.80	-1.60
2		-1.60	-1.40
3		-1.40	-1.20
4		-1.20	-1.00
5		-1.00	-0.80
6		-0.80	-0.60
7		-0.60	-0.40
8		-0.40	-0.20
9		-0.20	0.00
10		0.00	0.20
11		0.20	0.40
12		0.40	0.60
13		0.60	0.80
14		0.80	1.00
15		1.00	1.20

Cut / Fill

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NOT FOR CONSTRUCTION

Revision	App	Date
0 For resource consent	DR	28/02/19

Surveyed		
Designed	PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN — Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: CUT / FILL LEVELS AND DEPTHS

Level 13
Kordia House
109-125 Willis Street
Wellington 6141
+64 4 384 2028
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Scale (A1 Original) 1:1000 (A3) 1:2000

20 10 0 20 40 60 m

Project No	Sheet	Revision
711288	C210	0

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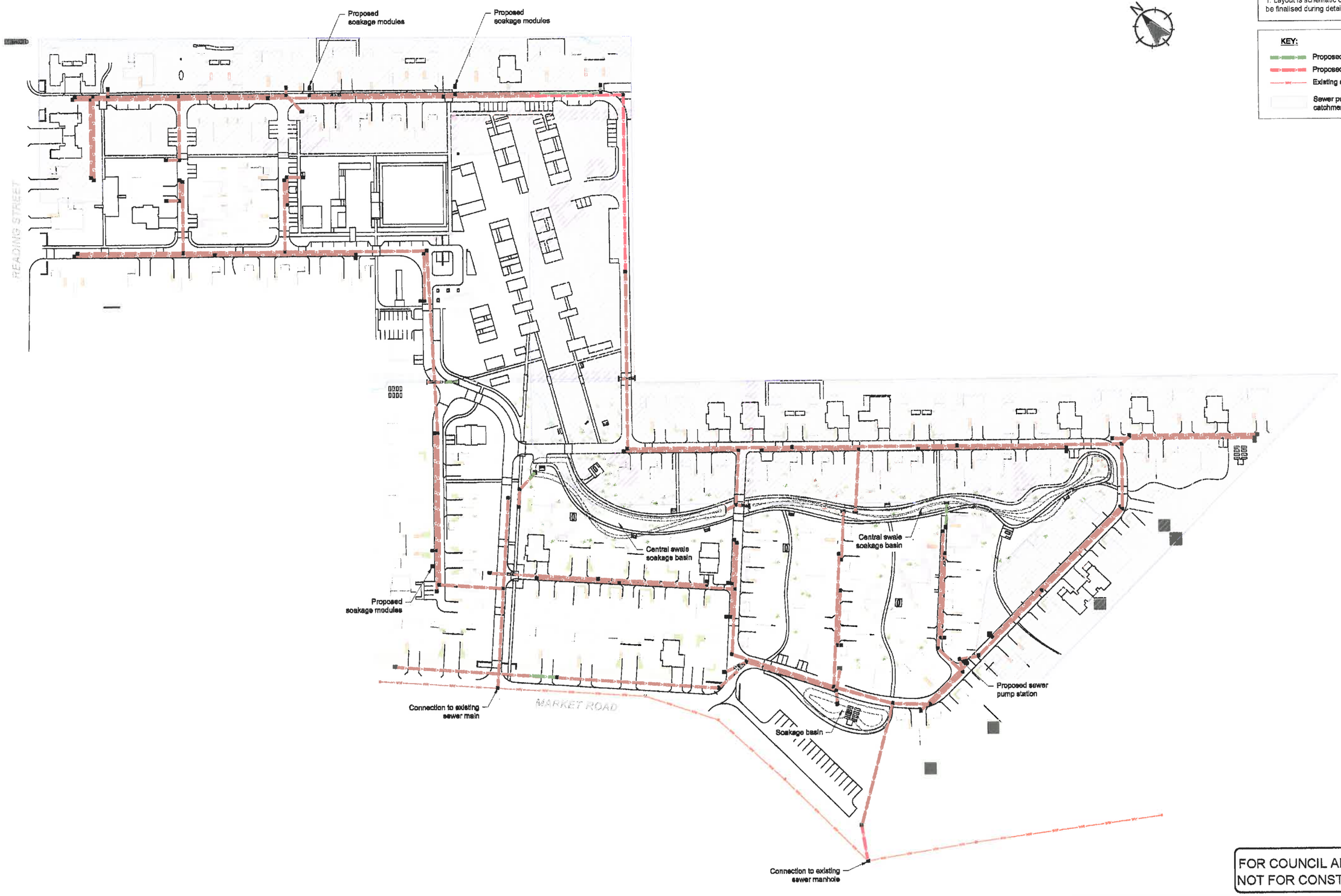
NOTES:
1. Layout is schematic only and will be finalised during detailed design.

KEY:
- Proposed stormwater
- Proposed sewer
- Existing sewer
- Sewer pump station catchment



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		Surveyed	
		Designed	JW / PCV 02/19
		Drawn	PCV 02/19
0	For resource consent	Reviewed	PBR 28/02/19
Revision		Approved	DR 28/02/19
		App	Date

Client: THE ORCHARDS AT GREYTOWN — Lifestyle Retirement

Project Title: THE ORCHIDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: DRAINAGE PLAN OVERALL SITE

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109-125 Willis Street
Wellington 6141
+64 4 384 2029
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Scale (A1 Original) 1:1000 (A3) 1:2000

20 10 0 20 40 60 m

Project No	Sheet	Revision
711288	C400	0

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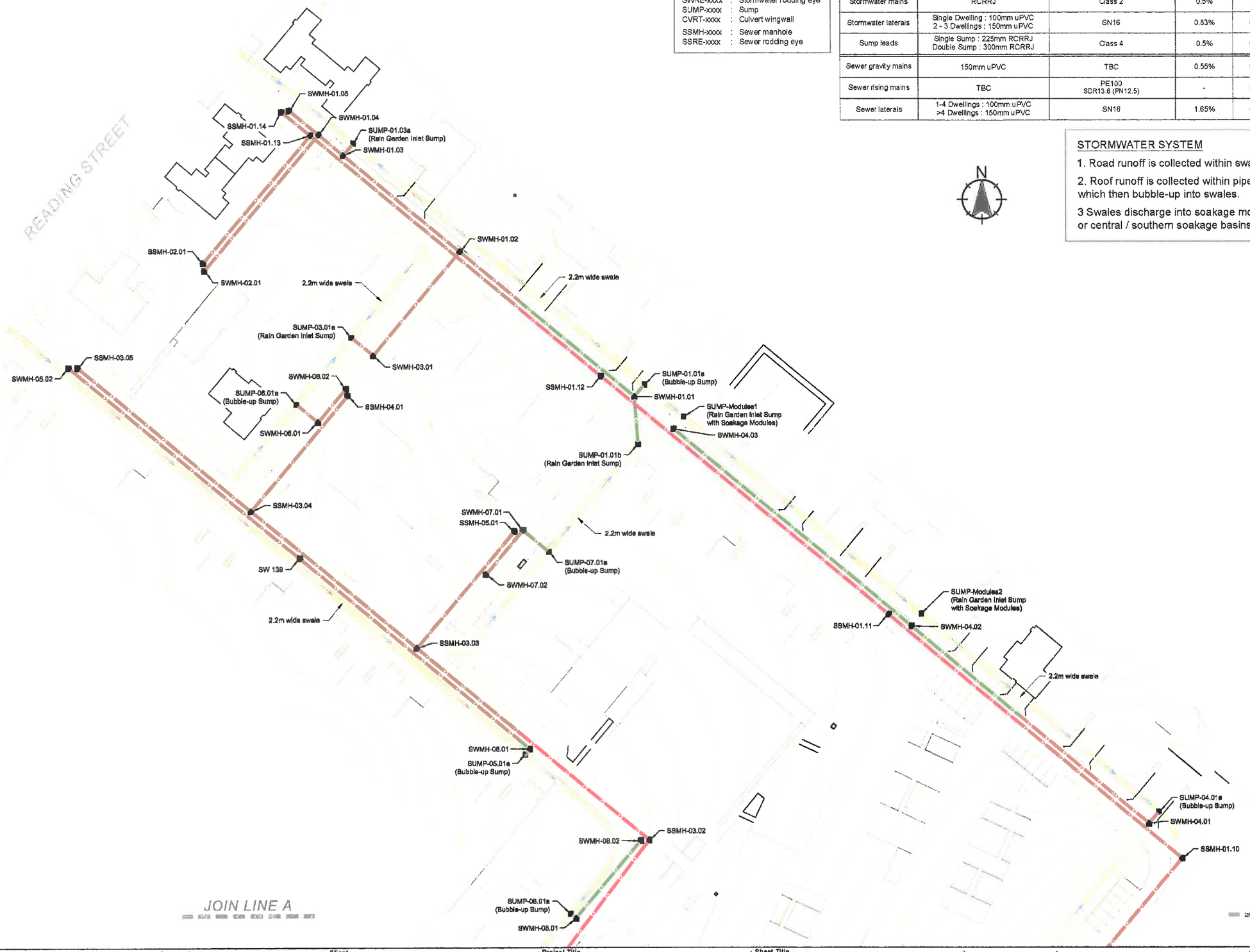

ITEM CODE:

SWMH-xxxx	:	Stormwater manhole
SWRE-xxxx	:	Stormwater rodding eye
SUMP-xxxx	:	Sump
CVRT-xxxx	:	Culvert wingwall
SSMH-xxxx	:	Sewer manhole
SSRE-xxxx	:	Sewer rodding eye

Pipe Type	Size (nominal internal dia.)	Class	Min. Grade	Min. Cover
Stormwater mains	RCRRJ	Class 2	0.5%	750mm
Stormwater laterals	Single Dwelling : 100mm uPVC 2 - 3 Dwellings : 150mm uPVC	SN16	0.83%	600mm
Sump leads	Single Sump : 225mm RCRRJ Double Sump : 300mm RCRRJ	Class 4	0.5%	600mm
Sewer gravity mains	150mm uPVC	TBC	0.55%	900mm
Sewer rising mains	TBC	PE100 SDR13.6 (PN12.5)	-	900mm
Sewer laterals	1-4 Dwellings : 100mm uPVC >4 Dwellings : 150mm uPVC	SN16	1.65%	600mm

KEY:

Stormwater:
- Manhole
- Sump
- Wingwall
- Stormwater main
- Soakage modules

Sewer:
- Manhole
- Rodding eye
- Sewer gravity main
- Sewer rising main
- Existing sewer main

STORMWATER SYSTEM

1. Road runoff is collected within swales.
2. Roof runoff is collected within pipelines, which then bubble-up into swales.
3 Swales discharge into soakage modules or central / southern soakage basins.

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NOT FOR CONSTRUCTION

Revision	App	Date
0 For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: DRAINAGE PLAN SHEET 1 OF 3

Level 13
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109-125 Willis Street
Wellington 6141
+64 4 384 2029
calibregroup.com

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Scale (A1 Original) 1:500 (A3) 1:1000

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Project No	Sheet	Revision
711288	C401	0

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JOIN LINE A

JOIN LINE A

JOIN LINE B

MARKET ROAD

SUMP-06.01a (Bubble-up Sump)
SWMH-06.01
2.2m wide swale
CVRT-09.02
CVRT-09.01
SWMH-11.02
SSMH-03.01
Existing water race
2.2m wide swale
SSMH-01.09
2.2m wide swale
SUMP-011.01a (Bubble-up Sump)
SWMH-11.01
SUMP-MODULES3 (Rain Garden Inlet Sump with Soakage Modules)
SSMH-06.01
SWMH-12.02
SSMH-07.03
CVRT-13.01
SWMH-13.02
SWMH-13.03
CVRT-10.02
CVRT-10.01
SWMH-15.02
SSMH-01.08
SWMH-20.06
SUMP-14.02a (Rain Garden Inlet Sump)
SSMH-07.02
2.2m wide swale
SSMH-08.02
1.7m wide swale
Central swale soakage basin
2.2m wide swale
SWMH-15.01
SWMH-14.02
SSMH-07.01
SSMH-08.01
SWMH-20.05
2.2m wide swale
SWMH-11.03
SSMH-01.07
CVRT-16.03
SWMH-16.02
CVRT-16.01
2.2m wide swale
2.2m wide swale
SWMH-17.03
Central swale soakage basin
SUMP-14.01a (Bubble-up Sump)
SSMH-09.07
SWMH-14.01
SWMH-16.02
SUMP-09.06a (Rain Garden Inlet Sump)
SWMH-17.02
SSMH-09.06
CVRT-21.01
SWMH-19.02
SUMP-17.01a (Bubble-up Sump)

N

KEY:

Stormwater:
- Manhole
- Sump
- Wingwall
- Stormwater main
- Soakage modules

Sewer:
- Manhole
- Rodding eye
- Sewer gravity main
- Sewer rising main
- Existing sewer main

ITEM CODE:

SWMH-xxxx	:	Stormwater manhole
SWRE-xxxx	:	Stormwater rodding eye
SUMP-xxxx	:	Sump
CVRT-xxxx	:	Culvert wingwall
SSMH-xxxx	:	Sewer manhole
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Pipe Type	Size *(nominal internal dia.)*	Class	Min. Grade	Min. Cover
Stormwater mains	RCRRJ	Class 2	0.5%	750mm
Stormwater laterals	Single Dwelling : 100mm uPVC 2 - 3 Dwellings : 150mm uPVC	SN16	0.83%	600mm
Sump leads	Single Sump : 225mm RCRRJ Double Sump : 300mm RCRRJ	Class 4	0.5%	600mm
Sewer gravity mains	150mm uPVC	TBC	0.55%	900mm
Sewer rising mains	TBC	PE100 SDR13.6 (PN12.5)	-	900mm
Sewer laterals	1-4 Dwellings : 100mm uPVC >4 Dwellings : 150mm uPVC	SN16	1.65%	600mm

STORMWATER SYSTEM

1. Road runoff is collected within swales.
2. Roof runoff is collected within pipelines, which then bubble-up into swales.
3 Swales discharge into soakage modules or central / southern soakage basins.

FOR COUNCIL APPROVAL
NOT FOR CONSTRUCTION

Revision			Surveyed		
0 For resource consent	DR	28/02/19	Designed	JW / PCV	02/19
Revision	App	Date	Drawn	PCV	02/19
			Reviewed	PBR	28/02/19
			Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN *Lifestyle Retirement*

Project Title: THE ORCHIDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: DRAINAGE PLAN SHEET 2 OF 3

Level 13
Kordia House
109-125 Willis Street
Wellington 6141
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Scale (A1 Original) 1:500 (A3)1:1000

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Project No	Sheet	Revision
711288	C402	0

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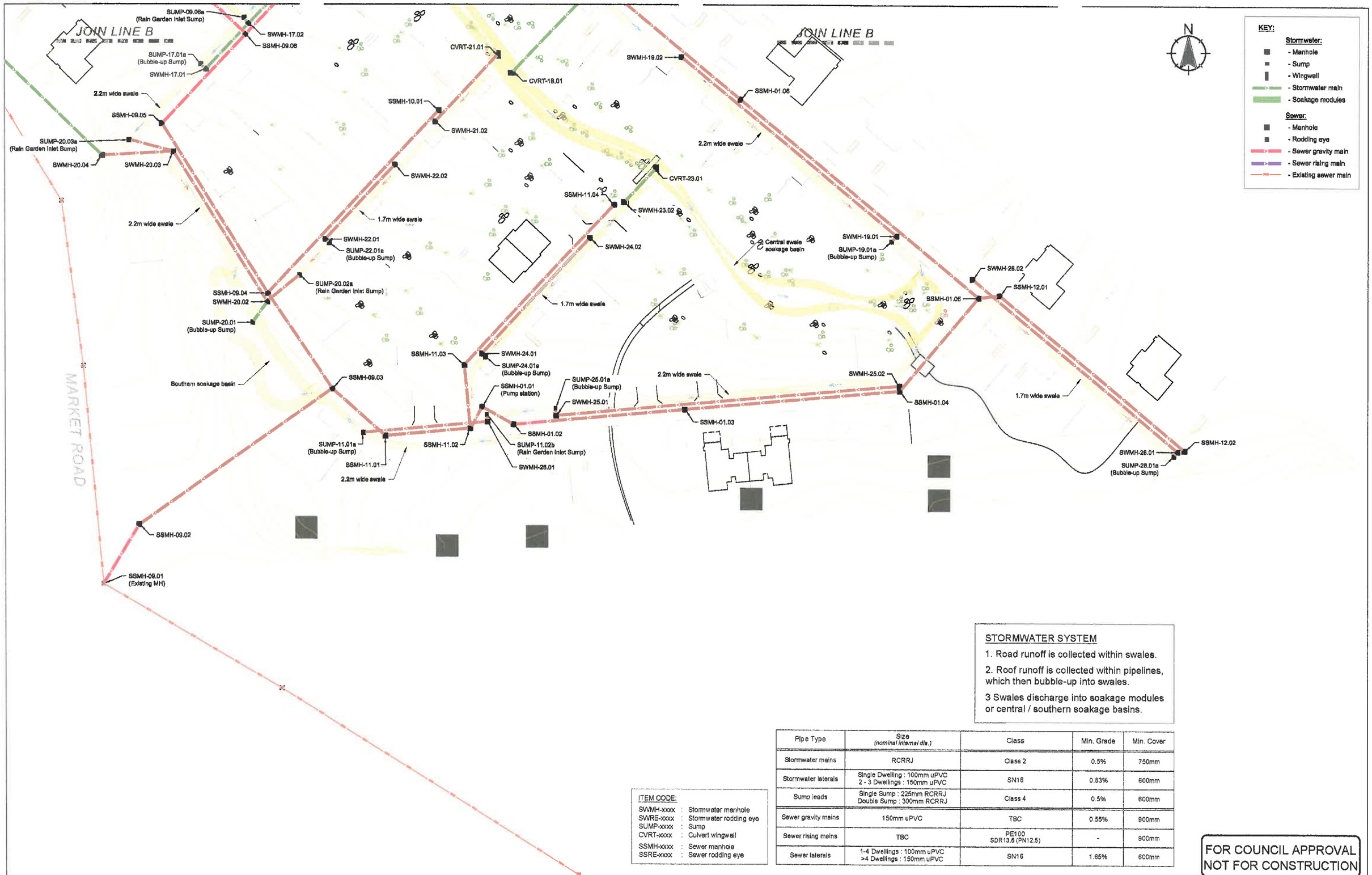

ITEM CODE:

SWMH-xxxx	:	Stormwater manhole
SWRE-xxxx	:	Stormwater rodding eye
SUMP-xxxx	:	Sump
CVRT-xxxx	:	Culvert wingwall
SSMH-xxxx	:	Sewer manhole
SSRE-xxxx	:	Sewer rodding eye

STORMWATER SYSTEM

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Pipe Type	Size *(nominal internal dia.)*	Class	Min. Grade	Min. Cover
Stormwater mains	RCRRJ	Class 2	0.5%	750mm
Stormwater laterals	Single Dwelling : 100mm uPVC 2 - 3 Dwellings : 150mm uPVC	SN16	0.83%	600mm
Sump leads	Single Sump : 225mm RCRRJ Double Sump : 300mm RCRRJ	Class 4	0.5%	600mm
Sewer gravity mains	150mm uPVC	TBC	0.55%	900mm
Sewer rising mains	TBC	PE100 SDR13.6 (PN12.5)	-	900mm
Sewer laterals	1-4 Dwellings : 100mm uPVC >4 Dwellings : 150mm uPVC	SN16	1.65%	600mm

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Revision	App	Date
0 For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN *Lifestyle Retirement*

Project Title: THE ORCHIDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: DRAINAGE PLAN SHEET 3 OF 3

Level 13
Kordia House
109-125 Willis Street
Wellington 6141
+64 4 384 2026
calibregroup.com

Scale (A1 Original) 1:500 (A3) 1:1000

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Project No	Sheet	Revision
711288	C403	0

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NOTE:
Pipe sizing to be determined during detailed design.

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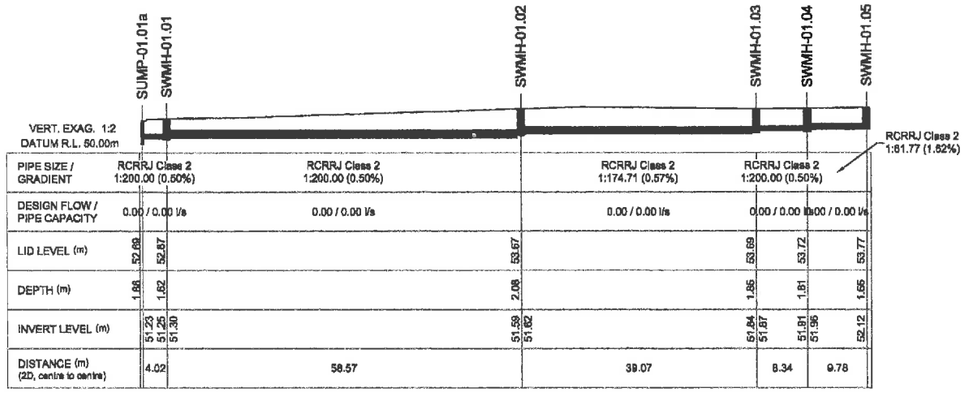
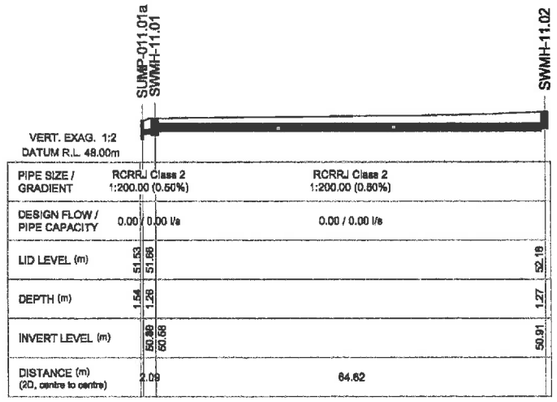
NOT FOR CONSTRUCTION

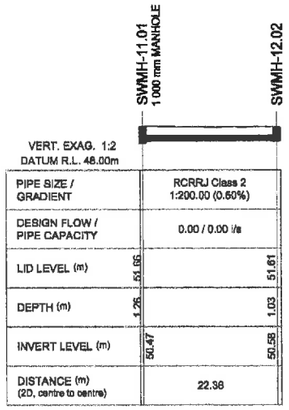


| | | |

NOTE:
Pipe sizing to be determined during detailed design.



SW LINE 11 LONG SECTION



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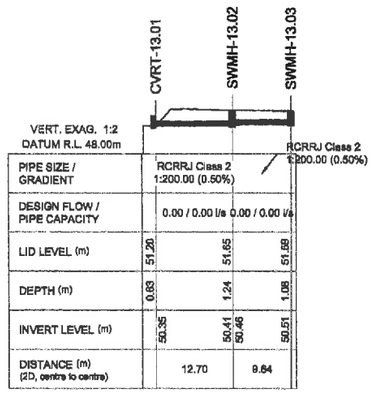

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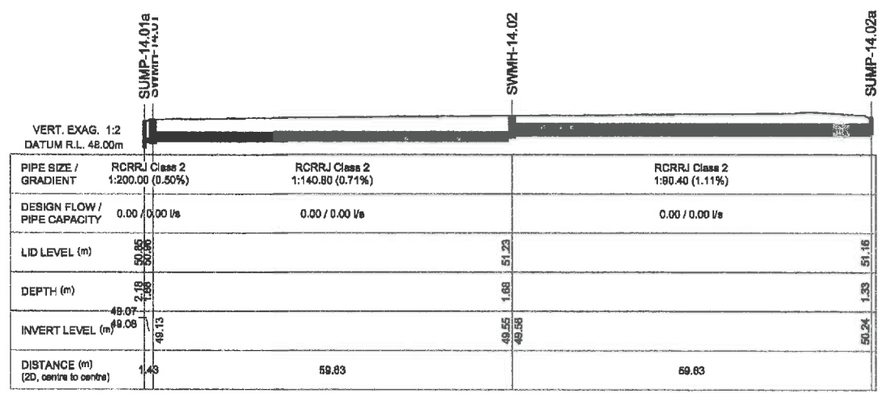

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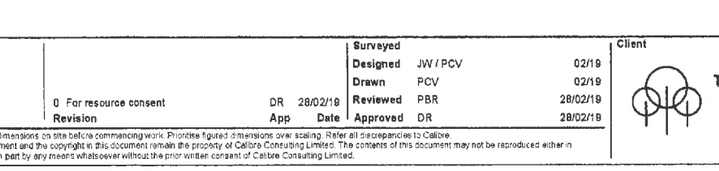

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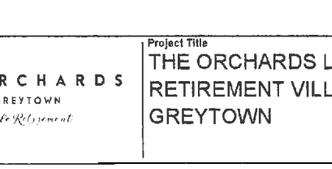

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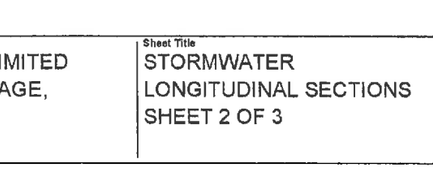
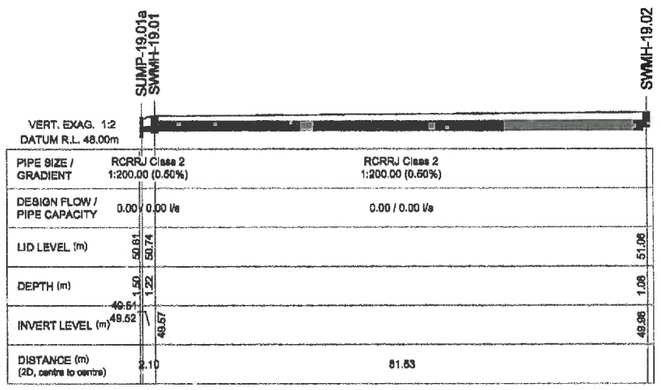


SW LINE 17 LONG SECTION



SW LINE 18 LONG SECTION



SW LINE 19 LONG SECTION

FOR COUNCIL APPROVAL
NOT FOR CONSTRUCTION

Revision			Surveyed		
			Designed	JW / PCV	02/19
			Drawn	PCV	02/19
0 For resource consent	DR	28/02/19	Reviewed	PBR	28/02/19
Revision	App	Date	Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN — Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: STORMWATER LONGITUDINAL SECTIONS SHEET 2 OF 3

Level 13
Kordia House
109-125 Wills Street
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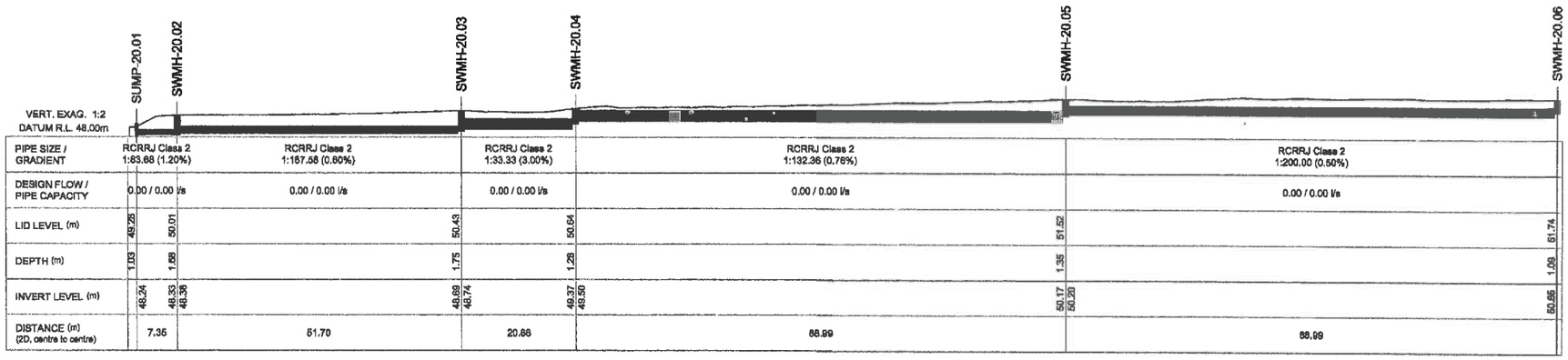
calibregroup.com

Scale (A1 Original) 1:500 (A3)1:1000
10 5 0 10 20 30 m

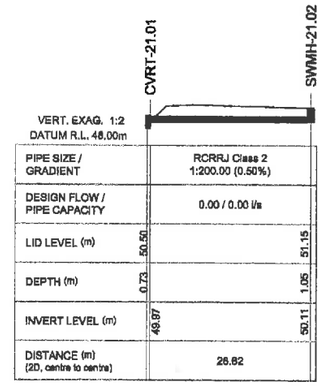
Project No	Sheet	Revision
711288	C421	0

NOTE:
Pipe sizing to be determined during detailed design.



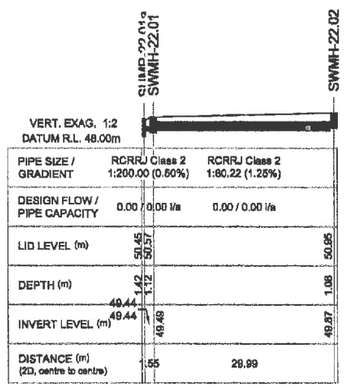
PIPE SIZE / GRADIENT	RCRRJ Class 2 1:83.68 (1.20%)	RCRRJ Class 2 1:167.58 (0.60%)	RCRRJ Class 2 1:33.33 (3.00%)	RCRRJ Class 2 1:132.36 (0.76%)	RCRRJ Class 2 1:200.00 (0.50%)
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s	0.00 / 0.00 l/s	0.00 / 0.00 l/s	0.00 / 0.00 l/s	0.00 / 0.00 l/s
LID LEVEL (m)	49.28 / 50.01	50.43	50.64	51.62	51.74
DEPTH (m)	1.03 / 1.68	1.75	1.29	1.35	1.09
INVERT LEVEL (m)	48.24 / 48.33 / 48.36	48.68 / 48.74	49.37 / 49.50	50.17 / 50.20	50.65
DISTANCE (m) (2D, centre to centre)	7.35	51.70	20.86	88.99	88.99

SW LINE 20 LONG SECTION



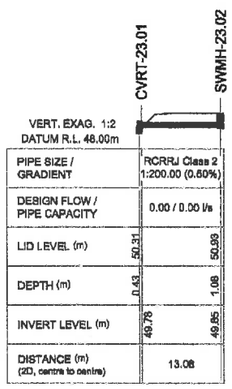
PIPE SIZE / GRADIENT		RCRRJ Class 2 1:200.00 (0.50%)
DESIGN FLOW / PIPE CAPACITY		0.00 / 0.00 l/s
LID LEVEL (m)	50.50	51.15
DEPTH (m)	0.73	1.05
INVERT LEVEL (m)	49.97	50.11
DISTANCE (m) (2D, centre to centre)		26.82

SW LINE 21 LONG SECTION



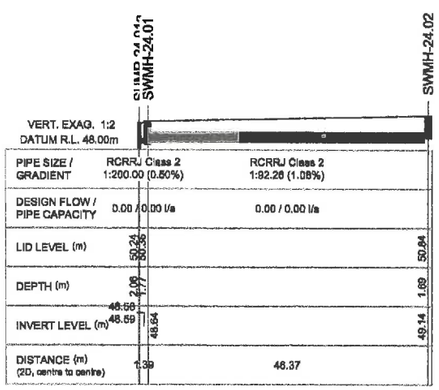
PIPE SIZE / GRADIENT	RCRRJ Class 2 1:200.00 (0.50%)	RCRRJ Class 2 1:80.22 (1.25%)	
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s	0.00 / 0.00 l/s	
LID LEVEL (m)	50.45 / 50.57		50.95
DEPTH (m)	1.42 / 1.12		1.08
INVERT LEVEL (m)	49.44 / 49.44	49.48	49.87
DISTANCE (m) (2D, centre to centre)	1.55	29.99	

SW LINE 22 LONG SECTION



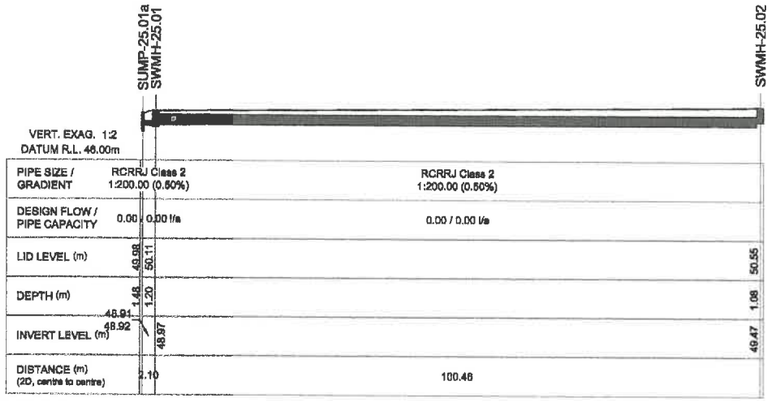
PIPE SIZE / GRADIENT	RCRRJ Class 2 1:200.00 (0.50%)	
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s	
LID LEVEL (m)	50.31	50.93
DEPTH (m)	0.43	1.08
INVERT LEVEL (m)	49.78	49.85
DISTANCE (m) (2D, centre to centre)	13.08	

SW LINE 23 LONG SECTION



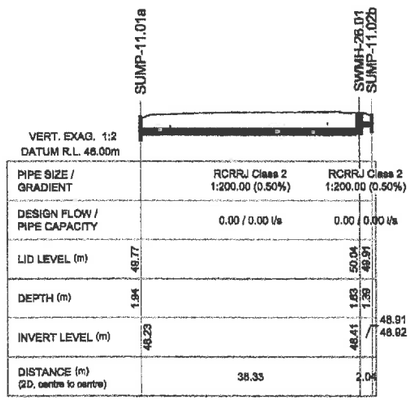
PIPE SIZE / GRADIENT	RCRRJ Class 2 1:200.00 (0.50%)	RCRRJ Class 2 1:82.26 (1.08%)	
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s	0.00 / 0.00 l/s	
LID LEVEL (m)	50.24 / 50.36		50.84
DEPTH (m)	2.00 / 1.77		1.69
INVERT LEVEL (m)	48.56 / 48.59	48.64	49.14
DISTANCE (m) (2D, centre to centre)	1.39	46.37	

SW LINE 24 LONG SECTION



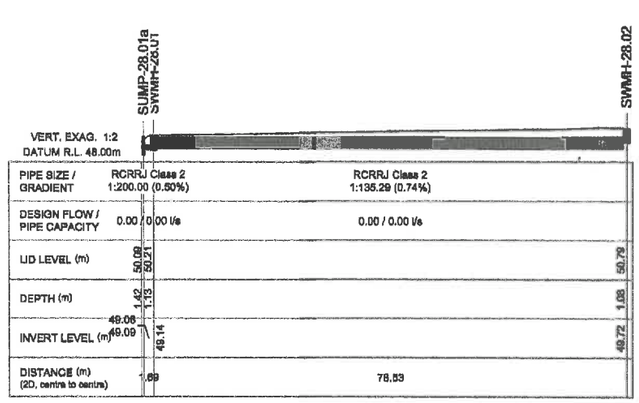
PIPE SIZE / GRADIENT	RCRRJ Class 2 1:200.00 (0.50%)		RCRRJ Class 2 1:200.00 (0.50%)
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s		0.00 / 0.00 l/s
LID LEVEL (m)	49.98 / 50.11		50.55
DEPTH (m)	1.48 / 1.20		1.08
INVERT LEVEL (m)	48.91 / 48.92	48.97	49.47
DISTANCE (m) (2D, centre to centre)	2.10	100.46	

SW LINE 25 LONG SECTION



PIPE SIZE / GRADIENT		RCRRJ Class 2 1:200.00 (0.50%)	RCRRJ Class 2 1:200.00 (0.50%)
DESIGN FLOW / PIPE CAPACITY		0.00 / 0.00 l/s	0.00 / 0.00 l/s
LID LEVEL (m)	48.77		50.04 / 49.91
DEPTH (m)	1.94		1.63 / 1.38
INVERT LEVEL (m)	48.23		48.41 / 48.91 / 48.62
DISTANCE (m) (2D, centre to centre)		38.33	2.04

SW LINE 26 LONG SECTION



PIPE SIZE / GRADIENT	RCRRJ Class 2 1:200.00 (0.50%)	RCRRJ Class 2 1:135.29 (0.74%)	
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s	0.00 / 0.00 l/s	
LID LEVEL (m)	50.09 / 50.21		50.79
DEPTH (m)	1.43 / 1.53		1.09
INVERT LEVEL (m)	49.06 / 49.09	49.14	49.72
DISTANCE (m) (2D, centre to centre)	1.69	78.53	

SW LINE 28 LONG SECTION

FOR COUNCIL APPROVAL
NOT FOR CONSTRUCTION

Revision		App	Date
0	For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN — Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: STORMWATER LONGITUDINAL SECTIONS SHEET 3 OF 3

Level 13
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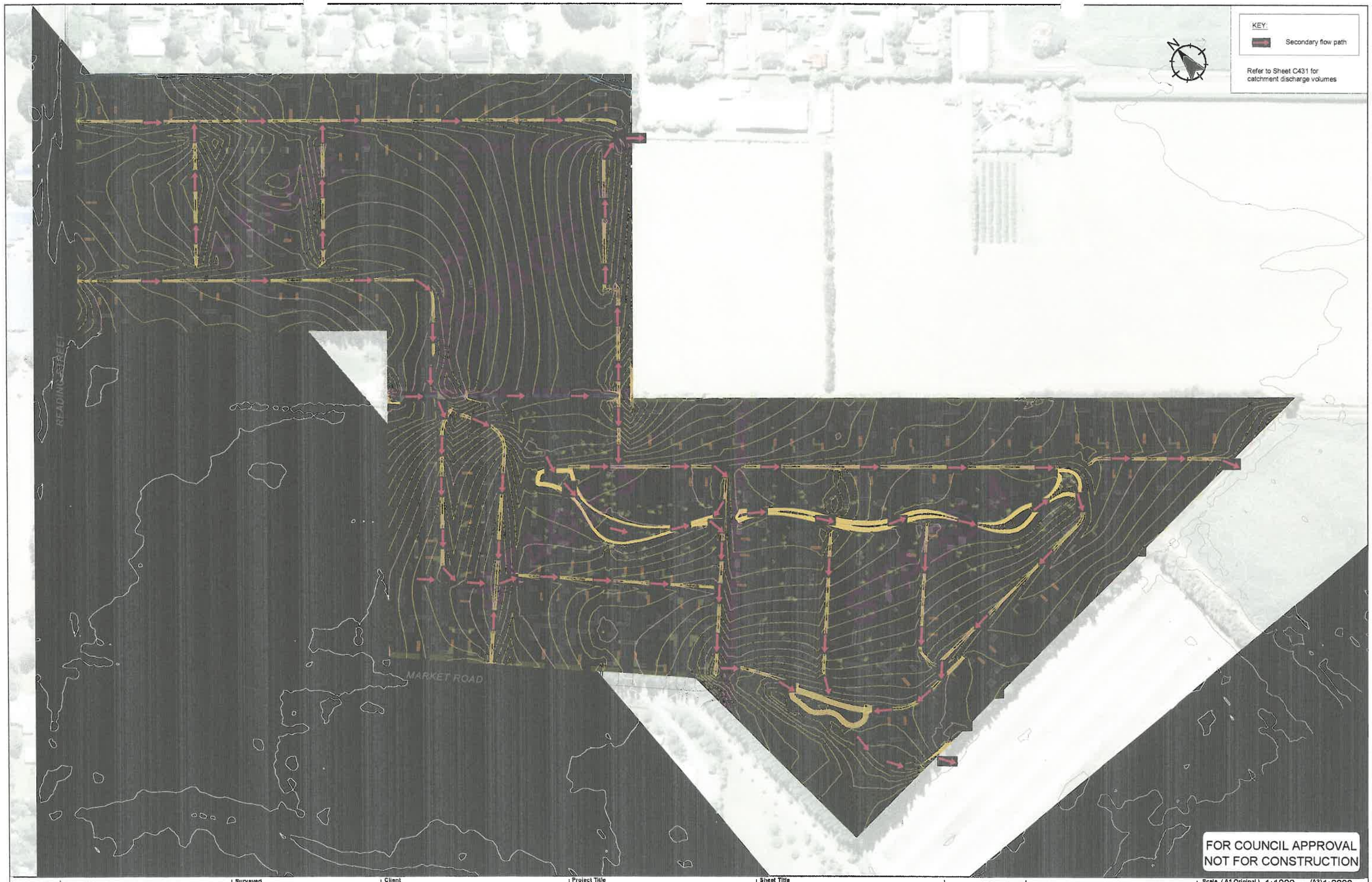
Scale (A1 Original) 1:500 (A3) 1:1000

Project No	Sheet	Revision
711288	C422	0



Revision	App	Date
0 For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN — Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: PROPOSED OVERLAND FLOWPATHS

Level 13
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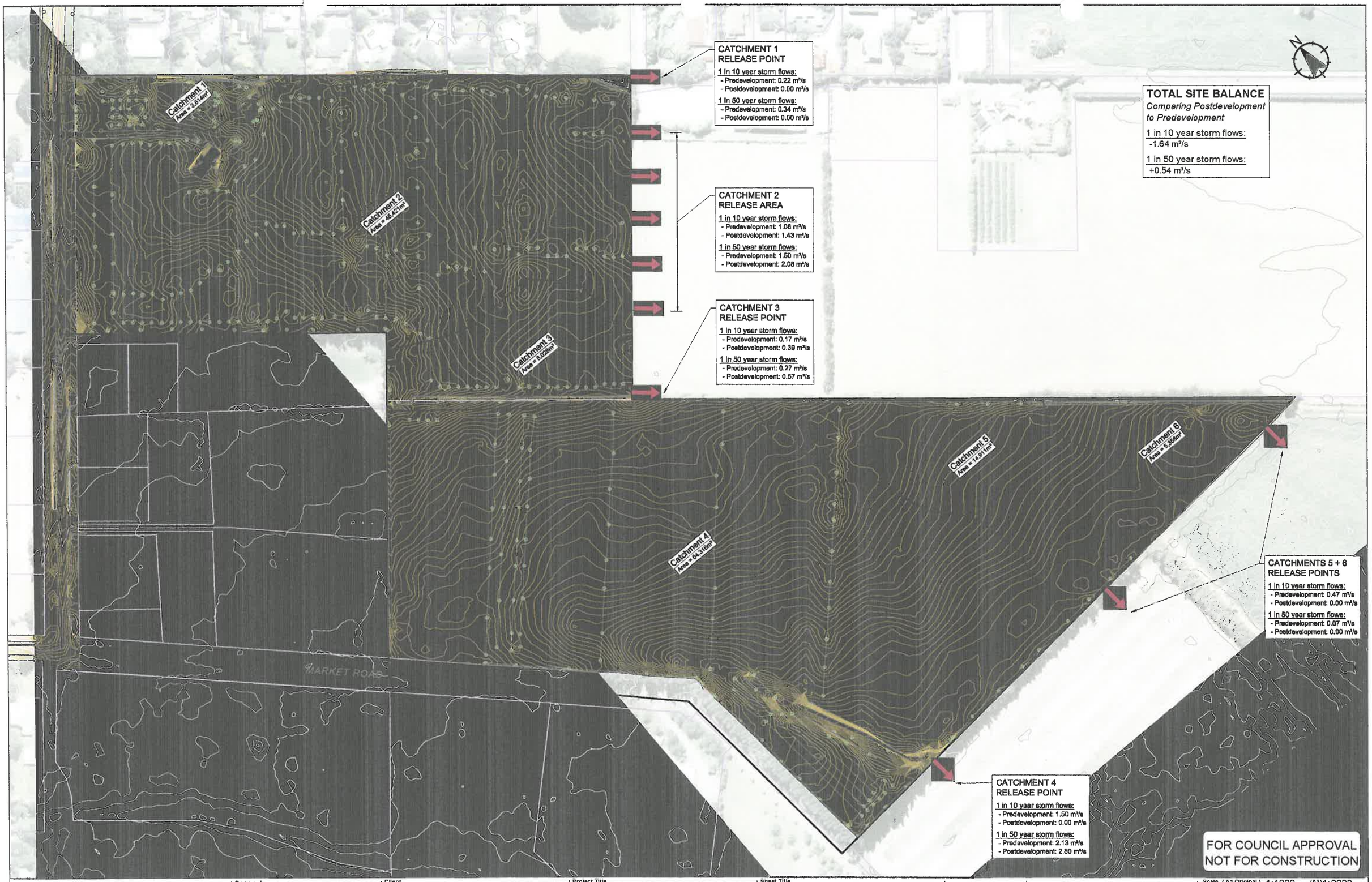
calibregroup.com

Scale (A1 Original) 1:1000 (A3)1:2000

20 10 0 20 40 60 m

Project No	Sheet	Revision
711288	C430	0

H:\WLG\711288 Perception Planning - The Orchards Ltd Retirement Village\320 Drawings\711288-C430 Overland Flow.dwg, Plotted By Paul Vautier at 28/02/2019 5:02:45 PM



Revision		Date
0 For resource consent	DR	28/02/19

Surveyed		
Designed	JW	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

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Client
THE ORCHARDS AT GREYTOWN
Lifestyle Retirement

Project Title
THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title
STORMWATER CATCHMENTS PREDEVELOPMENT AND COMPARISON WITH POSTDEVELOPMENT

Level 13
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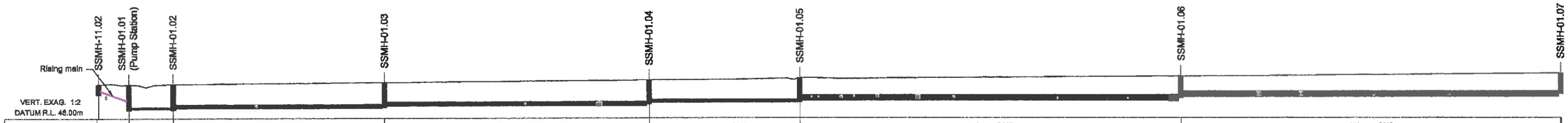
calibregroup.com

calibre

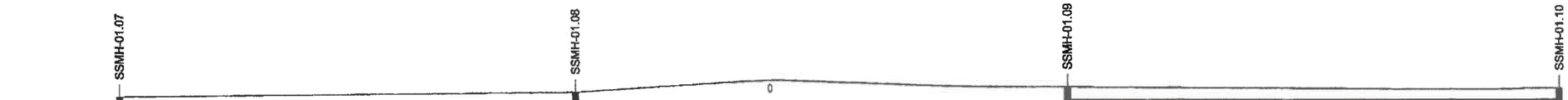
Scale (A1 Original) 1:1000 (A3) 1:2000
20 10 0 20 40 60 m

Project No	Sheet	Revision
711288	C431	0



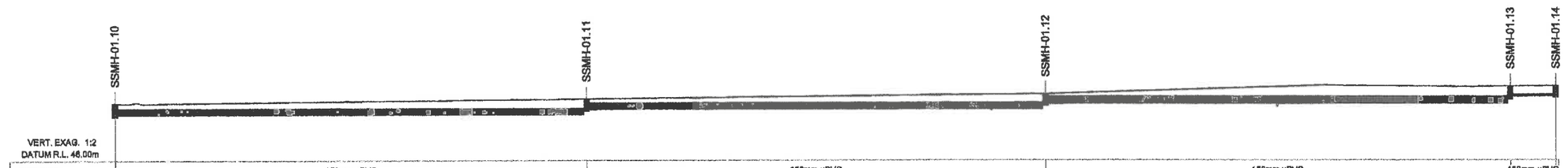
PIPE SIZE / GRADIENT		150mm uPVC 1:181.82 (0.55%)		150mm uPVC 1:181.82 (0.55%)		150mm uPVC 1:181.82 (0.55%)		150mm uPVC 1:181.82 (0.55%)		150mm uPVC 1:181.82 (0.55%)		150mm uPVC 1:181.82 (0.55%)	
DESIGN FLOW / PIPE CAPACITY		0.00 / 0.00 l/s		0.00 / 0.00 l/s		0.00 / 0.00 l/s		0.00 / 0.00 l/s		0.00 / 0.00 l/s		0.00 / 0.00 l/s	
LID LEVEL (m)	50.07	50.07	50.11		50.31		50.59		50.77		51.02		51.37
DEPTH (m)	1.06	2.94	2.92		2.81		2.75		2.70		2.43		2.26
INVERT LEVEL (m)		47.13	47.19 47.22		47.50 47.50		47.84 47.87		48.07 48.08		48.59 48.61		49.11
DISTANCE (m) (2D, centre to centre)		10.56		50.18		62.93		35.71		90.36		90.38	

SS LINE 1 LONG SECTION



PIPE SIZE / GRADIENT		150mm uPVC 1:181.82 (0.55%)		150mm uPVC 1:181.82 (0.55%)		150mm uPVC 1:181.82 (0.55%)		
DESIGN FLOW / PIPE CAPACITY		0.00 / 0.00 l/s		0.00 / 0.00 l/s		0.00 / 0.00 l/s		
LID LEVEL (m)	51.37		51.72		52.17		52.04	
DEPTH (m)	2.26		2.09		1.97		1.27	
INVERT LEVEL (m)	49.14		49.64 49.67		50.20 50.23		50.77	
DISTANCE (m) (2D, centre to centre)		90.36		97.36		97.38		

SS LINE 1 LONG SECTION



PIPE SIZE / GRADIENT		150mm uPVC 1:181.82 (0.55%)		150mm uPVC 1:181.82 (0.55%)		150mm uPVC 1:193.73 (0.65%)		150mm uPVC 1:181.82 (0.55%)
DESIGN FLOW / PIPE CAPACITY		0.00 / 0.00 l/s		0.00 / 0.00 l/s		0.00 / 0.00 l/s		0.00 / 0.00 l/s
LID LEVEL (m)	52.04		52.48		52.86		53.78	53.82
DEPTH (m)	1.27		1.14		1.06		1.21	1.07
INVERT LEVEL (m)	50.80		51.34 51.36		51.80 51.83		52.57	52.70 52.76
DISTANCE (m) (2D, centre to centre)		98.73		96.33		97.53		9.54

SS LINE 1 LONG SECTION

FOR COUNCIL APPROVAL
NOT FOR CONSTRUCTION

Revision	App	Date
0 For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: SEWER LONGITUDINAL SECTIONS SHEET 1 OF 3

Level 13
Kordia House
108-125 Willis Street
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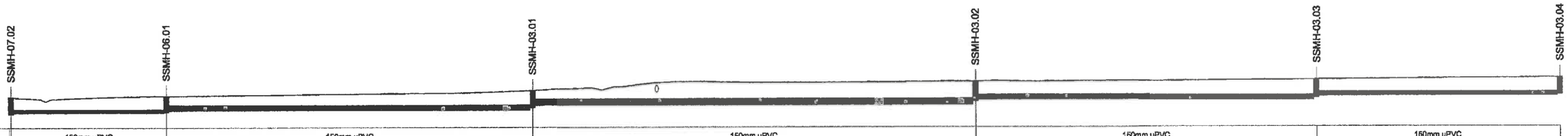
calibregroup.com

Scale (A1 Original) 1:500 (A3) 1:1000

10 5 0 10 20 30 m

Project No	Sheet	Revision
711288	C460	0

H:\WLG\711288 Perception Planning - The Orchards Ltd Retirement Village\a\320 Drawings\711288-C420-C460 Drainage Longsections.dwg, Plotted By Paul Veutier at 28/02/2019 5:00:34 PM



VERT. EXAG. 1:2 DATUM R.L. 48.00m											
PIPE SIZE / GRADIENT	150mm uPVC 1:181.82 (0.55%)			150mm uPVC 1:181.82 (0.55%)			150mm uPVC 1:181.82 (0.55%)			150mm uPVC 1:181.82 (0.55%)			150mm uPVC 1:181.82 (0.55%)		
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s			0.00 / 0.00 l/s			0.00 / 0.00 l/s			0.00 / 0.00 l/s			0.00 / 0.00 l/s		
LID LEVEL (m)	51.47		51.80			52.23			53.19			53.42			53.62
DEPTH (m)	1.78		1.67			1.80			2.11			1.88			1.74
INVERT LEVEL (m)	49.74		49.93 49.97			50.43 50.53			51.08 51.11			51.54 51.57			51.88
DISTANCE (m) (2D, centre to centre)	36.18			83.34			100.58			77.73			55.48		

SS LINE 3 LONG SECTION



VERT. EXAG. 1:2 DATUM R.L. 51.00m			
PIPE SIZE / GRADIENT	150mm uPVC 1:181.82 (0.55%)		
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s		
LID LEVEL (m)	53.82		53.83
DEPTH (m)	1.74		1.60
INVERT LEVEL (m)	51.91		52.23
DISTANCE (m) (2D, centre to centre)	58.14		

SS LINE 2 LONG SECTION



VERT. EXAG. 1:2 DATUM R.L. 52.00m			
PIPE SIZE / GRADIENT	150mm uPVC 1:181.82 (0.55%)		
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s		
LID LEVEL (m)	53.78		53.65
DEPTH (m)	1.21		0.81
INVERT LEVEL (m)	52.61		52.84
DISTANCE (m) (2D, centre to centre)	43.10		

SS LINE 4 LONG SECTION



VERT. EXAG. 1:2 DATUM R.L. 50.00m			
PIPE SIZE / GRADIENT	150mm uPVC 1:181.82 (0.55%)		
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s		
LID LEVEL (m)	53.62		53.52
DEPTH (m)	1.74		1.06
INVERT LEVEL (m)	52.25		52.46
DISTANCE (m) (2D, centre to centre)	39.04		

SS LINE 5 LONG SECTION



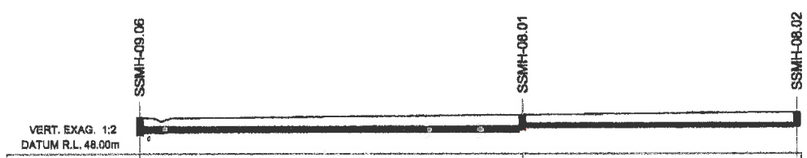
VERT. EXAG. 1:2 DATUM R.L. 50.00m			
PIPE SIZE / GRADIENT	150mm uPVC 1:181.82 (0.55%)		
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s		
LID LEVEL (m)	53.42		53.23
DEPTH (m)	1.88		1.06
INVERT LEVEL (m)	51.96		52.19
DISTANCE (m) (2D, centre to centre)	39.50		

SS LINE 7 LONG SECTION



VERT. EXAG. 1:2 DATUM R.L. 48.00m					
PIPE SIZE / GRADIENT	150mm uPVC 1:181.82 (0.55%)			150mm uPVC 1:181.82 (0.55%)		
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s			0.00 / 0.00 l/s		
LID LEVEL (m)	51.63		51.47			51.63
DEPTH (m)	2.41		1.78			1.62
INVERT LEVEL (m)	49.39		49.70 49.74			50.01
DISTANCE (m) (2D, centre to centre)	84.96			49.94		

SS LINE 8 LONG SECTION



VERT. EXAG. 1:2 DATUM R.L. 48.00m					
PIPE SIZE / GRADIENT	150mm uPVC 1:181.82 (0.55%)			150mm uPVC 1:181.82 (0.55%)		
DESIGN FLOW / PIPE CAPACITY	0.00 / 0.00 l/s			0.00 / 0.00 l/s		
LID LEVEL (m)	51.02		51.23			51.43
DEPTH (m)	1.30		1.11			1.03
INVERT LEVEL (m)	49.76		50.11 50.14			50.39
DISTANCE (m) (2D, centre to centre)	63.46			45.32		

FOR COUNCIL APPROVAL
NOT FOR CONSTRUCTION

Revision		App	Date
0	For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

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Client: THE ORCHARDS AT GREYTOWN – Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: SEWER LONGITUDINAL SECTIONS SHEET 2 OF 3

Level 13
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calibregroup.com

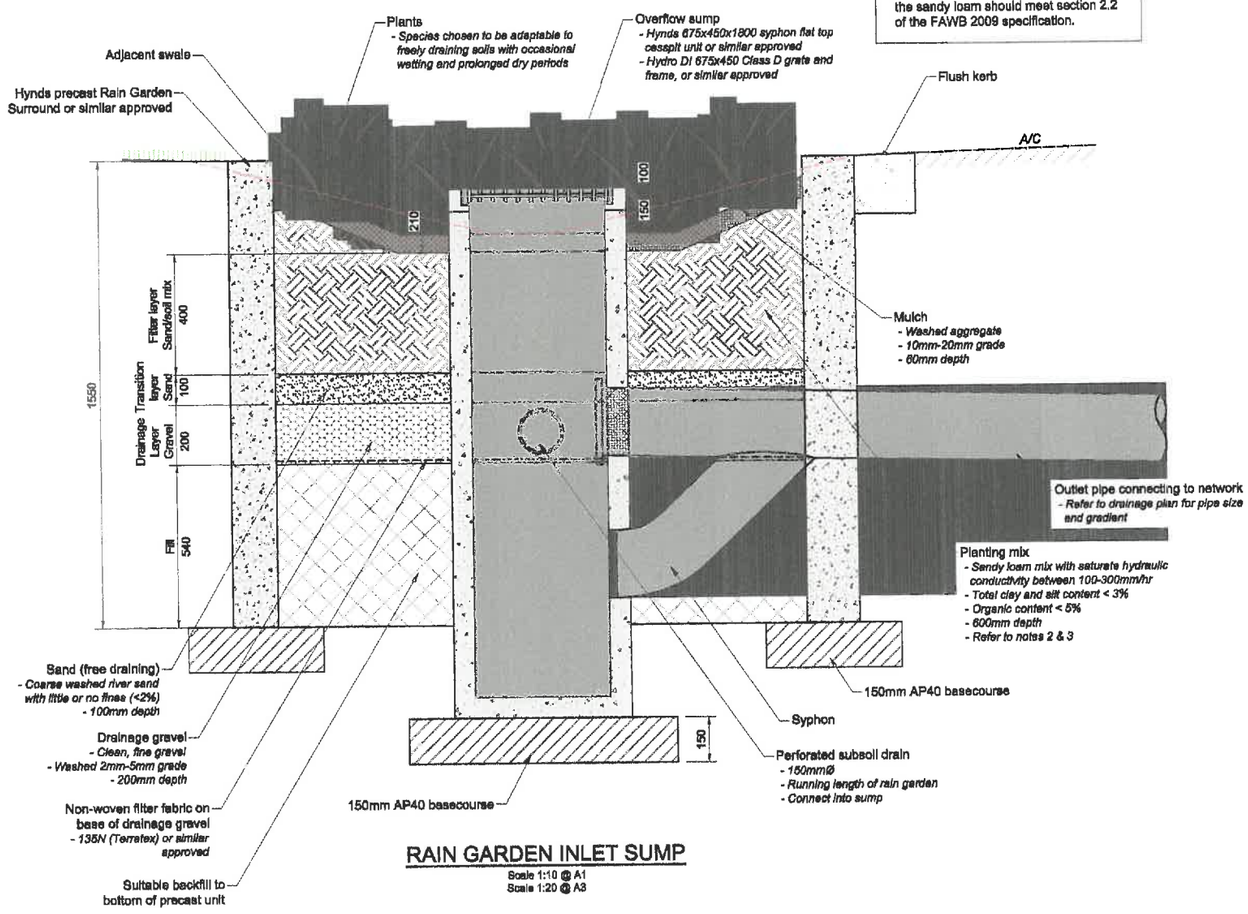
Scale (A1 Original) 1:500 (A3) 1:1000

10 5 0 10 20 30 m

Project No	Sheet	Revision
711288	C461	0

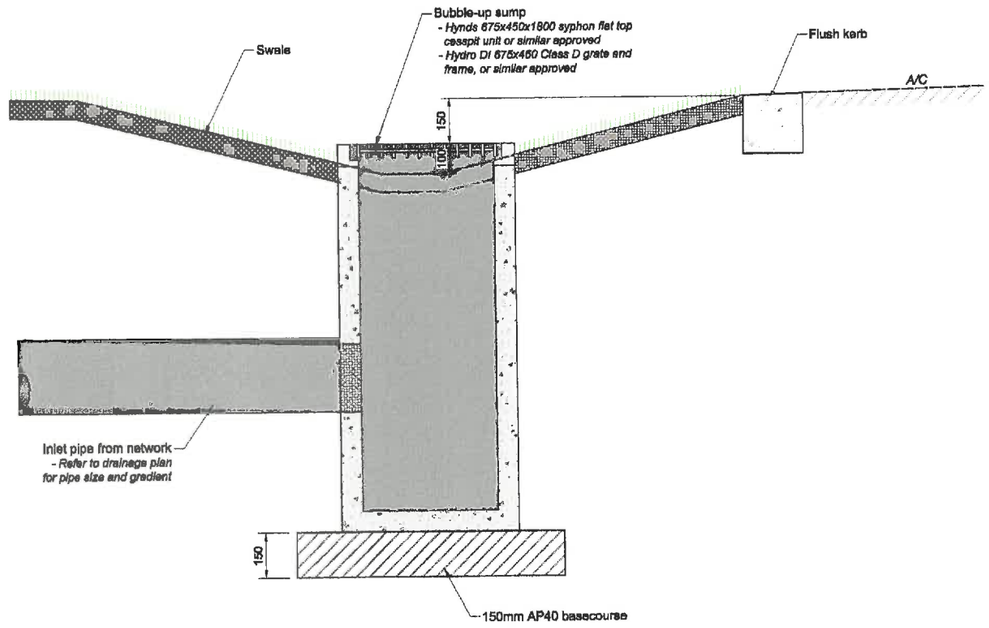
NOTES:

1. Biofilter layer specification is based on FAWB, 2009.
2. The hydraulic conductivity of the sandy loam filter material is to be measured using the ASTM F 1815-06 method.
3. The particle size distribution (PSD) of the sandy loam should meet section 2.2 of the FAWB 2009 specification.



RAIN GARDEN INLET SUMP

Scale 1:10 @ A1
Scale 1:20 @ A3



BUBBLE-UP SUMP

Scale 1:10 @ A1
Scale 1:20 @ A3

FOR COUNCIL APPROVAL
NOT FOR CONSTRUCTION

Revision	App	Date
0 For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

Client: THE ORCHARDS AT GREYTOWN *Lifestyle Retirement*

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: DRAINAGE DETAILS SHEET 1 OF 2

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Scale (A1 Original): SCALE AS NOTED

Project No	Sheet	Revision
711288	C480	0

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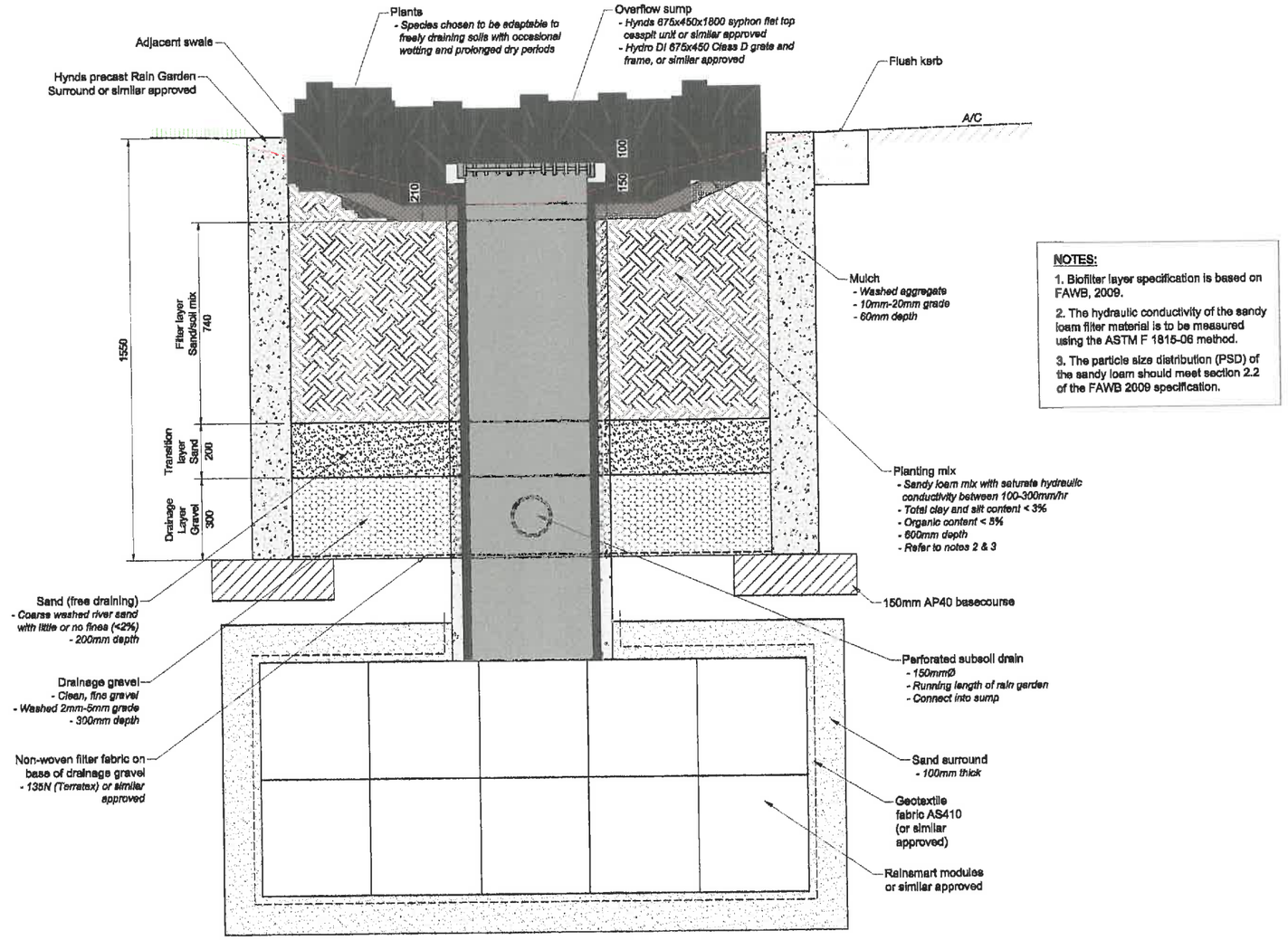

NOTES:

1. Biofilter layer specification is based on FAWB, 2009.
2. The hydraulic conductivity of the sandy loam filter material is to be measured using the ASTM F 1815-06 method.
3. The particle size distribution (PSD) of the sandy loam should meet section 2.2 of the FAWB 2009 specification.

RAIN GARDEN INLET SUMP WITH SOAKAGE MODULES

Scale 1:10 @ A1
Scale 1:20 @ A3

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NOT FOR CONSTRUCTION

Revision		App	Date
0	For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
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Client: THE ORCHARDS AT GREYTOWN — Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: DRAINAGE DETAILS SHEET 2 OF 2

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Scale (A1 Original): SCALE AS NOTED

Project No	Sheet	Revision
711288	C481	0

Combined storage tanks (up to 122,000 litres) necessary for fire flows - position and size to be confirmed

READING STREET

Connection to existing 100mmØ water pipe

Existing 100mmØ Water

MARKET ROAD

Existing 50mmØ Water

NOTES:

1. Layout is schematic only and will be finalised during detailed design.
2. On site storage will be necessary for fire flows - position and details to be determined.

KEY:

- Fire Hydrant
- Sluice/Gate Valve
- Scour Valve
- Water main
- Rider main
- Existing water

FOR COUNCIL APPROVAL
NOT FOR CONSTRUCTION

Revision	App	Date
D For resource consent	DR	28/02/19

Surveyed		
Designed	JW / PCV	02/19
Drawn	PCV	02/19
Reviewed	PBR	28/02/19
Approved	DR	28/02/19

Client: THE ORCHARDS AT GREYTOWN — Lifestyle Retirement

Project Title: THE ORCHARDS LIMITED RETIREMENT VILLAGE, GREYTOWN

Sheet Title: WATER SUPPLY

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Scale (A1 Original) 1:1000 (A3) 1:2000

20 10 0 20 40 60 m

Project No	Sheet	Revision
711288	C510	0

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H:\WLG\711288 Perception Planning - The Orchards Ltd Retirement Village\320 Drawings\711288-C510 Water.dwg, Plotted By Paul Veutier at 28/02/2019 5:06:11 PM



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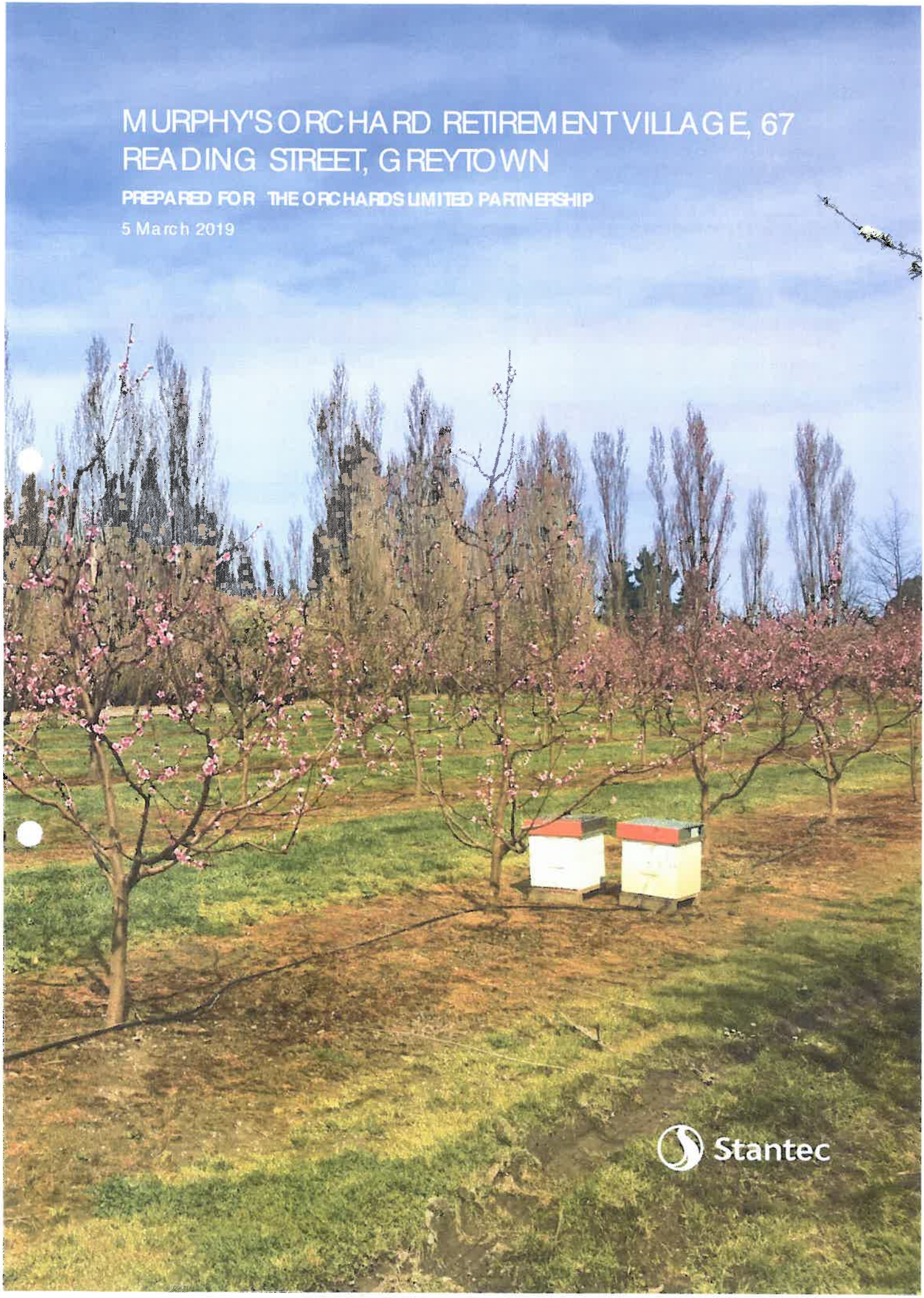
Appendix 22

Stantec Transport Assessment

MURPHY'S ORCHARD RETIREMENT VILLAGE, 67 READING STREET, GREYTOWN

PREPARED FOR THE ORCHARDS LIMITED PARTNERSHIP

5 March 2019



Stantec

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QUALITY STATEMENT

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CHECKED BY		
Cobus de Kock	.....	05/03/2019
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APPROVED FOR ISSUE BY		
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REVISION SCHEDULE

Rev No	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
1	29/01/2019	Draft issued for review	Athul Harris	Cobus de Kock	Cobus de Kock	Mark Georgeson
2	28/02/2019	Draft issued for review	Athul Harris	Cobus de Kock	Cobus de Kock	Cobus de Kock
3	05/03/	Final Report	Athul Harris	Cobus de Kock	Cobus de Kock	Mark Georgeson

Executive Summary

The Orchards Limited Partnership owns approximately 13ha of rural zoned land on the south eastern side of Reading Street in Greytown. The site currently operates as a rural activity. A plan change and resource consent is now being sought by The Partnership to rezone the section of land from a rural zone to a residential zone in order to establish a retirement village on the site. As a result of the potential plan change, the new development could include residential activities, care facilities, a bowling green and other associated activities such as a café on site.

Several transport related issues have been identified as part of this assessment. The first is in regard to the existing section of Market Road and Reading Street which are formed as rural roads. The second would be the impact of the development on the surrounding transport environment and finally the impact of the development on the state highway.

The proposed development has also been assessed against the relevant transport rules of the Wairarapa Combined District Plan ("District Plan"). Overall, it has been concluded that there are no reasons why the site layout would not comply with the rules.

Accordingly, provided that Market Road, Reading Street and proposed intersections can be upgraded / constructed to meet District Plan standards prior to the site being occupied, it has been concluded that the proposed development can be supported from a transportation perspective.

The Orchards Limited Partnership

Murphy's Orchard Retirement village, 67 Reading Street, Greytown

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APPENDICES

Appendix A Vehicle Tracking
A.1 Refuse Collection Truck
A.2 B99 at Proposed Internal Intersection
A.3 B99 at Proposed On-Street Parking
A.4 Recreational Vehicle

1. Introduction

The Orchards Limited Partnership (OLP) is proposing to establish a retirement village on about 13ha of rural zoned land adjacent to Reading Street and Market Road about 400m southeast of state highway 2 (SH2).

This report provides a description of the existing transportation infrastructure surrounding the site, traffic volumes and a review of road safety in the area. It then describes the transportation components of the proposal and the traffic generation of the proposed activity. An assessment of the potential effects associated with the changes facilitated by the proposed development is followed by an assessment against strategic planning considerations from a transport perspective.

2. Existing Transport Environment

2.1 Site Location

Figure 1 shows the location of the development site on the eastern corner of the Reading Street / Market Road intersection, some 400m southeast of State Highway 2 (SH2) and the Greytown town centre.



Figure 1: Site Location

The site is currently zoned as a rural zone, under the WCDP as shown in **Figure 2**. The site is surrounded by residential activities on the northern side and rural activities to the south.



Figure 2: Site Zoning within the Wairarapa Combined District Plan

2.2 Road Network

The site has two road frontages: Reading Street to the northwest and Market Road to the southwest.

2.2.1 Reading Street

Reading Street is classified as an access road in NZTA's One Network Road Classification (ONRC) system. Reading Street adjacent to the site has a sealed width of 5.4m. Reading Street also provides access to a school located on the north western side of the road adjacent to the development site frontage. Along the frontage of the school, there is informal parking available on both sides of the road as well as a 1.5m wide footpath on the northern side of the road as shown in **Figure 3**. During peak periods of the school, the informal parking on both sides of the road is well utilised as shown in Figure 3. The footpath extends from the school to the Reading Street / McMaster Street intersection further northeast.



Figure 3: Reading Street adjacent to Development Site (Facing Southwest)

To the southwest of the school, Reading Street is configured as a rural road as shown in **Figure 4**.



Figure 4: Reading Street Southwest of the School (Facing Southwest)

2.2.2 Market Road

Market Road is not classified in the ONRC system however this is also likely to be an access road as it only provides access to some residential dwellings. This road is part of the road network owned by the council and is configured as a sealed 5m wide road without any road marking, kerb and channel or pedestrian facilities as shown in **Figure 5**. Instead, wide grassed berms are available on both sides along the full length of the road.



Figure 5: Market Road near the Reading Street / Market Road Intersection (Facing Southeast)

2.2.3 McMaster Street

McMaster Street is classified as an access road in the ONRC system. It is configured as a two-way road with a cross-section width of about 12m which provides sufficient space to accommodate two 3.5m wide traffic lanes and on-street parking on both sides as shown in **Figure 6.** The section of road between SH2 and East Street provides footpaths on both sides however the section between East Street and Reading Street only provides a footpath on the west side.



Figure 6: McMaster Street (facing northwest)

2.2.4 Church Street

Church Street is classified as a low volume road in the ONRC system between SH2 and Market Road. It is configured as a sealed, unmarked, two-way road along its length and has a width of about 6m as shown in **Figure 7**. It provides footpaths on both sides between SH2 and East Street but the southern section of the road between East Street and Market Road does not provide footpaths. The southern section does however provide wide, grassed berms much like Market Road.



Figure 7: Church Street (facing southeast)

2.2.5 Reading Street / Church Street / Market Road Intersection

This intersection is configured as a priority controlled, three leg intersection as shown in **Figure 8**. The major movement is along Market Road and Church Street, such that vehicles travelling from the Reading Street approach must give way.



Figure 8: Reading Street / Church Street / Market Road Intersection (facing southwest)

2.2.6 Reading Street / McMaster Street Intersection

This is a crossroad, priority-controlled intersection as shown in **Figure 9** with give way sign controls on the McMaster Street west approach and the Reading Street south approach. The eastern McMaster Street approach is stop sign controlled. The Reading Street north approach does not have any forms of control and therefore the major movement is likely to occur from this approach to the McMaster Street west approach towards the state highway.



Figure 9: Reading Street / McMaster Street Intersection (facing northwest)

2.3 Traffic Volumes

2.3.1 ONRC Volumes

The daily traffic volumes available on the ONRC system for nearby roads are summarised in **Table 1**.

Road	Location	ONRC AADT	Count AADT
Reading Street	McMaster St – Church St	265	265 (2009)
Market Road	South of Church St	-	-
McMaster Street	Reading St – East St	530	-
	East St – SH2	300	-
Church Street	Reading St – East St	30	-
	East St – SH2	100	306 (2013)
SH2	McMaster St – Church St	8,097	

Table 1: ONRC Traffic Volumes

2.3.2 Reading Street

A traffic count was completed on Reading Street and the findings are summarised below in **Table 2**. The count was done for a period of 30 minutes around the school closing time and so was extrapolated to produce a conservative estimated hourly volume of 162vph.

Period	Westbound	Eastbound	Total
14:45 – 15:00	22	12 (1 Heavy)	34
15:00 – 15:15	15	32 (1 Heavy)	47
14:45 – 15:15	37	44	81
Extrapolated Hourly Volume	74vph	88vph	162vph

Table 2: Reading Street Vehicle Count (14:45 - 15:15pm)

2.3.3 Market Road

Official counts were not available on Market Road. Given that this road provides access to about four residential developments, the level of traffic has been derived based on typical traffic generation rates provided in NZTA's Research Report 453. On this basis, the traffic on the road is estimated as follows:

Period	Total
Hourly Volume	6vph
Daily Volume	40vpd

Table 3: Market Road Estimate Traffic Volumes

2.3.4 State Highway 2

SH2 accommodates an annual average daily traffic volume of about 8,500vpd. The traffic profile of the road during a typical weekday and weekend is shown in **Chart 1**.

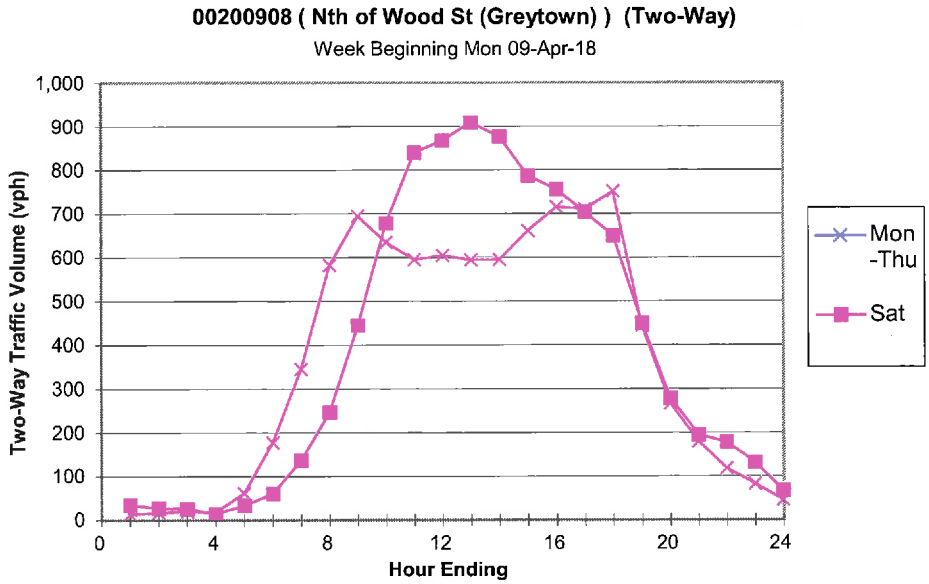


Chart 1: SH2 Traffic Volume Profile (Source: NZTA Site – 00200908 9 April 2018)

The profile shows a morning peak of about 700vph occurring at 9am and an afternoon peak of about 750vph occurring at 6pm. The weekend volumes are higher than the weekday volumes with a peak volume of about 900vph occurring at about 1pm.

2.4 Public Transport

The Wairarapa Line (Masterton - Wellington) train route operates with five services a day in each direction (inbound / outbound) on weekdays. Three of the five inbound services depart during the morning peak period from Masterton and three of the five outbound services depart from Wellington during the afternoon peak period. During the weekend, there are two services available each day, in each direction. One in the morning and the other in the evening.

This train service does not travel through Greytown. However, there are two bus services that travel through Greytown which provide connections to other nearby towns and nearby railway stations. These include:

- 200 - Masterton - Greytown - Featherston – Martinborough. This service operates sporadically throughout the day and also operates in conjunction with the Wairarapa Line train route. Some of these bus services are aligned with the train timetable while other services are also available, independent of the train arrival / departures. Independent services are available during the weekend as well as services providing connection with the train services for people wishing to travel between Greytown and Wellington city.
- 204 - Greytown – Woodside. This service provides a key connection for residents of Greytown to the Woodside Railway Station and it operates directly in conjunction with the train so there are five connecting services every weekday, in each direction. This service does not operate during the weekend.

2.5 Walking and Cycling Facilities

As discussed earlier, there are footpaths available on the north side of Reading Street adjacent to the development site providing a connection to McMaster Street. This provides a key connection for children, parents and staff travelling to / from the school.

There are no cyclist specific facilities in the area, so cyclists are expected to share the roads with vehicles.

3. Future Projects

Greytown school is proposing to construct a secondary school on the existing site located between East Street and Reading Street. The construction is planned to take place in January 2020. The access arrangement for the secondary school would generally remain the same with the primary access located on East Street and a secondary access located on Reading Street. We anticipate that these construction vehicles might access the construction site from Reading Street.

4. Road Safety

The New Zealand Transport Agency Crash Analysis System (CAS) has been used to identify all reported crashes on the road network near the proposed development site between (and inclusive of) 2013 and 2018. **Figure 10** outlines the extent of the area (within red outline) that has been reviewed and provides an overview of reported crash types. The location of the site is indicated by the blue star.

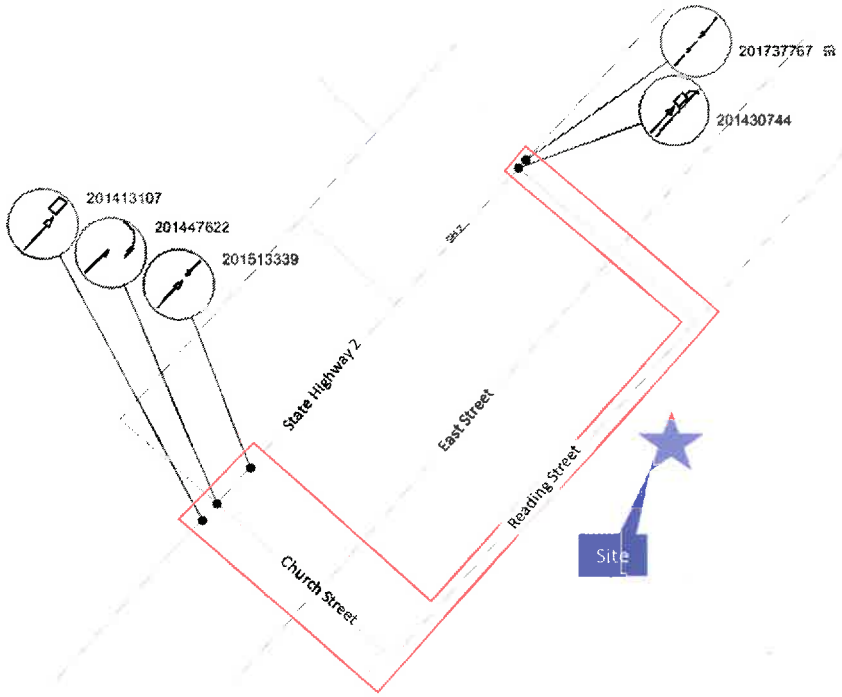


Figure 10: Collision Diagram (2013 - 2018)

A total of five crashes were recorded in the area, including two minor injury crashes and three non-injury crashes. There was a general trend of rear end type crashes as a result of drivers failing to notice other parties, fatigue or inattention.

One of the minor injury crashes occurred on SH2, north of Church Street and involved a head on collision between two vehicles as one of them was distracted. The other minor injury crash occurred on SH2 just south of Church Street and involved a vehicle hitting a parked vehicle due to fatigue.

Note that no crashes were recorded on any of the local roads near the development site.

5. Development Proposal

5.1 Overview

A retirement village is proposed on the section of land at 67 Reading Street. It will comprise 176 villas located uniformly around the site serviced by a network of internal roadways. Various different configurations of villas are proposed:

- Villa A – Two-bedroom unit with on-street parking
- Villa B – Two-bedroom unit with one garaged parking space
- Villa C and D – Three-bedroom unit with two garaged parking spaces

The retirement village will also incorporate leisure activities for use by all residents in the village. The general site plan is shown in **Figure 11**.

The main building located centrally on the site would include a café, reception, serviced apartments, rest home / hospital / dementia care suites and rest home / hospital / dementia care rooms. A total of 120 beds would be accommodated within this building. It should be noted that the main building would be part of a separate resource consent application. The main building has been included in this assessment for completeness and to provide a robust transport assessment for the plan change assessment.

The internal roadways are proposed with a network of primary and secondary roads through the site between Reading Street and Market Road. The roads within the development were designed as defined NZS 4404:2010 Land Development and Subdivision Infrastructure Standard. The primary roads are configured as suburban roads with the following attributes:

- movement lane width of 5.5m;
- 1.5m footpaths on at least one side of the road;
- parking provided adjacent to the movement lane; and
- cyclists are expected to share the movement lane with vehicles.

This arrangement is expected to be conducive to a slow speed environment with a specified target operating speed of 20km/h.

The secondary roads are proposed with the following attributes:

- movement lane width of 3m; and
- pedestrians and cyclists are expected to share the movement lane with vehicles.

Due to the narrow movement lane width, this arrangement has a target operating speed of 10km/h. These secondary roads will provide access to a limited number of dwellings, generally not exceeding nine dwelling units.

All villa units will have at least one garaged parking space and potentially one visitor parking space on the driveway. The Villa A units are proposed with 53 dedicated on-street parking spaces for residents and visitors. Visitor parking and any overflow staff parking for the main building would be accommodated by 64 on-street parking bays.

The development also has provision for a recreational vehicle parking area near the Market Road access to the site. This parking area has capacity to accommodate 18 recreational vehicles.



Figure 11: Site Plan

5.2 Access Strategy

5.2.1 Vehicle Access

Access to / from the surrounding road network will be via Reading Street and Market Road. The Reading Street road frontage is proposed with two new internal primary road connections located adjacent to the school. The Market Road frontage is also proposed to have two internal primary road connections located mid-block on Market Road. In summary, two new intersections are proposed on Reading Street and two new intersections are proposed on Market Road.

5.2.2 Pedestrian and Cyclist Access

Footpaths are proposed on one side of the road alongside primary roads through the site. There are also several off-street paths along key desire lines through the development. These are located through open spaces, orchards and alongside the waterway on-site. The pedestrians are expected to share the movement lanes on the secondary roads.

Cyclists are expected to share the internal roads with other road users.

5.2.3 Servicing

The refuge collection is anticipated to occur at a central location at the rear of the main building via an internal road which leads directly to the refuse collection area. The development will have an internal refuse collection service for all units, resulting in a single storage area. As described earlier, one of the two primary roads through the site would facilitate the movement of refuse trucks to this area. Trucks would drive into the servicing road leading to the refuse collection area such that they are able to drive out in a forward direction as indicated by the vehicle tracking in Appendix A. This would help to minimise risk to passing pedestrians and cyclists. There are multiple route options for refuse trucks to leave the area however it is likely they would exit via the same intersection they entered at.

Footpaths are available alongside primary roads and this would also help to ensure the safe movement of trucks and pedestrians with minimal potential for interaction.

5.3 Staging

The construction of the development is proposed in four stages as shown in **Figure 12**. The staging breakdown is as follows:

- Stage 1 – 41 Villas and 8 Terraces;
- Stage 2 – 40 Villas and 10 Terraces;
- Stage 3 – 61 Villas and 16 Terraces; and
- Main building (120 beds) is not part of this resource consent application but included to view the project in entirety for Plan Change implications, the timing of the main building is not linked to the staged approach of the Villas.

As the numbers suggest, Stage 1 would be completed first and Stage 3, last. This staging is expected to ensure that the units are occupied as they are built to minimise the number of unoccupied units.



Figure 12: Development Staging Plan

6. Traffic Generation and Distribution

NZTA's Research Report 453 - Trips and Parking Related Land Use (RR453), was used to produce the expected traffic generation for this development. Traffic generation rates were adopted as follows:

- 2.4 vehicles per day/bed for the care facilities in the main building; and
- 2.6 vehicles per day/unit for the villas.

As well as the above daily traffic generation rates, peak hour traffic generation rates and distribution data was also adopted from RR453. For most retirement villages such as this, the number of vehicle movements generated to and from the retirement village during the morning and afternoon traffic peaks for the adjacent road network are the most important for assessing the traffic related effects of the development, even though they do not represent the traffic peaks for the retirement village itself.

As this indicates, residents of retirement villages tend to avoid travelling at peak times because they do not generally need to travel in peak hours.

The following **Table 4** summarises the traffic generation for the various components of the proposed retirement village. It includes the daily generation and the peak hour generation during the external traffic peak hours for the network.

Activity	No of Beds/Units	Daily Traffic Generation Per Unit, Bed (vpd)	Daily Traffic Generation (vpd)	Peak Hour Traffic (vph)
Care facility beds and Suites	120 beds	2.4	288vpd	0.4x120=48vph
Villas B, C & D	142 units	2.6	369vpd	0.3x142=43vph
Villas A	34 units	2.6	88vpd	0.3x34=10vph
Total	**296**		**745vpd**	**101vph**

Table 4: Expected Traffic Generation from Retirement Village

Inbound/outbound proportional traffic movements for the retirement village was also adopted from the data available in the ITE Trip Generation Manual. The distribution values expected at the site during the AM peak is split 45% inbound / 55% outbound and during the PM peak is split 52% inbound / 48% outbound.

The distribution of traffic generated by the development was determined based on the layout of lots on the site and SH2 / Greytown town centre being the key destination in the area. It is considered that the northern portion of the development would utilise the Reading Street accesses and the southern portion would utilise Market Road, split 56% and 44% respectively. This would mean an additional of about 400vpd on Reading Street and about 300vpd on Market Road.

As discussed earlier there are many route options available to access the State Highway and Greytown town centre. However, the most convenient and direct routes would be via McMaster Street and Church Street. It is also considered that the primary destination in the area would be the Greytown town centre located along SH2. Based on these assumptions, the following indicative traffic distribution schematic was produced as shown in **Figure 13.**



Figure 13: Indicative Retirement Village Traffic and Distribution (Vehicles per Day)

The figure shows the lowest level of traffic on the secondary internal roads (blue) which then feed on to the primary internal roads (yellow) which have between 10 – 230vpd and finally the existing roads (red) are excepted to accommodate between about 180 and 420vpd. On this basis, this arrangement of internal roads proposed is expected to accommodate low volumes of traffic.

7. District Plan Provision

7.1 District Plan Compliance Table

The site is zoned "Rural – Primary Production" within the provisions of the District Plan. Chapter 21.1.25 and Appendix 5 of the District Plan relates to the requirements for Permitted Activities in respect of roads, access, parking and loading. The proposed development is assessed against each of these rules and requirements in **Table 5** as follows:

Ref	Rule	Proposed	Compliance
21.1.25(a)	*All new roads, intersections, access, parking and loading areas shall be provided in accordance with the provisions of Appendix 5 – Requirements for Roads, Access, Parking and Loading.*	New roads and accesses are designed as per NZS 4404:2010 with the exception of secondary roads on-site which do not provide passing bays as required by this standard. Parking and loading (medium rigid vehicle) areas are designed in accordance with NZS 2890.1:2004.	Does not comply See report
	Access		
21.1.25(b)(i)	*All sites and activities shall have safe and practicable vehicle access from a public road. All vehicle crossings and intersections shall be positioned and constructed in accordance with the standards in Appendix 5.*	The internal primary roads on-site have access from a public road. Some lots have access via internal roads while others have direct access off public roads.	Complies - tracking 85th and 99th car
	Provision of On-Site Parking and Loading		
21.1.25(c)(i)	*(1) Every activity shall provide off-street parking and loading for vehicles associated with the activity and vehicles expected to visit or be stored on the site in connection with the activity, in accordance with Table 21.1.25.1 below.*	All units aside from Villa A units and the main building have provision for off-street parking spaces. The Villa A units and the main building activity would have dedicated 90° on-street parking available on surrounding internal roads. A loading bay is proposed at the rear of the main building.	Does not comply See report
	(2) Where any activity is changed or any building erected or altered, sufficient vehicle parking and loading shall be provided to meet the demands generated by the altered activity or building, in accordance with Table 21.1.25.1 below. *Total Required – 231 on-site spaces* Details in **Table 7** of this report.	212 Off-street spaces 117 On-street spaces 1 Loading space	Complies
	(3) On sites where there are multiple activities, and each activity requires vehicle parking in terms of this Plan, the total parking required shall be the combined total requirement for all activities. The Council will consider reducing parking requirements,	Proposed number of parking meets the requirement.	Complies See report

Ref	Rule	Proposed	Compliance
	where it is demonstrable that parking demands generated by each activity do not occur simultaneously and that operational hours or arrangements of those activities means shared parking will occur.		
	(4) Loading bays and spaces may be counted as parking space(s) according to the number of parking spaces able to be accommodated.	Number of parking spaces required is met.	Complies
	Number of Vehicle Parking Spaces		
21.1.25(c)(ii)	*(1) Where the calculation of required vehicle parking spaces results in a fraction of a whole space, any fraction less than or equal to one half shall be disregarded; and any fraction over one half shall count as one space.*	Calculated in accordance with this requirement.	Complies
	(2) The area of required spaces, access drives, or aisles provided within a building shall be excluded from the gross floor area (GFA) of the building.		Not applicable
	(3) Vehicle parking spaces shall be provided for activities in accordance with Table 21.1.25.1. If an activity is not listed, then the standard for the activity listed that is closest in nature to that proposed activity shall be applied. Parking requirements do not apply to temporary activities.	Calculated in accordance with this requirement.	Complies
	Parking for Disabled		
21.1.25(c)(iii)	*(1) Any activity shall provide parking for the disabled in accordance with NZS 4121:2001 Design for Access and Mobility – Buildings and Associated Facilities.* *NZS 2890.6:2009 requires at least 3 mobility spaces to be provided.*	Currently not proposed however, will be included in detailed design.	Can comply
	Vehicle Access and Manoeuvring Space		
21.1.25(c)(iv)	*(1) Each required vehicle park shall have practical access from a public road. Sufficient manoeuvring space shall be provided to enable vehicles to enter and exit the site in a forward direction. Exception: The requirement to exit and enter a site in a forward direction shall not apply to a front lot in the Residential Zone where a garage is attached to a dwelling and that obtains access to a District Arterial, Collector or Local Road. This exception does not apply where access is obtained directly from the State Highway or a Strategic Arterial Road.* *Note: The hierarchy of roads is identified in Volume 2 of the Plan: Maps.*	All parking spaces on site have access from either a public access road (Reading St / Market Road) or via internal roads on-site. All of these can be designed to accommodate manoeuvring of the appropriate vehicles at detailed design stage.	Complies
	Vehicle Parking Spaces and Access Aisles to Remain Clear		
21.1.25(c)(v)	*(1) Dedicated vehicle parking space and access shall remain unobstructed by other activities and shall not be diminished by storage of goods or erection of any structure.*	The site will operate as per this requirement.	Can comply

Ref	Rule	Proposed	Compliance
	Design of Vehicle Parking and Loading Spaces		
21.1.25(c)(vi)	*(1) Every parking space shall be designed and constructed in accordance with AS/NZS 2890.1:2004 Parking Facilities.*	The proposed layout meets this requirement.	Complies See report
	(2) Each required loading space shall be of usable shape and have a minimum length of 7.5 metres, minimum width of 3.5 metres, and minimum clear height of 4.5 metres. Sufficient manoeuvring space shall be provided to accommodate a 90 percentile two-axle truck. In the Commercial and Industrial Zones where articulated vehicles are to be used, the layout shall be designed to accommodate such vehicles.	The proposed loading bay meets this requirement.	Complies
	Standards of Construction of Vehicle Parking Spaces		
21.1.25(c)(vii)	*(1) All required vehicle parking spaces and access aisles shall be formed, sealed and marked, and shall be provided with surface water drainage.*	All internal parking spaces, access aisles and roads will be sealed and will provide drainage.	Can comply

Table 5: District Plan Rules Compliance

Ref	Rule	Proposed	Compliance
	Appendix 5		
32.1.3 - New Roads	*All new roads shall connect with and be compatible with the Council's roading hierarchy as shown in the Planning Maps.*	The proposed internal roads are designed as local roads and are compatible with the existing roads.	Complies
32.1.4 - Intersections and accessways	*Road and accessway intersections shall be designed to ensure sufficient sight distances and safety, having regard to expected traffic volumes and speeds on approach roads.*	Intersections will be designed to meet this requirement at the detailed design stage.	Can Comply
	Where it is proposed to create a vehicle access or road intersection with any State Highway, the applicant shall obtain the approval of New Zealand Transport Agency. Intersections with State highway shall meet New Zealand Transport Agency requirements.	N/A	N/A
	Where it is proposed to create an accessway over or under the railway and/or create an accessway and/or intersection within 30 metres of a road/rail level crossing, the applicant shall obtain the approval of the railway premises owner and/or the railway access provider (ONTRACK).	N/A	N/A
32.1.5 Road Intersections with Rail Crossings	*At road/rail level crossings, viewlines shall meet the minimum requirements of ONTRACK (New Zealand Railways Corporation). Tranz Rail document CSG 417-Q517 Issue 3 Section 4 sets out the requirements for viewlines. The minimum and desirable view along the track is specified for various train speeds. For crossings where automatic warning devices or stop signs are not installed the*	N/A	N/A

Ref	Rule	Proposed	Compliance
	minimum view along the track at 30m from track centreline is also specified.		
32.1.6 New Roads to be shown in Proposed Subdivision	*The Council may require the applicant to clearly show a proposed roading pattern for any balance area. The proposed future roading pattern shown is required to be compatible with the Council's roading hierarchy.*	The proposed roads are shown in the site plan. This requirement will be met.	Complies
32.1.7 New Roads - Construction	*The subdivider or developer shall form and construct all roads, shared access ways, private ways, and private roads.*	This requirement can be met.	Can Comply
32.1.8 Roads and Vehicle Access Way Lighting	*All public roads serving 3 or more residential allotments shall be provided with night lighting in urban areas only.*	This requirement can be met.	Can comply
32.1.9 Pedestrian Facilities Standards	*Pedestrian facilities shall be provided on footpaths in accordance with NZS 4121:2001 Design for Access and Mobility – Buildings and Associated Facilities and RTS 14 Guidelines for Facilities for Blind and Vision Impaired Pedestrians.*	This requirement can be met. This will be addressed at the detailed design stage.	Can comply
32.1.10 Vehicle Access to Individual Sites	*All sites and allotments shall have legal practicable vehicle access from a public road.*	In general, internal allotments will have access to public roads via internal roads.	Complies
	Seal widening at accesses shall be in accordance with Figure 32.2 below.	N/A	N/A
	Any vehicle access crossing a waterway shall incorporate culverts appropriate to the volume of water in the waterway and the traffic load on the access. Any earthworks shall comply with the requirements of this Plan. Note: Wellington Regional Council may have additional requirements relating to activities in waterways.	This requirement can be met.	Can Comply
32.1.11 Vehicle Parking Spaces, Loading Spaces and Access Aisles	*All required vehicle parking spaces, loading spaces and access aisles shall be formed and sealed, and shall be provided with surface water drainage in accordance with NZS 4404:2004.*	This requirement can be met.	Can Comply

Table 6: District Plan Appendix 5

Activity	Parking Rates	Requirement
Residential activities	*1 per residential unit* *(Residential unit is defined as a self-contained residential accommodation unit to be used exclusively by one household unit and includes residential units within multi-unit and retirement village developments)*	*176 Units / 176 Spaces*
Resthome *(A facility including associated land and buildings providing care to dependent persons in a live-in situation)*	*1 per 4 beds the facility is designed to accommodate plus 1 per employee on site*	*120 Beds / 30 Spaces Required* *25 Staff / 25 Spaces*

Table 7: District Plan Parking Requirement

7.2 Rule 21.1.25(a) Vehicle Tracking

The District Plan requires that all new roads, intersections, access, parking and loading areas shall be provided in accordance with the provisions of Appendix 5 – Requirements for Roads, Access, Parking and Loading. All new internal roads and accesses are designed as per NZS 4404:2010. Parking and loading (medium rigid vehicle) areas are designed in accordance with NZS 2890.1:2004. An exception to this is the secondary roads on-site which do not provide dedicated passing bays.

The secondary roads on-site have a width of 3m and are longer than 50m in length. NZS 4404:2010 requires that roads such as this should provide passing opportunities at 50m intervals. The proposal does not include any passing bays however this is not considered to be an issue on the basis that the volumes on these roads are low (10-40vpd as indicated in Figure 13) and the driveways to the units would allow vehicles to pass.

7.3 Rule 21.1.25(c)(i)(1) Parking

The requirement specifies that every activity shall provide off-street parking for vehicles associated with the activity and vehicles expected to visit. The resident, visitor and staff parking are proposed as on-street parking spaces for the main building and the Villa A units. Although this does not meet the requirement, it is considered that it would operate without any major concerns as the internal roads of the developments are anticipated to operate with slow speeds and low traffic volumes.

7.4 Rule 21.1.25(c)(i)(3) Parking

This requirement states that the total parking required shall be the combined total requirement for all activities. There are various residential activities on-site as well as some ancillary activities such as a Bowls Green and café. The parking on-site has been provided based only on the residential activities as the ancillary activities are only expected to be used by the residents of the development. On this basis, the parking provision at the development is considered appropriate.

7.5 Rule 21.1.25(c)(vi)(1) Manoeuvring

The District Plan requires that every parking space shall be designed and constructed in accordance with AS/NZS 2890.1:2004 Parking Facilities. The 90° parking spaces are proposed with a 5.5m wide aisle which does not explicitly meet the 5.8m wide aisle specified in the standard however the plan is proposed with a 0.3m clearance area on the opposite side which would allow overhang of vehicles. This would ensure that a 99-percentile vehicle would be able manoeuvre in / out of the parking spaces without any issues.

8. Assessment of Transportation Effects

8.1 Future Traffic Volumes

The table below shows the traffic volumes on existing roads and the addition of future development traffic.

Road	Location	Existing Daily Volumes	Additional Daily Future Volumes	Combined Traffic
Reading Street	Market Rd to McMaster St	265	415	680
Market Road	South of Reading St	40	330	370
McMaster Street	Reading St to East St	530	369	899
Church Street	Reading to East St	30	330	360

Table 8: Future Traffic Volumes

The traffic distribution helped to establish that about 56% of traffic generated (415vpd) is expected to utilise the Reading Street entrances and McMaster Street while the remaining 44% (330vpd) is expected to use Market Road and Church Street to access the town centre.

8.2 Existing Roads

The existing roads need to be able to accommodate the additional traffic anticipated to be generated by the proposed development. The following section provides assessment of the existing road infrastructure against NZS 4404:2010.

Market Road and Church Street are expected to continue operation as rural local roads with less than 500 vehicles per day, including the additional traffic anticipated. Market Road has an existing width of 5m and Church Street has a width of about 6m. Therefore, these roads can be categorised as per Figure E3 specified in NZS 4404:2010, which suggests a minimum road width of 5.5m – 5.7m and sealed 0.5m shoulders. Footpaths are not required as part of this cross-section for a rural character road. On this basis, consider upgrading both roads to meet these standards.

Reading Street and McMaster Street are expected to continue operating as suburban roads. The design of these roads currently provides parking on-street, access to multiple activities and a notable number of pedestrians and cyclists associated with the school on Reading Street use this road. Reading Street has an existing width of 5.4m while McMaster Street has an existing width of about 12m.

In the future, Reading Street would need to accommodate about 680vpd with the addition of development traffic. On this basis, it is anticipated that Reading Street would need to be upgraded as per Figure E12 of NZS 4404:2010 with a minimum road width of 5.5m – 5.7m to accommodate the vehicular movements, 1.5m footpaths on both sides and separate parking given the road gives access to over 100 dwellings. This would mean formalising / sealing the roadsides used for parking adjacent the school. Consider upgrading this road to match these standards.

McMaster Street has an existing cross-section width of about 12m and therefore would not need to be upgraded.

8.3 Existing Intersections

The two main intersections in the immediate vicinity of the proposed development includes the Reading Street / McMaster Street intersection and the Reading Street / Market Road / Church Street intersection. Both of these are configured as priority-controlled intersections.

At the Reading Street / McMaster Street intersection, the primary movements are between Reading Street north leg and McMaster Street west leg with give way or stop limit lines on all except the Reading Street north leg of the intersection. This means that traffic associated with the proposed development would have to give way in order to enter / exit Reading Street which would benefit safety as there will be children in the area when the school is open. On this basis, this intersection arrangement is desirable in this area.

The Reading Street / Market Road / Church Street intersection is configured as a T-intersection and Reading Street traffic must give way to traffic along Market Road and Church Street. This arrangement is desirable for all traffic along Market Road towards the town centre as they have an undisrupted route to

the key destination in the area. The development traffic distribution would work well with this arrangement as there is little to no movement of traffic expected between the two existing intersections.

8.4 Proposed Intersections

The proposal involves the addition of two new intersections on Reading Street and two new intersections on Market Road as stated earlier. Each of these would be tied in to existing cross-sections of Reading Street and Market Road. Each of these are proposed as priority-controlled intersections and will be designed at the detailed design stage to meet design criteria stated in Austroads Part 4A: Unsignalised and Signalised Intersections. This would help to ensure that all vehicular, cyclist and pedestrian movements can safely be accommodated as there is a school adjacent to the site.

The development is proposed with several internal intersections. These would also be designed to meet design criteria and industry standards.

8.5 Walking and Cycling

8.5.1 Pedestrian Connectivity and Walking Circuit

The proposed development has good connectivity within the site as the roads have been designed to meet the road cross-section specification set out in NZS4404: 2010 Land Development and Subdivision Infrastructure. A number of the footpaths proposed are off-street facilities that meander through open spaces which adds to amenity.

The internal footpaths would connect to the footpath on the north side of Reading Street at the proposed new intersections. These connections would provide an attractive desire line to / from the town centre. However, as there are no footpaths on Market Road due to its layout as a rural road the proposed internal footpaths would end at Market Road. Although this would still allow pedestrians to use the grassed berm along Market Road and subsequently Church Street, it would limit connectivity for disabled users as they would have to utilise the footpaths to and along Reading Street to access the town centre. This is not a major issue as the layout of Market Road and Church Street are in context with their surroundings and in addition to this, the desire line for pedestrian from the southern end of the site to the town centre is generally expected to be through the development site and on to Reading Street and McMaster Street.

In order to accommodate pedestrian movements along this desire line, it is considered that some form of a pedestrian crossing would be beneficial on Reading Street, positioned immediately to the north of the development site. This would help to further promote the use of pedestrian facilities in the area and potentially reduce dependence on private vehicles.

The convenience of the location of the site and the good pedestrian connectivity of the site is expected to encourage residents to walk to nearby destination which would in turn reduce car ownership to some degree.

8.5.2 Footpath layout

The footpaths proposed will have a width of 1.5m and are proposed on at least one side of the primary roads through the development site. Austroads Guide to Road Design Part 6A: Paths for Walking and Cycling provides design considerations for footpaths and it suggests that a footpath width of 1.5m would allow a wheelchair and pram to pass. Therefore, the arrangement proposed is expected to operate without any issues.

As stated earlier, in some instances the footpaths are separated from the movement lane and parking to improve safety and amenity.

Footpaths are not proposed along secondary road within the site as pedestrians are expected to share the movement lane with the low volume of vehicles expected to use the roads with typically between 21 to 34vpd. This is consistent with NZ4404:2010 and on that basis is expected to operate without any notable safety concerns.

8.5.3 Road Safety

Impact of additional traffic on Reading Street which is known to have vulnerable road users like children from the school is not considered an issue. The peak periods of the proposed development are expected to occur at about 12pm which would not coincide with the peak periods of the school which would occur at about 8:30am in the morning and at about 2:30pm in the afternoon. On this basis, the potential for

interaction between pedestrians on Reading Street and vehicular traffic associated with the development is expected to be minimal.

8.6 Interaction with SH2

The anticipated traffic distribution indicates that traffic would generally be split between Market Road and Reading Street. The traffic along Market Road is expected to continue to Church Street towards SH2 however the traffic would then spread out though the network of roads available in the area. Similarly, the traffic via Reading street is primarily expected to use McMaster Street towards the town centre however there are multiple route options available. This would in effect help to spread or dilute the level of new development traffic accessing SH2. In addition to this, the development is expected to have a peak traffic generation occurring in the afternoon like other retirements villages in New Zealand, outside of the weekday peak periods of SH2 which occur in the morning and evening.

Due to the network of roads available in the area and operational characteristics of the development, it is anticipated that the additional traffic is not expected to have any notable impact on the current operation of SH2.

9. Construction Traffic

As shown earlier, the staged development of this land is expected to begin at the western side of site and end at the eastern side. Works would broadly include:

- earthworks;
- building construction and site works; and
- building fit-out.

Construction traffic will principally comprise:

- trucks, involved with the earthworks and delivery of construction plant and materials, and also including concrete trucks;
- trades vehicles associated with suppliers and subcontractors; and
- staff vehicles.

It is anticipated that trucks and trade vehicles would access the site via Church Street and Market Road. This arrangement is expected to minimise the potential for interaction between pedestrian and traffic movements associated with the school nearby. Solely using Market Road would help to minimise the impact of construction traffic on Reading Street, especially given that the construction of the proposed Greytown secondary school in 2020 is expected to utilise Reading Street.

In common with usual practice, a Construction Traffic Management Plan will be prepared once a refined construction programme is available and construction activities and needs confirmed. It is recommended that such a Plan include details of:

- the staging of works;
- construction traffic volumes;
- site access arrangements;
- hours of construction traffic movements;
- temporary traffic management and control;
- construction staff numbers and parking arrangements;
- pedestrian safety;
- plan implementation, including procedures for receiving and handling comments; and
- coordination with other construction projects in the area.

The Applicant volunteers a condition of consent requiring the submission of a Construction Traffic Management Plan to Council for approval prior to the commencement of construction.

10. Mitigation

Several upgrades were recommended earlier in this report to minimise any potential negative impacts of this new development on the surrounding road network and to ensure safe operation. These include:

- Upgrade Market Road and Church Street to have a minimum road width of 5.5m – 5.7m and sealed 0.5m shoulders (as per figure E3 specified in NZS 4404:2010). Footpaths are not required within this cross-section;
- Upgrade Reading Street as per Figure E12 of NZS 4404:2010 to have a minimum road width of 5.5m – 5.7m to accommodate the vehicular movements, 1.5m footpaths on both sides and separate parking given the road gives access to over 100 dwellings; and
- Ensure each of the proposed new priority-controlled intersections to Market Road and Reading Street from the development are designed to meet criteria specified in Austroads Part 4A: Unsignalised and Signalised Intersections.
- Provide a pedestrian crossing facility on Reading Street to facilitate the pedestrian desire line from the new development into the town centre as well as pedestrian movements associated with the school and kindergarten.

These upgrades would help to ensure safe operation of the road network nearby.

11. Conclusions

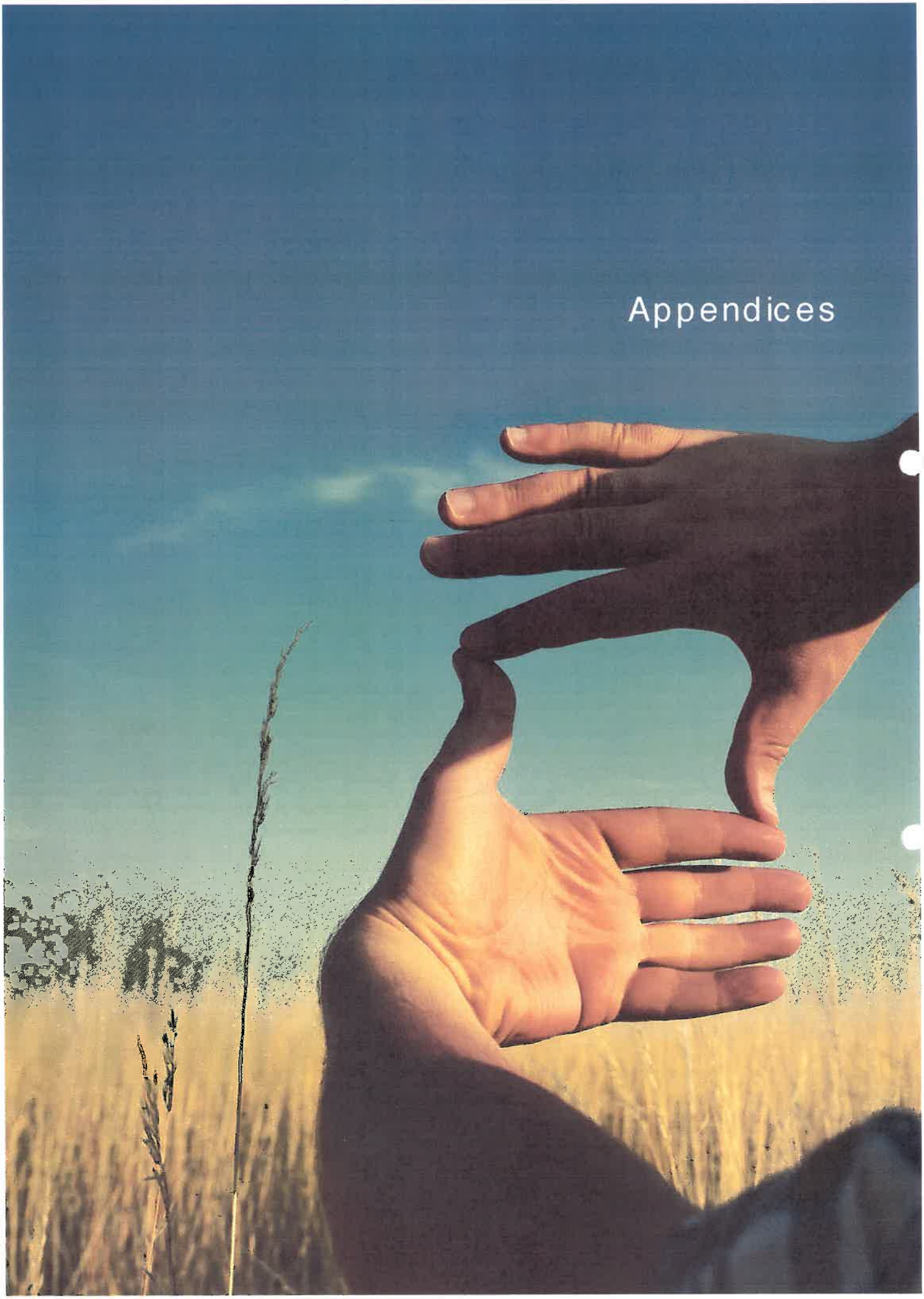
The proposed Orchards Retirement Village has generally been designed to meet the criteria and requirement set by the Wairarapa Combined District Plan. The proposed development provides good facilities for vehicles, cyclists and pedestrians within the site with separated footpaths in some locations.

However, it is considered that Market Road and Reading Street would need to be upgraded to meet NZS 4404:2010 to ensure that the existing roads can safely accommodate the additional traffic without posing a risk to cyclists and pedestrians. With the mitigation recommended, it is expected that any potential impacts of the proposed developments can be effectively managed.

The proposed development is not expected to have a notable impact on the current operation of SH2 as the development has a peak period in the afternoon, outside of SH2 peak periods. The network of existing roads through Greytown would also help to alleviate the impact of the additional traffic generated by the site on SH2.

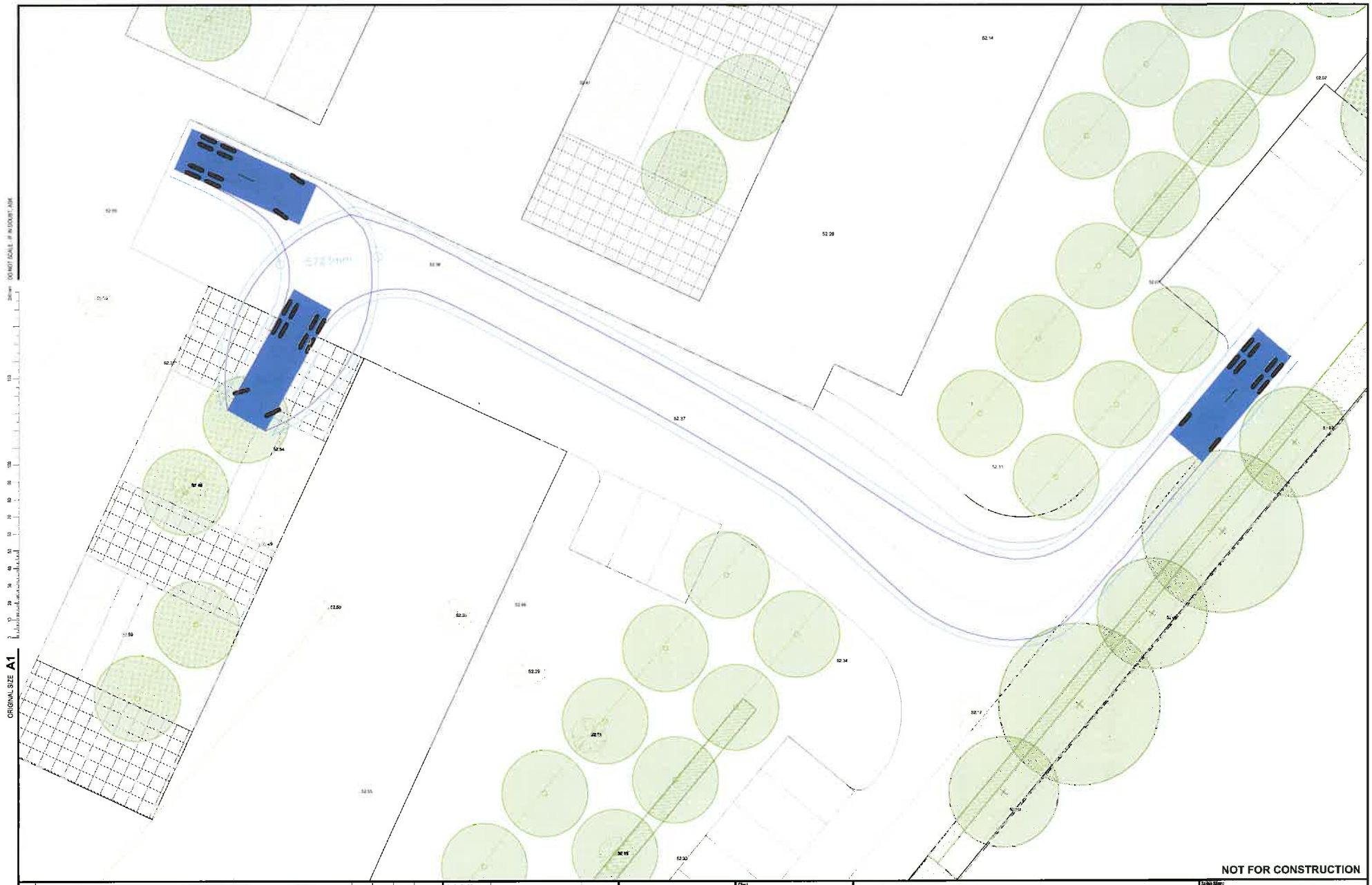
On this basis, this proposed development can be supported from a traffic engineering perspective.

Appendices



Appendix A Vehicle Tracking

A.1 Refuse Collection Truck



NOT FOR CONSTRUCTION

SURVEYED	
DESIGNED	
DRAWN	
CAD REVIEW	
DESIGN CHECK	
DESIGN REVIEW	
APPROVED	NOT APPROVED
PROF REGISTRATION	

REV	REVISIONS	DRN	CHK	APP	DATE

Stantec

Client: The Orchards

THE ORCHARDS

VEHICLE TRACKING
8m MEDIUM RIGID TRUCK

Status Stamp: WORKING PLOT

Date Stamp: 1 March 2019

Scales: 1:200 @ A3

Drawing No: 15737

Rev: SK1

ORIGINAL SIZE A1

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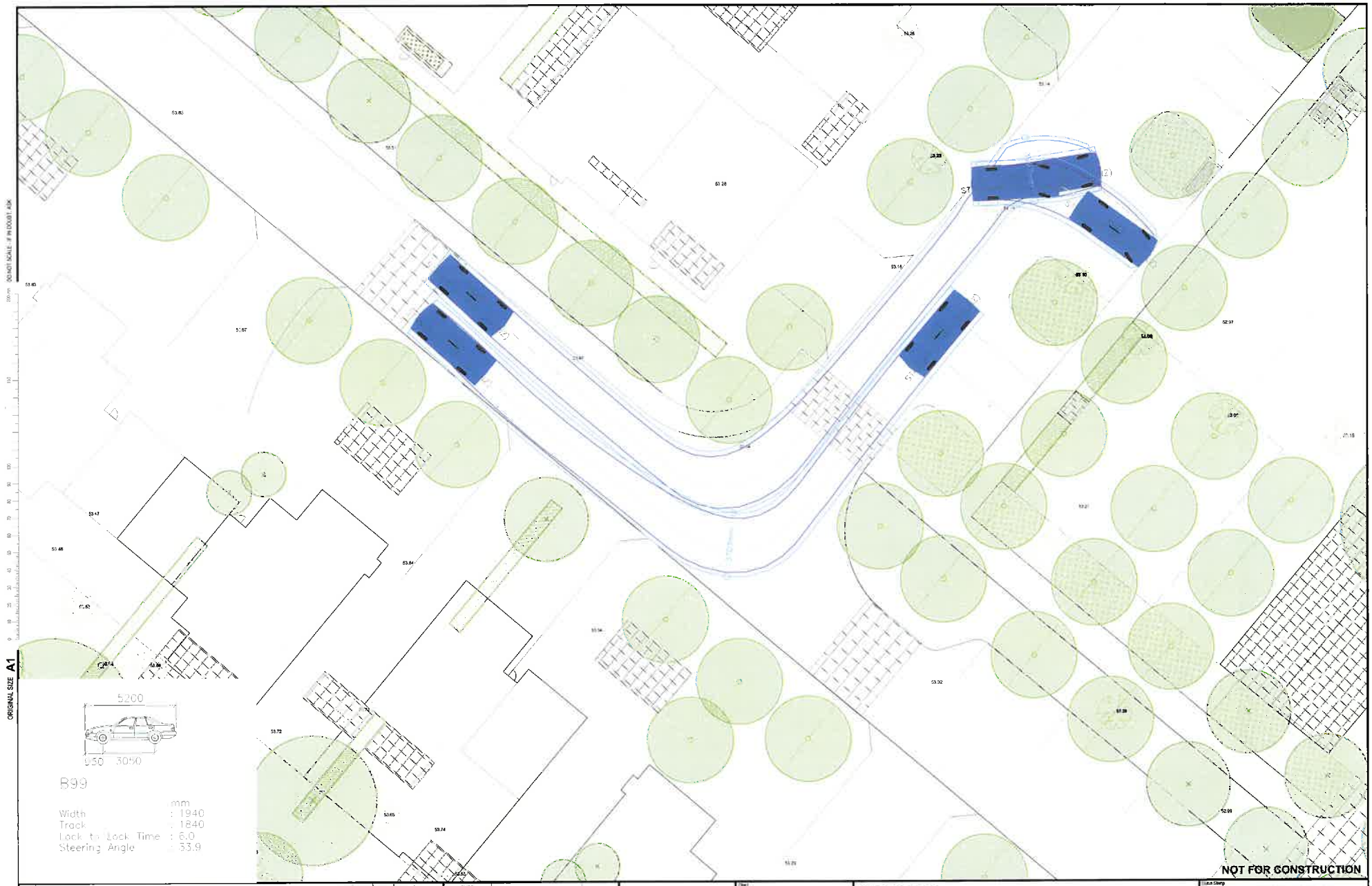
A.2 B99 at Proposed Internal Intersection



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PROF REGISTRATION:	

Stantec

The Orchards

THE ORCHARDS

VEHICLE TRACKING
B99

WORKING PLOT

Date Stamp: 1 March 2019

Scales: 1:200 @ A3

Drawing No: 15737

Rev: SK1

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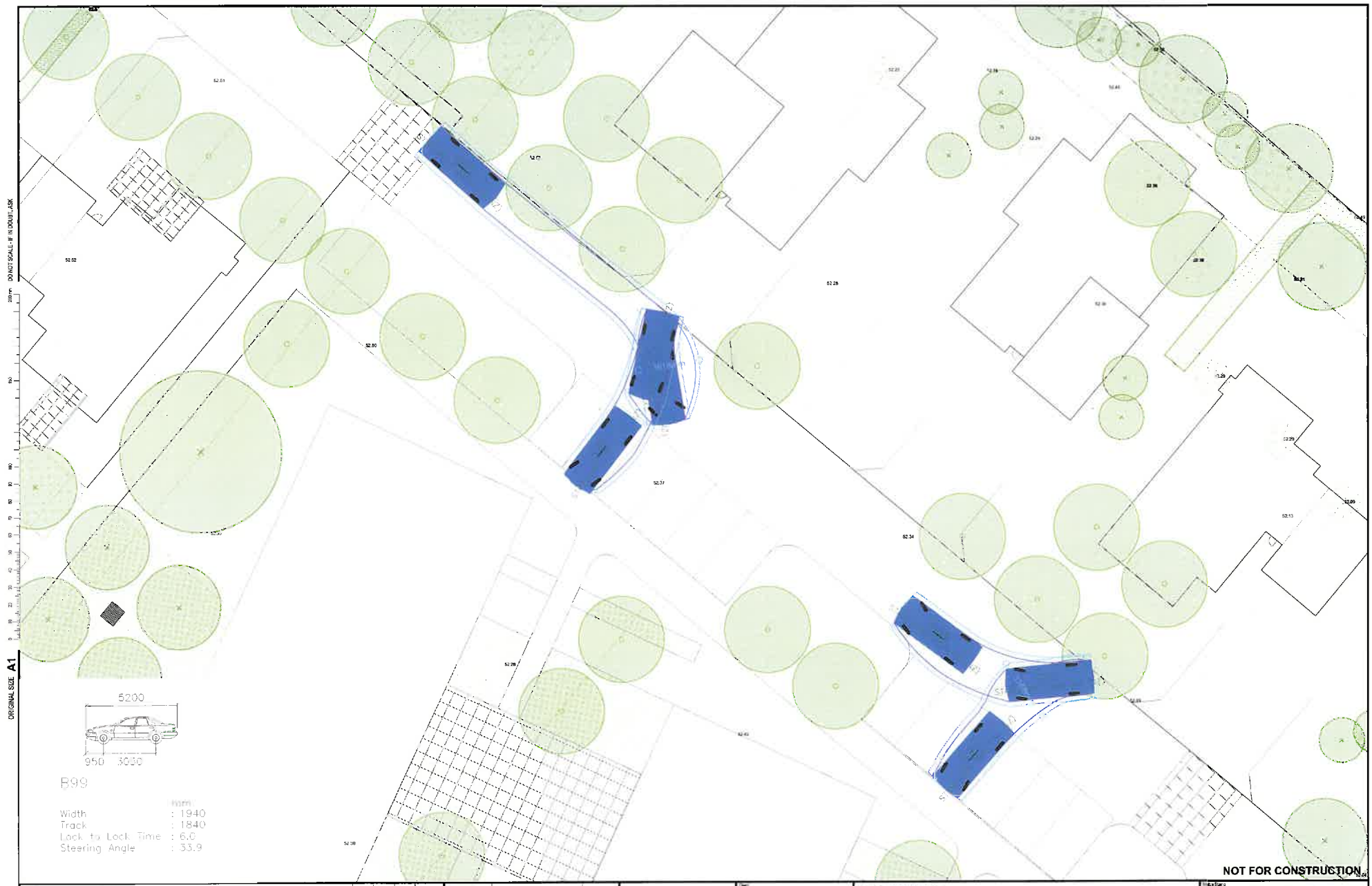
A.3 B99 at Proposed On-Street Parking



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Client: The Orchards

THE ORCHARDS

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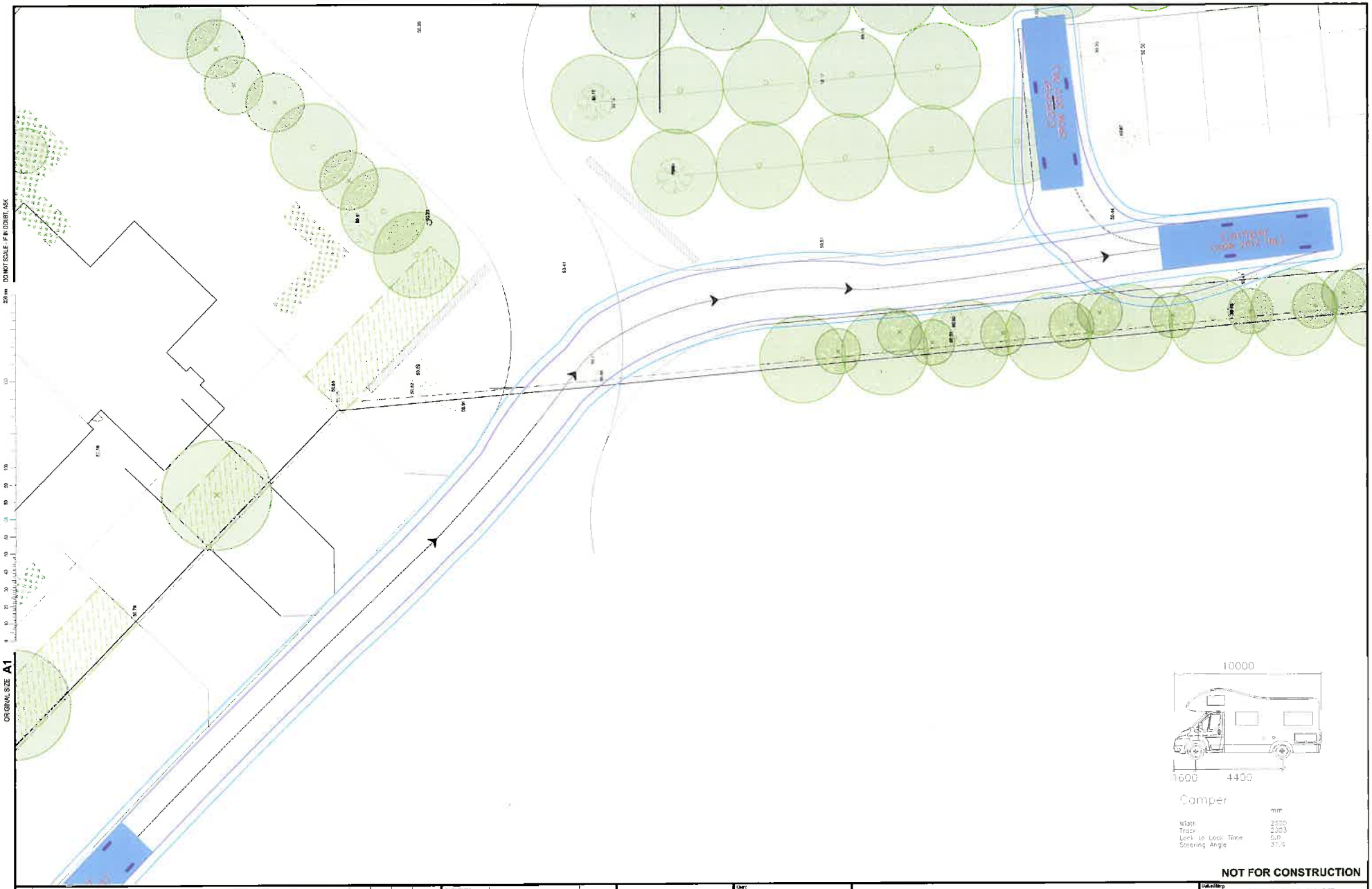
A.4 Recreational Vehicle



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ORIGINAL SIZE A1

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CAD REVIEW	
DESIGN CHECK	
DESIGN REVIEW	
APPROVED	NOT APPROVED
PROF REGISTRATION	

Stantec

Client: The Orchards

THE ORCHARDS

VEHICLE TRACKING
10m CAMPER

Status/Stage: WORKING PLOT

Date Plotted: 1 March 2019

Scales: 1:200 @ A3

Drawing No: 15737

Rev: SK1

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Appendix 23, 23a

Treecology Report and Memo

Murphy's Orchard

Trees and Shelterbelts Report



Jez Partridge MSc

Treecology Tree Consultancy

29th October 2018

1 Brief

I have been instructed by Perception Planning to undertake an assessment of significant trees and shelterbelts at Murphy's Orchard for the purpose of:

1) Identification of the most significant trees on the site, which have the potential to be retained for landscaping, screening, inherent, or ecological value
2) Assessment of trees and shelterbelts to ensure that these are safe to be retained
3) Provision of advice and guidance to ensure that trees to be retained are adequately protected during development
4) Assistance with landscape and planting advice

I prepared a Memo outlining the scope of my involvement and some initial thoughts on the trees on site on August 12th 2018. This is shown in Appendix 5.

2 Trees Overview

2.1 Orchard Trees

The site is a working orchard comprised of almost entirely rows of plums, many of which are around 40 years old. Many of the rows comprise of impressive well-maintained heavy cropping trees. To the right of the Market Road entrance is a particularly impressive stand of maturing plum trees.

2.2 Significant Individual Trees

The most interesting individual trees are located to north and north east of the main house, and pack house. These are detailed in the Significant Trees Schedule (Appendix 10 and shown on the Significant Trees Map Plan (Appendix 2). These trees have also been tagged and numbered on site. The significant trees comprise of a range of native and exotic trees including Rimu, Totara, Walnut, Lacebark, Tulip Tree, Japanese Maple, and Ash.

Retain Significant Trees T1 to T20 if possible, with particular focus on retention of Significant Trees T8 to T20 as these trees have the best landscape and intrinsic value. These trees could be retained as part of a green space with seating provided and sculptures in order to provide residents and visitors space for quite reflection and relaxation.

There are also a number of well formed individual trees such as Rimu, Oak, Gleditsia and Liquidambar scattered throughout the orchard trees, sometimes at the end of rows. The better formed specimens could be retained for instant landscaping if these happen to be sited in garden areas. Once the final building and road/path footprints are approved, these trees could be identified and scheduled for retention.

Shelterbelts and lines of trees

These are detailed in the Shelterbelts and Lines of Trees Schedule (Appendix 3) and shown on the Shelterbelts and Line of Trees Map (Appendix 4).

2.3 Reading Street Pines

The most prominent line of trees is situated along the Reading Street boundary (G1) and consists of a line of maturing Pinus radiata. The line has been planted very close together to form a windbreak, and ideally these should have had their side branches removed as they aged. Unfortunately, almost no side branches have been removed on the Reading Street side whilst many side branches have been removed from the orchard side. The effect of the overly close planting and lack of pruning on Reading Street, has resulted in the growth of many large, over-weighted and over extended branches at acute angles which place stress on branch unions and make the branches more susceptible to structural failure.

As a result of their poor form and weight these are prone to breakage in windy conditions and prone to occasional breakage under still conditions. The risk from falling branches of these trees is medium to high during high winds, and low in still conditions. The risk is sufficient to mean that risk mitigation is required.

Due to the large number of unsafe side branches and poor form of tree structures, it will not be possible to remove or reduce side branches and be certain that risk of falling branches will have been sufficiently mitigated. Removal of large side branches may also open up internal parts of the tree to unaccustomed wind forces, and other parts of the tree may thus become unstable. Consequently, the safest option to mitigate the risk of falling large branches is the removal of the trees. This also represents the most cost-effective approach, as it would add significant costs if extensive reduction works were to take place now with whole scale removal taking place later.

Given that the trees will need to be removed before or shortly after development commences it makes sense to remove these trees.

I would recommend that these trees are removed before the next winter when stormy weather becomes more prevalent. Removal of the trees during the Greytown School summer holiday would be ideal as this would allow the work and safety/roading impacts to occur outside of term time when this road is busy with children and parents and parked cars. The stumps could be ground out and new planting could occur immediately afterwards. This would allow replacement screen planting to mature prior to development completion.

There are two main options in respect of removal. Either use of a crane and other plant to remove the trees from the Reading Street side, or use the orchard side to drop the trees into and they can be cut up in there. If the orchard side removal option is followed, this will mean that many orchard trees will need to be removed to allow space for falling trees. I will get both felling options priced by several arborists, and it is likely to be cheaper to fell the trees using the orchard side option. However, felling trees into the orchard will cause much disruption to the site.

2.4 Native tree lines

There are a few valuable lines of mostly native trees, and most useful being G2 and G4. These have valuable wildlife value and provide useful screening and are relatively low maintenance. It is recommended that these are retained where possible.

2.5 Large Macrocarpa Trees

Line G6 comprises of four large mature Cupressus macrocarpa trees. Whilst these trees are reasonably well structured, they have suffered from storm damage and as a result require removal of various unsafe branches. This species is prone to branch fall and have high maintenance requirements, it is therefore recommended that these trees are removed to mitigate risk and to avoid large ongoing management costs. However, as these appear to be located on adjoining land removal may not be possible. If the trees are retained, arborists should undertake safety work to make the trees safe, and ideally dwellings should be located at least 15 metres from the lower trunks.

2.6 Lombardy Poplars (topped)

Lombardy poplars are soft wooded trees prone to decay and branch loss. Once topped, the subsequent regrowth tends to be poorly attached and prone to snap outs, and the trunks often develop decay. There is widespread decay at poor structure evident at the bases of the trees on site. They are therefore not safe to be retained in a residential setting, and should be removed. I would not recommend retention of individual specimens as Lombardy poplars are soft wood trees prone to decay and branch loss.

2.7 Lombardy Poplars (not topped)

Although these are not great specimen trees and will become high maintenance, these potentially could be safely retained in a residential setting. I would not recommend retention of individual specimens as Lombardy poplars are soft wood trees prone to decay and branch loss.

2.8 Lines of pines

Although these are not great specimen trees and will become high maintenance, these potentially could be safely retained in a residential setting.

3 Treework Recommendations

Detailed recommendations are set out in the Schedule of Significant Trees (Appendix 2) and Shelterbelts and Line of trees (Appendix 3).

4 Landscaping Recommendations Summary

- Retain native trees where possible
- Replace removed shelterbelts with native trees and shrubs
- Retain Significant Trees T1 to T20 if possible, with particular focus on retention of Significant Trees T8 to T20 as these trees have the best landscape and intrinsic value. These trees could be retained as part of a green space with seating provided and sculptures in order to provide residents and visitors space for quite reflection and relaxation.
- Protect trees to be retained during development - Trees can be inadvertently irreparably damaged by construction activities compacting roots and damaging trees. Further guidance will be supplied on how to successfully protect trees during the landscape phase.

5 Recommended Resource Consent Conditions

- Incorporate retained trees into approved Landscape Plan
- Landscape Plan required
- Protection of retained trees during development

APPENDIX ONE

Schedule of Significant Trees

Tree number	Name	Age class	Height metres	Single or multi stem	Form	Spread metres	Tree work required	Comments
T1	ASH	SM	16	SS	GF, NF	11	DW	Hanger
T2	OP	SM	8	SS	AF, NF	6	NW	
T3	LIQ	SM	10	SS	AF NF	4	10% THIN	
T4	LACE	SM	14	SS	GF NF	4	10-15% THIN	
T5	LIQ	SM	12	SS	AF NF	5	DW 10% THIN	HANGER
T6	OK	SM	10	SS	PF NF	5	CR AND SHAPE 5-6M. 10% THIN	
T7	LIQ	SM	14	SS	GF NF	7	CL 2.5M, CC	ROOT GIRDLED
T8	WNT	M	14	MS (3)	AF, NF	13	10% THIN, REDUCE BACK BRANCHES CLOSEST TO RIMU BY 2-3 METRES	Large specimen, one of best on site
T9	RIM	SM	8	SS	GF	4	CL 2.5M,	
T10	RIM	SM	9	SS	PF	6	CROWN SHAPE 1-2 METRES	LOST LEADER
T11	RIM	SM	12	SS	GF	4	CL 2.5M	
T12	PIT	SM	12	MS (2)	AF	10	CC, DW,	SOME BRANCH DEFECTS
T13	KOW	SM	6	MS (4)	AF	5	DW NSF	FUSED STEMS
T14	PIT	SM	12	MS (4)	AF	7	DW, NSF	FUSED STEMS
T15	LIQ	SM	15	SS	GF	8	10% THIN, NSD	
T16	TOT	SM	15	SS	GF	8	10% CROWN THIN, NSD	
T17	RIM	SM	15	SS	GF	4	CL 2.5M, NSD	
T18	TOT	SM	18	SS	GF	6	CC. NSD	

T19	JMAP	M	18	MS(2)	AF	10	SD, Monitor biennially	Magnificent tree, has sig included bark union, and cavities
T20	TUL	M	20	SS	GF	7	CL 2.5M, NSD, DW	
T21	TOT	SM	15	SS	PF	6		Poor tree form

Key

Trees

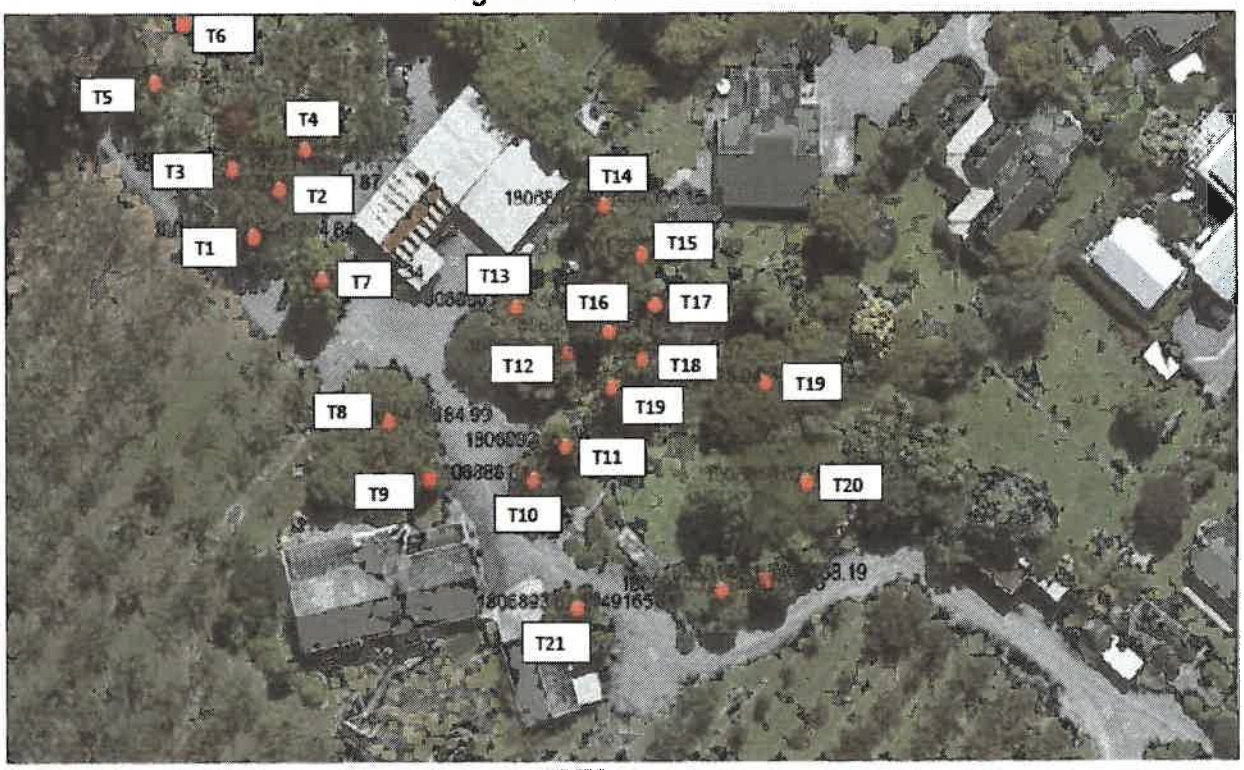
LIQ = Liquidambar, TOT = Totara, RIM = Rimu, ASH = Ash, JMAP = Japanese maple, WNT = Walnut, LACE = Lacebark, OP = Ornamental plum, PIT = Pittosporum, OK = Oak TUL = Tulip Tree

Condition

DW = Dead wood, CR = Crown reduce, CL = Crown lift, NSD = No significant defects, SM = Semi mature, GF = Good form, PF = Poor form, AF = Average form, VGF = Very good form, ST = Single stem, MS = Multi stemmed, TH = Thin, CC = Crown clean, NW = No work required

APPENDIX TWO

Significant Trees - Orchard



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APPENDIX THREE

Murphy's Orchard Trees lines and Shelterbelts inventory

Shelterbelt number	Species	Comments	Recommendation
G1	Pinus radiata	Line of over mature, poorly formed trees with numerous significant limb defects and unsafe branches, very poor form as a result of being planted too close together and lack of side branch pruning.	Remove
G2	Mostly native, various species	Useful screening and wildlife value, some trimming of side branches required	Retain
G3	Lombardy poplars	Topped trees, regrowth from topping points are prone to breakage and snap outs. Decay observed at base of some trees.	Remove
G4	Native and non native shrubs	Useful screening and landscape value, some trimming of side branches required	Retain
G5	Lombardy poplars	Topped trees, regrowth from topping points are prone to breakage and snap outs. Decay observed at base of some trees.	Remove
G6	Cupressus macrocarpa	Four large trees – Maybe on neighbouring land. Contain numerous unsafe and poorly formed branches. If retained, the trees require removal and shortening of various branches if to be safely retained. Recommend no buildings or permanent structures within 15 metres of trunks. If structures are proposed within 15 metres then the trees should ideally be removed.	Remove or retain.
G7	Non native shrubs	On neighbouring property. Useful screen and landscaping. Trim back overhanging branches.	Retain
G8	Lombardy poplars	Topped trees, regrowth from topping points are prone to breakage and snap outs. Decay observed at base of some trees.	Remove
G9	SM Willows and Y fir trees	Willows on neighbouring property, firs within site boundary. Remove firs as poorly formed with poor prospects. Retain willows and prune back overhanging branches.	Remove firs, retain willows
G10, G11 & G12	Lombardy poplars	G10 & G11 are topped trees, Topped trees, regrowth from topping points are prone to breakage and snap outs.	Remove
G13	Pines	On neighbouring property. Prune back overhanging branches. Good screen and landscaping.	Retain
G14	Pines	Shelterbelt, reasonable condition, Useful screening and wind protection. May cause concern to residents as tall and overbearing, but not unsafe.	Retain or Remove

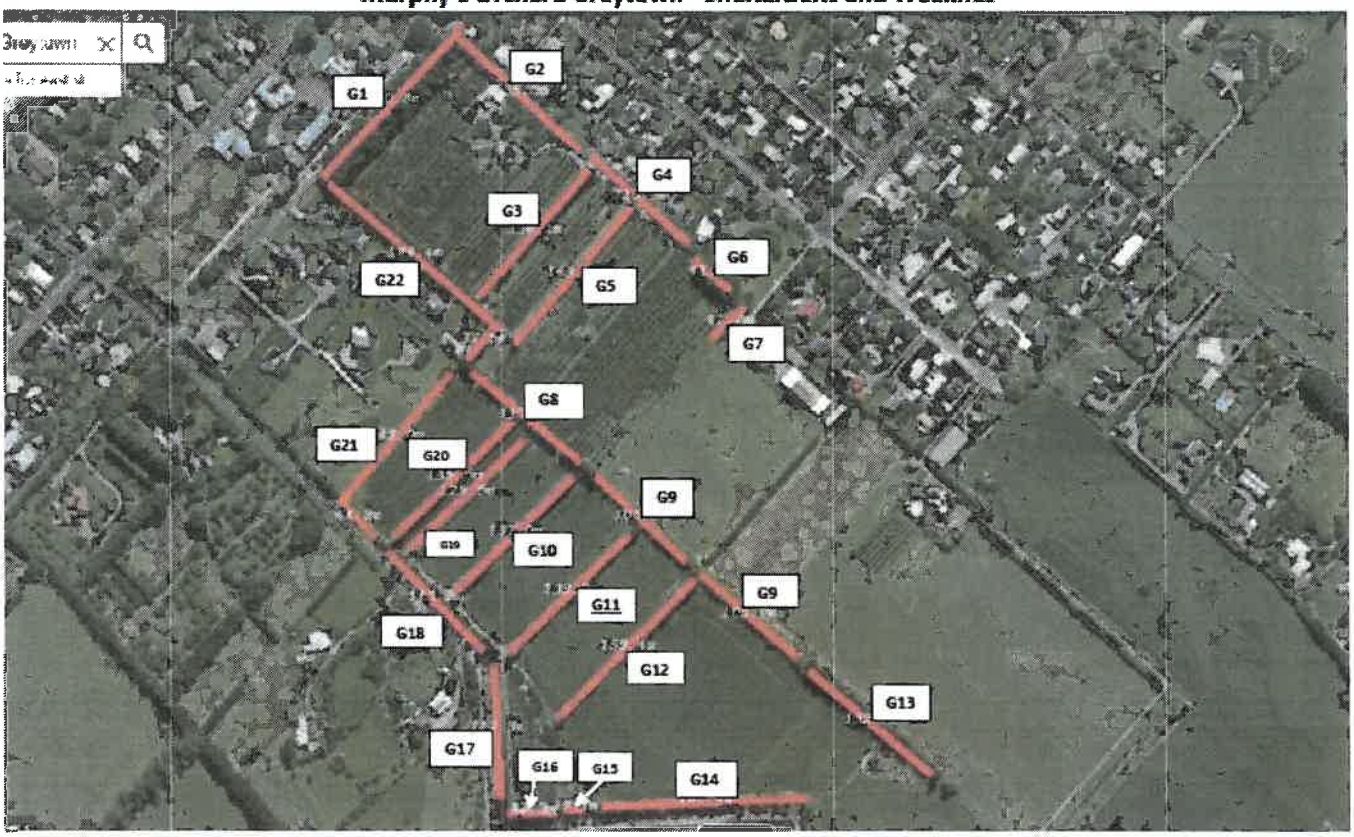
G15	Lombardy Poplars	Not topped. Semi mature, average condition, some screening value	Retain or remove
G16	Pines	Shelterbelt, reasonable condition, Useful screening and wind protection. May cause concern to residents as tall and overbearing, but not unsafe.	Retain or remove
G17	Lombardy poplars	Not topped. Semi mature, average condition, some screening value, sheltering fruit trees.	Retain
G18	Lombardy poplars	Not topped. Semi mature, average condition, some screening value, sheltering fruit trees.	Retain
G19	Plums	Three rows of young maturing plums in average condition. Could be useful established green space/food source for development.	Remove or retain
G20	Lombardy poplars	Young maturing line. Not topped, average condition.	Remove or retain
G21	Native shrubs	On neighbouring land. Useful screen and wildlife value.	Retain
G22	Lombardy poplars	Topped trees, regrowth from topping points are prone to breakage and snap outs. Decay observed at base of some trees.	Remove

Landscaping notes

For shelterbelts and tree lines removed from the site boundaries for safety reasons, stumps should be ground out, fresh quality topsoil added, and mix of small and medium sized native species with wildlife value established. Recommendations for species can be made if required, in conjunction with Landscape Architect.

APPENDIX FOUR

Murphy's Orchard Greytown - Shelterbelts and Treelines



APPENDIX FIVE

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Treecology Tree Consultancy

Memo

To:	Lucy Cooper, Perception Planning	**From:**	Jez Partridge, Treecology
Phone:	0210 263 9129	**Date**	12/09/18
Re:	Murphy's Orchard Development	**cc:**	Murphy's Orchard Development Team

Comments:

Hi Team, I look forward to meeting you. I am an Arboricultural Consultant currently working mainly in the Wellington and Manawatu Regions. I would welcome any comments, or opportunities to discuss arboricultural and landscape matters with the team.

The key aspects of this development I will provide advice on are:

- Existing trees that have the potential to be retained as part of the development, and specifically their amenity and landscape value, safety and condition.
- Ensuring that trees to be retained are not inadvertently damaged during the construction stage, and are well managed and successfully integrated within any new landscaping.
- Providing advice on proposed new landscaping to help ensure this is appropriate for the site, local tree palette, and geographic location, and is able to enhance ecological values.

Based on a brief site visit, my initial observations are set out below:

- The shelter belts of mostly poplar and radiata are generally in poor/unsafe condition. It is therefore likely that these will need to be removed for safety reasons.
- There are quite a number of liquidamabar scattered throughout the site. This is an attractive species with good autumn colour, and some of these could potentially be retained for beneficial landscaping within the development.
- There is a small row of large Macrocarpa at the north east end of the site which are also not in good/safe condition and will therefore likely need to be removed.

- Some of the orchard's fruit trees could potentially be retained to provide established landscaping within the development depending on the placement of buildings.

- Around the house, both in front and behind, there are a number of semi mature specimen native and exotic trees such as oak, liquidambar, rimu, matai, kowhai, maple, and gleditsia. These are generally in good condition and a number of them could be worth retaining. As a group, some could be incorporated into a wooded garden if that was a desirable outcome.

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Tree inspection/s Disclaimer
Tree inspection/s, unless specified, have been undertaken from ground level and using non-invasive techniques. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey and are valid for six months from the date of the report.

Jez Partridge cannot guarantee that the trees assessed will remain structurally sound under all circumstances, and cannot guarantee that the recommendations made will categorically result in the tree being made safe.
The condition of trees is subject to change over time as a result of biological and non-biological factors, as well as mechanical/ physical changes to conditions in the proximity of the tree. Severe weather or natural hazards can lead to unforeseeable risk or failure. Trees should be inspected at regular intervals relative to identified site risks, in accordance the recommendations in this report, as well as Health and Safety legislation, Government guidance, and industry body advice. Jez Partridge can provide further information on this matter if required.

Where tree surgery works have been identified, these works are based on the assumption that resource consent (if required) is approved for these, and that the tree's owner has consented to these. All works should be undertaken in accordance with the appropriate Duty of Care such as site specific risk assessments and due diligence inspections for the presence of protected species. Jez Partridge can provide further information on this matter if required.

Jez Partridge M.Sc.
Senior Consulting Arborist
Treecology Tree Consultancy
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Email: jez.partridge@yahoo.co.uk
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Treecology Tree Consultancy

Memo

To:	Lucy Cooper, Perception Planning	**From:**	Jez Partridge, Treecology
Phone:	0210 263 9129	**Date**	05/03/19
Re:	Murphy's Orchard Development	**cc:**	

Progress to date

After hard work by all involved, the Masterplan is nearing completion. The resource consent is now being put together for submission.

With this process in mind, the tree issues raised in my first Memo have mostly been resolved, or are on their way to resolution.

A summary of outcomes are set out below:

Aspect 1 – Identify existing trees and shelterbelts for retention

- 22 significant trees were identified and surveyed within the *Treecology Trees and Shelterbelts Report*, and the most important of these have been incorporated for retention in the latest masterplan, mostly within the area currently described as the 'Murphy's Orchard Garden'. Precise information on which trees are to be retained and how this will be achieved has not yet been completed.

- 22 shelterbelts (lines of trees) were surveyed for condition and safety. All those recommended for removal due to safety concerns are due to be removed as part of the design, as well as numerous other internal shelterbelts. Some exterior shelterbelts will be retained as part of the design. The line of mature pinus radiata along Reading Street which was unsafe has now been removed and stump grinded. Some issues remain e.g. the group of large macrocarpa and how close dwellings can be to these.

- **Aspect 2 - Ensure that trees to be retained are not inadvertently damaged during the construction stage, and are well managed.**

- Guidelines on how this will be achieved should be referenced within a resource consent condition. Tree Protection Guidelines are set out below, and these represent an overview of the process, and details and implementation are required at a later date.

Aspect 3 - Providing advice on proposed new landscaping to help ensure this is appropriate for the site, local tree palette, and geographic location, and is able to enhance ecological values.

- Once the Schedule of trees to be established has been completed by Mark Newdick as part of the detailed landscape design, I will provide comment on this as above and work with him to ensure a diverse and ecologically focused tree species mix.

Tree Protection Guidelines Note

Step 1 – Identify Trees to be Retained

Trees and tree groups that can be successfully retained within the final development design will be precisely identified and tagged (tagged, numbered, and plotted). Trees will be identified by an arborist in conjunction with the Developer, and will be a mixture of 'significant trees' identified by Treecology, orchard trees retained for landscaping effect, and other occasional native or exotic trees which are located outside construction areas on the site.

Step 2 – Tree Protection During Construction

For each of the tagged trees (trees to be retained), methods to protect tree/s during development and construction phase will be developed. Protection measures will generally consist of secure solid or mesh panel fencing around trees, ideally located at the drip line. Ground protection (heavy duty ply) may occasionally be required to protect roots where tree fencing is not possible. Protective Fencing should be broadly in line with British Standard 5837 – Trees in Relation to Construction.

A Map Plan and Schedule will be created which will identify all the tagged trees, showing the extent and design of protective fencing and ground protection. The arborist will liaise with the Construction Manager and site staff to ensure that protective fencing is not moved or breached during construction.

Step 3 – Tree Root Pruning

Specific advice and pruning may be required where roots will need to be excavated within the dripline to accommodate road or footpaths

When excavation occurs, an arborist will be on site to prune back torn roots and advise on backfill material and fertilisation if required. Such work will occur in the trees' dormant season, and root barriers may need to be installed. The arborist will also advise on any required canopy pruning, for example crown lifting to enable vehicles or people to use passageways safely. These trees may require additional watering and feeding the following summer.

Step 4 – Monitoring

A consultant arborist will periodically monitor the site to ensure that trees to be retained are maintained in good health and adequately protected for the duration of the construction of the development.

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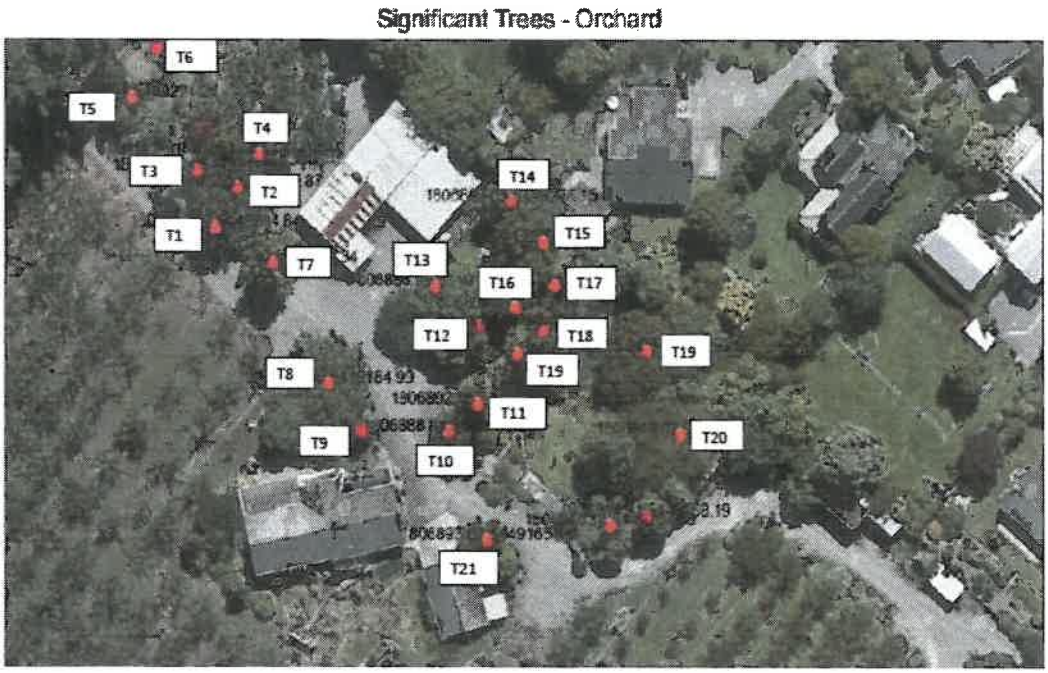
A condition is recommended to be added to the resource consent which will state that trees identified for retention on site by the developer, will be protected in accordance with the this Tree Protection Guidelines Note.

Location of Significant Trees recommended for retention.



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Location of Significant trees as shown to be retained on Masterplan.



Appendix 24

EQONZ Detailed Site Investigation Report and Chain of Custody

The Orchards Site Investigations Report 180507,

Version 4 January 2019

Address: Reading St, Greytown

Sustainable development, energy,
and environmental consultants



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1. Executive Summary

The site is proposed for change of use to include residential land use. In 2015 lifestyle residential use was anticipated by the previous owner, however the purchaser wishes to create a retirement village, and at a meeting with SWDC in September 2018 it was agreed that in terms of NES guideline values, *residential* is the best land use descriptor, with attendant maximum recommended guideline levels. Further information on the proposed land use can be seen in the draft planning documents (main land use application to Council to follow).

A desktop study, site assessment, historical review, and verification by site investigation indicates that the risk to human health from the change of use is possible and hence the land use change is ***a restricted discretionary activity under the National Environmental Standards (NES)***. This report details the work necessary to mitigate this risk if and where required.

Investigation in 2015 identified that remediation works are required to reach guideline contaminant levels in two relatively small areas, and potential minor mixing for the remainder of the site. More detailed investigation in 2018 (with also the change in descriptor) shows that no further work is required for the remainder of the site.

2. Objectives & scope of the report

This report combines the ***Preliminary Site Investigation Report***, the ***Detailed Site Investigation Report***, and comments on possible Remedial ***Action Plan*** as defined by the MfE Contaminated Land Management Guidelines.

It assesses the risk to human health from the change of land use, recommends actions required to mitigate those risks where appropriate, and discusses the acceptability of risk to human health from the proposal, and any ongoing monitoring or management requirements. This report accompanies a resource consent application under the NES, and contains the items listed in table 1.

Table 1 Scope of report

Scope - reports contained in this document	
Preliminary site inspection	√
Detailed Site Investigation	√
Remedial Action Plan	√
Site Validation Report	X
Ongoing monitoring and management plan	X

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Table 2 Checking of reporting elements

Checklist of reporting requirements	Included	Section
Executive Summary	√	1
Scope of work	√	2
site identification	√	3
Site History	√	4 & 6
Site condition and surrounding environment	√	5
Geology and hydrology	√	6
Sampling and analysis plan/methodology	√	11.2
Field quality assurance/control	√	11.2
Laboratory QA	√	11.2
QA/QC data evaluation	√	11.2 & G
Basis for guideline values	√	11.2.5
Results	√	11.2.3, B & C
Site characterisation	√	11.2.6
Remedial Actions	√	12
Validation	√	13
Site management plan	√	14
Ongoing site monitoring	√	15
Conclusions and recommendations	√	16

3. Introduction

Legislation requires that investigations be carried out to confirm that conditions are suitable for residential use. Preliminary and Detailed Site Investigations (Ministry for the Environment, 2001) have been carried out to determine Compliance with the NES (NZ Government, 2011).

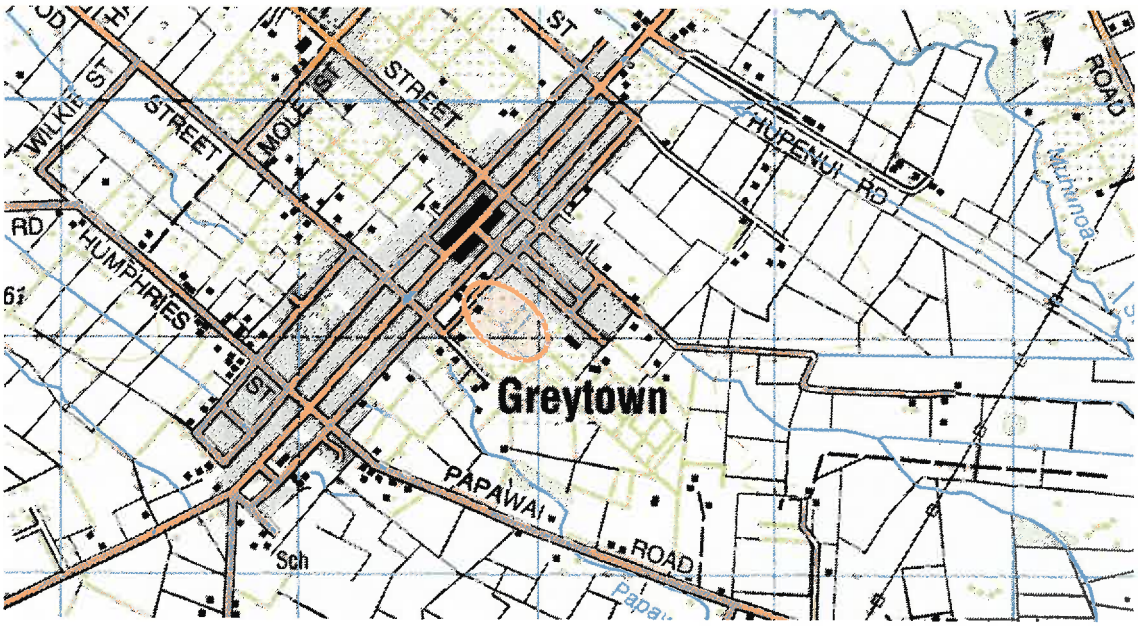

Figure 1 Location

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The site is located on the edge of Greytown township. Geo-references are Easting: 1806871.84 / Northing: 5449198.51, BP34:0687-4919

The legal description of the land is comprised of LOT 4 DP 410283 LOT 1 DP 6753 and PT TAHORAHINA IB.

The National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil to protect Human Health are triggered when an activity noted on the HAIL list coincides with a proposed activity on the site.

Hazardous Activities and Industries List (HAIL)

October 2011

A Chemical manufacture, application and bulk storage

1. Agrichemicals including commercial premises used by spray contractors for filling, storing or washing out tanks for agrichemical application

10. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds

The storage and application of agrichemicals on the site triggers the need for investigation under the NES.

Interviews with the previous owner indicated that persistent pesticides may have been used on the site prior to 1979 (but definitely not after), and currently used chemicals do not have immediate, persistence or bioaccumulation issues that could affect human health. Current chemicals used and associated assessment of priority contaminants are noted in Appendices E and F.

The client has engaged EQOnz Ltd to undertake an assessment of the site. This report presents the results of our environmental investigation and was undertaken in accordance with the Land Management Guidelines (Ministry for the Environment, 2001), revised 2011.

Work in 2015 was carried out for the Murphy family – the previous owners. Work in 2018 has been for the Orchards development. For clarity, the current owner is referred to as 'the client', and the previous owners the Murphys referred to as 'previous owner'.
This document should be read in conjunction with the draft planning information produced by Perception Planning Ltd. Land use consent is scheduled to be lodged 1st March 2019.

4. Site History

Question and answer notes from the previous owner are included as Appendix D. In summary:

- The previous owner owned the property since 1979. Since the mid-eighties it has been developed as a stonefruit orchard.
- Prior to that it was owned by MGMarketing, and was used mainly for berry fruit
- No export products have been grown – with subsequently lower range spray applications.
- There have been no known chemical spills
- Chemical containers have been rinsed into spray units
- No manufacturing has taken place on site – just packing and sale

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- There is a recorded farm pit, in which material was burned (noted as mainly packaging material and some household rubbish).
- The previous owner never used any chemicals containing any of the 12 priority contaminants, but suspects former owners may have.
- There is one operative consent for a water abstraction from ground water for irrigation purposes.

Observation: The use of DDT was restricted in the 1970's and subsequently banned in 1989. The wider awareness of persistent chemical issues thus grew significantly through the 70's. This site, having been used as an orchard for approximately 30 years (i.e. around 1985 onwards) , suggesting that persistent chemicals found in older orchards may not be so significant here. However there is some evidence of priority contaminant use before this time.

5. Walkover

A walkover of the site noted the dominant activity as orchard, with also domestic and cropping occurring. Processing does take place but is essentially a packaging exercise and does not involve any chemical processes.

The site has multiple shelterbelt tree lines, mainly Poplar, with old pines along the road frontage.

Of significance were an historic chemical store and filling area (pre-1970) and a more recent fill station (post-1970).

A burn site was also visible in the south-eastern corner of the site.

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Cropping area



Burn pit



post-1970 chemical store/fill



Fruit trees typical of the majority of the site



Pre-1970 chemical store/fill



Domestic dwelling

Figure 2walkover photos

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6. Desktop study

6.1. Council records

A search of the Greater Wellington Regional Council Selected Land Use Register indicates that the orchard is not on the register.

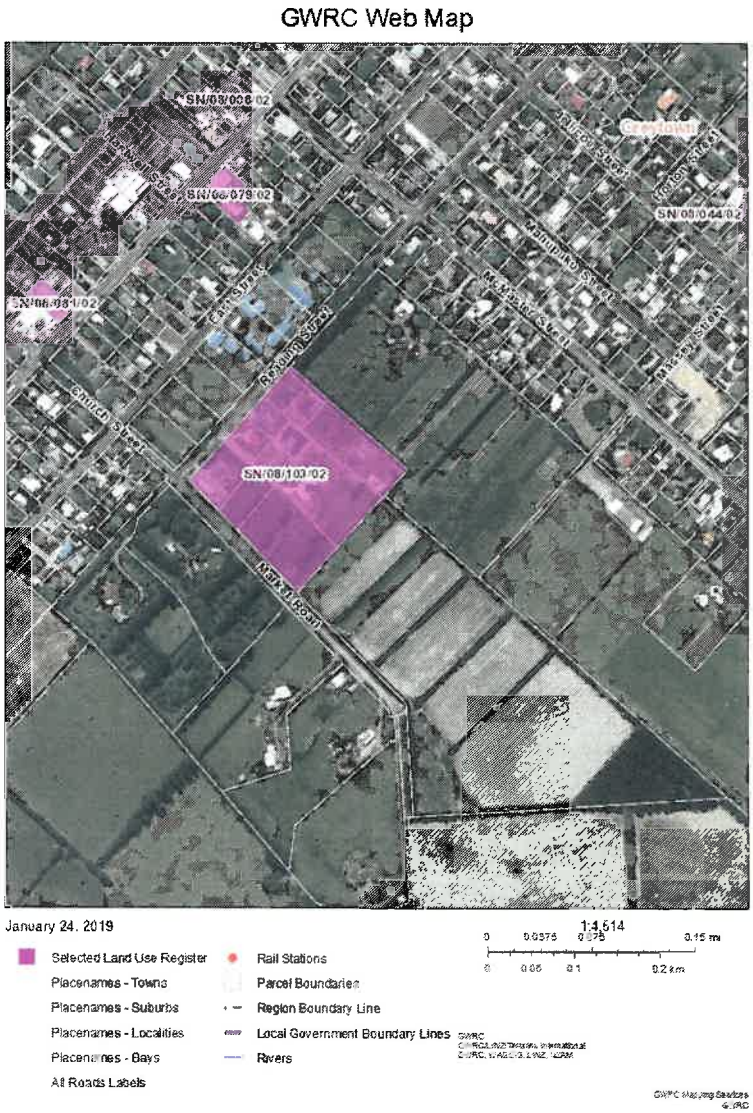

Figure 3 SLUR details captured from Greater Wellington Regional Council website

The adjacent land, previously an orchard is captured on the register, and identified as a HAIL activity as follows:

File No: SN/08/103/02
Site Name: Gleeson Pip Fruit Orchard
HAIL: Chemical manufacture, application and bulk storage
HAIL Sub: Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds
Category: Contamination Acceptable Managed/Remediated for

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No further pertinent information was gathered from South Wairarapa District Council or Greater Wellington Regional Council.

6.2. Fault locations

The nearest known fault lies around 5.5km from the site.

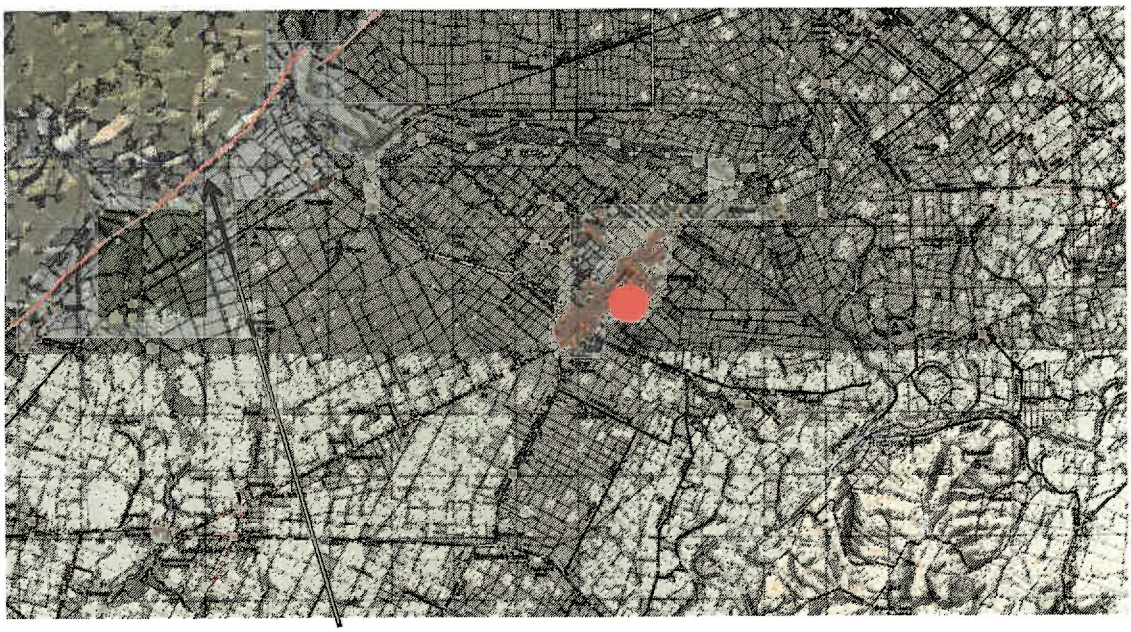

Figure 4 Fault locations relative to the site

6.3. Surface water

There are two water races nearby, one along the north-eastern boundary, and one that bisects the site flowing from north west to south east (fig. 3).

As can also be seen from figure 3, there are no other services running through the site.

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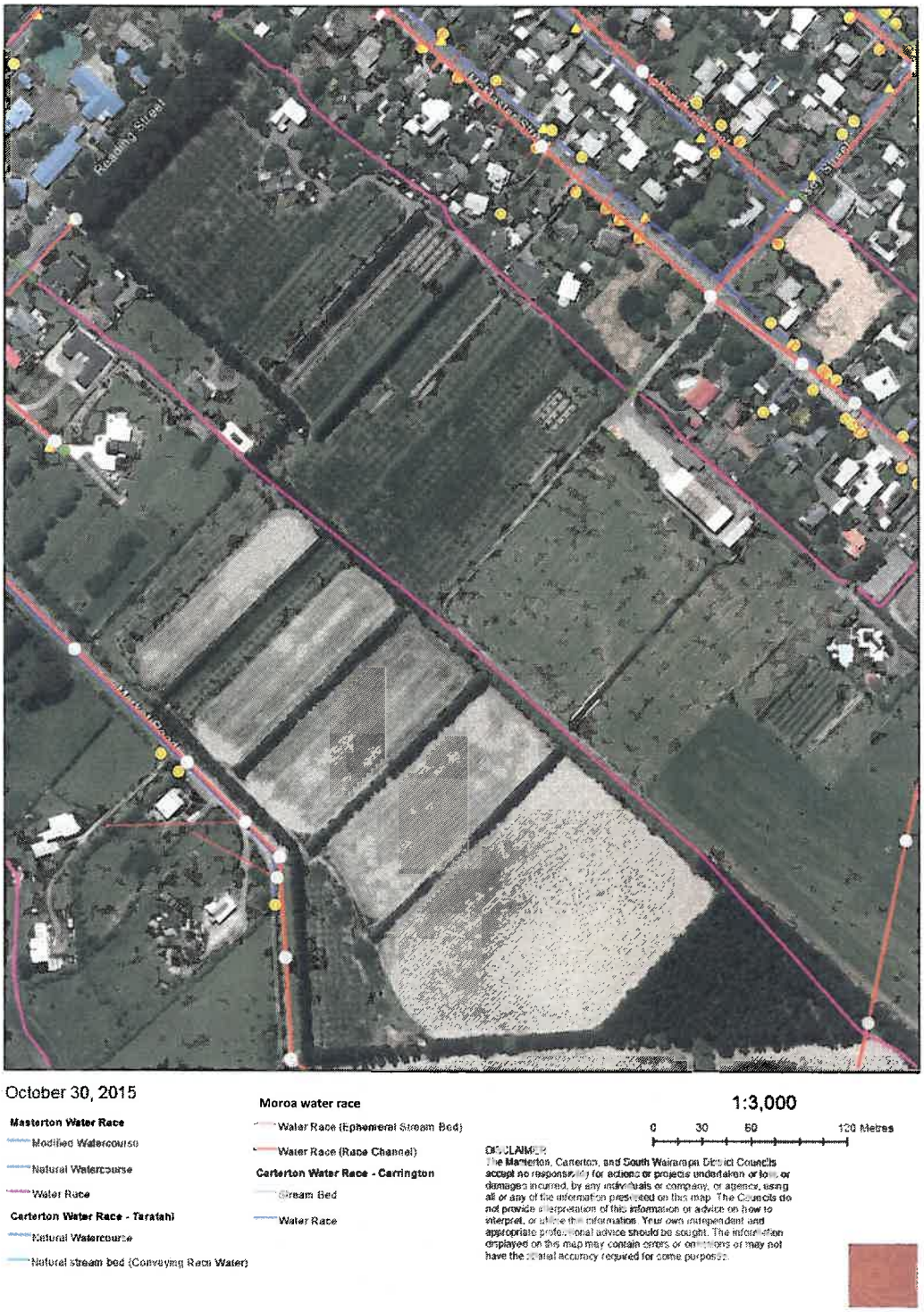

Figure 5 Services near the site (water races shown in magenta)

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6.4. Groundwater

There is a bore on site (S26/0515), and multiple neighbouring bores at varying distances (fig. 4) [note the location shown on the GW GIS data is slightly inaccurate]. The contours available for the area suggest that the flow direction would be south-easterly (fig. 5).



Figure 6 Bore locations.

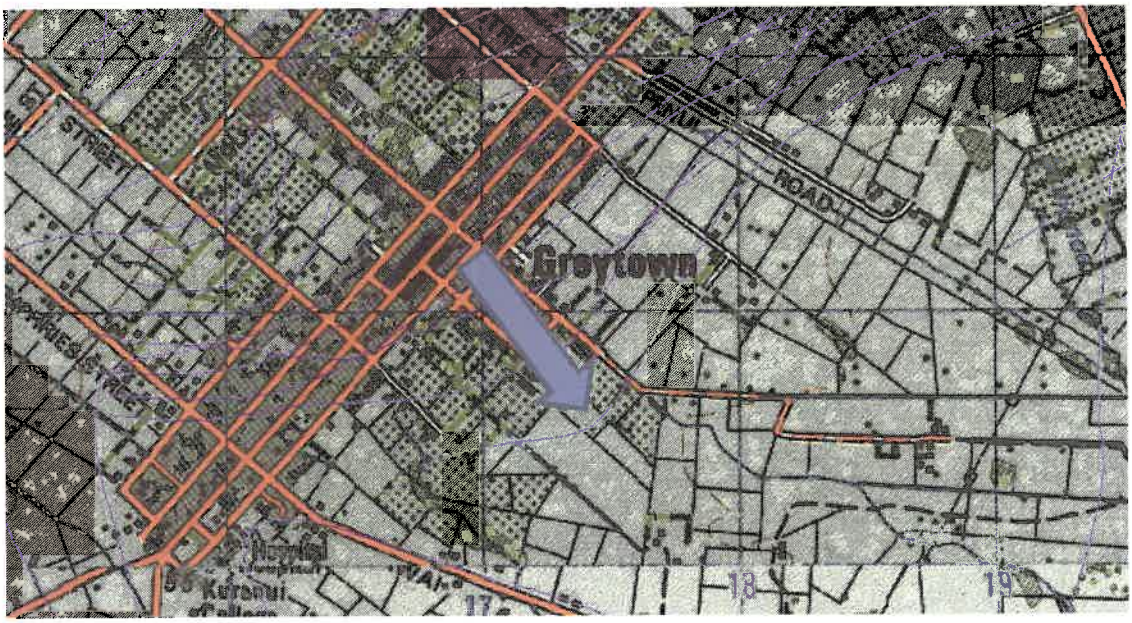

Figure 7 Piezometric contours (blue) and groundwater flow direction

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6.5. Flood zones

The flood hazard mapping on record at Greater Wellington Regional Council and Masterton District Council does not indicate any flood hazard in the immediate vicinity.

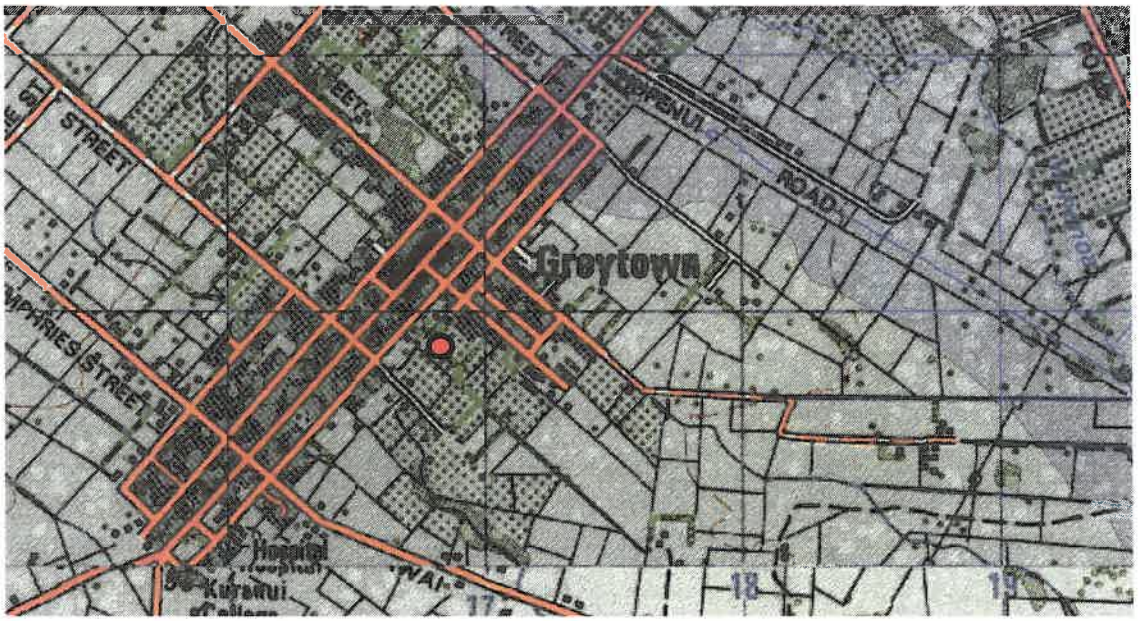

Figure 8 50-year Flood zones

6.6. Soil type

Geological maps indicate a mixture of soils nearby, with the site lying in an area of Greytown silt loam and Ahikouka loam. Silt loams have a wastewater classification of moderately well drained (Standards New Zealand, 2012), and are likely to provide a good balance between drainage and attenuation and degradation of contaminants. The Ahikouka loam is typically finer and hence slower draining than the Greytown silt loam.

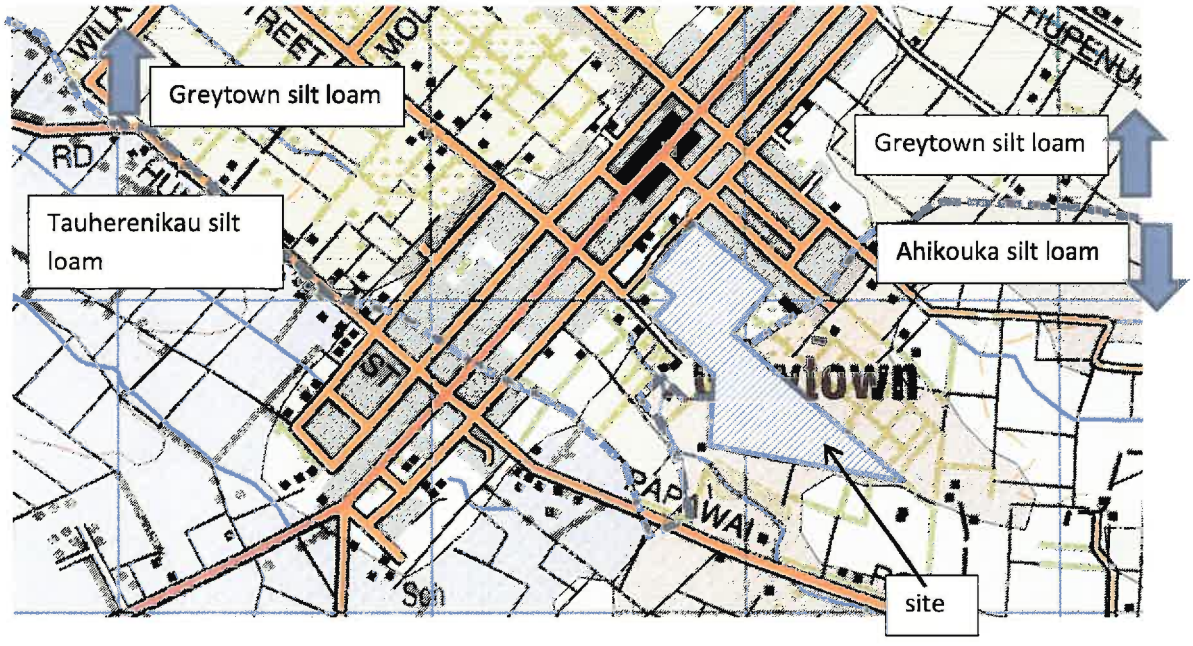

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Figure 9 Soil map. Tan shaded area Greytown Silt loam, pink Ahikouka Silt loam, and blue fine Tauherenikau silt loam. Estimated soil boundary shown as a dashed line

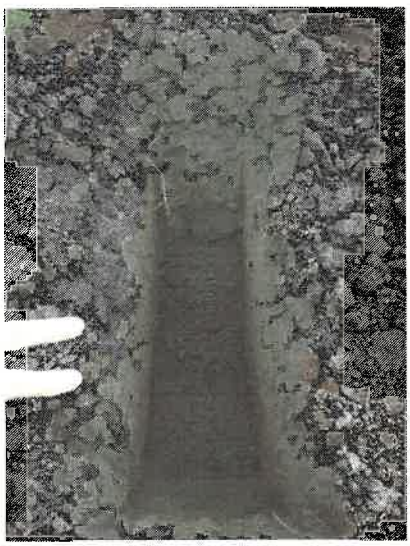
Greytown silt soils typically have:

- Moderate drainage characteristics
- Unsaturated soils of this classification have good effluent renovation capacity (Pang, 2009).
- Weak structure

Five trial pits were excavated (October 2018) and confirmed silt loam overlying sand and gravel at varying depths.



Test pit 1 (site A) 200mm topsoil over brown silt loam to 2.4m, then silty sand and gravel. Note water is from an old irrigation pipe hit during



Test pit 2 (site B) 200mm topsoil over brown silt loam to 1.2m, then silty sand and gravel



Test pit 3 (site E) 200mm topsoil over brown silt loam to 2.5m, then dense sand and gravel



Test pit 4 (site C) 200mm topsoil over brown silt loam to 2.0m, then silty sand and gravel

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Test pit 5 (site D) 200mm topsoil over brown silt loam to 1.2m, then silty sand and gravel



Figure 10 Trial pit examinations of soil

6.7. Land Use Classification

The New Zealand Land Inventory system classifies land in terms of slope, erosion, vegetation, and soil type. For this site, the following classification applies:

- alluvium over gravels
- Slope predominantly 0-3 degrees
- Negligible erosion
- Vegetation – high producing pasture, orchards and cereals

6.8. Rainfall

Rainfall across the valley varies greatly, being relatively high in the Tararuas and Remutaka ranges given the predominantly westerly wind flow direction, decreasing eastwards. This site is expected to have an average rainfall of between 1000-1200mm/year.

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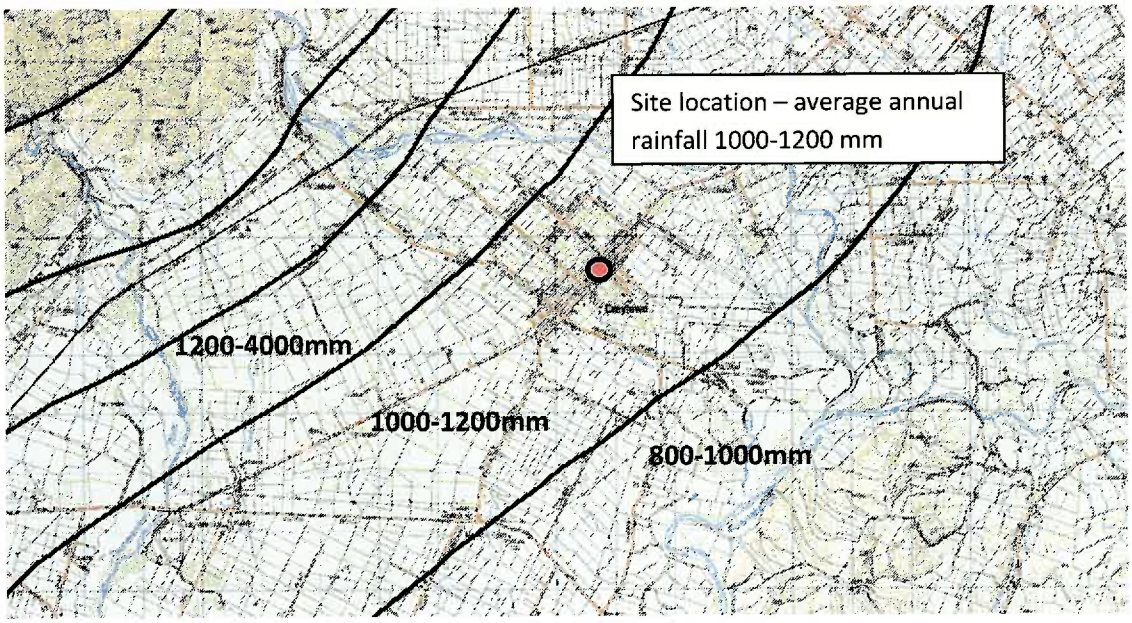

Figure 11 Rainfall Isohyets (black lines) rainfall in mm

7. Historic photographs

Aerial photographs from 1941, 1969, and 1974 show the development of the orchard:



Figure 12 1941 Aerial

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Figure 13 1969 aerial

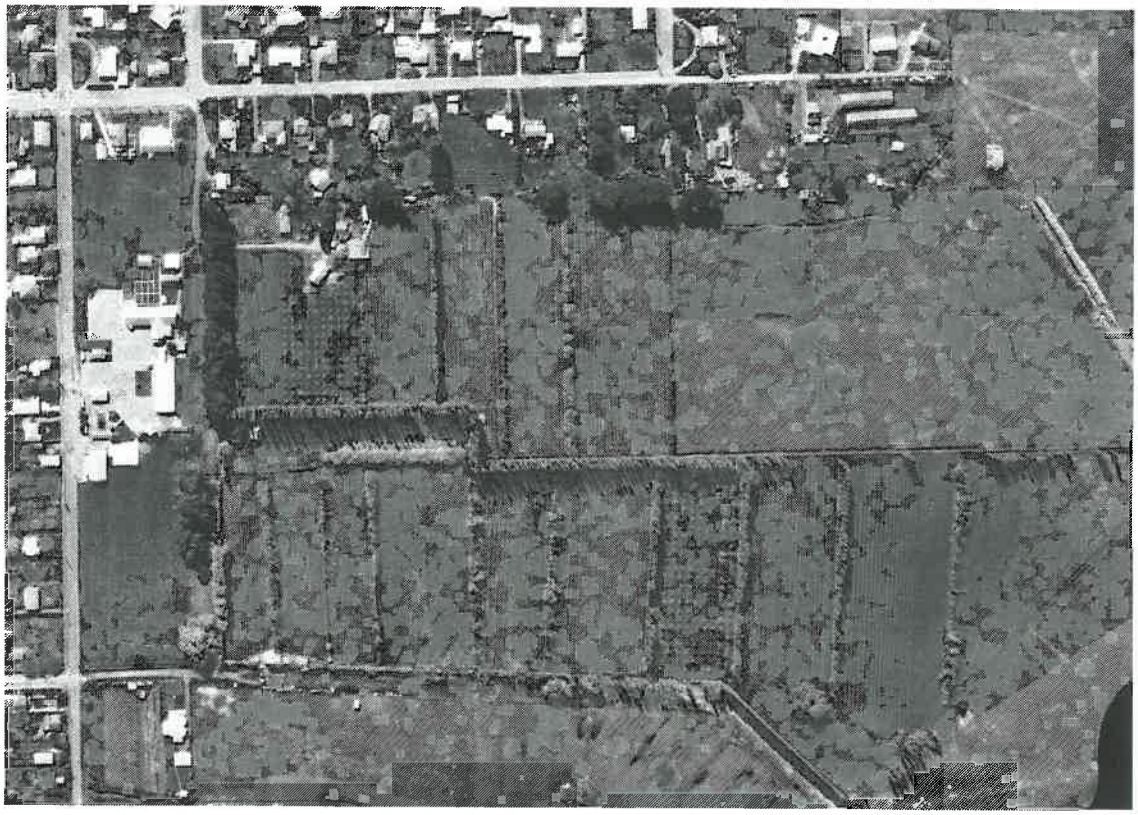

Figure 14 1974 Aerial

The aerial photos suggest that cropping or market gardening was the dominant land use pre-1969, with the emergent orchard seen there becoming more established through 1974. This confirms discussions with the previous owner, who took over the property in 1970. The photos do not

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distinguish between cropping and market garden activities, which would have different chemical contaminant loads.

8. Site chemical use

Fertiliser records from 2005 to present show typical additives for this land use (Appendix D).

The owner reported use of a range of standard herbicides. A summary of the active chemical ingredients is included (Appendix F). None of the chemicals used show priority contaminant ingredients other than one using copper, which has low/no human health implications.

9. Conclusions on likely contaminant levels

We have found no firm evidence of the use of any of the 12 priority contaminants listed in the NES, (Minsitry for the Environment, 2011) ***however the owners have noted that use of these chemicals prior to their taking possession is a possibility.***

Soil and groundwater information suggests ***that there is some potential risk of accumulation of chemicals or other condition that could have potentially harmful effects to human health***.

Testing of bore water is outside of the scope of the NES criteria and not considered here.

The preliminary Site Investigation indicates that the risk to human health as a result of the change of land use is a foreseeable risk, and that subsequently it is a restricted discretionary activity under the NES.

10. Permitted activity status under the NES

There are three key criteria of interest:

- If contaminant concentrations in the soil are below the guideline values, the NES does not apply (Regulation 5(9).
- If the balance of probability suggests that a HAIL activity has not taken place on the site, then the NES does not apply and vice versa (regulation 5(5) and 5(6).
- If the findings of the Preliminary Site Investigation indicate that the risk of harm to people as a result of the activity is highly unlikely, then the activity would be a permitted activity.

Our understanding is that:

- *The application of agri-chemicals triggers assessment under the NES,*
- *Information on historic use of priority contaminants requires a detailed site investigation*

11. Detailed site investigation

The site practices, pesticide (and other contaminant) use history, and land use history suggests a low-risk site other than potentially at a historic wash down area.

11.1. Investigation objectives

- The purpose of the investigation is to qualify and quantify the presence of priority contaminants or other contaminants harmful to human health for residential land use.
- To establish the nature, degree, and extent of any contamination.
- The boundary of the investigation is limited to the site boundaries where the agricultural activities took place but covers the entire development area (must examine all land that would undergo a change of use).

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- The contaminant type is assumed as liquid spray or granular surface applications directly at or on the orchard trees (i.e. not aerial application).
- Contaminant migration pathways are assessed as dispersal on soil around the fruit trees, and accumulation in the upper soil layers. Deeper soils have lower accumulation risk and lower exposure pathway risk. Given that any use of priority contaminants that did occur happened over thirty years ago, groundwater contamination is not considered a current risk.
- The primary risk pathways are assessed to be dermal contact and ingestion of produce grown on residential sections.
- Given the site history, persistent rather than volatile contaminants are the focus of the investigation.

11.2. Sampling methodology

11.2.1. 2015

The objectives of sampling was to ascertain the risk to human health from contaminants exceeding guideline levels, and identifying spatial trends in those contaminant concentrations.

Given the site history, a detailed site investigation was undertaken on a judgemental/stratified basis and focussed on the washdown area and chemical loading as areas of specific risk of chemical build-up. For other areas a stratified sampling methodology was adopted, breaking down the proposed development according to original use (i.e. by consistent block of fruit tree type). Composites taken within each land use block present a valid and cost-effective method of obtaining coarse contaminant levels. Composites are generally followed up with individual samples or further testing where there more accurate data is needed.

The conceptual model is that an intensification of chemical concentrations may occur at or adjacent to storage and filling areas due to spills or leaks from the spray equipment. As the radius from these points increases, the most likely scenario is that concentrations will decrease. Specific sampling on a judgement basis was therefore carried out at and around the chemical stores/filling stations.

Additional specific samples were taken inside the burn pit (samples 23, 24).

Soil samples were taken using a spade at a depth of 0-75mm (upper) and 75-150mm (lower) and included blind samples. Composite samples were taken from within each stratified group. Thirty-seven samples were taken and aggregated into groups of two or three for composite sampling. Work was stopped on the preliminary investigation project before testing on individual samples was carried out.

11.2.2. Field sampling control

- 2015 Samples were logged on a sampling register, which refers to the sampling plan (fig. 12) and notes composites.
- Equipment was brushed and wiped down between samples.
- All samples were taken by Andrew Duncan
- Samples were logged by a unique identifier and date
- Samples were couriered to Hill Laboratories with a Chain of custody proforma signed and dated by the sampler.
- Standard laboratory QA procedure was followed with test methodology described in the chain of custody document.

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Sampling Register, Murphy's Orchard, Greytown

Sample location	Sample ID	Description	Composite/ Single	Date	Time (pm)	
1	1	upper (0-75mm)	C	3/11/2015	1:33	C1
2	2	upper (0-75mm)	C	3/11/2015	1:40	
3	3	upper (0-75mm)	C	3/11/2015	1:45	
4	4	upper (0-75mm)	C	3/11/2015	1:45	
5	5	upper (0-75mm)	C	3/11/2015	2:05	C2
6	6	upper (0-75mm)	C	3/11/2015	2:15	
7	7	upper (0-75mm)	C	3/11/2015	2:15	
8	8	upper (0-75mm)	C	3/11/2015	2:15	C3
9	9	upper (0-75mm)	C	3/11/2015	2:15	
10	10	upper (0-75mm)	C	3/11/2015	2:15	
11	11	upper (0-75mm)	C	3/11/2015	2:15	C4
12	12	upper (0-75mm)	C	3/11/2015	2:15	
13	13	upper (0-75mm)	C	3/11/2015	2:15	
14	14	upper (0-75mm)	C	3/11/2015	2:45	C5
15	15	upper (0-75mm)	C	3/11/2015	2:45	
16	16	upper (0-75mm)	C	3/11/2015	2:45	C6
17	17	upper (0-75mm)	C	3/11/2015	2:45	
18	18	upper (0-75mm)	C	3/11/2015	2:45	
19	19	upper (0-75mm)	C	3/11/2015	2:45	
20	20	upper (0-75mm)	C	3/11/2015	2:45	C7
21	21	upper (0-75mm)	C	3/11/2015	2:45	
22	22	upper (0-75mm)	C	3/11/2015	2:45	
23	23	upper (0-75mm)	C	3/11/2015	3:00	C8
24	24	upper (0-75mm)	C	3/11/2015	3:00	
2	25	lower (75-150mm)	C	3/11/2015	3:00	C9
3	26	lower (75-150mm)	C	3/11/2015	3:00	
4	27	lower (75-150mm)	C	3/11/2015	3:00	
8	28	lower (75-150mm)	C	3/11/2015	3:00	C10
9	29	lower (75-150mm)	C	3/11/2015	3:00	
10	30	lower (75-150mm)	C	3/11/2015	3:00	
14	31	lower (75-150mm)	C	3/11/2015	3:00	C11
15	32	lower (75-150mm)	C	3/11/2015	3:00	
16	33	lower (75-150mm)	C	3/11/2015	3:00	
3	34	upper (0-75mm)	S	3/11/2015	3:00	blind
15	35	upper (0-75mm)	S	3/11/2015	3:00	blind
25	36	upper (0-75mm)	C	3/11/2015	3:00	C12
25	37	upper (0-75mm)	C	3/11/2015	3:00	

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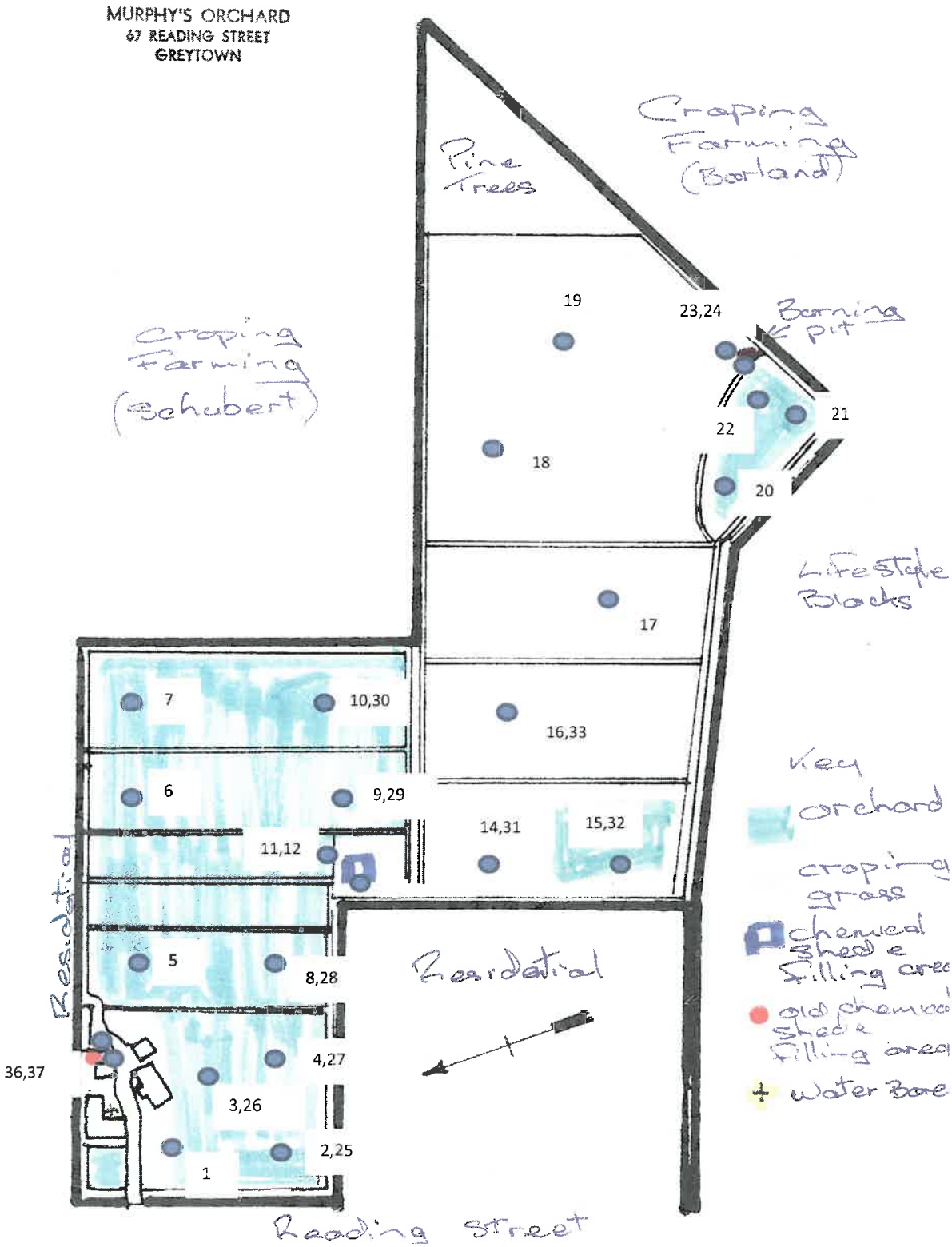

Figure 15 Sampling location plan

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Samples were analysed at Hill Laboratories for CCA, pesticides, and the 12 priority contaminants under the NES using standard broad sweep laboratory test suites.

Nearly all pesticides were below detection level, and all were below guideline levels. See appendix B for results. Peak metal concentrations are above rural residential but below residential guideline values.

11.2.3. 2018

The 2015 results indicate no organochlorides hence the 2018 tests focussed on Lead and Arsenic. The additional sampling was in part to cover the shortfall in the 2015 testing where individuals of composite had not been tested.

A Delta XRF handheld analyser was used to estimate contaminant concentrations at ground level, 100mm, 200mm and 300mm depths at 22 locations around the site, around 90 tests in all. Accuracy was recorded typically as 3-4ppm for these tests. Calibration of the XRF machine was carried out on each day of sampling, and before use had been verified by the machine owner.

The results indicate that apart from the historic washdown/spray filling area, the site is at or below residential guideline values for both Lead and Arsenic and gives a good image of the variation of contaminant concentration with depth.

Sample sites were geo-referenced at time of sampling, and contours of contaminant concentration evaluated for each depth. In addition, the average concentration of 200mm and 300mm depths were calculated and plotted. The land parcel outline (fig. 13) can be superimposed over the contaminant isograms to show the variation around the site (figs. 14&15). A deep red signifies contaminants near or at guideline levels, graduated down to white, being zero contaminant.



Figure 16 Land parcel outline

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Arsenic – scale between zero and guideline (20mg/kg)

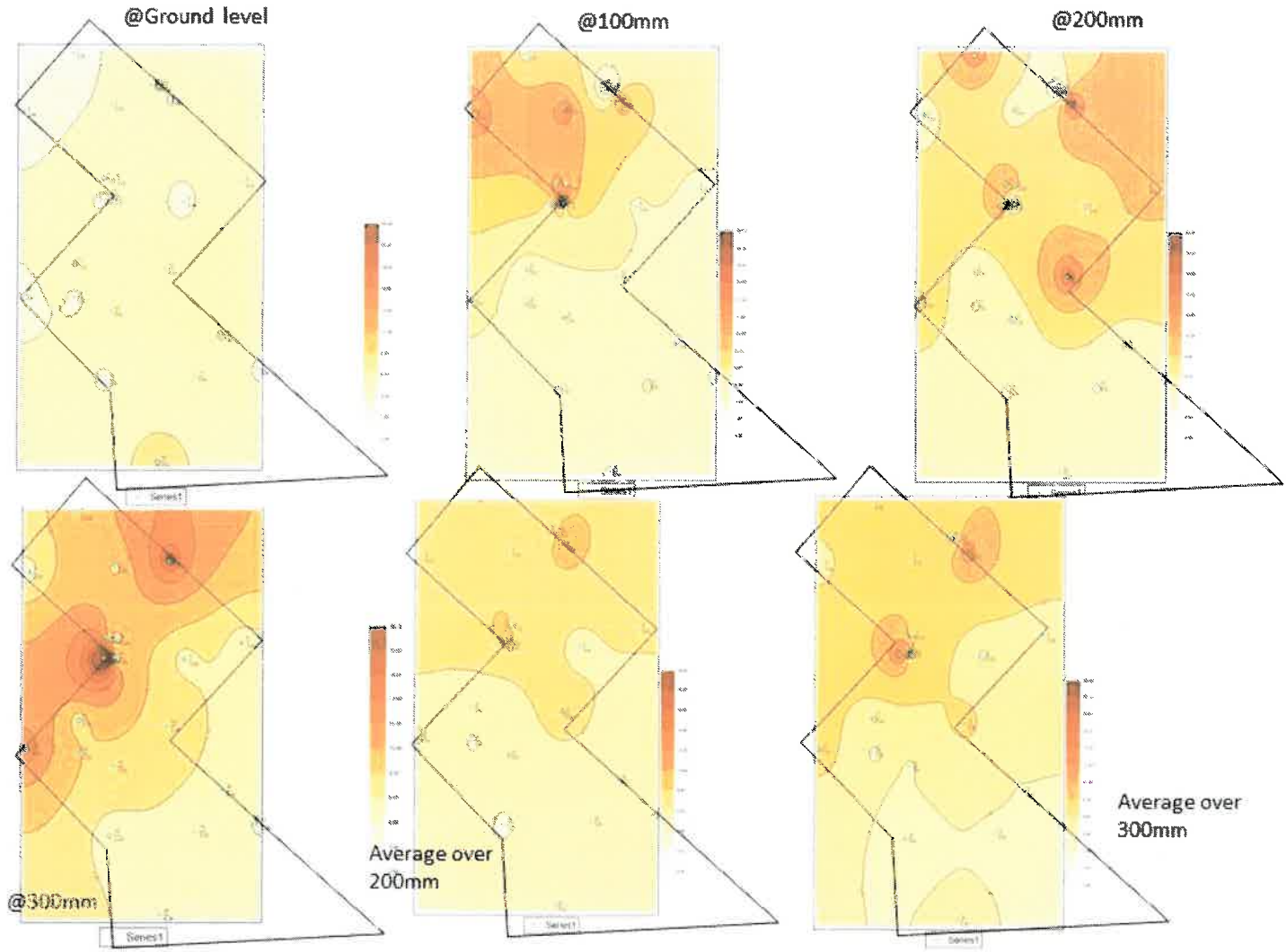

Figure 17 Arsenic concentrations at various depths

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Lead – scale between zero and guideline (210mg/kg)

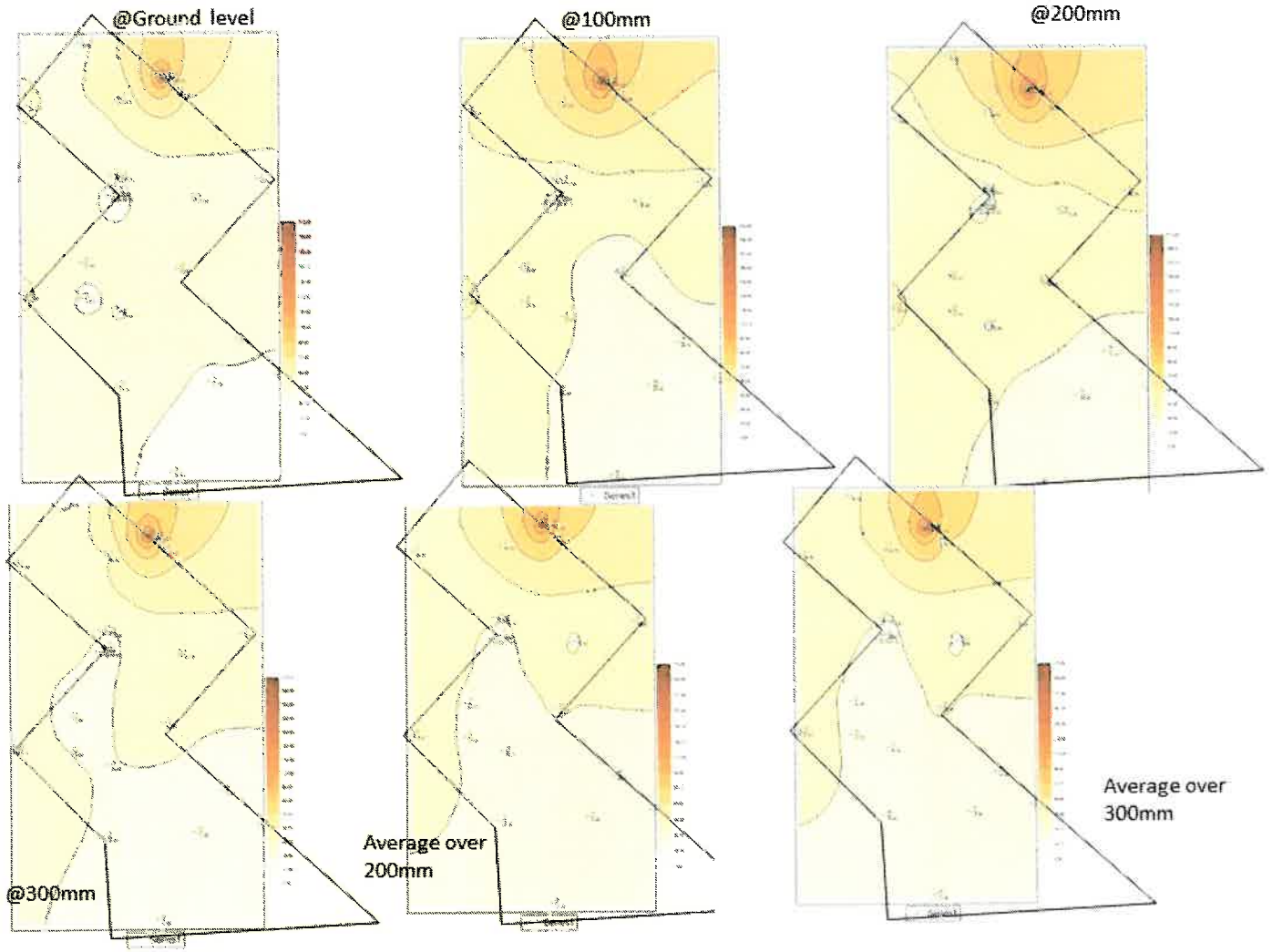

Figure 18 Lead concentrations at various depths

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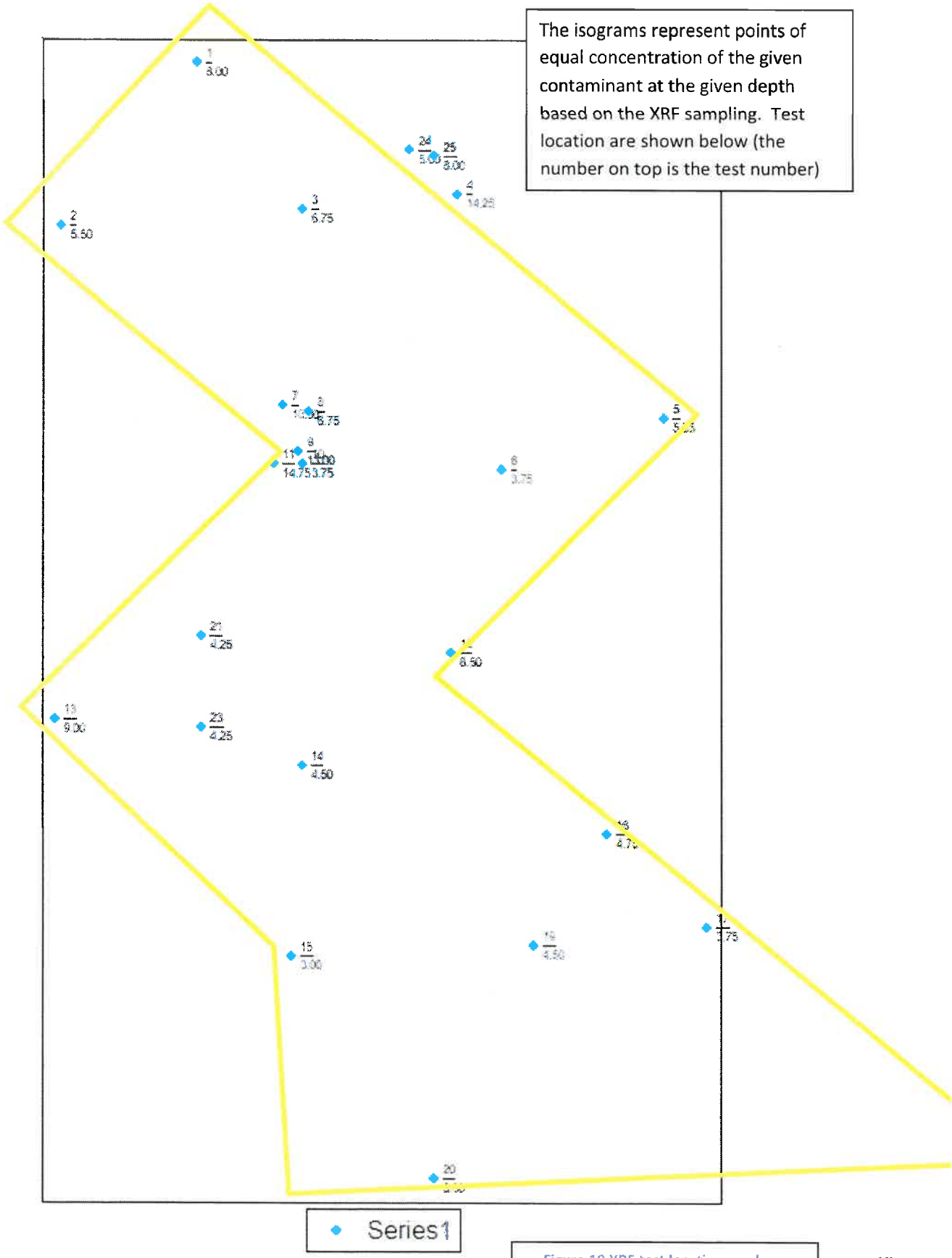

Figure 19 XRF test locations and numbers

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Isograms do not refer to or infer land use, soil type or any other parameter. They are a literal representation of the spatial variation of contaminants, wherever and however those contaminants happen to be there.

Isograms are useful for visual interpretation of numerical values and can convey trends in numerical data that are not apparent from the original data. In this case the isograms support the original conceptual model that concentrations of contaminants would decrease radially away from original the chemical store/fill station. They indicate that as a whole the site is well below guideline levels.

11.2.4. Laboratory QA processes

Standard chain of custody lab procedures was followed. Two random verification samples were taken during the 2018 XRF sampling and sent for laboratory analysis.
Samples were analysed at Hill Laboratories for NES metals, Chromium, and NES organic pesticides in 2015, and NES metals in 2018.

11.2.5. Basis for guideline values

Guideline basis was discussed and agreed with SWDC and the guideline values are outlined in the Appendices. A description of residential is also included in the appendices.

12. Conclusions drawn from sample results

The combination of sample results from 2015 and 2018 give a good picture of contaminant levels and risk to human health. The primary findings area that:

1. Contaminant concentrations at ground level are well below guideline levels for the entire site.
2. There are two hotspots that have elevated Arsenic concentration that it would be prudent to remediate.
3. The average Arsenic concentration over 200mm and 300mm is well below guideline values.

The primary contaminant pathways for metals in soil are from dermal contact and direct ingestion.

Thus, the conclusion drawn is that:

- Direct contact with the soil upper layers is extremely unlikely to cause harm to human health.
- Vegetables grown in un-remediated soil and consumed are extremely unlikely to cause harm to human health as the average concentration over rooting depth is significantly lower than guideline levels.
- The old wash down area (2015 samples 36,37) shows sufficiently high levels of contaminants to warrant remediation. Removal and carting to suitable landfill is recommended.
- The current chemical filling area (2015 samples 11,12) shows some elevated contaminant levels, however the area is small and easily managed in terms of remediation. The main contaminant is copper, which is not significantly harmful to human health. Again, removal and replacement of existing material is recommended.

12.1.1. Options

The NES gives some clarification regarding the restricted activity status as follows:

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An application can be assessed as a restricted discretionary activity under regulation 10 if it does not meet the requirements of a permitted activity, and if a detailed investigation shows the soil contamination exceeds the applicable standard for the current or intended land use. The applicant must decide what to do to make the land safe for the current or intended land use.

There are two options:

1. remediate (clean up) the land to reduce the concentration of the contaminants to an acceptable level

2. manage the land to prevent exposure of people to the contaminants.

Resource consent is required for both these options.

Resource consent is required for a restricted discretionary activity. The consent authority may decline the consent, or grant it subject to conditions, but these can only apply to matters for which it has discretion. If the site is to be remediated so the soil meets the applicable standard, the land use will be considered acceptable without ongoing restrictions. The resource consent will therefore specify the applicable standard to be met by the remediation, and the controls that must be put in place during the remediation activity to protect people's health during the remedial works. Users' Guide: NES for Assessing and Managing Contaminants in Soil to Protect Human Health 29

A landowner may elect not to remediate the land, for example, because the additional expense is not justified or if management controls can be implemented to ensure the risk to people is acceptable. Management controls could include containment of the contamination or behavioural controls that restrict the behaviour of occupants or residents of the land so exposure is minimised. In this case, the resource consent can specify how the applicable standard is to be met and maintained in the future, and may require restrictions to be put in place on activities that can take place on the land.

For some sites, a combination of remediation and management controls is the most appropriate form of risk management.

The options available are therefore:

- *Remediate the affected land*
- *Prevent contact between people and the affected areas*
- *A combination of any of the above*

12.2. Risk Assessment

Whilst the primary risk paths for Arsenic and Lead in soils is chronic ailments from sustained ingestion, the disturbance of the soil could potentially lead to dust generation and inhalation. The risk of serious illness from this activity is extremely low and it is an activity habitually carried out in agricultural work (ploughing etc.), however it is relatively easy to reduce risks by ensuring that he work is carried out in still, or low wind conditions.

The contractor shall be made aware of this report and takes steps to wear appropriate personal protective equipment.

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13. Validation works

Testing of the replacement soil is required to validate that the residential area is suitable. I recommend:

- an inspection be carried out following removal of the topsoil in remediated areas prior to filling
- XRF testing of the remediated areas be carried out to verify that contaminant levels are below residential guideline levels.

14. Site management

The extensive development of the site will require significant management, and the historic data and contamination risk assessment will be included in the overall site management plan. Overall, no specific post development site management requirements are envisaged for the normal operation of the proposed development.

15. Ongoing site monitoring

No ongoing site monitoring is deemed necessary.

16. Recommendations

We recommend:

Removal and replacement of soil in two relatively confined areas (appendix C). No action is required for the remainder of the site, indeed the less work carried out the better as the lowest contaminant concentrations were discovered at ground level.

Analysis suggests that no further restrictions (i.e. on deep excavation work) are warranted as contaminant levels are, at worst, around guideline levels for persistent exposure through ingestion – thus short duration exposure to excavations has negligible risk.



A.Duncan CPEng

Works Cited

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Ministry for the Environment. (2001). *Contaminated Land Management Guidelines.*

Minsitry for the Environment. (2011). *Toxicological Intake Values for Priority Contaminants in Soil.*

NZ Government. (2011). *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.*

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Pang, L. (2009). Microbial Removal Rates in Subsurface Media Estimated From Published Studies of Field Experiments and Large Intact Soil Cores. *Published in J. Environ. Qual. 38:1531–1559 (2009).*

Standards New Zealand. (2012). *AS/NZS1547:2012 On-Site domestic wastewater management.*

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The two main guideline sources are:

1 NES – Cabinet paper on proposed guideline values (MfE, 2012)
http://www.mfe.govt.nz/sites/default/files/cabinet-paper-proposed-soil-contamination_1.pdf

2 Supplemental Guidance for Developing Soil Screening Levels at Superfund Sites (US EPA, 20021)

http://www.epa.gov/superfund/health/conmedia/soil/index.htm

In all cases the Rural lifestyle category (high % consumption of home produce) has been assumed. Source 1 above applies to all but DDE 2,4.

Appendix A Soil contaminant standards

The five standard land-use scenarios for which soil contamination standards (SCSs) have been derived are contained in Table B1. A summary of the SCSs is presented in Tables B2 and B3. More detailed versions of these tables are contained in Section 7 of the *Methodology*, in which additional residential sub-scenarios have also been derived.

Table B1: Land-use scenarios

Table B1: Land-use scenarios

Scenario	Description
Rural / lifestyle block	Rural residential land use, including home-grown produce consumption (25 per cent). Applicable to the residential vicinity of farm houses for protection of farming families, but not the productive parts of agricultural land. Note: Consumption of eggs, milk and meat from animals raised on site is excluded. Produce consumption is limited to home-grown vegetables. Sites for which consumption of home-grown eggs, milk or meat is important will need to be evaluated on a site-specific basis.
Residential	Standard residential lot, for single dwelling sites with gardens, including home-grown produce consumption (10 per cent).
High-density residential	Urban residential with limited soil contact, including small ornamental gardens but no vegetable garden (no home-grown produce consumption); applicable to urban townhouses, flats and ground-floor apartments with small ornamental gardens, but not high-rise apartments.
Parks / recreational	Public and private green areas and reserves used for active sports and recreation. This scenario is intended to cover playing fields and suburban reserves where children play frequently. It can also reasonably cover secondary school playing fields but not primary school playing fields.
Commercial / industrial outdoor worker (unpaved)	Commercial / industrial site with varying degrees of exposed soil. Exposure of outdoor workers to near-surface soil during routine maintenance and gardening activities with occasional excavation as part of maintaining subsurface utilities (ie, a caretaker or site maintenance personnel). Also conservatively applicable to outdoor workers on a largely unpaved site.

Table B2: Soil contaminant standards for health ($SCS_{(health)}$) for inorganic substances

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Table B2: Soil contaminant standards for health ($SCS_{(health)}$) for inorganic substances

	Arsenic	Boron	Cadmium (pH 5)[1]	Chromium		Copper	Inorganic lead	Inorganic mercury
				III	VI			
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Rural residential / lifestyle block 25% produce	17	>10,000	0.8	>10,000	290	>10,000	160	200
Residential 10% produce	20	>10,000	3	>10,000	460	>10,000	210	310
High-density residential	45	>10,000	230	>10,000	1,500	>10,000	500	1,000
Recreation	80	>10,000	400	>10,000	2,700	>10,000	880	1,800
Commercial / industrial outdoor worker (unpaved)	70	>10,000	1,300	>10,000	6,300	>10,000	3,300	4,200

Notes: All concentrations refer to dry weight (ie, mg/kg dry weight).

[1] Default value is for soil that is pH 5. Concentrations increase with increasing pH (see *Methodology*).

Table B3: Soil contaminant standards for health ($SCS_{(health)}$) for organic compounds

Table B3: Soil contaminant standards for health ($SCS_{(health)}$) for organic compounds

Scenario	BaP[1]	DDT	Dieldrin[2]	PCP	Dioxin	
					TCDD	Dioxin-like PCBs
	mg/kg TEQ	mg/kg	mg/kg	mg/kg	µg/kg TEQ	µg/kg TEQ
Rural residential / lifestyle block 25% produce	6	45	1.1	55	0.12	0.09
Residential 10% produce	10	70	2.6	55	0.15	0.12
High-density residential	24	240	45	110	0.36	0.33
Recreation	40	400	70	150	0.6	0.52
Commercial / industrial outdoor worker (unpaved)	35	1,000	160	360	1.4	1.2

Notes: All concentrations refer to dry weight (ie, mg/kg dry weight or µg/kg dry weight).

[1] For benzo(a)pyrene, the equivalent BaP concentration is calculated as the sum of each of the detected concentrations of nine carcinogenic PAHs (benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene and indeno(1,2,3-cd) pyrene), multiplied by their respective potency equivalency factors (see table 40 of the *Methodology*).

[2] The SCS is applicable to either dieldrin or aldrin separately, or to the sum of aldrin and dieldrin if both are involved.

TEQ = Toxic equivalency, an indication of the toxicity of a mixture of compounds.

For dioxins and dioxin-like PCBs the total toxicity is assessed as a toxic equivalency (TEQ) to 2,3,7,8-TCDD using toxic equivalency factors (TEF). The TEQ is defined as the sum of the products of the concentration of each compound multiplied by the value of its TEF (see table 45 of the *Methodology*).

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Appendix B Metal and pesticide sample results 2015

National Environmental Standards Metals	Sample Name:	34 upper (0-75mm) 03-Nov-2015 3:00 pm	35 upper (0-75mm) 03-Nov-2015 3:00 pm	C1 = Composite of 1 upper (0-75mm) + 2 upper (0-75mm) + 3 upper (0-75mm) & 4 upper (0-75mm)	C2 = Composite of 5 upper (0-75mm) + 6 upper (0-75mm) & 7 upper (0-75mm)	C3 = Composite of 8 upper (0-75mm) + 9 upper (0-75mm) & 10 upper (0-75mm)	C4 = Composite of 11 upper (0-75mm) & 12 upper (0-75mm)	C5 = Composite of 14 upper (0-75mm) & 15 upper (0-75mm)	C6 = Composite of 16 upper (0-75mm) + 17 upper (0-75mm) + 18 upper (0-75mm) & 19 upper (0-75mm)	C7 = Composite of 20 upper (0-75mm) + 21 upper (0-75mm) & 22 upper (0-75mm)	C8 = Composite of 23 upper (0-75mm) & 24 upper (0-75mm)	C9 = Composite of 25 lower (75-150mm) + 26 lower (75-150mm) & 27 lower (75-150mm)	C10 = Composite of 28 lower (75-150mm) + 29 lower (75-150mm) & 30 lower (75-150mm)	C11 = Composite of 31 lower (75-150mm) + 32 lower (75-150mm) & 33 lower (75-150mm)	C12 = Composite of 36 upper (0-75mm) & 37 upper (0-75mm)	guideline mg/kg
Dry Matter	g/100g as rcvd	78	85	73	83	83	77	85	82	80	73	85	84	82	83	
Total Recoverable Chromium	mg/kg dry wt	18	20	20	21	18	22	20	20	19	23	19	17	19	18	460
Total Recoverable Arsenic	mg/kg dry wt	5	6	11	16	18	18	19	8	8	7	10	16	16	290	20
Total Recoverable Boron	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	87	< 20	< 20	< 20	< 20	-
Total Recoverable Cadmium	mg/kg dry wt	0.55	0.14	0.33	0.17	0.21	0.52	0.2	0.13	0.26	1	0.2	0.19	0.18	2.3	3
Trivalent Chromium	mg/kg dry wt	18	20	20	21	18	22	20	20	19	23	19	17	19	18	
Chromium (hexavalent)	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	460
Total Recoverable Copper	mg/kg dry wt	760	18	360	158	230	5,900	132	36	195	410	122	135	101	4,800	
Total Recoverable Lead	mg/kg dry wt	27	24	47	58	57	45	67	28	26	37	35	49	57	730	210
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	310
Benzo[a]anthracene	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	8.8	
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.14	< 0.13	< 0.15	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.14	< 0.15	< 0.13	< 0.13	< 0.13	9.1	10
Benzo[b]fluoranthene + Benz	mg/kg dry wt	< 0.14	< 0.13	< 0.15	< 0.13	< 0.13	0.15	< 0.13	< 0.13	< 0.14	< 0.15	< 0.13	< 0.13	< 0.13	10.8	
Benzo[k]fluoranthene	mg/kg dry wt	< 0.14	< 0.13	< 0.15	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.14	< 0.15	< 0.13	< 0.13	< 0.13	3.9	
Chrysene	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	7.2	
2,4'-DDD	mg/kg dry wt	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.39	
4,4'-DDD	mg/kg dry wt	< 0.005	< 0.005	0.013	0.013	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	0.012	6.4	
2,4'-DDE	mg/kg dry wt	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.25	
4,4'-DDE	mg/kg dry wt	< 0.005	< 0.005	0.081	0.29	0.27	< 0.005	0.56	0.006	< 0.005	< 0.005	0.039	0.26	0.47	2.8	
2,4'-DDT	mg/kg dry wt	< 0.005	< 0.005	< 0.005	0.016	0.021	< 0.005	0.03	< 0.005	< 0.005	< 0.005	< 0.005	0.024	0.014	0.192	
4,4'-DDT	mg/kg dry wt	< 0.005	< 0.005	0.071	0.4	0.29	< 0.005	0.46	< 0.005	< 0.005	< 0.005	0.038	0.27	0.36	8.5	
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.14	< 0.13	< 0.15	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.14	< 0.15	< 0.13	< 0.13	< 0.13	3.6	
Dieldrin	mg/kg dry wt	< 0.14	< 0.13	< 0.15	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.14	< 0.15	< 0.13	< 0.13	< 0.13	< 0.13	2.6
Fluoranthene	mg/kg dry wt	< 0.10	< 0.10	0.15	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	23	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.14	< 0.13	< 0.15	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.14	< 0.15	< 0.13	< 0.13	< 0.13	8.7	
Pentachlorophenol (PCP)	mg/kg dry wt	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	55
Benzo[a]pyrene Potency Equi	mg/kg dry wt	< 0.4	< 0.3	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	16.2	
Total Reported DDT Isomers	mg/kg dry wt	< 0.03	< 0.03	0.17	0.72	0.58	< 0.03	1.05	< 0.03	< 0.03	< 0.03	0.08	0.56	0.86	18.4	70

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Appendix C 2018 XRF Sampling results & Remediation areas

As				Pb				Location		
ground level	100mm	200mm	300mm	ground level	100mm	200mm	300mm	site	E	N
3	5	14	10	32	48	55	19	1	1806838	5449209
3	13	3	3	50	40	28	27	2	1806771	5449127
4	14	3	6	40	61	49	34	3	1806891	5449135
3	14	19	21	52	57	70	52	4	1806969	5449143
5	4	9	3	38	38	46	36	5	1807072	5449030
3	4	5	3	24	26	19	23	6	1806991	5449004
7	12	12	9	36	44	43	44	7	1806881	5449036
4	9	9	5	27	27	20	18	8	1806894	5449033
3	23			28	17			9	1806889	5449013
5	3	4	3	18	32	32	28	10	1806891	5449007
3	3	13	40	23	21	24	27	11	1806877	5449007
4	5	18	7	45	9	49	40	12	1806966	5448912
3	7	10	16	57	54	56	47	13	1806768	5448878
5	3	3	7	28	31	26	28	14	1806891	5448855
3	3	3	3	34	26	30	28	15	1806886	5448759
7	3	3	6	31	28	17	13	16	1807044	5448821
3	3	6	3	27	22	15	23	17	1807094	5448774
								18		
4	6	3	5	27	20	24	17	19	1807007	5448765
9	3	6	6	25	24	15	21	20	1806957	5448647
7	3	3	4	31	25	27	15	21	1806841	5448920
								22		
3	3	3	8	22	32	27	28	23	1806841	5448874



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Appendix D Owner questions and answers

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Murphys Orchard Page 1

67 Reading Street

Greytown

06 3049 551

027 4494 574

Prior to our taking over the property it was largely berryfruit grown here which required a low volume of spray per hectare.

There has never been any exporting done from here.

Export does require a much more concerntrated spray programme

We are approved growers of the NZ GAP programme for which we are monitored annually

Andrew and Heather Murphy

19. 07 .2015

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Soil Testing Page 2

When did you purchase the property?

1979

Who owned the property before you and for how long?

MGMarketing

What was the land used for before you owned it?

Berryfruit Growing

Produce a map of the site with different land use areas marked on it

Map attached

What have adjacent properties been used for ?

Orcharding Farming and residential

Are there any farm pits ?Where ?What was put in them?

Yes as marked on map.All rubbish dumped in these pits was burned.Old packaging cardboard and wooden,strapping tape,broken pallets and some household rubbish

When did it change to orchard ?

Started converting to orcharding approx. 30 years ago

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What consents do you have /have you had on the property?

Uptake of bore water

What chemicals are stored on site?How are they stored?

List attached of all possible chemicals that might be used on orchard.

Stored in GAP approved locked shed

Have there been any chemical spills?

No

A description of the manufacturing process

No manufacturing done here .Fruit grown picked and packed on site then distributed to agents for sale or sold at gate .No export fruit

Is there a bore? What irrigation has been used?

Yes we have a bore for trickle irrigation under the trees

Are there any areas that have been used for washdown or emptying of chemical containers?

No all containers triple rinsed into sprayer.

Any excess spray sprayed onto shelter belts

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Appendix E Fertiliser/chemical records

chemical Stock at

Insecticide :-

Omite
Lannate
Larsban W.P.
Lorsban L.
Mimic
Success
Carbaryl
Dynamite
Dyanica
Mercral
Pirimor

Fungicide :-

Kocide W.P.
Kocide L
thiram
Captan
Rovral
Saprol
Sqllit
Folicur

Weed killers :-

Harmony
Buster
ESCORT
Goal
Hunitrol
Roundup
Kamba

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Appendix F Summary of chemical constituents

Priority contaminants present in list of known chemicals used, Murphy's Orchard

		arsenic	boron	cadmium	chromium	copper	lead	mercury	benzo(a)pyrene	DDT	dieldrin	PCP	dioxin (incl. dioxin-like PCBs)	
Insecticides	Omite													http://pmep.cce.cornell.edu/profiles/insect-mite/mevinphos-propargite/propargite/insect-prof-propargite.html
	Lannate													http://www.dupont.co.nz/content/dam/assets/industries/agriculture/assets/SDS_Lannate_L_13.pdf http://pmep.cce.cornell.edu/profiles/extoxnet/haloxyfop-methylparathion/methomyl-ext.html
	Lorsban WP & L													http://ws.greenbook.net/Docs/Msds/M90141.pdf
	Mimic													http://forestry.valentbiosciences.com/docs/forestry-resources-library/mimic-2lv-msds
	Success (Yates?)													http://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_G-4674_01-Oct-09.pdf
	Carbaryl													http://npic.orst.edu/factsheets/carbgen.pdf http://www2.epa.gov/sites/production/files/2015-06/documents/carbaryl-056801_2015-06-29_txr0057159.pdf
	Dyno-mite													http://files.tlhort.com/labels/4253-dyno-mite_wp_miticideinsecticide_-_pyridaben.pdf
	Pyranica													http://tirmsdev.com/SIPCAM-PACIFIC-AUSTRALIA-Pyranica-Miticide-p800531#.VkBj0oSkL6w
	Mesurol													https://www.cropscience.bayer.co.nz/~/media/internet/BCSNZ/CP/CropScience%20NZ/Product%20Downloads/Insecticides/Mesurol%20200SC/Mesurol%20200SC%20SDS.ashx
	Pirimor													http://www3.syngenta.com/country/au/SiteCollectionDocuments/Labels/MSDS%20to%20be%20uploaded%2005.03.13/Pirimor%20SDS%200313.pdf
Fungicides	Kocide WP & L					x								http://www.dupont.co.nz/content/dam/assets/industries/agriculture/assets/SDS_Kocide_Opti_13.pdf
	Thiram													http://www.kiwicare.co.nz/content/library/Thiram_Fungus_Control_SDS.pdf
	Captan													http://pmep.cce.cornell.edu/profiles/extoxnet/24d-captan/captan-ext.html
	Rovral													http://www.cdms.net/ldat/mpAKR001.pdf
	Saprol													http://www.orioncp.co.nz/pdfs/labels/SAPROL.pdf
	Syllit													http://www.cdms.net/LDat/mp7EP005.pdf
	Folicur													https://www.cropscience.bayer.co.nz/~/media/internet/BCSNZ/CP/CropScience%20NZ/Product%20Downloads/Fungicides/Folicur%20SC/Folicur%20SC%20SDS.ashx
Herbicides	Harmony													http://www.dupont.co.nz/content/dam/assets/industries/agriculture/assets/SDS_Harmony_50SG_13.pdf
	Buster													https://www.cropscience.bayer.co.nz/~/media/internet/BCSNZ/CP/CropScience%20NZ/Product%20Downloads/Herbicides/Buster/SDS%20Buster%20120115.ashx http://www.agpro.co.nz/turf/non-s
	Escort													http://www.dupont.co.nz/content/dam/assets/industries/agriculture/assets/SDS_Escort_13.pdf
	Goal													http://msdssearch.dow.com/PublishedLiteratureDAS/dh_08f5/0901b803808f5cc5.pdf?filepath=au/pdfs/noreg/012-10171.pdf&fromPage=GetDoc
	Amitrol													http://www.nufarm.com/assets/21130/1/Amitrole_T_MSDS_0085_0513.pdf
	Roundup													http://www.roundup.com.au/materials-safety-data-sheets
	Kamba													http://www.nufarm.co.nz/Assets/17991/2/Kamba_500_10L_Label.pdf

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Appendix G Chain of custody

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Job No: 149 7868 Date Recv: 06-Nov-15 08:16

Hill Laboratories
BETTER TESTING BETTER RESULTS

R J Hill Laboratories Ltd
1 Clyde Street,
Private Bag 3205,
Hamilton 3240, New Zealand

Received by: Kim Harrison

3114978689

Client
Name EQOnz Limited 166914
Address 672 Te Whiti Road, RD 4
MASTERTON 5884
Phone 06 370 8175 Fax
Client Reference
Quote No 72746 Order No
Primary Contact Mr A Duncan 25286
Submitted By Mr A Duncan 25286
Charge To EQOnz Limited 166914
Results To ☑ Mail Primary Contact ☐ Mail Submitter
☐ Fax Results
☑ Email Results

Office use Job No:

Sent to Hill Laboratories
☐ Please tick if you require COC to be emailed back
Date & Time: 5/11/2015
Name: A Duncan
Signature:

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☑ Room Temp ☐ Chilled ☐ Frozen
Temp: 13.9

☐ Sample & Analysis details checked
Signature:

Package 1 of 3
see attached sampling

Priority ☐ Low ☐ Normal ☑ High
☐ **Urgent** (ASAP, extra charge applies, please contact lab first)
NOTE: The estimated turnaround time for the types and number of samples and analyses specified on this quote is by 4:30 pm, 5 working days following the day of receipt of the samples at the laboratory.

Quoted Sample Types

Requested Reporting Date:

Soil (Soil)

No.	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
BETTER TESTING **BETTER RESULTS**

R J Hill Laboratories Ltd
1 Clyde Street,
Private Bag 3205,
Hamilton 3240, New Zealand

Phone: +64 7 858 2000
Fax: +64 7 858 2001
Email: mail@hill-labs.co.nz
Web: www.hill-labs.co.nz

Client
Name EQOnz Limited 166914

Address 672 Te Whiti Road, RD 4
MASTERTON 5884

Phone 06 370 8175 *Fax*

Client Reference

Quote No 72746 *Order No*

Primary Contact Mr A Duncan 25286

Submitted By Mr A Duncan 25286

Charge To EQOnz Limited 166914

Results To ☐ *Mail Primary Contact* ☐ *Mail Submitter*

☐ *Fax Results*

☐ *Email Results*

Office use *Job No:*

Sent to Hill Laboratories
☐ *Please tick if you require COC to be emailed back*
Date & Time: 5/11/2015
Name: A DUNCAN
Signature:

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition *Temp:*
☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*

☐ Sample & Analysis details checked
Signature:

Package 3 of 3
see attached
sampling register.

Priority ☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact lab first)
NOTE: The estimated turnaround time for the types and number of samples and analyses specified on this quote is by 4:30 pm, 5 working days following the day of receipt of the samples at the laboratory.

Quoted Sample Types

Requested Reporting Date:

Soil (Soil)

No.	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
BETTER TESTING BETTER RESULTS

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Email: mail@hill-labs.co.nz
Web: www.hill-labs.co.nz

Client
Name EQOnz Limited 166914
Address 672 Te Whiti Road, RD 4
MASTERTON 5884
Phone 06 370 8175 Fax
Client Reference
Quote No 72746 Order No
Primary Contact Mr A Duncan 25286
Submitted By Mr A Duncan 25286
Charge To EQOnz Limited 166914

Results To ☑ Mail Primary Contact ☐ Mail Submitter
☐ Fax Results
☑ Email Results

Package 2 of 3
See attached sampling register

Office use Job No:

Sent to Hill Laboratories
☐ Please tick if you require COC to be emailed back
Date & Time: 5/11/2015
Name: A DUNCAN
Signature:

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ Room Temp ☐ Chilled ☐ Frozen
Temp:

☐ Sample & Analysis details checked
Signature:

Priority ☐ Low ☐ Normal ☑ High
☐ **Urgent** (ASAP, extra charge applies, please contact lab first)
NOTE: The estimated turnaround time for the types and number of samples and analyses specified on this quote is by 4:30 pm, 5 working days following the day of receipt of the samples at the laboratory.

Quoted Sample Types

Requested Reporting Date:

Soil (Soil)

No.	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Sampling Register, Murphy's Orchard, Greytown

Package 1

Sample location	Sample ID	Description	Composite/ Single	Date	Time (pm)	
1	1	upper (0-75mm)	C	3/11/2015	1:33	C1
2	2	upper (0-75mm)	C	3/11/2015	1:40	
3	3	upper (0-75mm)	C	3/11/2015	1:45	
4	4	upper (0-75mm)	C	3/11/2015	1:45	
5	5	upper (0-75mm)	C	3/11/2015	2:05	C2
6	6	upper (0-75mm)	C	3/11/2015	2:15	
7	7	upper (0-75mm)	C	3/11/2015	2:15	
8	8	upper (0-75mm)	C	3/11/2015	2:15	C3
9	9	upper (0-75mm)	C	3/11/2015	2:15	
10	10	upper (0-75mm)	C	3/11/2015	2:15	
11	11	upper (0-75mm)	C	3/11/2015	2:15	C4
12	12	upper (0-75mm)	C	3/11/2015	2:15	
~~13~~ not used	~~13~~	~~upper (0-75mm)~~	~~C~~	~~3/11/2015~~	~~2:15~~	
14	14	upper (0-75mm)	C	3/11/2015	2:45	C5
15	15	upper (0-75mm)	C	3/11/2015	2:45	
16	16	upper (0-75mm)	C	3/11/2015	2:45	C6
17	17	upper (0-75mm)	C	3/11/2015	2:45	
18	18	upper (0-75mm)	C	3/11/2015	2:45	
19	19	upper (0-75mm)	C	3/11/2015	2:45	
20	20	upper (0-75mm)	C	3/11/2015	2:45	C7
21	21	upper (0-75mm)	C	3/11/2015	2:45	
22	22	upper (0-75mm)	C	3/11/2015	2:45	
23	23	upper (0-75mm)	C	3/11/2015	3:00	C8
24	24	upper (0-75mm)	C	3/11/2015	3:00	
2	25	lower (75-150mm)	C	3/11/2015	3:00	C9
3	26	lower (75-150mm)	C	3/11/2015	3:00	
4	27	lower (75-150mm)	C	3/11/2015	3:00	
8	28	lower (75-150mm)	C	3/11/2015	3:00	C10
9	29	lower (75-150mm)	C	3/11/2015	3:00	
10	30	lower (75-150mm)	C	3/11/2015	3:00	
14	31	lower (75-150mm)	C	3/11/2015	3:00	C11
15	32	lower (75-150mm)	C	3/11/2015	3:00	
16	33	lower (75-150mm)	C	3/11/2015	3:00	
3	34	upper (0-75mm)	S	3/11/2015	3:00	
15	35	upper (0-75mm)	S	3/11/2015	3:00	
25	36	upper (0-75mm)	C	3/11/2015	3:00	C12
25	37	upper (0-75mm)	C	3/11/2015	3:00	

Sampling Register, Murphy's Orchard, Greytown

Sample location	Sample ID	Description	Composite/ Single	Date	Time (pm)	
1	1	upper (0-75mm)	C	3/11/2015	1:33	C1
2	2	upper (0-75mm)	C	3/11/2015	1:40	
3	3	upper (0-75mm)	C	3/11/2015	1:45	
4	4	upper (0-75mm)	C	3/11/2015	1:45	
5	5	upper (0-75mm)	C	3/11/2015	2:05	C2
6	6	upper (0-75mm)	C	3/11/2015	2:15	
7	7	upper (0-75mm)	C	3/11/2015	2:15	
8	8	upper (0-75mm)	C	3/11/2015	2:15	C3
9	9	upper (0-75mm)	C	3/11/2015	2:15	
10	10	upper (0-75mm)	C	3/11/2015	2:15	
11	11	upper (0-75mm)	C	3/11/2015	2:15	C4
12	12	upper (0-75mm)	C	3/11/2015	2:15	
not used 13	~~13~~	~~upper (0-75mm)~~	~~C~~	~~3/11/2015~~	~~2:15~~	
14	14	upper (0-75mm)	C	3/11/2015	2:45	C5
15	15	upper (0-75mm)	C	3/11/2015	2:45	
16	16	upper (0-75mm)	C	3/11/2015	2:45	C6
17	17	upper (0-75mm)	C	3/11/2015	2:45	
18	18	upper (0-75mm)	C	3/11/2015	2:45	
19	19	upper (0-75mm)	C	3/11/2015	2:45	
20	20	upper (0-75mm)	C	3/11/2015	2:45	C7
21	21	upper (0-75mm)	C	3/11/2015	2:45	
22	22	upper (0-75mm)	C	3/11/2015	2:45	
23	23	upper (0-75mm)	C	3/11/2015	3:00	C8
24	24	upper (0-75mm)	C	3/11/2015	3:00	
2	25	lower (75-150mm)	C	3/11/2015	3:00	C9
3	26	lower (75-150mm)	C	3/11/2015	3:00	
4	27	lower (75-150mm)	C	3/11/2015	3:00	
8	28	lower (75-150mm)	C	3/11/2015	3:00	C10
9	29	lower (75-150mm)	C	3/11/2015	3:00	
10	30	lower (75-150mm)	C	3/11/2015	3:00	
14	31	lower (75-150mm)	C	3/11/2015	3:00	C11
15	32	lower (75-150mm)	C	3/11/2015	3:00	
16	33	lower (75-150mm)	C	3/11/2015	3:00	
3	34	upper (0-75mm)	S	3/11/2015	3:00	
15	35	upper (0-75mm)	S	3/11/2015	3:00	
25	36	upper (0-75mm)	C	3/11/2015	3:00	C12
25	37	upper (0-75mm)	C	3/11/2015	3:00	

fenceline

Sampling Register, Murphy's Orchard, Greytown

Sample location	Sample ID	Description	Composite/ Single	Date	Time (pm)	
1	1	upper (0-75mm)	C	3/11/2015	1:33	C1
2	2	upper (0-75mm)	C	3/11/2015	1:40	
3	3	upper (0-75mm)	C	3/11/2015	1:45	
4	4	upper (0-75mm)	C	3/11/2015	1:45	
5	5	upper (0-75mm)	C	3/11/2015	2:05	C2
6	6	upper (0-75mm)	C	3/11/2015	2:15	
7	7	upper (0-75mm)	C	3/11/2015	2:15	
8	8	upper (0-75mm)	C	3/11/2015	2:15	C3
9	9	upper (0-75mm)	C	3/11/2015	2:15	
10	10	upper (0-75mm)	C	3/11/2015	2:15	
11	11	upper (0-75mm)	C	3/11/2015	2:15	C4
12	12	upper (0-75mm)	C	3/11/2015	2:15	
~~13~~ Not used	~~13~~	~~upper (0-75mm)~~	~~C~~	~~3/11/2015~~	~~2:15~~	
14	14	upper (0-75mm)	C	3/11/2015	2:45	C5
15	15	upper (0-75mm)	C	3/11/2015	2:45	
16	16	upper (0-75mm)	C	3/11/2015	2:45	C6
17	17	upper (0-75mm)	C	3/11/2015	2:45	
18	18	upper (0-75mm)	C	3/11/2015	2:45	
19	19	upper (0-75mm)	C	3/11/2015	2:45	
20	20	upper (0-75mm)	C	3/11/2015	2:45	C7
21	21	upper (0-75mm)	C	3/11/2015	2:45	
22	22	upper (0-75mm)	C	3/11/2015	2:45	
23	23	upper (0-75mm)	C	3/11/2015	3:00	C8
24	24	upper (0-75mm)	C	3/11/2015	3:00	
2	25	lower (75-150mm)	C	3/11/2015	3:00	C9
3	26	lower (75-150mm)	C	3/11/2015	3:00	
4	27	lower (75-150mm)	C	3/11/2015	3:00	
8	28	lower (75-150mm)	C	3/11/2015	3:00	C10
9	29	lower (75-150mm)	C	3/11/2015	3:00	
10	30	lower (75-150mm)	C	3/11/2015	3:00	
14	31	lower (75-150mm)	C	3/11/2015	3:00	C11
15	32	lower (75-150mm)	C	3/11/2015	3:00	
16	33	lower (75-150mm)	C	3/11/2015	3:00	
3	34	upper (0-75mm)	S	3/11/2015	3:00	
15	35	upper (0-75mm)	S	3/11/2015	3:00	
25	36	upper (0-75mm)	C	3/11/2015	3:00	C12
25	37	upper (0-75mm)	C	3/11/2015	3:00	

Package 2

Hill Laboratories
BETTER TESTING BETTER RESULTS

R J Hill Laboratories
Limited
1 Clyde Street
Private Bag 3205

Tel +64 7 858 2000
Fax +64 7 858 2001
Email mail@hill-labs.co.nz

Job Information Summary

Client: EQOnz Limited
Contact: Mr A Duncan
C/- EQOnz Limited
672 Te Whiti Road
RD 4
MASTERTON 5884

Lab No: 1497868
Date Registered: 06-Nov-2015 1:12 pm
Priority: High
Quote No: 72746
Order No:
Client Reference:
Add. Client Ref:
Submitted By: Mr A Duncan
Charge To: EQOnz Limited
Target Date: 13-Nov-2015 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	1 upper (0-75mm) 03-Nov-2015 1:33 pm	Soil	cpBag	Composite Environmental Solid Samples
2	2 upper (0-75mm) 03-Nov-2015 1:40 pm	Soil	cpBag	Composite Environmental Solid Samples
3	3 upper (0-75mm) 03-Nov-2015 1:45 pm	Soil	cpBag	Composite Environmental Solid Samples
4	4 upper (0-75mm) 03-Nov-2015 1:45 pm	Soil	cpBag	Composite Environmental Solid Samples
5	5 upper (0-75mm) 03-Nov-2015 2:05 pm	Soil	cpBag	Composite Environmental Solid Samples
6	6 upper (0-75mm) 03-Nov-2015 2:15 pm	Soil	cpBag	Composite Environmental Solid Samples
7	7 upper (0-75mm) 03-Nov-2015 2:15 pm	Soil	cpBag	Composite Environmental Solid Samples
8	8 upper (0-75mm) 03-Nov-2015 2:15 pm	Soil	cpBag	Composite Environmental Solid Samples
9	9 upper (0-75mm) 03-Nov-2015 2:15 pm	Soil	cpBag	Composite Environmental Solid Samples
10	10 upper (0-75mm) 03-Nov-2015 2:15 pm	Soil	cpBag	Composite Environmental Solid Samples
11	11 upper (0-75mm) 03-Nov-2015 2:15 pm	Soil	cpBag	Composite Environmental Solid Samples
12	12 upper (0-75mm) 03-Nov-2015 2:15 pm	Soil	cpBag	Composite Environmental Solid Samples
13	14 upper (0-75mm) 03-Nov-2015 2:45 pm	Soil	cpBag	Composite Environmental Solid Samples
14	15 upper (0-75mm) 03-Nov-2015 2:45 pm	Soil	cpBag	Composite Environmental Solid Samples
15	16 upper (0-75mm) 03-Nov-2015 2:45 pm	Soil	cpBag	Composite Environmental Solid Samples
16	17 upper (0-75mm) 03-Nov-2015 2:45 pm	Soil	cpBag	Composite Environmental Solid Samples
17	18 upper (0-75mm) 03-Nov-2015 2:45 pm	Soil	cpBag	Composite Environmental Solid Samples
18	19 upper (0-75mm) 03-Nov-2015 2:45 pm	Soil	cpBag	Composite Environmental Solid Samples
19	20 upper (0-75mm) 03-Nov-2015 2:45 pm	Soil	cpBag	Composite Environmental Solid Samples
20	21 upper (0-75mm) 03-Nov-2015 2:45 pm	Soil	cpBag	Composite Environmental Solid Samples
21	22 upper (0-75mm) 03-Nov-2015 2:45 pm	Soil	cpBag	Composite Environmental Solid Samples
22	23 upper (0-75mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
23	24 upper (0-75mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
24	25 lower (75-150mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
25	26 lower (75-150mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
26	27 lower (75-150mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
27	28 lower (75-150mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
28	29 lower (75-150mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
29	30 lower (75-150mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
30	31 lower (75-150mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
31	32 lower (75-150mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
32	33 lower (75-150mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
33	34 upper (0-75mm) 03-Nov-2015 3:00 pm	Soil	cpBag	National Environmental Standards Metals
34	35 upper (0-75mm) 03-Nov-2015 3:00 pm	Soil	cpBag	National Environmental Standards Metals
35	36 upper (0-75mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
36	37 upper (0-75mm) 03-Nov-2015 3:00 pm	Soil	cpBag	Composite Environmental Solid Samples
37	C1 = Composite of 1 upper (0-75mm) + 2 upper (0-75mm) + 3 upper (0-75mm) & 4 upper (0-75mm)	Soil	GSoil300	National Environmental Standards Metals
38	C2 = Composite of 5 upper (0-75mm) + 6 upper (0-75mm) & 7 upper (0-75mm)	Soil	GSoil300	National Environmental Standards Metals
39	C3 = Composite of 8 upper (0-75mm) + 9 upper (0-75mm) & 10 upper (0-75mm)	Soil	GSoil300	National Environmental Standards Metals
40	C4 = Composite of 11 upper (0-75mm) & 12 upper (0-75mm)	Soil	GSoil300	National Environmental Standards Metals
41	C5 = Composite of 14 upper (0-75mm) & 15 upper (0-75mm)	Soil	GSoil300	National Environmental Standards Metals
42	C6 = Composite of 16 upper (0-75mm) + 17 upper (0-75mm) + 18 upper (0-75mm) & 19 upper (0-75mm)	Soil	GSoil300	National Environmental Standards Metals
43	C7 = Composite of 20 upper (0-75mm) + 21 upper (0-75mm) & 22 upper (0-75mm)	Soil	GSoil300	National Environmental Standards Metals
44	C8 = Composite of 23 upper (0-75mm) & 24 upper (0-75mm)	Soil	GSoil300	National Environmental Standards Metals
45	C9 = Composite of 25 lower (75-150mm) + 26 lower (75-150mm) & 27 lower (75-150mm)	Soil	GSoil300	National Environmental Standards Metals
46	C10 = Composite of 28 lower (75-150mm) + 29 lower (75-150mm) & 30 lower (75-150mm)	Soil	GSoil300	National Environmental Standards Metals
47	C11 = Composite of 31 lower (75-150mm)+ 32 lower (75-150mm) & 33 lower (75-150mm)	Soil	GSoil300	National Environmental Standards Metals
48	C12 = Composite of 36 upper (0-75mm) & 37 upper (0-75mm)	Soil	GSoil300	National Environmental Standards Metals

SUMMARY OF METHODS

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation. May contain a residual moisture content of 2-5%.	-	33-34, 37-48
National Environmental Standards Metals		0 - 20 mg/kg dry wt	33-34, 37-48
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. US EPA 3550. (Free water removed before analysis).	0.10 g/100g as rcvd	33-34, 37-48
Extraction of Hexavalent Chromium in Environmental Solids	0.01M KH_2PO_4 Extraction.	-	33-34, 37-48
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	33-34, 37-48
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	1-32, 35-36
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	33-34, 37-48
Total Recoverable Boron	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	20 mg/kg dry wt	33-34, 37-48
Total Recoverable Cadmium	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.10 mg/kg dry wt	33-34, 37-48
Trivalent Chromium	Calculation Total Chromium - Hexavalent Chromium.	0 mg/kg dry wt	33-34, 37-48
Hexavalent Chromium in Environmental Solids	Phosphate buffer extraction, colorimetry.	0.4 mg/kg dry wt	33-34, 37-48
Total Recoverable Chromium	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	33-34, 37-48
Total Recoverable Copper	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	33-34, 37-48
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	33-34, 37-48
Total Recoverable Mercury	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.10 mg/kg dry wt	33-34, 37-48

Appendix 25

Decision Notice – Resource Consent under NES for Site Remediation

SOUTH WAIRARAPA DISTRICT COUNCIL

APPLICATION FOR RESOURCE CONSENT UNDER SECTION 88 OF RESOURCE MANAGEMENT ACT 1991

Application No: 180203

Consent Type: Land Use

Applicant: The Orchard Limited Partnership

Proposal: Change in use from rural to residential and soil disturbance associated with the proposed remediation of two areas within the site and general earthworks

Location: 67 Reading Street, Greytown

Legal Description: Lot 4 DP 410283 and LOT 1 DP 6753

Zone: Rural (Primary Production) - Wairarapa Combined District Plan 2011

Activity Status: National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health 2011
Restricted Discretionary Activity – Section 10(1) for the change of use of a piece of land that has had a "Hazardous Activity" undertaken on it and does not meet the Permitted or Controlled Activity Standards in Sections 8(3)&(4) and 9(1)&(3).

The application is therefore a Restricted Discretionary Activity.

Locality Diagram:



1.0 APPLICATION

The site is located on the eastern side of the Greytown urban area at 67 Reading Street. The site is zoned rural on the urban / rural boundary.

The site is approximately 13.8 hectares and contains a dwelling and buildings associated with orchard use.

It is proposed to develop the site into a retirement complex. This application is to address the National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health (NES-CS) in relation to the proposal.

The site has previously had orchard / market garden activities undertaken on it over a long period of time. These activities are considered to be on the Ministry for the Environment's Hazardous Activity and Industries List (HAIL) as entry A.10. A represents "Chemical manufacture, application and bulk storage" and 10 represents "Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses, or spray sheds".

The proposal triggers resource consent under the NES-CS for a change of use and soil disturbance on HAIL land.

The applicants have confirmed that the site has a history of horticultural use which is considered to be HAIL activities. A detailed site investigation has shown that all but two areas of the site are below residential guidelines for arsenic and lead. Organochlorides were determined to be not at levels that required detailed investigation.

Two areas of land with elevated arsenic and lead were identified and determined that remediation was required are around two spray storage sheds where equipment and gear has been washed down over a long period of time.

Note that this application is for the required resource consents under the NES-CS and not the Wairarapa Combined District Plan.

2.0 S95A – 95F NOTIFICATION ANALYSIS AND DETERMINATION

2.1 Public Notification

1: Mandatory Public Notification (s95A Step 1)

Public Notification is required when the application meets any of the following criteria;

- The applicant has requested public notification,
- Public notification is required under s95C of the Act (relating to a requests for further information),
- The application been made jointly with an application to exchange recreation reserve land under section 15AA of the Reserves Act.

The above provisions do not apply to this proposal.

2: Public notification precluded in certain circumstances (s95A Step 2)

If not required by Step 1 above, Public Notification is precluded in certain circumstances when the application meets either of the following criteria;

- *All activities in the application are subject to one or more rules or national environmental standards that preclude public notification.*
- *The application is for one or more of the following, but no other, types of activities:*
  - *a controlled activity,*
  - *a restricted discretionary or discretionary activity that is a "residential activity" (as defined in s95A of the RMA) or a subdivision of land,*

- *a restricted discretionary, discretionary activity or non-complying activity that is a boundary activity,*
- *an activity prescribed by regulations made under section 360H(1)(a)(i) of the Act (if any) precluding public notification.*

Section 10 of the NES is silent in terms of notification of restricted discretionary activities, thus Step 2 does not preclude assessment under Step 3 below.

3: Public notification required in certain circumstances (s95A Step 3)
If not precluded in Step 2 above, Public Notification is required in certain circumstances when the application meets either of the following criteria;

- *Any activity in the application is subject to a rule or national environmental standard that requires public notification,*
- *The activity has, or is likely to have, adverse effects on the environment that are more than minor in accordance with s95D of the Act.*

As noted above, the NES is silent with respect to Public Notification, therefore it must be determined whether the proposal will have adverse effects on the environment that are more than minor. However, S95D precludes any effects on the land subject to the application and adjacent land. The proposed means of addressing the contaminated soil would have the soil remaining on the site, thus would not have adverse effects beyond the site. Thus in terms of S95D, any adverse effects do not meet the threshold for public notification.

4: Public notification in special circumstances (s95A Step 4)
If special circumstances exist in relation to the application that warrant public notification then the application must be publicly notified.

No special circumstances have been identified that would warrant public notification of the application.

2.2 Limited Notification

If public notification is not required, the Council must then determine whether there are any affected persons that would warrant limited notification under Section 95B(1).

1: Certain affected groups and affected persons must be notified (s95B Step 1)
An application shall be notified to each affected person/group if it meets any of the following criteria;

- *There are affected protected customary rights groups,*
- *There are affected customary marine title groups (in the case of an application for a resource consent for an accommodated activity),*
- *The proposed activity is on or adjacent to, or may affect, land that is the subject of a statutory acknowledgement made in accordance with an Act specified in Schedule 11 of the Act; and the person to whom the statutory acknowledgement is made is affected under s95E of the Act.*

The above provisions do not apply to this proposal.

2: Limited notification precluded in certain circumstances (s95B Step 2)
If not required by Step 1 above, Limited Notification is precluded in certain circumstances when the application meets either of the following criteria;

- *All activities in the application are subject to one or more rules or national environmental standards that preclude limited notification.*
- *The application is for either or both of the following, but no other activities:*

- *a controlled activity, that requires consent under a district plan (other than a subdivision)*
- *an activity prescribed by regulations made under section 360H(1)(a)(ii) of the Act (if any) precluding limited notification*

The above provisions do not apply to this proposal, therefore Step 3 below must be considered.

3. Certain other affected persons must be notified (s95B Step 3)

If not precluded by Step 2 above, the following affected persons must be notified;

- *In the case of a boundary activity, an owner of an allotment with an infringed boundary*
- *A person prescribed in regulations made under s360H(1)(b) of the Act (if any) in respect of the proposed activity*
- *For other activities, "affected persons" under s95E of the Act.*

Under Section 95(E) of the Act, Council must consider a person to be affected if the activity's adverse effects on that person are minor or more than minor unless an activity with that effect is permitted by a Rule or NES, the effect is not within the matters of control or discretion (as applicable to Controlled and Restricted Discretionary Activities) or that person has given written approval to the proposed activity.

The remediation of the site and earthworks within it will be carried out in such a way that any effects on neighbouring sites will be less than minor and therefore no affected parties have been identified.

4: Limited notification in special circumstances (s95B Step 4)

If special circumstances exist in relation to the application that warrant notification to any persons not already determined to be eligible for limited notification (excluding persons considered not affected under s95E) then the application must be notified to these persons. The proposed activity would manage the potential adverse effects within the site and does not present special circumstances that would warrant limited notification.

3.0 S104 ASSESSMENT

The relevant statutory provisions that were considered are the Resource Management Act 1991 and the National Environment Standards for Assessing and Managing Contaminants in Soil to Protect Human Health (NES).

3.1 National Environment Standards for Assessing and Managing Contaminants in Soil to Protect Human Health

Under Section 10(3) of the NES the matters over which discretion is restricted are as follows:

(a) the adequacy of the detailed site investigation, including—
  (i) site sampling:
  (ii) laboratory analysis:
  (iii) risk assessment:

(b) the suitability of the piece of land for the proposed activity, given the amount and kind of soil contamination:

(c) the approach to the remediation or ongoing management of the piece of land, including—
  (i) the remediation or management methods to address the risk posed by the contaminants to human health:
  (ii) the timing of the remediation:

(iii) the standard of the remediation on completion:
(iv) the mitigation methods to address the risk posed by the contaminants to human health:
(v) the mitigation measures for the piece of land, including the frequency and location of monitoring of specified contaminants:

(d) the adequacy of the site management plan or the site validation report or both, as applicable:

(e) the transport, disposal, and tracking of soil and other materials taken away in the course of the activity:

(f) the requirement for and conditions of a financial bond:

(g) the timing and nature of the review of the conditions in the resource consent:

(h) the duration of the resource consent.

The sampling and proposed remediation are covered in the EQOnz report "The Orchards Site Investigations Report 180507, Version 4 January 2019 Address: Reading St, Greytown" submitted with the application.

To make the piece of land suitable for the proposed use (residential living) it has been proposed that the contaminated soil within the two spray shed areas be removed.

This would effectively reduce the pathways of exposure to contaminants (ingestion of soil). The soil within the rest of the site would need to remain within the site as it is above background levels. Monitoring of remediation works by the applicants engineer would ensure that the works are undertaken as proposed.

A validation report confirming that the remediated sites are suitable for residential use will need to be submitted to Council for approval once the work has been completed.

As the EQOnz report states at "14. Site Management" the extensive development of the site will require significant management. An earthworks management plan will be a Council requirement of this. A condition of consent will ensure that the earthworks within the site are covered by an earthworks management plan (to be approved by Council) to ensure that, as far as practically possible, dust is retained within the application site.

Provided that the remediation works are carried out as proposed and confirmed through validation reporting, the site is considered suitable for residential use.

4.0 CONCLUSION

It is considered the proposal will have no more than minor adverse effects on the environment, no parties are considered to be adversely affected, and that it is consistent with the relevant assessment criteria of the NES-CS regulations.

5.0 DECISION

That the South Wairarapa District Council hereby grants Land Use consent, to application no. 180203 pursuant to Section 104C of the Resource Management Act 1991, subject to the following conditions:

CONDITIONS

THAT:

1. Except as amended by the conditions below, the development be carried out in general accordance with the following plans and documentation provided with the application.

2. All soil removed from the site during the proposed remediation around the two spray sheds shall be deposed of at a facility authorised to receive soil of that kind.

3. A remediation validation report prepared by a suitably qualified engineer shall be submitted to Council for approval once the remediation work has been carried out. This report shall include soil testing of the remediated sites once the clean soil is in place and shall also confirm;

    a. that the work has been supervised and conditions 1 and 2 above have been met,
    b. that there is a 200mm layer of compacted clean fill above the original fill within the area shown as "house site" on figure 15 of the application report,
    c. that the works have made it highly unlikely that the contaminated soil within the site will cause harm to human health.

4. Beyond the remediation in condition 3 above, prior to soil disturbance to develop the site, a site management plan (prepared by a suitably qualified professional) shall be submitted for Council approval. This report shall confirm that all soil is to remain on site and outline how the earthworks will proceed to address risks to human health (in respect to dust and stormwater control and in relation to site workers and adjoining land owners). Note that, while outside of the scope of this consent the resource consent under the Wairarapa Combined District Plan will require methods to minimise noise disturbance to neighbouring properties to be established.

Notes:

1. *In accordance with Section 125 of the Resource Management Act 1991, this resource consent will lapse if not given effect to within 5 years.*

2. *This land use is based on the plans provided with the application. Any changes to these plans could require further resource consent.*

3. *Compliance in all respects with the Building Act 2004 is required, including the obtaining of a Building Consent.*

The Council grants the Consent for the following reasons:

i) The effects of the proposal, with the conditions imposed, are considered to be no more than minor.

ii) The proposal is in accordance with the purpose of the Act and the NES-CS.

Prepared by:

Russell Hooper
Planning Manager

Reviewed / Approved by:

Russell O'Leary
Group Manager, Planning and Environment

DATED at Martinborough this 4th day of March 2019

For and on behalf of the
SOUTH WAIRARAPA DISTRICT COUNCIL

Appendix 26

EQONZ Ltd Foundation Report

Foundation report for Craig Percy – Reading St proposal

Prepared by EQOnz ltd

Tel: 06 3708175

e-mail: andy@eqo.org.nz

20th November 2018 For **Craig Percy/The Orchards partnership**

Background:

The site has multiple proposed buildings meeting NZS3604 and requiring soil testing under that standard. The report's aim is to establish soil strength variation over the site, and give an indication of likely foundation requirements.

Site inspection

A site initial inspection was carried out on 26th May 2018 and nine penetrometer tests were carried out. Subsequently further tests were carried out over several days in October 2018 focussing on specific areas where (at the time) it was believed two-storey buildings would be located. All tests were carried out to refusal or practical refusal (<3mm/blow). Soil maps indicate surrounding soils likely to be Greytown silt Loam (fig. 1).

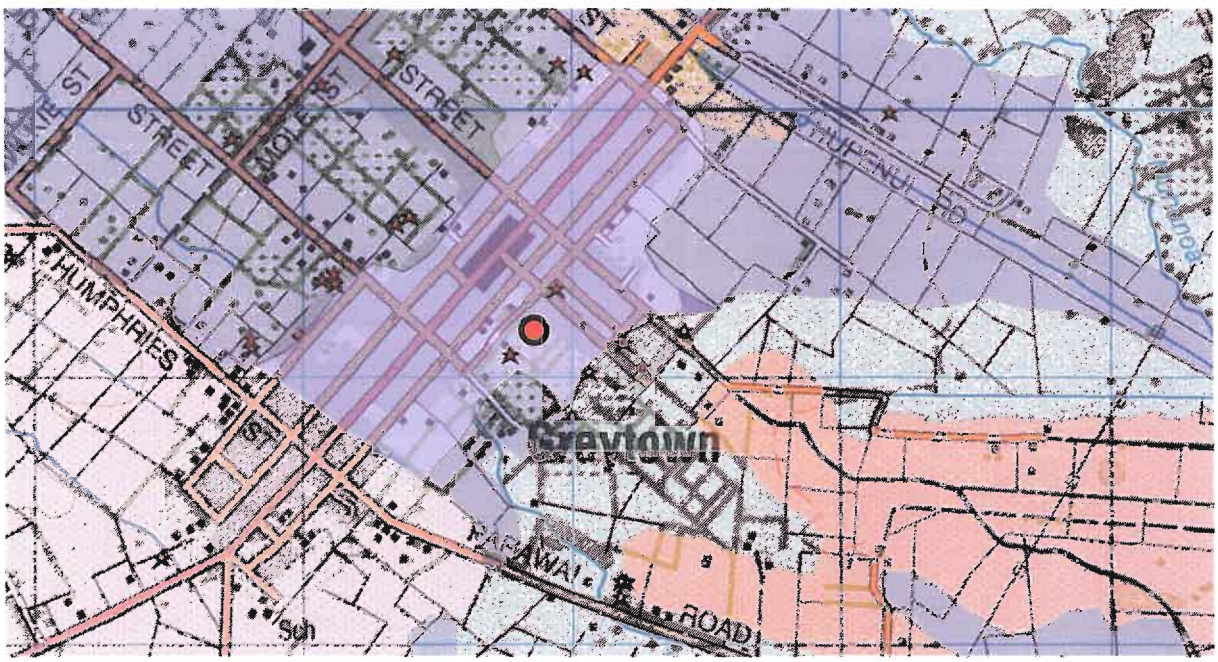

Figure 1 Purple shaded area is recorded or estimated as Greytown silt loam

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Inspection on site showed soils confirmed silt loam (fig. 2).



Figure 2 Soil sample from trial pit.

Results

In total 54 tests were carried out at around the site (fig. 3). Test results are appended (note the left hand column indicates test numbers 1-9 for the May testing, and A1-8, B1-8 etc for the October testing).

The site assessment and penetrometer tests indicate that the soil does not meet the NZS3604 'good ground' requirement generally until depths of 1200mm-1800mm, although at some locations it was reached at less than 1m and in others not reached until over 2.5m.

There appear to be pockets of different soil types – the Ahikouka (slightly firmer) and Greytown (weaker) dominate, but also areas of sand are also reported by the previous owner.

Soil strength test results reflect some of this variation, and it must be assumed that there will be inconsistency in the soil strength around the site.

Given the generally low soil strength, specific design for foundations will be required.

A.Duncan
B.Eng(Hons) M.Eng MIPENZ CPEng

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October 2018

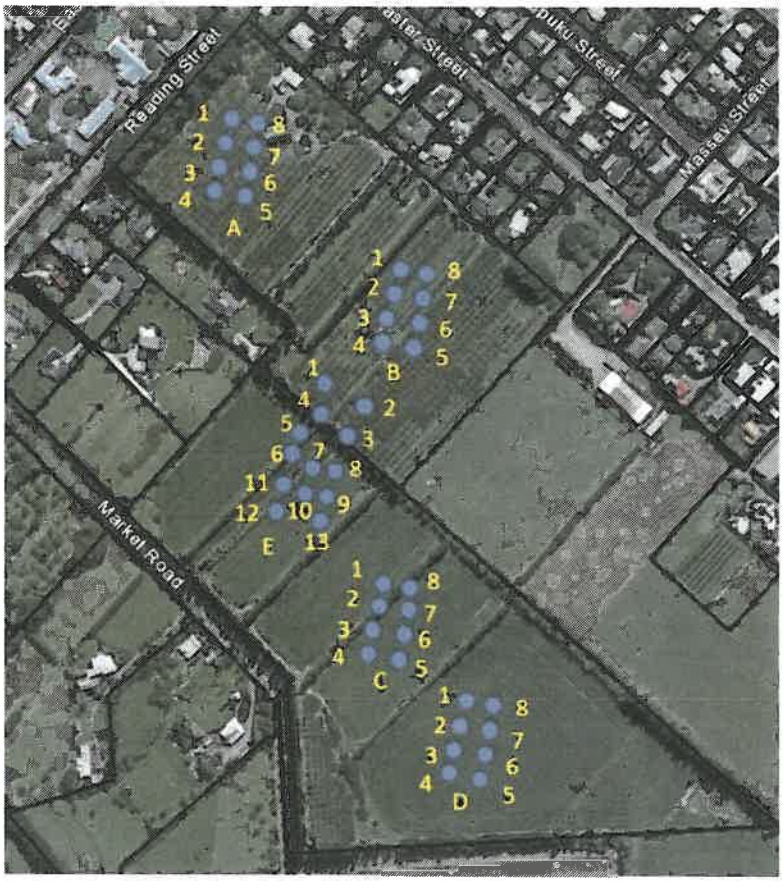

Figure 3 Test location plans May and October 2018

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Test pit 1 (site A) 200mm topsoil over brown silt loam to 2.4m, then silty sand and gravel. Note water is from an old irrigation pipe hit during excavation.



Test pit 2 (site B) 200mm topsoil over brown silt loam to 1.2m, then silty sand and gravel



Test pit 3 (site E) 200mm topsoil over brown silt loam to 2.5m, then dense sand and gravel



Test pit 4 (site C) 200mm topsoil over brown silt loam to 2.0m, then silty sand and gravel



Test pit 5 (site D) 200mm topsoil over brown silt loam to 1.2m, then silty sand and gravel

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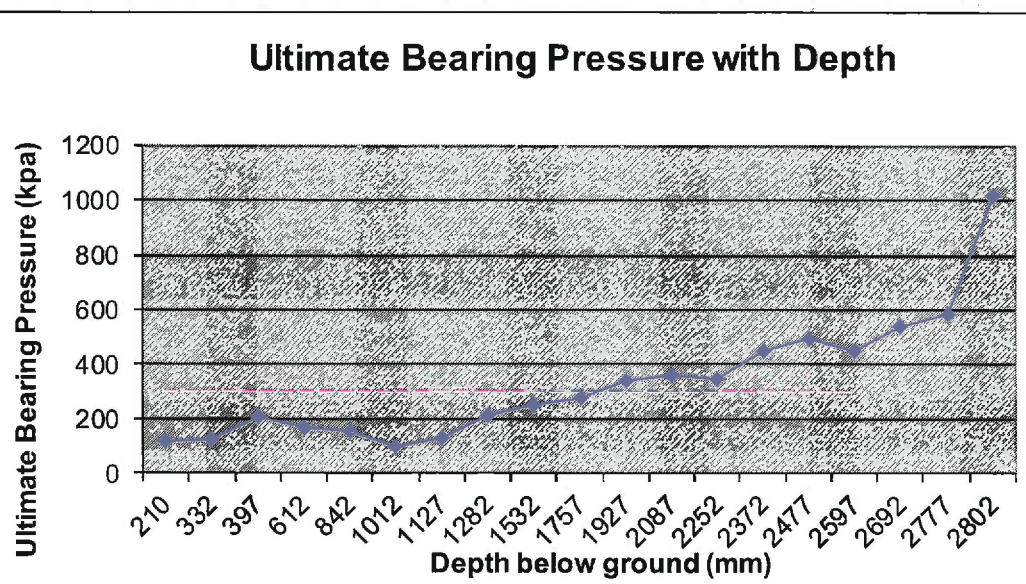
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 1 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown Owner: A&H Murphy

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1215	1080	210	silt loam	2	135	68	**117**
1	1080	958	332	0	2	122	61	**126**
	985	920	397		2	65	33	**206**
	920	705	612		5	215	43	**165**
	705	475	842		5	230	46	**157**
	475	305	1012		2	170	85	**97**
	305	190	1127		2	115	58	**132**
	1185	1030	1282		5	155	31	**213**
	1030	780	1532		10	250	25	**252**
	780	555	1757		10	225	23	**273**
	555	385	1927		10	170	17	**340**
	385	225	2087		10	160	16	**356**
	1485	1320	2252		10	165	17	**348**
	1320	1200	2372		10	120	12	**445**
	1200	1095	2477		10	105	11	**494**
	1095	975	2597		10	120	12	**445**
	975	880	2692		10	95	10	**534**
	880	795	2777		10	85	9	**582**
	795	770	2802		6	25	4	**1012**



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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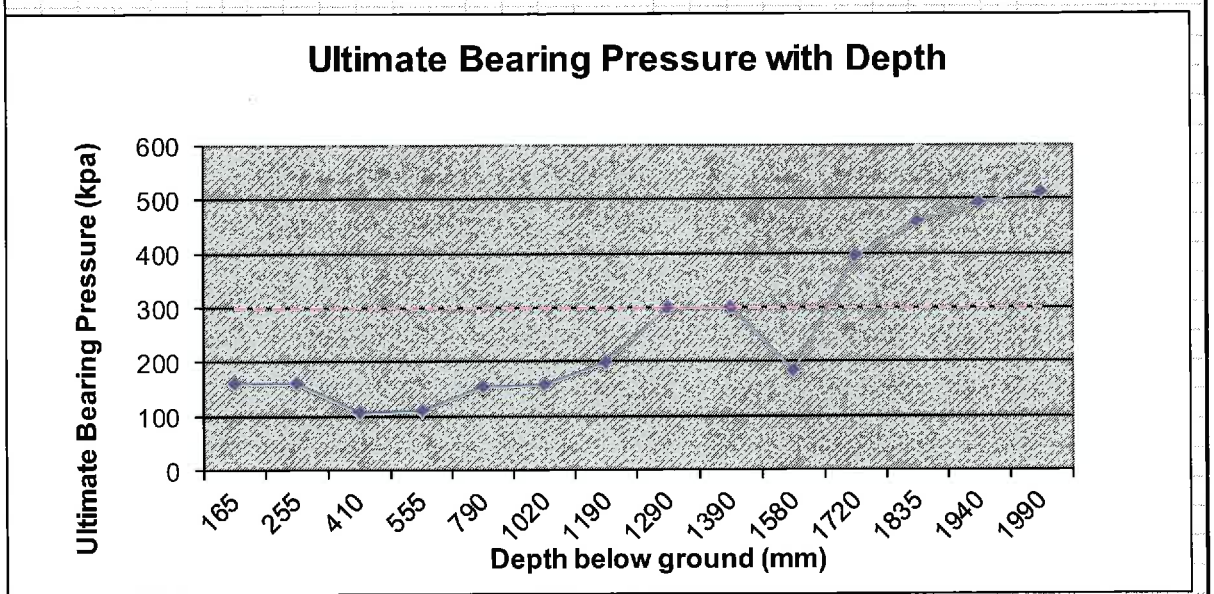
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 2 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: A&H Murphy

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1225	1135	165	brown silt loam	2	90	45	**160**
2	1135	1045	255		2	90	45	**160**
	1045	890	410		2	155	78	**105**
	890	745	555		2	145	73	**110**
	745	510	790		5	235	47	**154**
	510	280	1020		5	230	46	**157**
	280	110	1190		5	170	34	**198**
	1000	900	1290		5	100	20	**300**
	900	800	1390		5	100	20	**300**
	800	610	1580		5	190	38	**182**
	610	470	1720		10	140	14	**395**
	470	355	1835		10	115	12	**460**
	355	250	1940		10	105	11	**494**
	250	200	1990		5	50	10	**513**



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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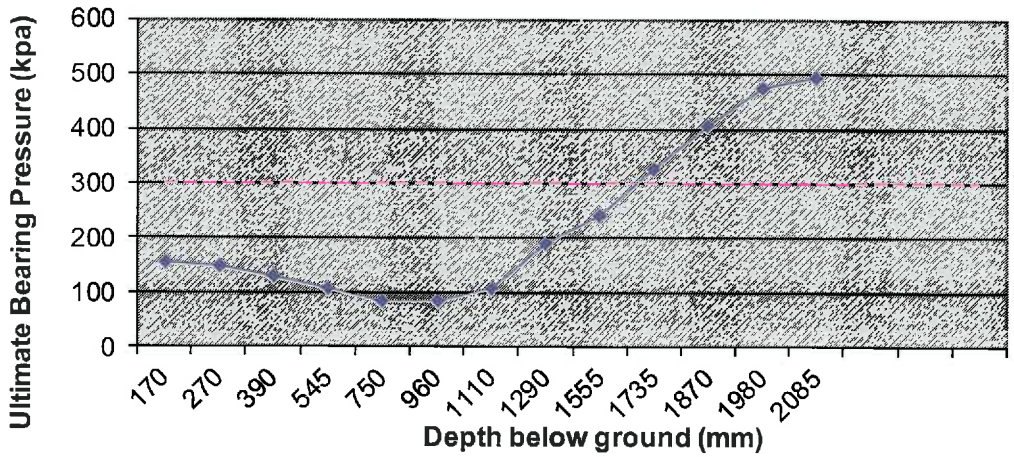
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 3 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: A&H Murphy

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1160	1065	170	brown silt loam	2	95	48	**153**
3	1065	965	270	0	2	100	50	**147**
	965	845	390		2	120	60	**128**
	845	690	545		2	155	78	**105**
	690	485	750		2	205	103	**84**
	485	275	960		2	210	105	**83**
	275	125	1110		2	150	75	**107**
	1125	945	1290		5	180	36	**190**
	945	680	1555		10	265	27	**241**
	680	500	1735		10	180	18	**325**
	500	365	1870		10	135	14	**406**
	365	255	1980		10	110	11	**476**
	255	150	2085		10	105	11	**494**

Ultimate Bearing Pressure with Depth



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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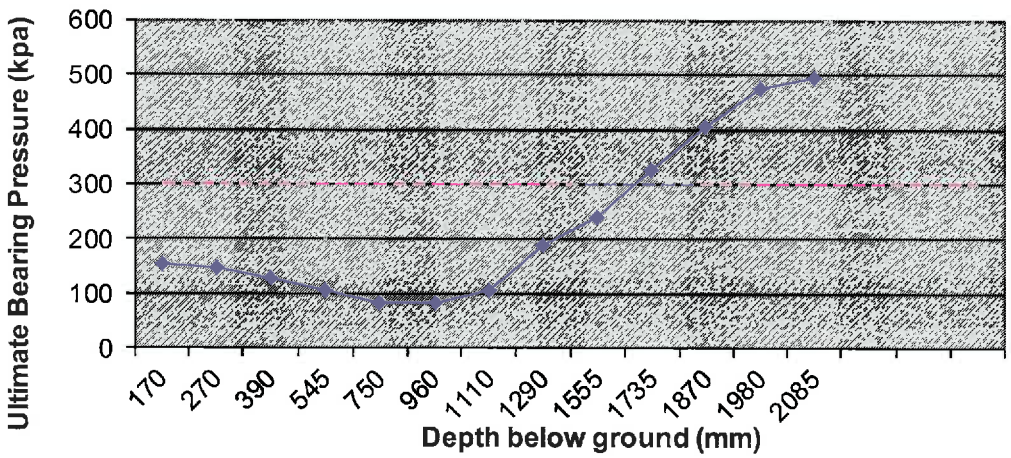
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 3 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: A&H Murphy

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1160	1065	170	brown silt loam	2	95	48	**153**
3	1065	965	270	0	2	100	50	**147**
	965	845	390		2	120	60	**128**
	845	690	545		2	155	78	**105**
	690	485	750		2	205	103	**84**
	485	275	960		2	210	105	**83**
	275	125	1110		2	150	75	**107**
	1125	945	1290		5	180	36	**190**
	945	680	1555		10	265	27	**241**
	680	500	1735		10	180	18	**325**
	500	365	1870		10	135	14	**406**
	365	255	1980		10	110	11	**476**
	255	150	2085		10	105	11	**494**

Ultimate Bearing Pressure with Depth



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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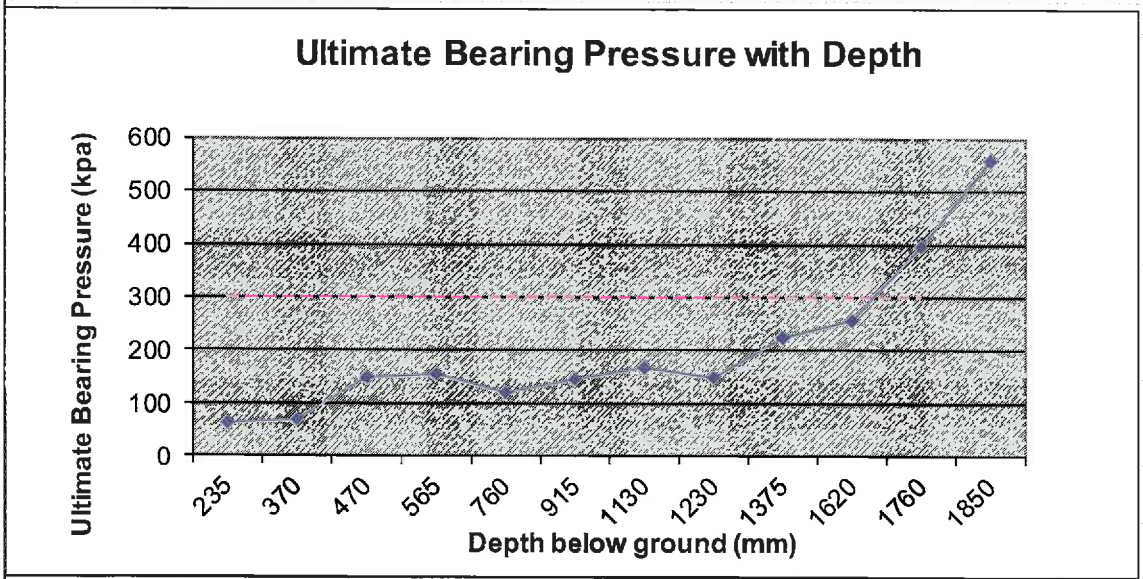
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 4 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 80 mm
Owner: A&H Murphy

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1195	1040	235	brown silt loam	1	155	155	**61**
4	1040	905	370	0	1	135	135	**68**
	905	805	470		2	100	50	**147**
	805	710	565		2	95	48	**153**
	710	515	760		3	195	65	**120**
	515	360	915		3	155	52	**143**
	360	145	1130		5	215	43	**165**
	1130	1030	1230		2	100	50	**147**
	1030	885	1375		5	145	29	**225**
	885	640	1620		10	245	25	**256**
	640	500	1760		10	140	14	**395**
	500	410	1850		10	90	9	**557**
	410	325	1935		10	85	9	**582**
	325	245	2015		10	80	8	**610**
	245	180	2080		10	65	7	**717**



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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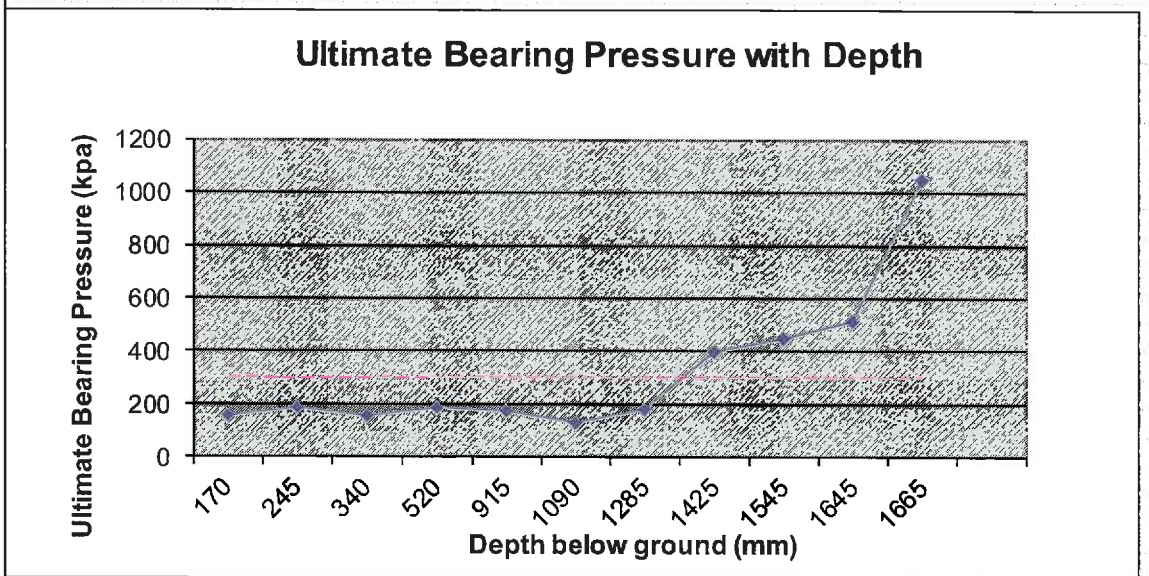
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 5 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 75 mm
Owner: A&H Murphy

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1220	1125	170	silt loam	2	95	48	**153**
5	1125	1050	245	0	2	75	38	**184**
	1050	955	340		2	95	48	**153**
	955	775	520		5	180	36	**190**
	775	380	915		10	395	40	**177**
	380	205	1090		3	175	58	**131**
	1215	1020	1285		5	195	39	**178**
	1020	880	1425		10	140	14	**395**
	880	760	1545		10	120	12	**445**
	760	660	1645		10	100	10	**513**
	660	640	1665		5	20	4	**1045**



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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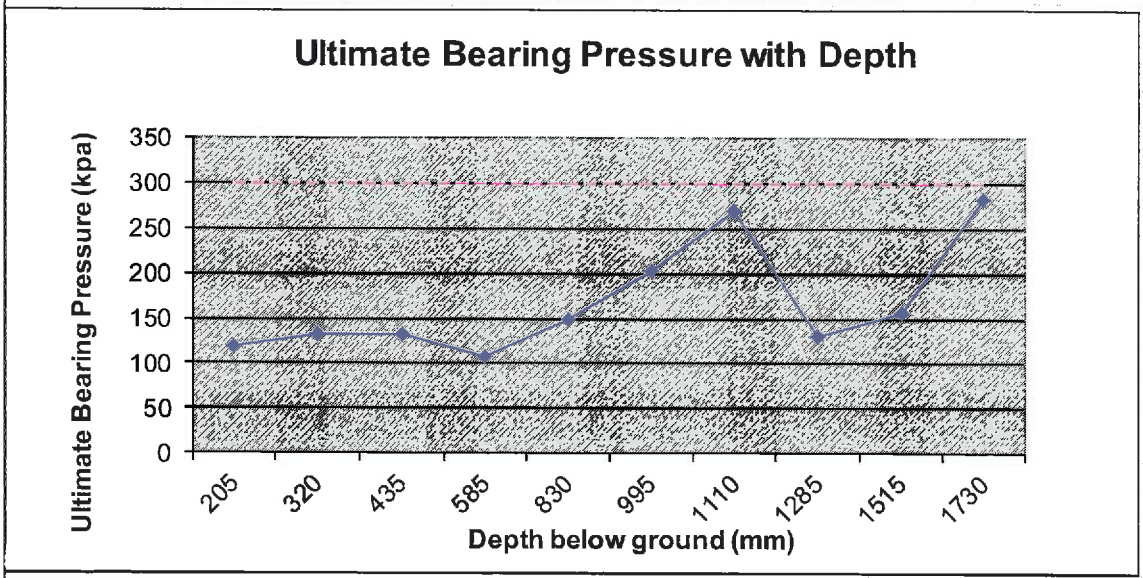
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 6 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1215	1085	205	silt loam	2	130	65	**120**
6	1085	970	320	0	2	115	58	**132**
	970	855	435		2	115	58	**132**
	855	705	585		2	150	75	**107**
	705	460	830		5	245	49	**149**
	460	295	995		5	165	33	**203**
	295	180	1110		5	115	23	**269**
	1175	1000	1285		3	175	58	**131**
	1000	770	1515		5	230	46	**157**
	770	555	1730		10	215	22	**283**
	555	395	1890		10	160	16	**356**
	395	320	1965		10	75	8	**641**
	320	265	2020		10	55	6	**816**
	265	180	2105		10	85	9	**582**



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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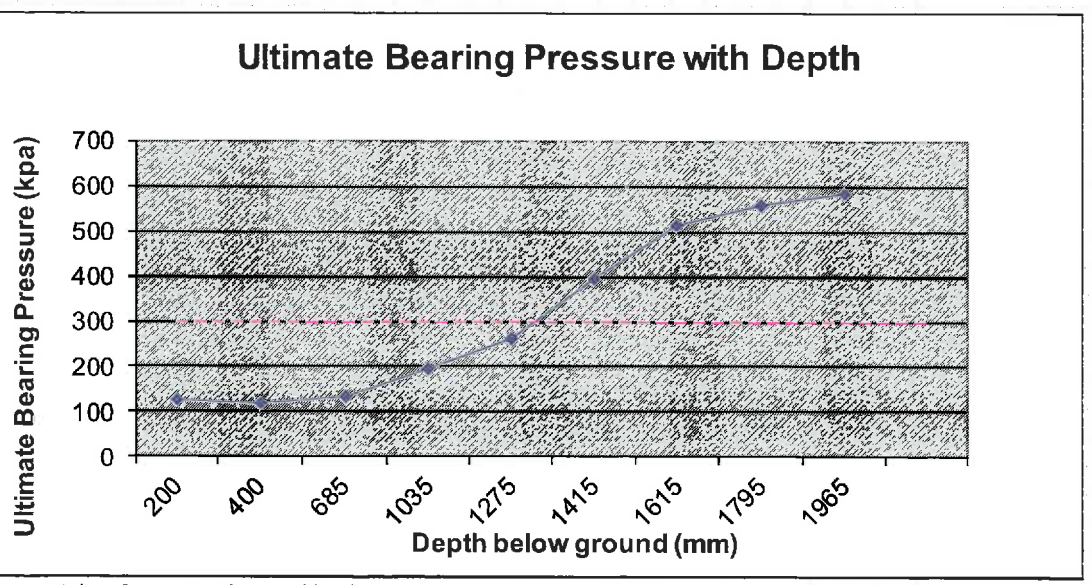
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 7 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
7	1150	1025	200	brown silt loam	2	125	63	**124**
	1025	825	400	0	3	200	67	**118**
	825	540	685		5	285	57	**133**
	540	190	1035		10	350	35	**194**
	1190	950	1275		10	240	24	**260**
	950	810	1415		10	140	14	**395**
	810	610	1615		20	200	10	**513**
	610	430	1795		20	180	9	**557**
	430	260	1965		20	170	9	**582**



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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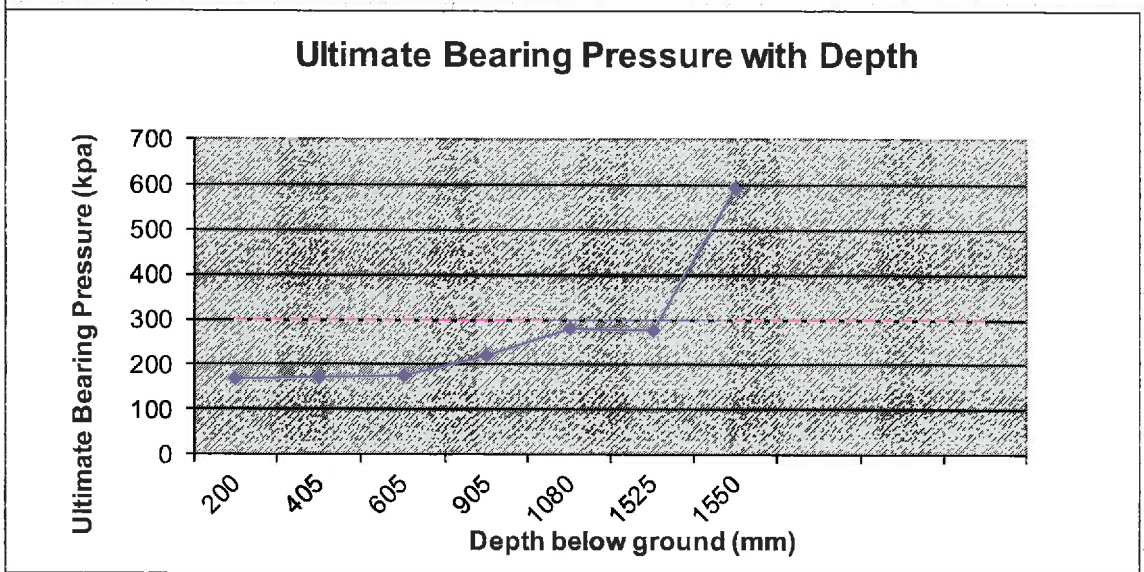
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 8 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 75 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1150	1025	200	brown silt loam	3	125	42	**170**
8	1025	820	405	0	5	205	41	**172**
	820	620	605		5	200	40	**175**
	620	320	905		10	300	30	**219**
	320	145	1080		8	175	22	**279**
	1145	700	1525		20	445	22	**276**
	700	675	1550		3	25	8	**591**



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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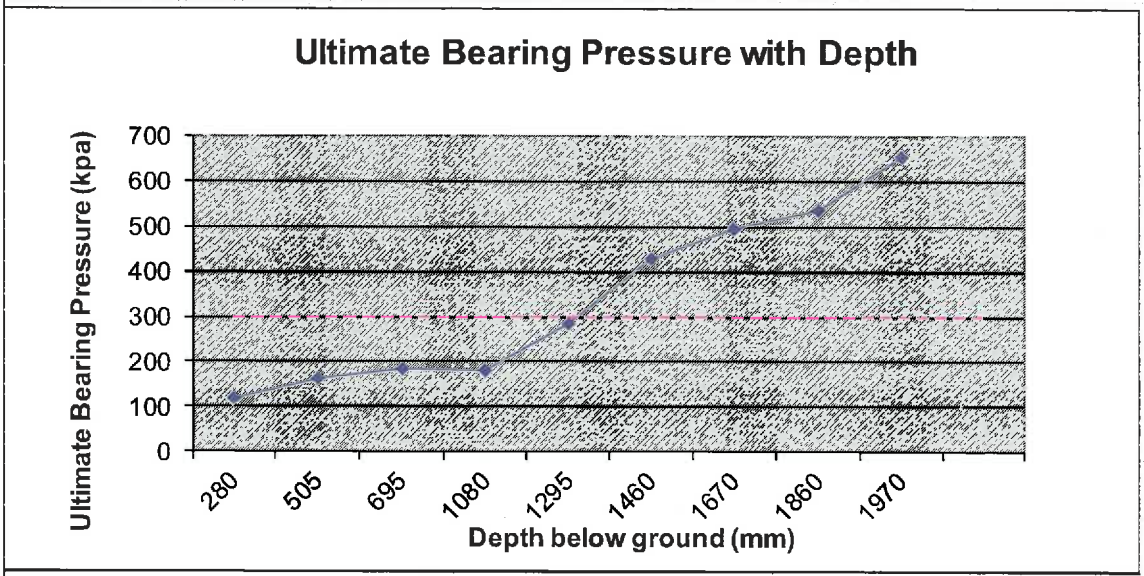
Designed: AGD Date: 26-May	Job Reference No. 180507 Murphys Orchard	Sheet No. 9 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 75 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1135	930	280	brown silt loam	3	205	68	**115**
9	930	705	505	0	5	225	45	**160**
	705	515	695		5	190	38	**182**
	515	130	1080		10	385	39	**180**
	1130	915	1295		10	215	22	**283**
	915	750	1460		13	165	13	**426**
	750	540	1670		20	210	11	**494**
	540	350	1860		20	190	10	**534**
	350	240	1970		15	110	7	**653**



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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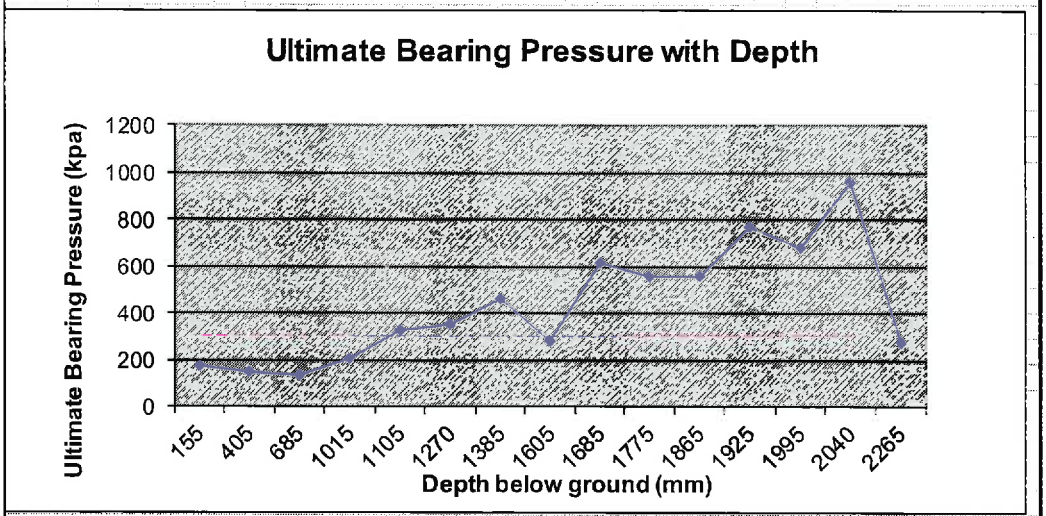
EQO nz	Job Reference No. 180507		Sheet No. 10
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC — start depth: 75 mm
Location: Reading st, Greytown — Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1220	1140	155	brown silt loam	2	80	40	**175**
A1	1140	890	405		5	250	50	**147**
	890	610	685		5	280	56	**135**
	610	280	1015		10	330	33	**203**
	280	190	1105		5	90	18	**325**
	1170	1005	1270		10	165	17	**348**
	1005	890	1385		10	115	12	**460**
	1000	780	1605		10	220	22	**278**
	780	700	1685		10	80	8	**610**
	700	610	1775		10	90	9	**557**
	610	520	1865		10	90	9	**557**
	520	460	1925		10	60	6	**763**
	460	390	1995		10	70	7	**677**
	390	345	2040		10	45	5	**953**
	345	120	2265		10	225	23	**273**
				Refusal				



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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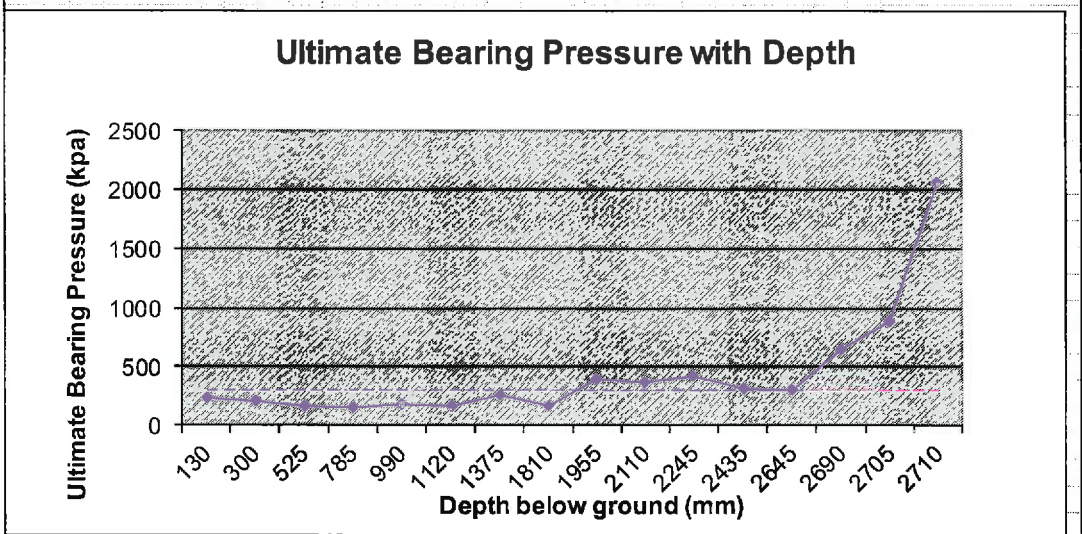
eQO nz	Job Reference No. 180507		Sheet No. 11
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1235	1180	130	brown silt loam	2	55	28	**234**
A2	1180	1010	300	0	5	170	34	**198**
	1010	785	525		5	225	45	**160**
	785	525	785		5	260	52	**143**
	525	320	990		5	205	41	**172**
	320	190	1120		3	130	43	**164**
	1160	905	1375		10	255	26	**248**
	1125	690	1810		10	435	44	**164**
	690	545	1955		10	145	15	**385**
	545	390	2110		10	155	16	**365**
	390	255	2245		10	135	14	**406**
	1520	1330	2435		10	190	19	**312**
	1330	1120	2645		10	210	21	**288**
	1120	1075	2690		6	45	8	**641**
	1075	1060	2705		3	15	5	**879**
	1060	1055	2710		3	5	2	**2061**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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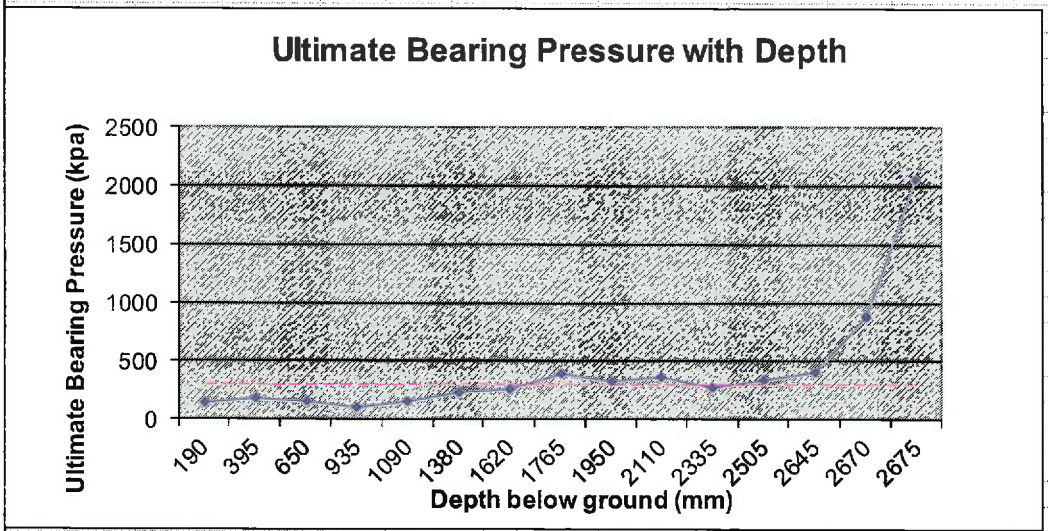
EQOnz	Job Reference No. 180507	Sheet No. 12
	Murphys Orchard	Element proposed building site
Designed: AGD	Date: 20-Nov	

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1240	1125	190	brown silt loam	2	115	58	**132**
A3	1125	920	395	0	5	205	41	**172**
	920	665	650		5	255	51	**145**
	665	380	935		3	285	95	**89**
	380	225	1090		3	155	52	**143**
	1200	910	1380		10	290	29	**225**
	910	670	1620		10	240	24	**260**
	670	525	1765		10	145	15	**385**
	525	340	1950		10	185	19	**318**
	340	180	2110		10	160	16	**356**
	1445	1220	2335		10	225	23	**273**
	1220	1050	2505		10	170	17	**340**
	1050	910	2645		10	140	14	**395**
	910	885	2670		5	25	5	**879**
	885	880	2675		3	5	2	**2061**
				Effective Refusal				



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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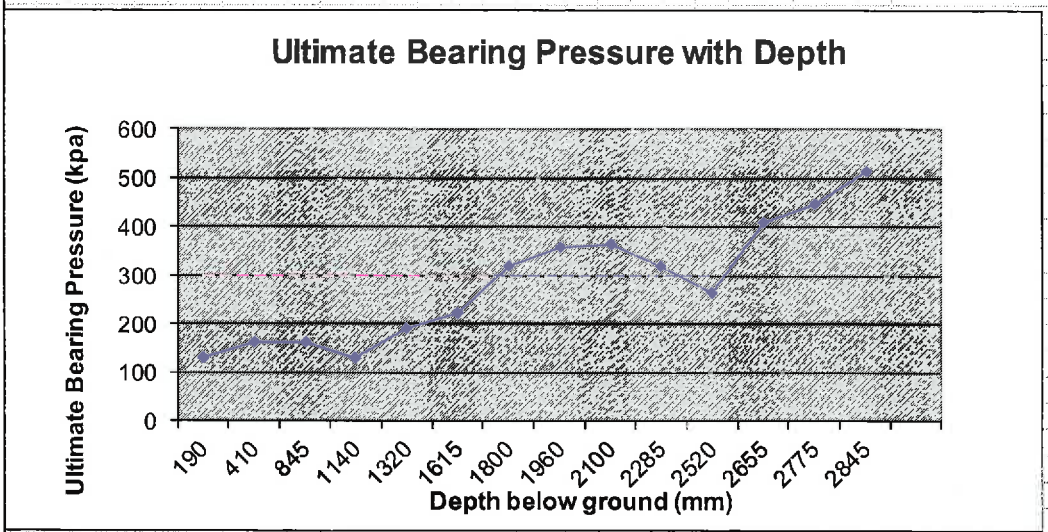
EQO nz	Job Reference No. 180507	Sheet No. 13
	Murphys Orchard	Element proposed building site
Designed: AGD	Date: 20-Nov	

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1240	1125	190	silt loam	2	115	58	**132**
A4	1125	905	410	0	5	220	44	**162**
	905	470	845		10	435	44	**164**
	470	175	1140		5	295	59	**129**
	1150	970	1320		5	180	36	**190**
	970	675	1615		10	295	30	**222**
	675	490	1800		10	185	19	**318**
	490	330	1960		10	160	16	**356**
	330	190	2100		9	140	16	**364**
	1405	1220	2285		10	185	19	**318**
	1220	985	2520		10	235	24	**264**
	985	850	2655		10	135	14	**406**
	850	730	2775		10	120	12	**445**
	730	660	2845		7	70	10	**513**
			Effective Refusal					



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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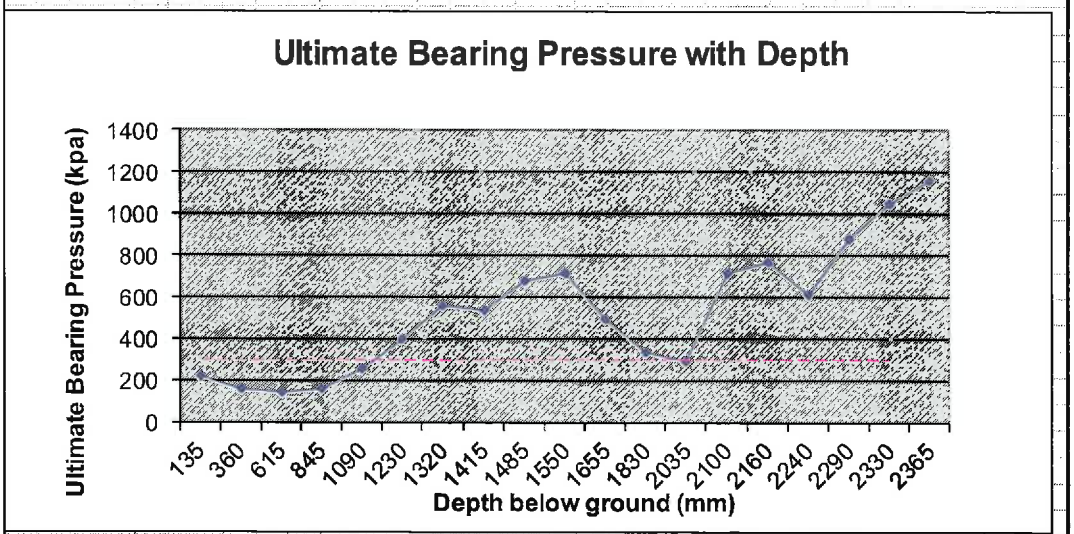
EQO nz	Job Reference No. 180507		Sheet No. 14
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1240	1180	135	silt loam	2	60	30	**219**
A5	1180	955	360	0	5	225	45	**160**
	955	700	615		5	255	51	**145**
	700	470	845		5	230	46	**157**
	470	225	1090		10	245	25	**256**
	1480	1340	1230		10	140	14	**395**
	1340	1250	1320		10	90	9	**557**
	1250	1155	1415		10	95	10	**534**
	1155	1085	1485		10	70	7	**677**
	1085	1020	1550		10	65	7	**717**
	1020	915	1655		10	105	11	**494**
	915	740	1830		10	175	18	**332**
	740	535	2035		10	205	21	**294**
	535	470	2100		10	65	7	**717**
	470	410	2160		10	60	6	**763**
	410	330	2240		10	80	8	**610**
	330	280	2290		10	50	5	**879**
	280	240	2330		10	40	4	**1045**
	240	205	2365		10	35	4	**1159**
				Effective Refusal				



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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eQO nz	Job Reference No. 180507	Sheet No. 15
	Murphys Orchard	Element proposed building site
Designed: AGD	Date: 20-Nov	

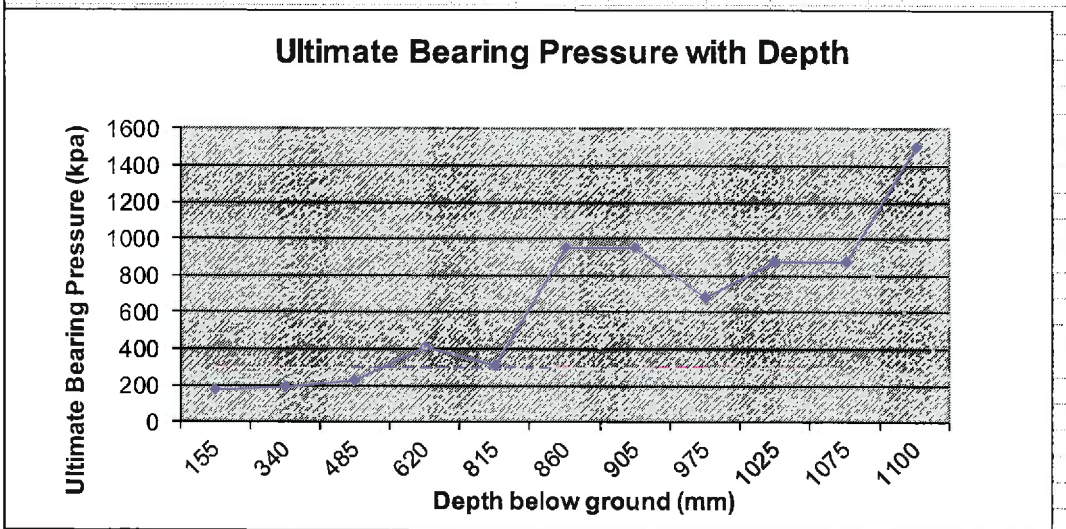
Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 75 mm

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1250	1170	155	brown silt loam	2	80	40	**175**
A6	1170	985	340	0	5	185	37	**186**
	985	840	485		5	145	29	**225**
	840	705	620		10	135	14	**406**
	705	510	815		10	195	20	**306**
	510	465	860		10	45	5	**953**
	465	420	905		10	45	5	**953**
	420	350	975		10	70	7	**677**
	350	300	1025		10	50	5	**879**
	300	250	1075		10	50	5	**879**
	1500	1475	1100		10	25	3	**1504**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 16 Element proposed building site

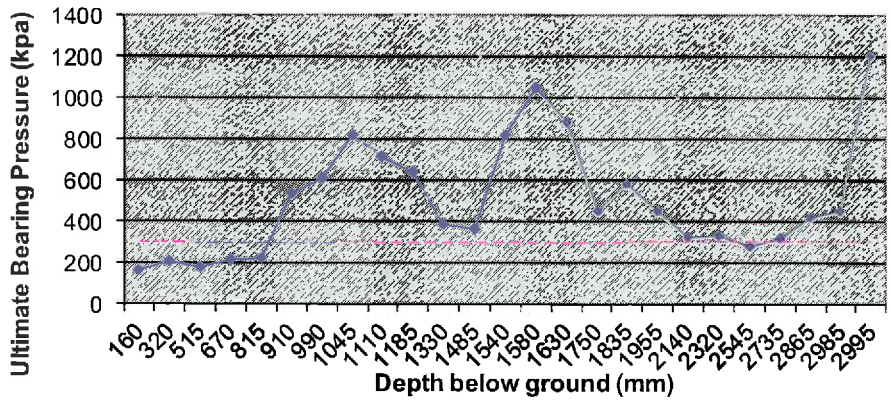
Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1240	1155	160	brown silt loam	2	85	43	**167**
A7	1155	995	320	0	5	160	32	**208**
	995	800	515		5	195	39	**178**
	800	645	670		5	155	31	**213**
	645	500	815		5	145	29	**225**
	500	405	910		10	95	10	**534**
	405	325	990		10	80	8	**610**
	325	270	1045		10	55	6	**816**
	270	205	1110		10	65	7	**717**
	1450	1375	1185		10	75	8	**641**
	1375	1230	1330		10	145	15	**385**
	1230	1075	1485		10	155	16	**365**
	1075	1020	1540		10	55	6	**816**
	1020	980	1580		10	40	4	**1045**
	980	930	1630		10	50	5	**879**
	930	810	1750		10	120	12	**445**
	810	725	1835		10	85	9	**582**
	725	605	1955		10	120	12	**445**
	605	420	2140		10	185	19	**318**
	420	240	2320		10	180	18	**325**
	1225	1000	2545		10	225	23	**273**
	1000	810	2735		10	190	19	**312**
	810	680	2865		10	130	13	**419**
	680	560	2985		10	120	12	**445**
	560	550	2995		3	10	3	**1203**

Effective Refusal

Ultimate Bearing Pressure with Depth



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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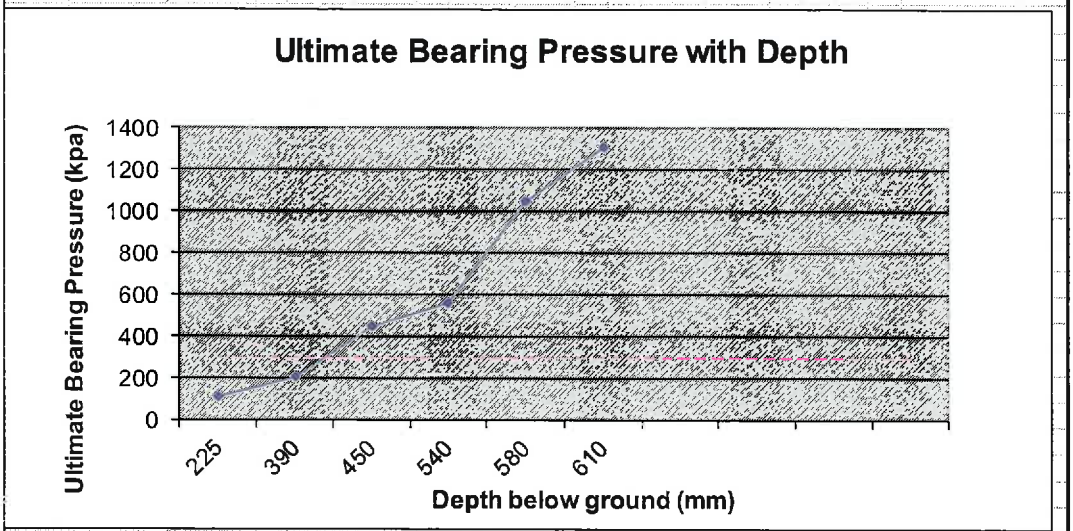
eQO nz	Job Reference No. 180507		Sheet No. 17
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1205	1055	225	brown silt loam	2	150	75	**107**
A8	1055	890	390	0	5	165	33	**203**
	890	830	450		5	60	12	**445**
	830	740	540		10	90	9	**557**
	740	700	580		10	40	4	**1045**
	700	670	610		10	30	3	**1306**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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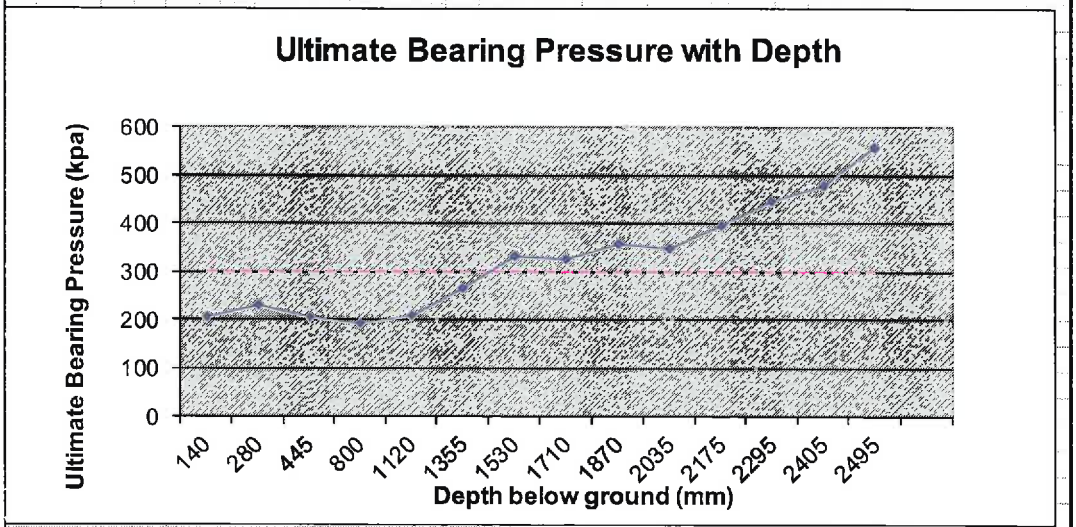
Designed: AGD	Date: 20-Nov	Job Reference No. 180507	Sheet No. 18
		Murphys Orchard	Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1255	1190	140	brown silt loam	2	65	33	**206**
B1	1190	1050	280		5	140	28	**231**
	1050	885	445		5	165	33	**203**
	885	530	800		10	355	36	**192**
	530	210	1120		10	320	32	**208**
	1460	1225	1355		10	235	24	**264**
	1225	1050	1530		10	175	18	**332**
	1050	870	1710		10	180	18	**325**
	870	710	1870		10	160	16	**356**
	710	545	2035		10	165	17	**348**
	545	405	2175		10	140	14	**395**
	405	285	2295		10	120	12	**445**
	285	175	2405		10	110	11	**476**
	1150	1060	2495		10	90	9	**557**
				Refusal				



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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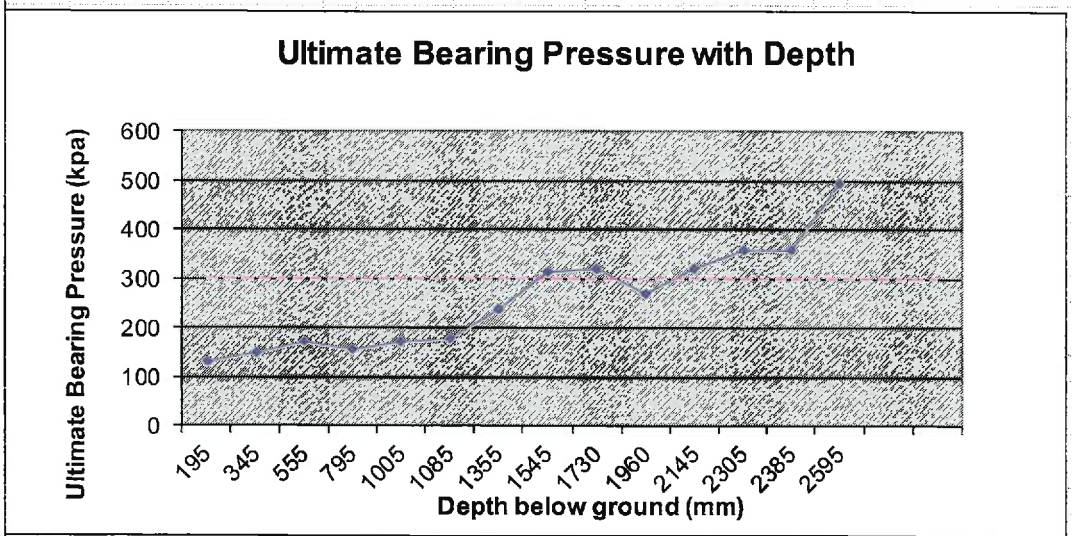
eQO nz	Job Reference No. 180507		Sheet No. 19
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1250	1130	195	brown silt loam	2	120	60	**128**
B2	1130	980	345	0	3	150	50	**147**
	980	770	555		5	210	42	**168**
	770	530	795		5	240	48	**152**
	530	320	1005		5	210	42	**168**
	320	240	1085		2	80	40	**175**
	1500	1230	1355		10	270	27	**237**
	1230	1040	1545		10	190	19	**312**
	1040	855	1730		10	185	19	**318**
	855	625	1960		10	230	23	**269**
	625	440	2145		10	185	19	**318**
	440	280	2305		10	160	16	**356**
	280	200	2385		5	80	16	**356**
	1175	965	2595		20	210	11	**494**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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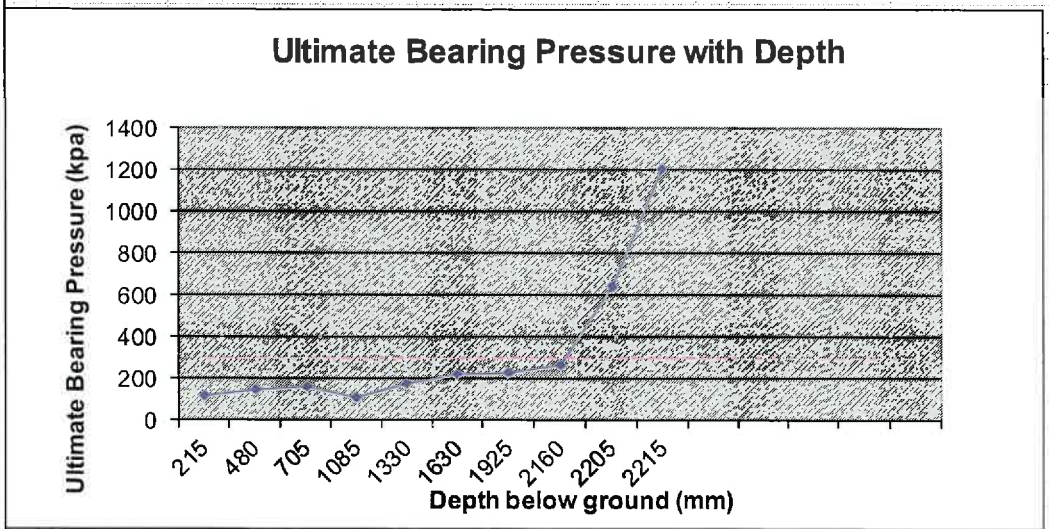
eQO nz	Job Reference No. 180507		Sheet No. 20
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1180	1040	215	brown silt loam	2	140	70	**113**
B3	1040	775	480	0	5	265	53	**141**
	775	550	705		5	225	45	**160**
	550	170	1085		5	380	76	**106**
	1425	1180	1330		6	245	41	**172**
	1180	880	1630		10	300	30	**219**
	880	585	1925		10	295	30	**222**
	585	350	2160		10	235	24	**264**
	350	305	2205		6	45	8	**641**
	305	295	2215		3	10	3	**1203**
				Effective Refusal				



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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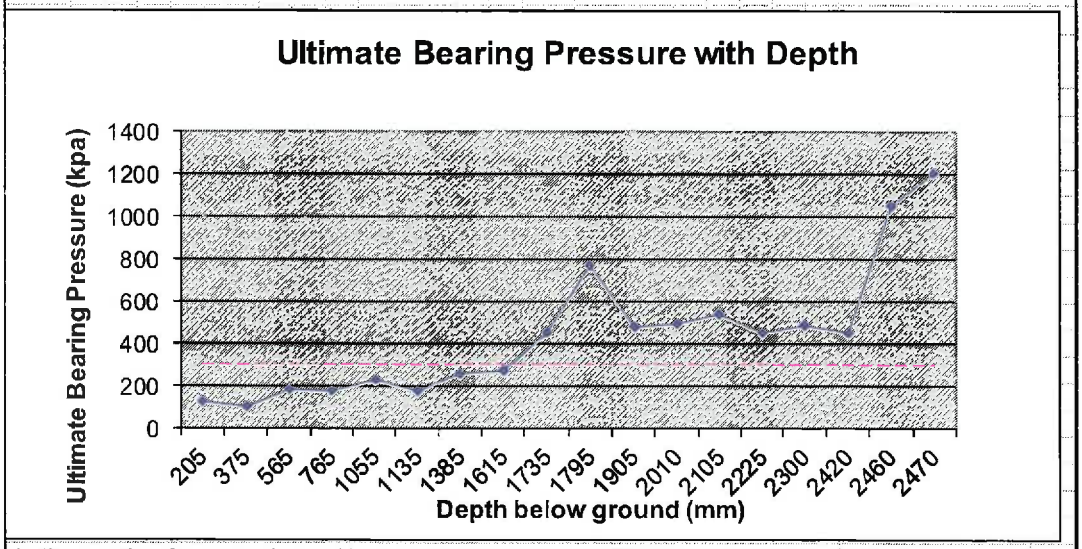
Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 21 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1240	1110	205	silt loam	2	130	65	**120**
B4	1110	940	375	0	2	170	85	**97**
	940	750	565		5	190	38	**182**
	750	550	765		5	200	40	**175**
	550	260	1055		10	290	29	**225**
	260	180	1135		2	80	40	**175**
	1330	1080	1385		10	250	25	**252**
	1080	850	1615		10	230	23	**269**
	850	730	1735		10	120	12	**445**
	730	670	1795		10	60	6	**763**
	670	560	1905		10	110	11	**476**
	560	455	2010		10	105	11	**494**
	455	360	2105		10	95	10	**534**
	360	240	2225		10	120	12	**445**
	240	165	2300		7	75	11	**486**
	1130	1010	2420		10	120	12	**445**
	1010	970	2460		10	40	4	**1045**
	970	960	2470		3	10	3	**1203**
				Effective Refusal				



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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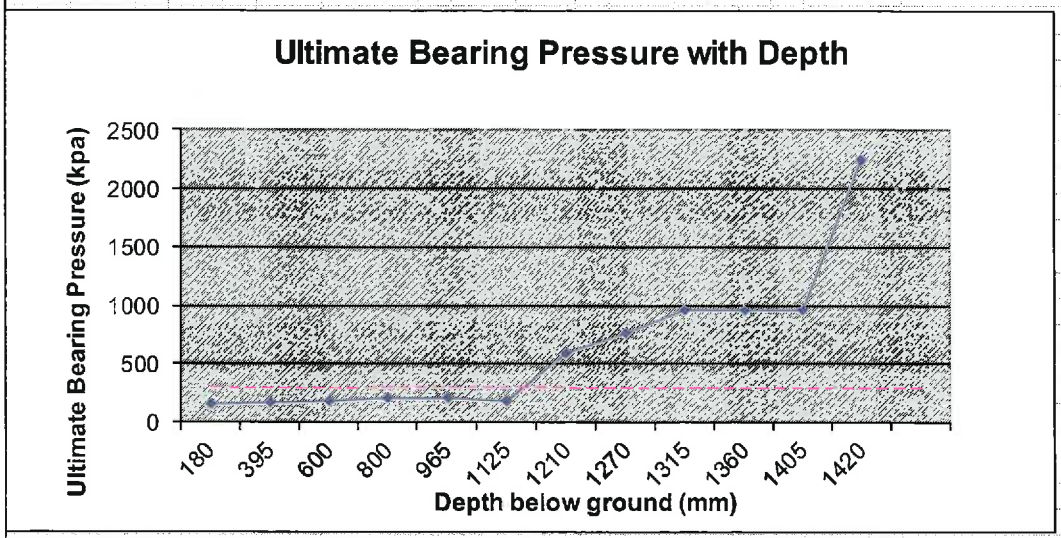
Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 22 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1230	1125	180	silt loam	2	105	53	**142**
B5	1125	910	395	0	5	215	43	**165**
	910	705	600		5	205	41	**172**
	705	505	800		6	200	33	**202**
	505	340	965		5	165	33	**203**
	340	180	1125		4	160	40	**175**
	1380	1295	1210		10	85	9	**582**
	1295	1235	1270		10	60	6	**763**
	1235	1190	1315		10	45	5	**953**
	1190	1145	1360		10	45	5	**953**
	1145	1100	1405		10	45	5	**953**
	1100	1085	1420		10	15	2	**2236**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

Notes:

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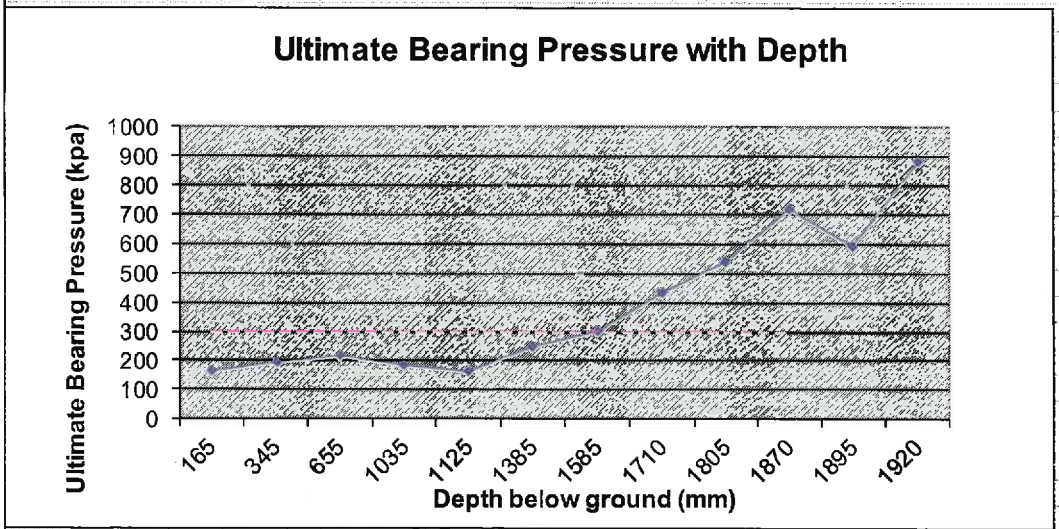
EQO nz	Job Reference No. 180507	Sheet No. 23
	Murphys Orchard	Element proposed building site
Designed: AGD	Date: 20-Nov	

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1230	1140	165	brown silt loam	2	90	45	**160**
B6	1140	960	345	0	5	180	36	**190**
	960	650	655		10	310	31	**213**
	650	270	1035		10	380	38	**182**
	270	180	1125		2	90	45	**160**
	1380	1120	1385		10	260	26	**244**
	1120	920	1585		10	200	20	**300**
	920	795	1710		10	125	13	**431**
	795	700	1805		10	95	10	**534**
	700	635	1870		10	65	7	**717**
	635	610	1895		3	25	8	**591**
	610	585	1920		5	25	5	**879**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 24 Element proposed building site

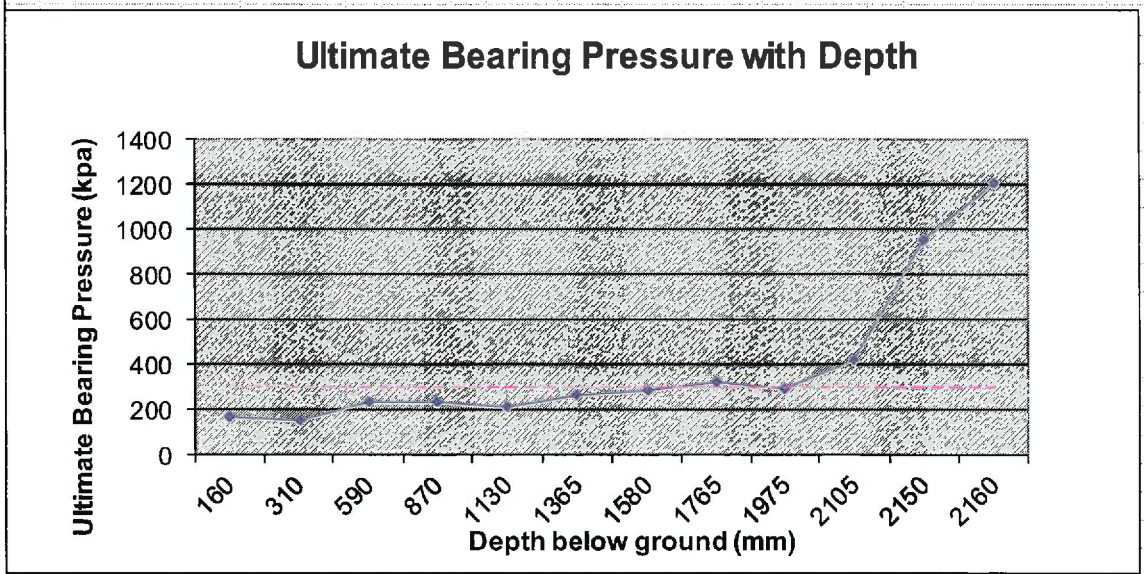
Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 75 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1235	1150	160	brown silt loam	2	85	43	**167**
B7	1150	1000	310	0	3	150	50	**147**
	1000	720	590		10	280	28	**231**
	720	440	870		10	280	28	**231**
	440	180	1130		8	260	33	**206**
	1415	1180	1365		10	235	24	**264**
	1180	965	1580		10	215	22	**283**
	965	780	1765		10	185	19	**318**
	780	570	1975		10	210	21	**288**
	570	440	2105		10	130	13	**419**
	440	395	2150		10	45	5	**953**
	395	385	2160		3	10	3	**1203**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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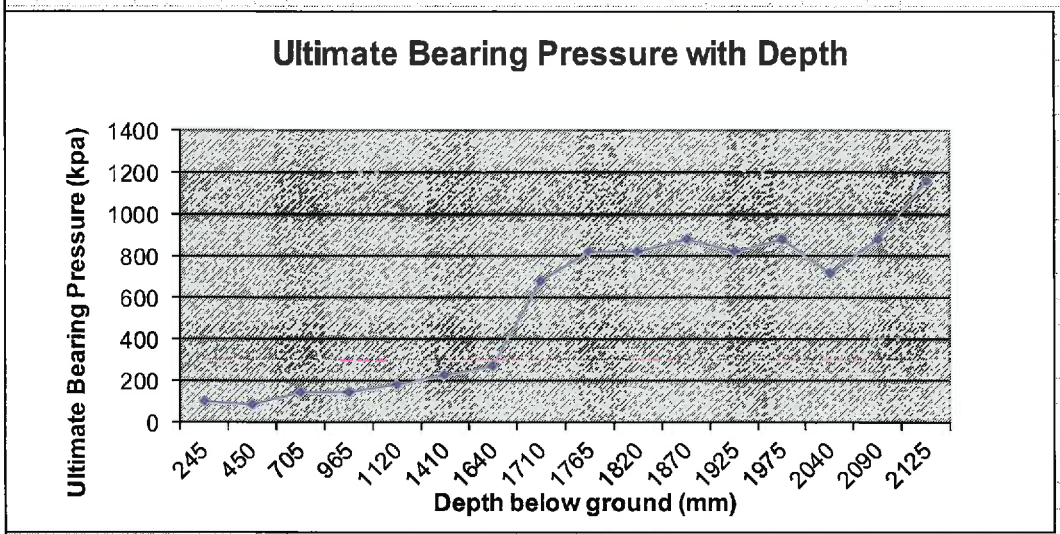
eQO nz	Job Reference No. 180507		Sheet No. 25
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1235	1065	245	brown silt loam	2	170	85	**97**
B8	1065	860	450	0	2	205	103	**84**
	860	605	705		5	255	51	**145**
	605	345	965		5	260	52	**143**
	345	190	1120		4	155	39	**179**
	1450	1160	1410		10	290	29	**225**
	1160	930	1640		10	230	23	**269**
	930	860	1710		10	70	7	**677**
	860	805	1765		10	55	6	**816**
	805	750	1820		10	55	6	**816**
	750	700	1870		10	50	5	**879**
	700	645	1925		10	55	6	**816**
	645	595	1975		10	50	5	**879**
	595	530	2040		10	65	7	**717**
	530	480	2090		10	50	5	**879**
	480	445	2125		10	35	4	**1159**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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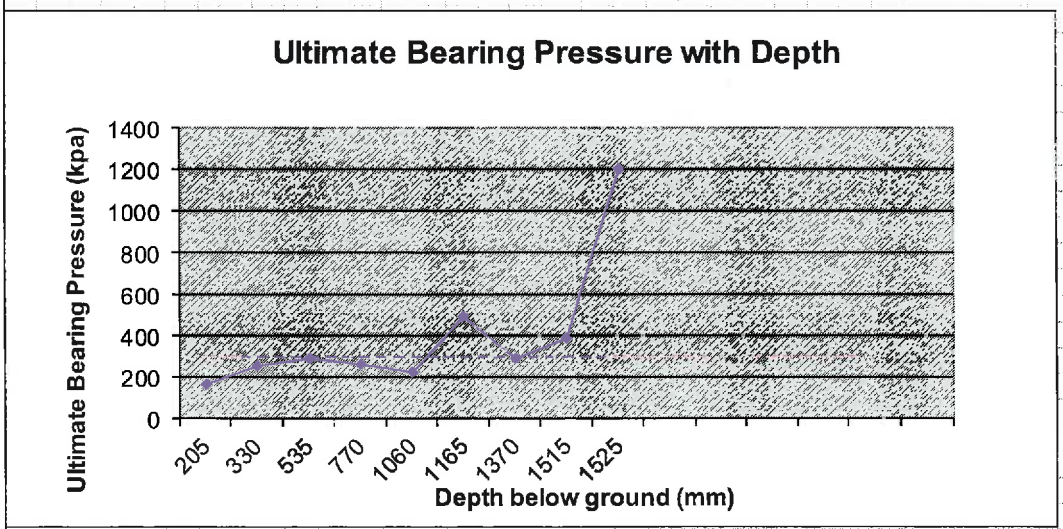
eQO nz	Job Reference No. 180507	Sheet No. 26
	Murphys Orchard	Element proposed building site
Designed: AGD	Date: 20-Nov	

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC — start depth: 75 mm
Location: Reading st, Greytown — Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1150	1020	205	brown silt loam	3	130	43	**164**
C1	1020	895	330		5	125	25	**252**
	895	690	535		10	205	21	**294**
	690	455	770		10	235	24	**264**
	455	165	1060		10	290	29	**225**
	1430	1325	1165		10	105	11	**494**
	1325	1120	1370		10	205	21	**294**
	1120	975	1515		10	145	15	**385**
	975	965	1525		3	10	3	**1203**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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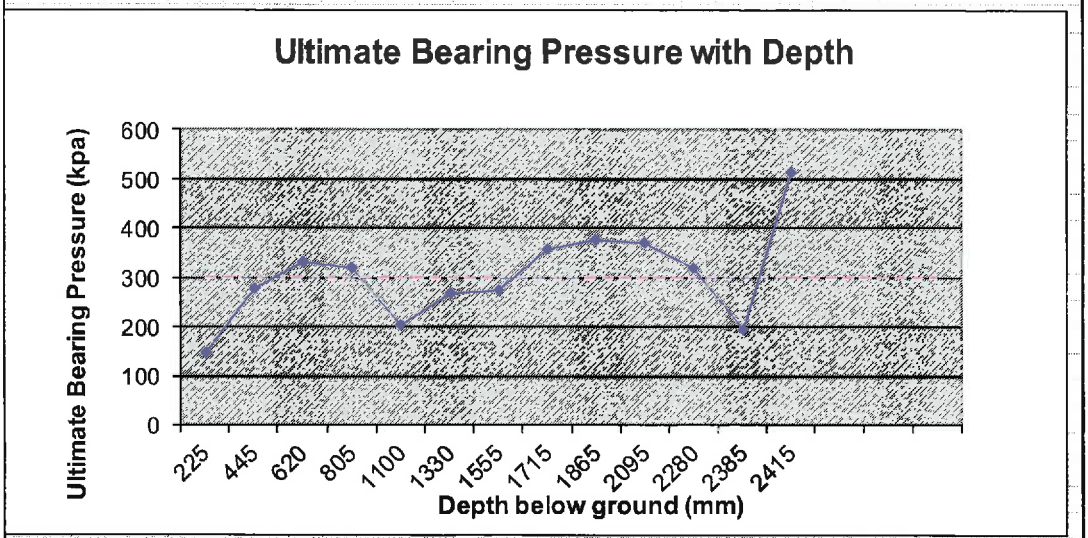
Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 27 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1125	975	225	brown silt loam	3	150	50	**147**
C2	975	755	445	0	10	220	22	**278**
	755	580	620		10	175	18	**332**
	580	395	805		10	185	19	**318**
	395	100	1100		9	295	33	**204**
	1415	1185	1330		10	230	23	**269**
	1185	960	1555		10	225	23	**273**
	960	800	1715		10	160	16	**356**
	800	650	1865		10	150	15	**375**
	650	420	2095		15	230	15	**368**
	420	235	2280		10	185	19	**318**
	235	130	2385		3	105	35	**194**
	130	100	2415		3	30	10	**513**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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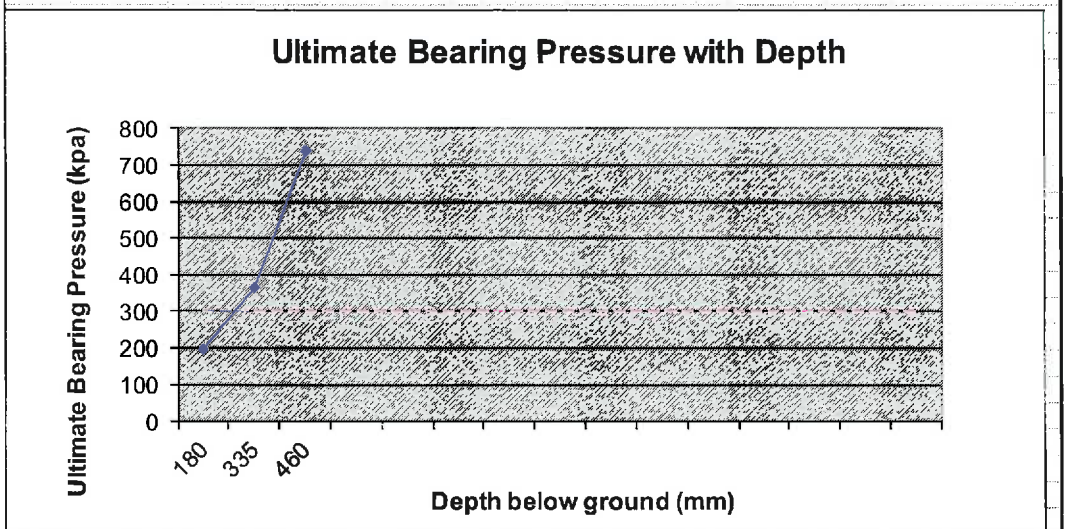
Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 28 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1165	1060	180	brown silt loam	3	105	35	**194**
C3	1060	905	335	0	10	155	16	**365**
	905	780	460		20	125	6	**739**
				Effective Refusal				



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

Notes:

Roots?

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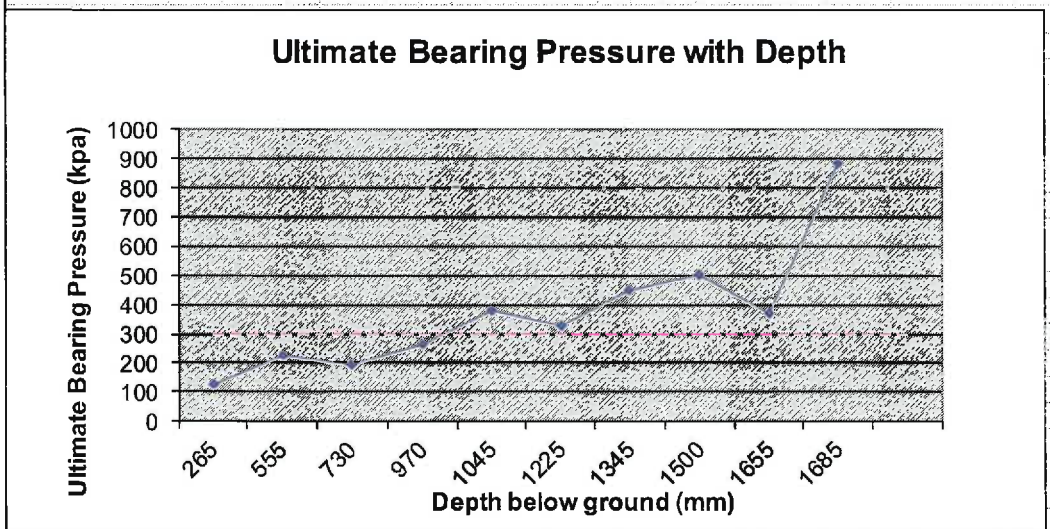
EQO nz	Job Reference No. 180507		Sheet No. 29
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1150	960	265	silt loam	3	190	63	**122**
C4	960	670	555	0	10	290	29	**225**
	670	495	730		5	175	35	**194**
	495	255	970		10	240	24	**260**
	255	180	1045		5	75	15	**375**
	1435	1255	1225		10	180	18	**325**
	1255	1135	1345		10	120	12	**445**
	1135	980	1500		15	155	10	**500**
	980	825	1655		10	155	16	**365**
	825	795	1685		6	30	5	**879**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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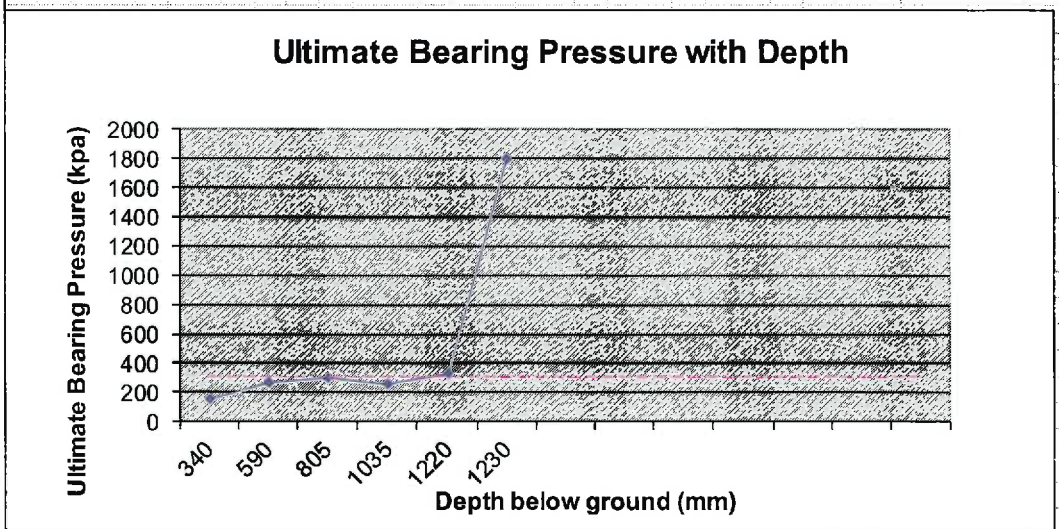
Designed: AGD Date: 20-Nov	Job Reference No. 180507	Sheet No. 30
	Murphys Orchard	Element: proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 120 mm
Location: Reading st, Greytown

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1045	825	340	silt loam	4	220	55	**137**
C5	825	575	590	0	10	250	25	**252**
	575	360	805		10	215	22	**283**
	360	130	1035		9	230	26	**248**
	1405	1220	1220		10	185	19	**318**
	1220	1210	1230		5	10	2	**1789**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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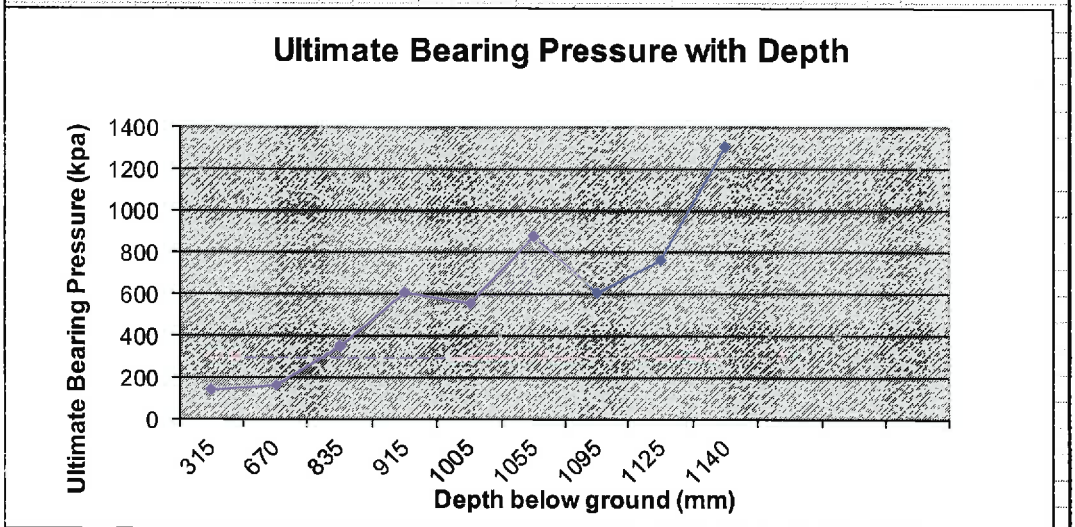
Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 31 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 160 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1030	875	315	brown silt loam	3	155	52	**143**
C6	875	520	670	0	8	355	44	**161**
	520	355	835		10	165	17	**348**
	355	275	915		10	80	8	**610**
	275	185	1005		10	90	9	**557**
	1410	1360	1055		10	50	5	**879**
	1360	1320	1095		5	40	8	**610**
	1320	1290	1125		5	30	6	**763**
	1290	1275	1140		5	15	3	**1306**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 32 Element proposed building site

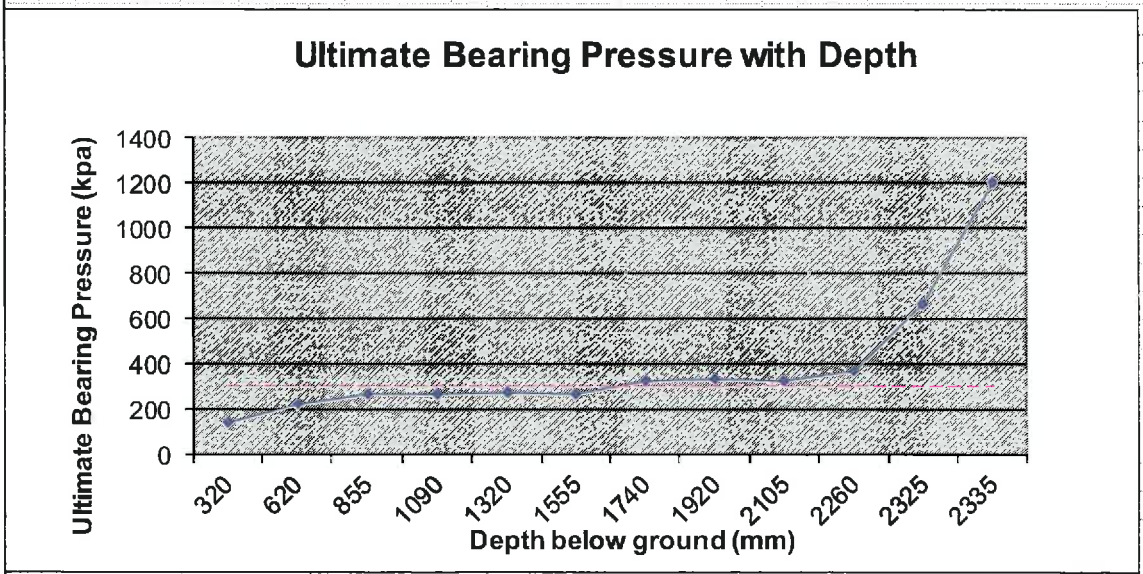
Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 150 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1070	900	320	brown silt loam	3	170	57	**134**
C7	900	600	620	0	10	300	30	**219**
	600	365	855		10	235	24	**264**
	365	130	1090		10	235	24	**264**
	1410	1180	1320		10	230	23	**269**
	1180	945	1555		10	235	24	**264**
	945	760	1740		10	185	19	**318**
	760	580	1920		10	180	18	**325**
	580	395	2105		10	185	19	**318**
	395	240	2260		10	155	16	**365**
	240	175	2325		9	65	7	**660**
	175	165	2335		3	10	3	**1203**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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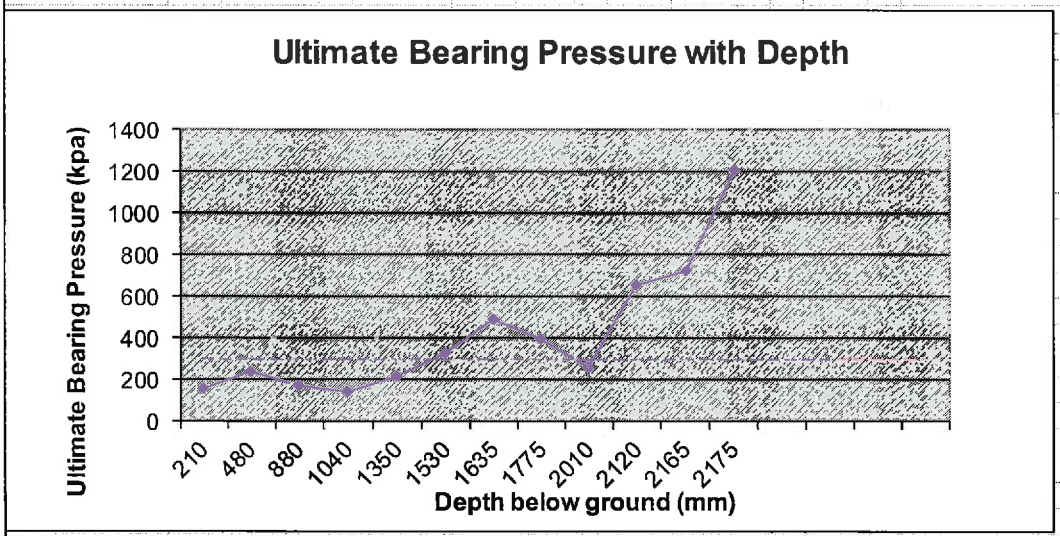
Designed: AGD	Job Reference No. 180507	Sheet No. 33
Date: 20-Nov	Murphys Orchard	Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1125	990	210	brown silt loam	3	135	45	**160**
C8	990	720	480	0	10	270	27	**237**
	720	320	880		10	400	40	**175**
	320	160	1040		3	160	53	**140**
	1410	1100	1350		10	310	31	**213**
	1100	920	1530		10	180	18	**325**
	920	815	1635		10	105	11	**494**
	815	675	1775		10	140	14	**395**
	675	440	2010		10	235	24	**264**
	440	330	2120		15	110	7	**653**
	330	285	2165		7	45	6	**723**
	285	275	2175		3	10	3	**1203**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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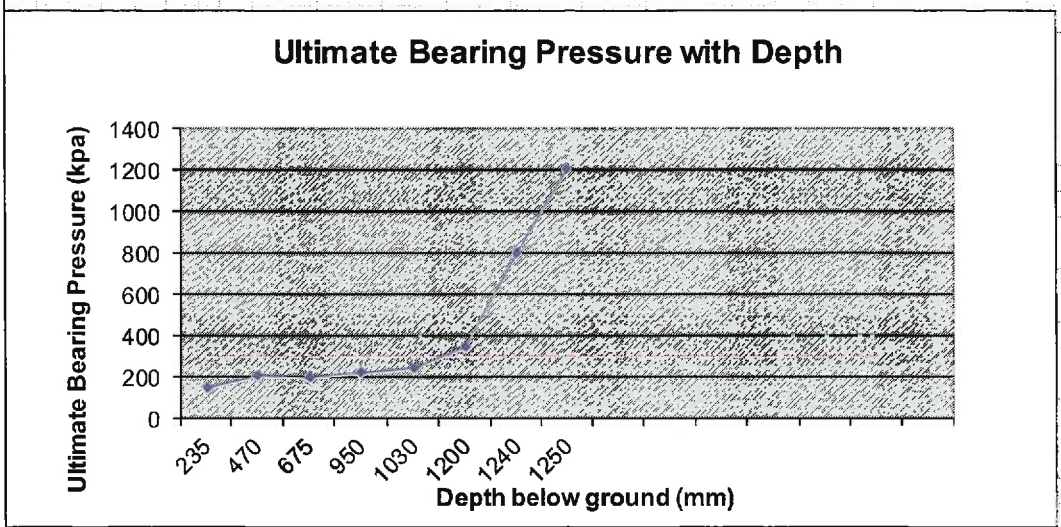
EQO nz	Job Reference No. 180507		Sheet No. 34
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
Owner: The Orchards
start depth: 75 mm

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1120	960	235	brown silt loam	3	160	53	**140**
D1	960	725	470		7	235	34	**200**
	725	520	675		6	205	34	**198**
	520	245	950		9	275	31	**216**
	245	165	1030		3	80	27	**240**
	1380	1210	1200		10	170	17	**340**
	1210	1170	1240		7	40	6	**792**
	1170	1160	1250		3	10	3	**1203**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 35 Element proposed building site

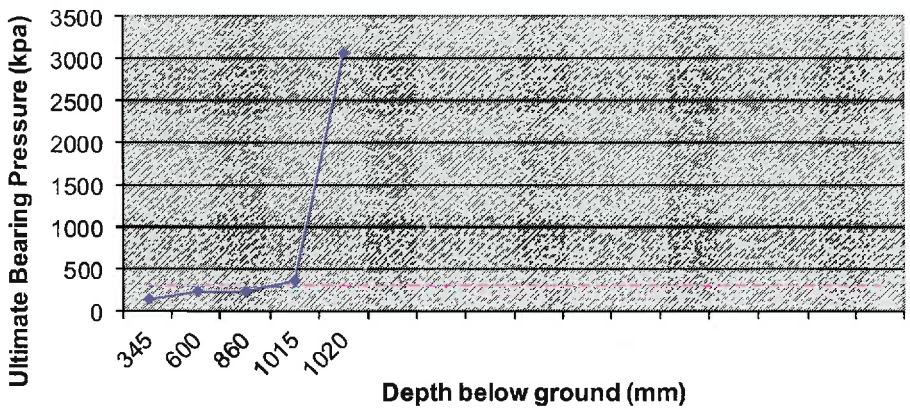
Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 200 mm
Owner: The Orchards

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	995	850	345	brown silt loam	3	145	48	**151**
D2	850	595	600	0	10	255	26	**248**
	595	335	860		10	260	26	**244**
	335	180	1015		10	155	16	**365**
	1425	1420	1020		5	5	1	**3063**

Refusal

Ultimate Bearing Pressure with Depth



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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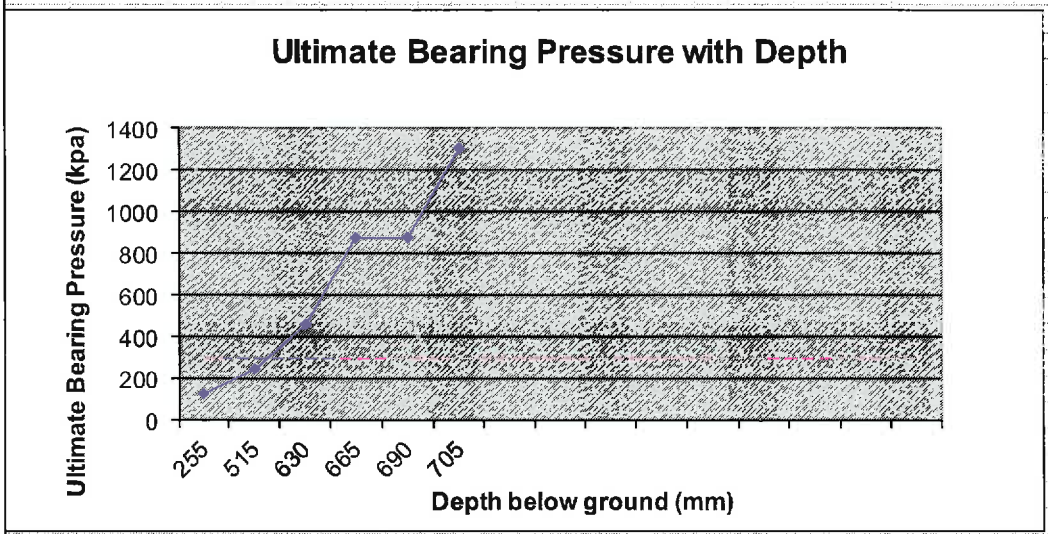
eQO nz	Job Reference No. 180507		Sheet No. 36
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC — start depth: 75 mm
Location: Reading st, Greytown — Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1100	920	255	brown silt loam	3	180	60	**128**
D3	920	660	515	0	10	260	26	**244**
	660	545	630		10	115	12	**460**
	545	510	665		7	35	5	**879**
	510	485	690		5	25	5	**879**
	485	470	705		5	15	3	**1306**
				Effective Refusal				



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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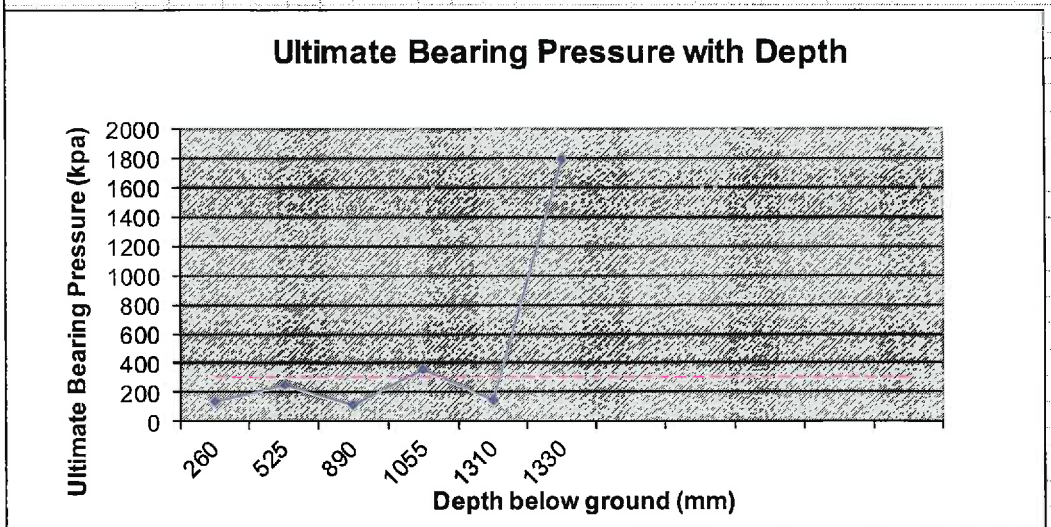
eQO nz	Job Reference No. 180507		Sheet No. 37
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1160	975	260	silt loam	3	185	62	**125**
D4	975	710	525	0	10	265	27	**241**
	710	345	890		5	365	73	**110**
	345	180	1055		10	165	17	**348**
	1430	1175	1310		5	255	51	**145**
	1175	1155	1330		10	20	2	**1789**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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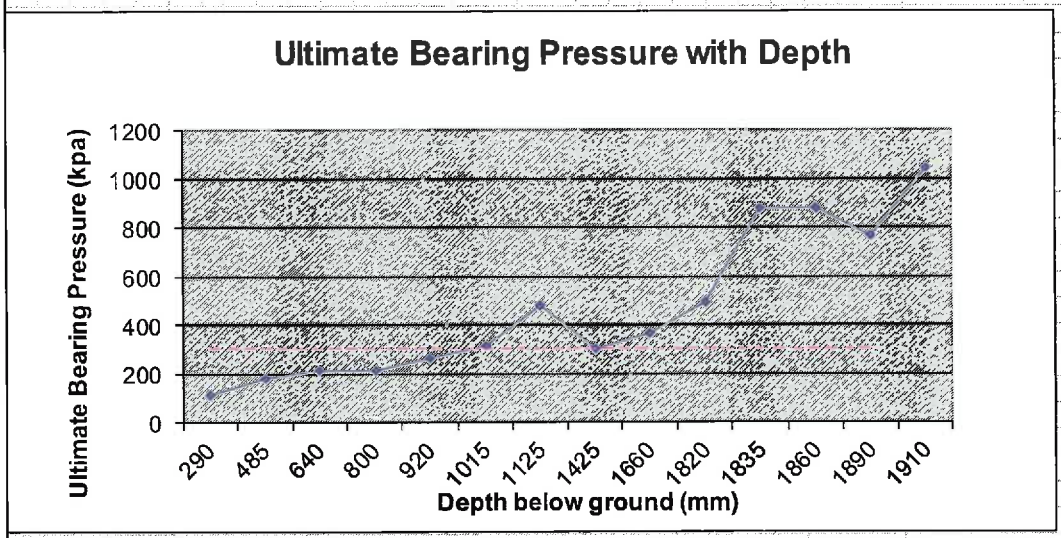
eQO nz	Job Reference No. 180507		Sheet No. 38
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1110	895	290	silt loam	3	215	72	**111**
D5	895	700	485	0	5	195	39	**178**
	700	545	640		5	155	31	**213**
	545	385	800		5	160	32	**208**
	385	265	920		5	120	24	**260**
	265	170	1015		5	95	19	**312**
	1445	1335	1125		10	110	11	**476**
	1335	1035	1425		15	300	20	**300**
	1035	800	1660		15	235	16	**362**
	800	640	1820		15	160	11	**488**
	640	625	1835		3	15	5	**879**
	625	600	1860		5	25	5	**879**
	600	570	1890		5	30	6	**763**
	570	550	1910		5	20	4	**1045**
				Effective Refusal				



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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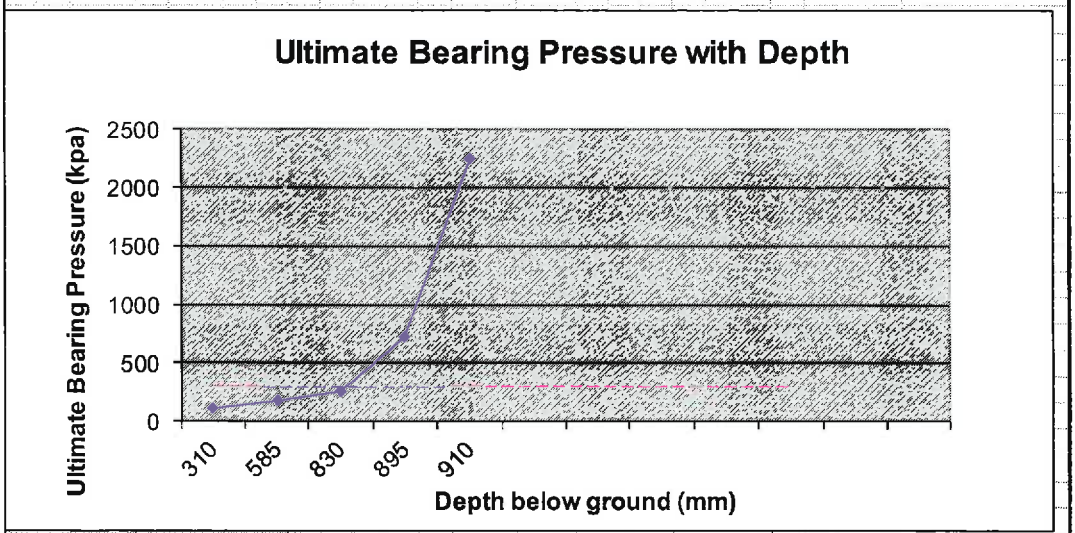
EQO nz	Job Reference No. 180507		Sheet No. 39
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1135	900	310	brown silt loam	3	235	78	**104**
D6	900	625	585	0	7	275	39	**177**
	625	380	830		10	245	25	**256**
	380	315	895		10	65	7	**717**
	315	300	910		10	15	2	**2236**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 40 Element proposed building site

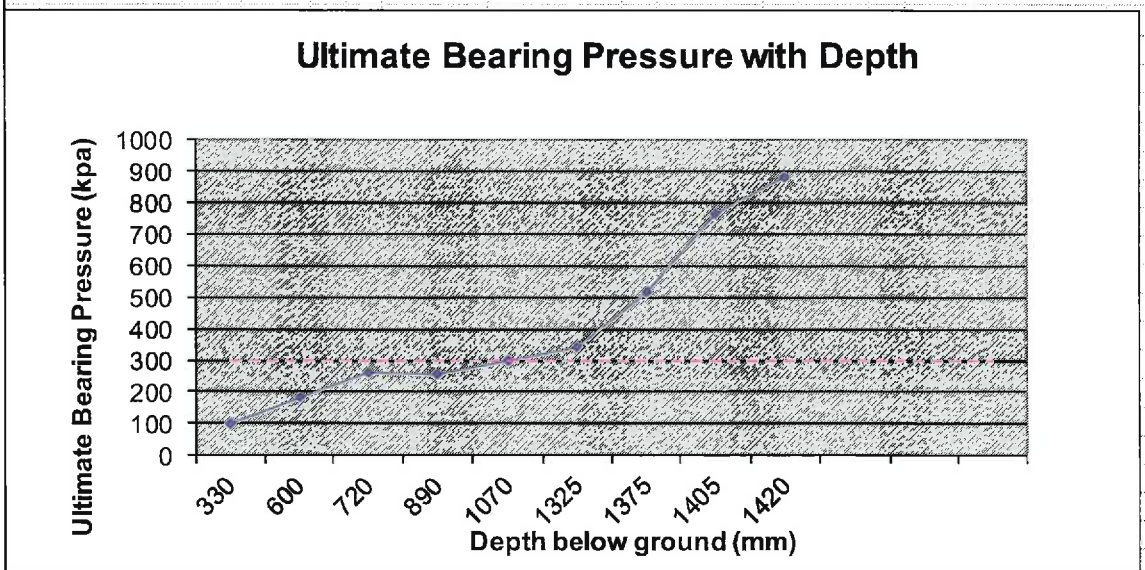
Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 75 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1135	880	330	brown silt loam	3	255	85	**97**
D7	880	610	600	0	7	270	39	**180**
	610	490	720		5	120	24	**260**
	490	320	890		7	170	24	**258**
	320	140	1070		9	180	20	**300**
	1470	1215	1325		15	255	17	**340**
	1215	1165	1375		5	50	10	**513**
	1165	1135	1405		5	30	6	**763**
	1135	1120	1420		3	15	5	**879**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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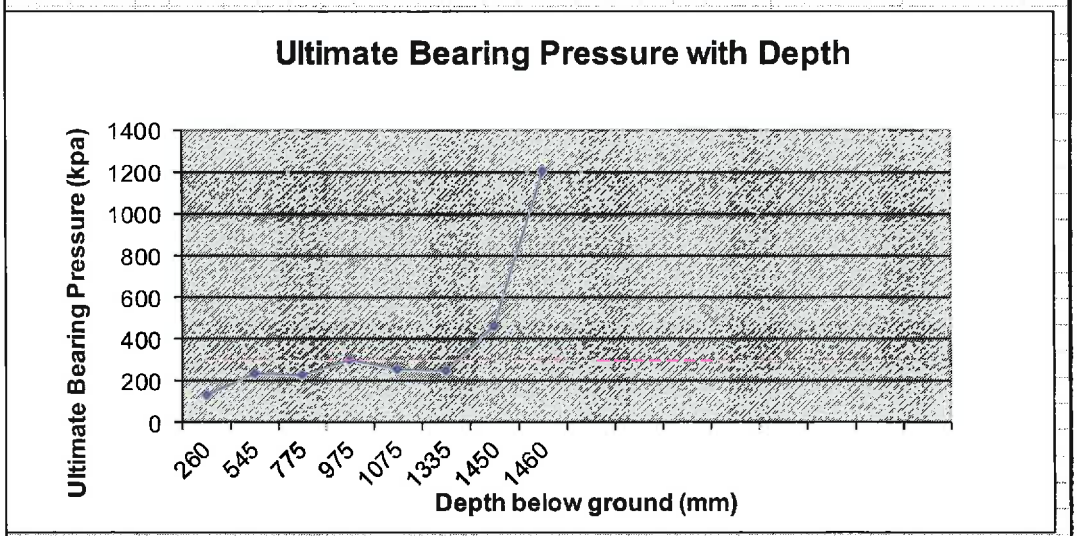
eQO nz	Job Reference No. 180507		Sheet No. 41
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1135	950	260	brown silt loam	3	185	62	**125**
D8	950	665	545	0	10	285	29	**228**
	665	435	775		8	230	29	**226**
	435	235	975		10	200	20	**300**
	235	135	1075		4	100	25	**252**
	1370	1110	1335		10	260	26	**244**
	1110	995	1450		10	115	12	**460**
	995	985	1460		3	10	3	**1203**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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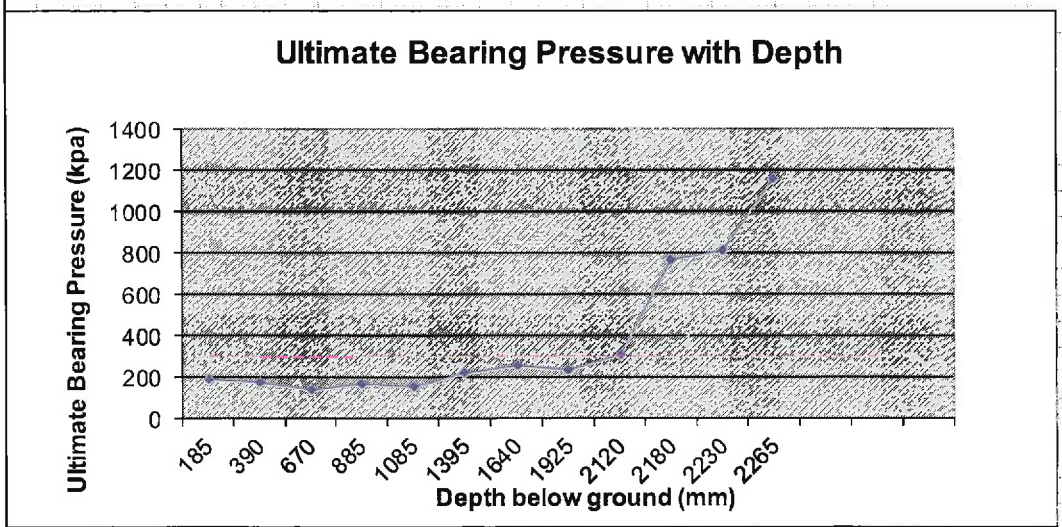
eQO nz	Job Reference No. 180507		Sheet No. 42
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
Owner: The Orchards
start depth: 75 mm

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1220	1110	185	brown silt loam	3	110	37	**187**
E1	1110	905	390		5	205	41	**172**
	905	625	670		5	280	56	**135**
	625	410	885		5	215	43	**165**
	410	210	1085		4	200	50	**147**
	1460	1150	1395		10	310	31	**213**
	1150	905	1640		10	245	25	**256**
	905	620	1925		10	285	29	**228**
	620	425	2120		10	195	20	**306**
	425	365	2180		10	60	6	**763**
	365	315	2230		9	50	6	**810**
	315	280	2265		10	35	4	**1159**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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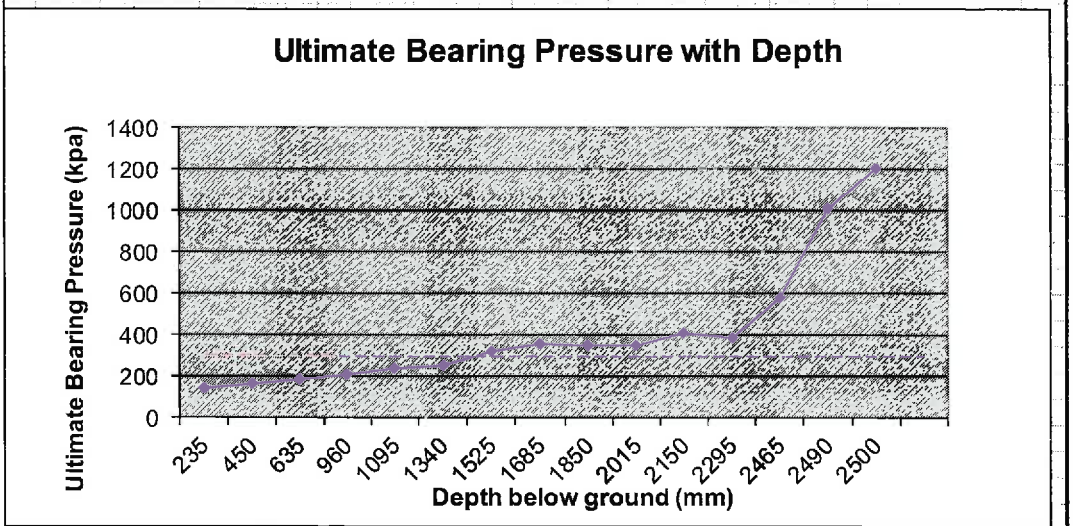
eQO nz	Job Reference No. 180507		Sheet No. 43
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1210	1050	235	brown silt loam	3	160	53	140
E2	1050	835	450	0	5	215	43	165
	835	650	635		5	185	37	186
	650	325	960		10	325	33	206
	325	190	1095		5	135	27	237
	1440	1195	1340		10	245	25	256
	1195	1010	1525		10	185	19	318
	1010	850	1685		10	160	16	356
	850	685	1850		10	165	17	348
	685	520	2015		10	165	17	348
	520	385	2150		10	135	14	406
	385	240	2295		10	145	15	385
	1225	1055	2465		20	170	9	582
	1055	1030	2490		6	25	4	1012
	1030	1020	2500		3	10	3	1203
				Refusal				



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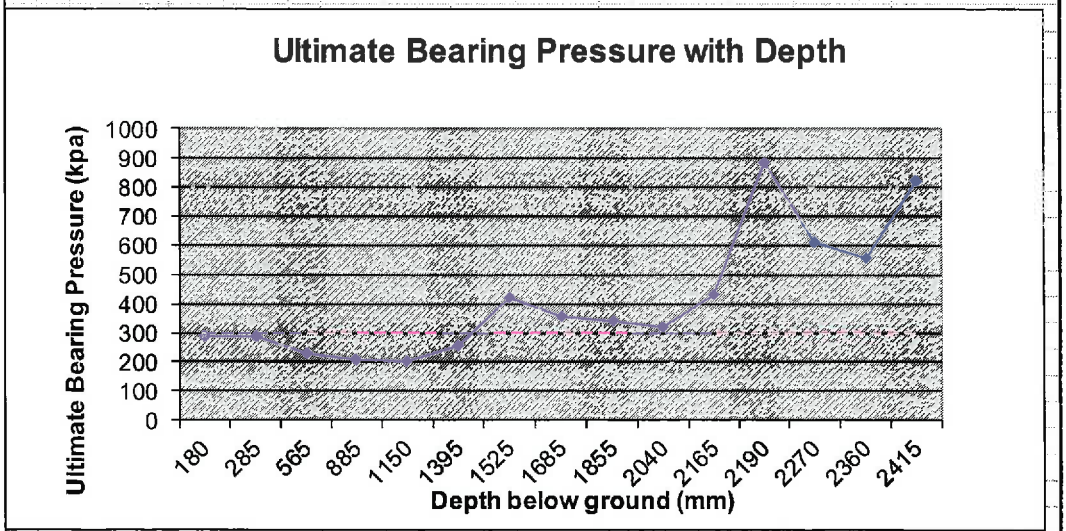
eQO nz	Job Reference No. 180507		Sheet No. 44
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC — start depth: 75 mm
Location: Reading st, Greytown — Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1245	1140	180	brown silt loam	5	105	21	**288**
E3	1140	1035	285	0	5	105	21	**288**
	1035	755	565		10	280	28	**231**
	755	435	885		10	320	32	**208**
	435	170	1150		8	265	33	**203**
	1445	1200	1395		10	245	25	**256**
	1200	1070	1525		10	130	13	**419**
	1070	910	1685		10	160	16	**356**
	910	740	1855		10	170	17	**340**
	740	555	2040		10	185	19	**318**
	555	430	2165		10	125	13	**431**
	430	405	2190		5	25	5	**879**
	405	325	2270		10	80	8	**610**
	325	235	2360		10	90	9	**557**
	1210	1155	2415		10	55	6	**816**
				Effective Refusal				



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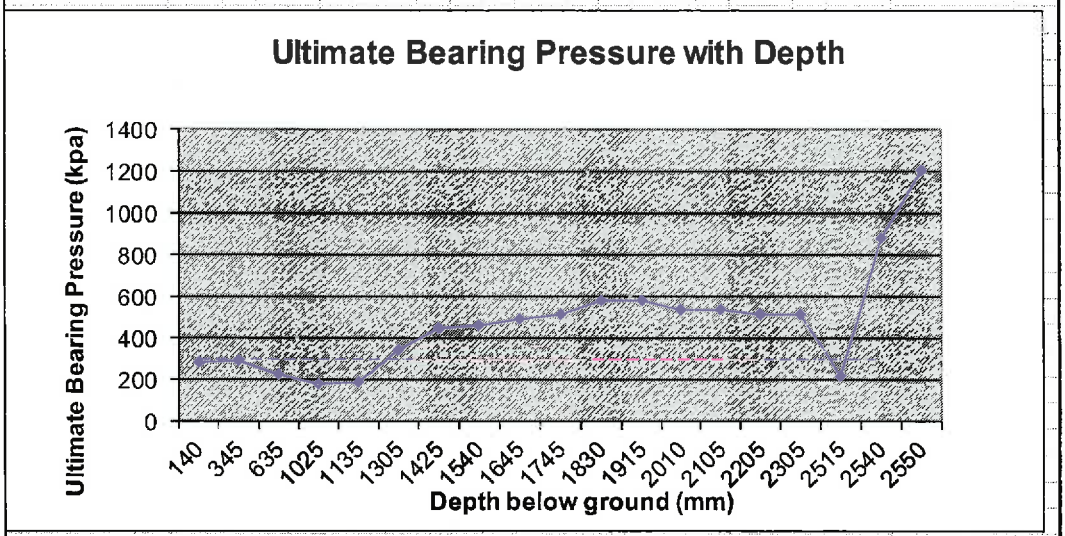
eQO nz	Job Reference No. 180507		Sheet No. 45
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1235	1170	140	silt loam	3	65	22	**282**
E4	1170	965	345	0	10	205	21	**294**
	965	675	635		10	290	29	**225**
	675	285	1025		10	390	39	**178**
	285	175	1135		3	110	37	**187**
	1410	1240	1305		10	170	17	**340**
	1240	1120	1425		10	120	12	**445**
	1120	1005	1540		10	115	12	**460**
	1005	900	1645		10	105	11	**494**
	900	800	1745		10	100	10	**513**
	800	715	1830		10	85	9	**582**
	715	630	1915		10	85	9	**582**
	630	535	2010		10	95	10	**534**
	535	440	2105		10	95	10	**534**
	440	340	2205		10	100	10	**513**
	340	240	2305		10	100	10	**513**
	1150	940	2515		7	210	30	**219**
	940	915	2540		5	25	5	**879**
	915	905	2550		3	10	3	**1203**
			Effective Refusal					



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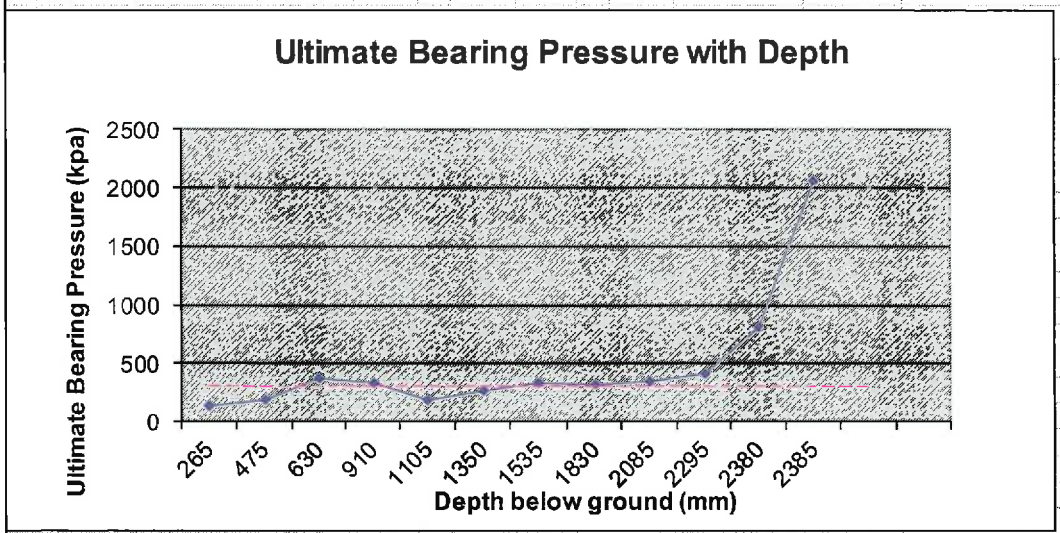
	Job Reference No. 180507		Sheet No. 46
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1150	960	265	silt loam	3	190	63	**122**
E5	960	750	475	0	5	210	42	**168**
	750	595	630		10	155	16	**365**
	595	315	910		15	280	19	**316**
	315	120	1105		5	195	39	**178**
	1330	1085	1350		10	245	25	**256**
	1085	900	1535		10	185	19	**318**
	900	605	1830		15	295	20	**304**
	605	350	2085		15	255	17	**340**
	350	140	2295		15	210	14	**395**
	1105	1020	2380		15	85	6	**797**
	1020	1015	2385		3	5	2	**2061**

Effective Refusal



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Designed: AGD	Date: 20-Nov	Job Reference No. 180507
		Murphys Orchard
		Sheet No. 47
		Element: proposed building site

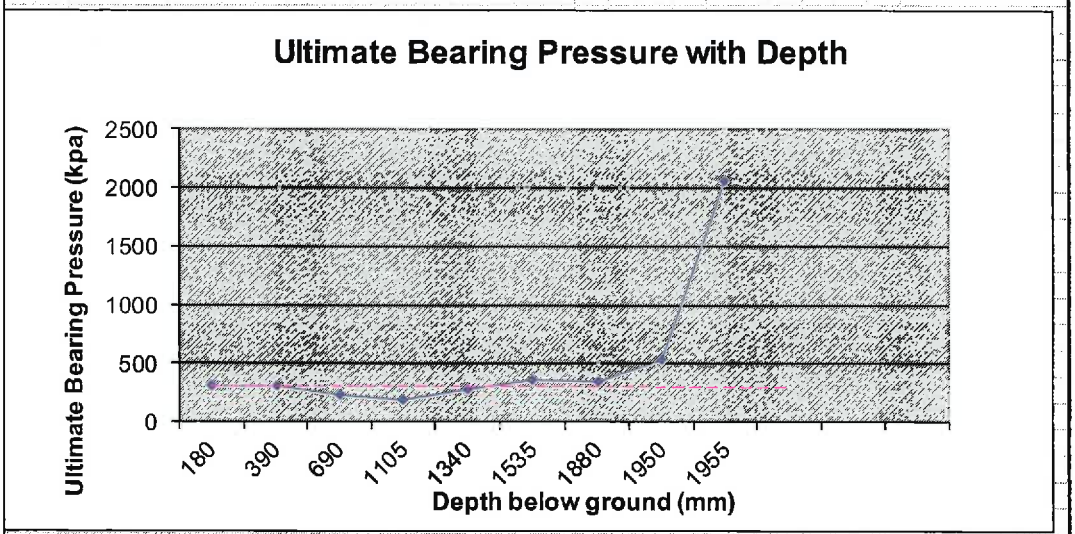
Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 75 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1175	1070	180	brown silt loam	5	105	21	**288**
E6	1070	860	390	0	10	210	21	**288**
	860	560	690		10	300	30	**219**
	560	145	1105		10	415	42	**170**
	1395	1160	1340		10	235	24	**264**
	1160	965	1535		12	195	16	**352**
	965	620	1880		20	345	17	**336**
	620	550	1950		7	70	10	**513**
	550	545	1955		3	5	2	**2061**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 48 Element proposed building site

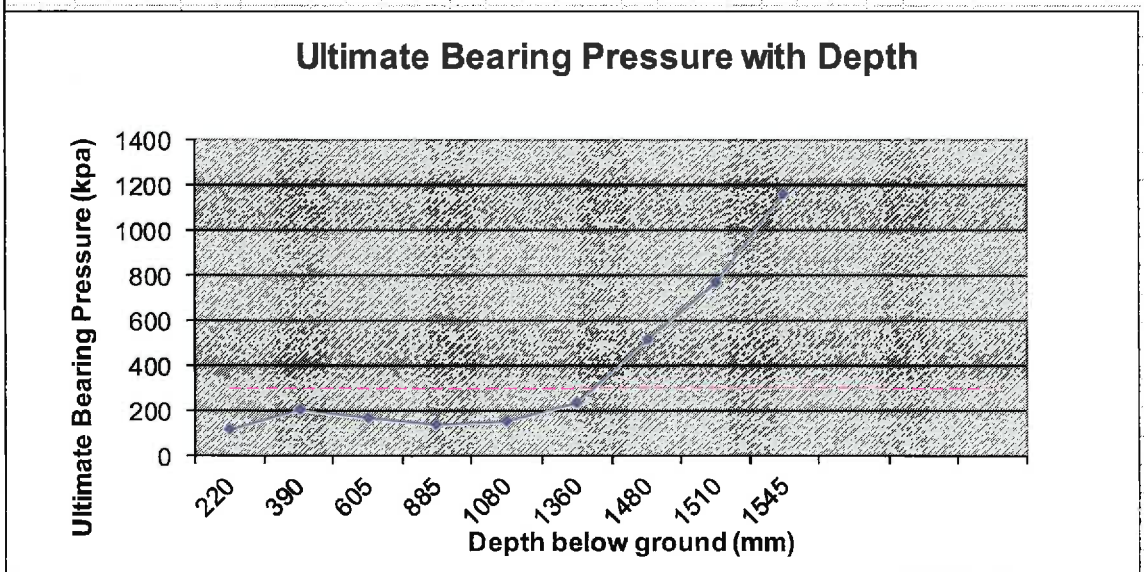
Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 75 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1130	985	220	brown silt loam	2	145	73	**110**
E7	985	815	390	0	5	170	34	**198**
	815	600	605		5	215	43	**165**
	600	320	885		5	280	56	**135**
	320	125	1080		4	195	49	**150**
	1380	1100	1360		10	280	28	**231**
	1100	980	1480		12	120	10	**513**
	980	950	1510		5	30	6	**763**
	950	915	1545		10	35	4	**1159**

Effective Refusal



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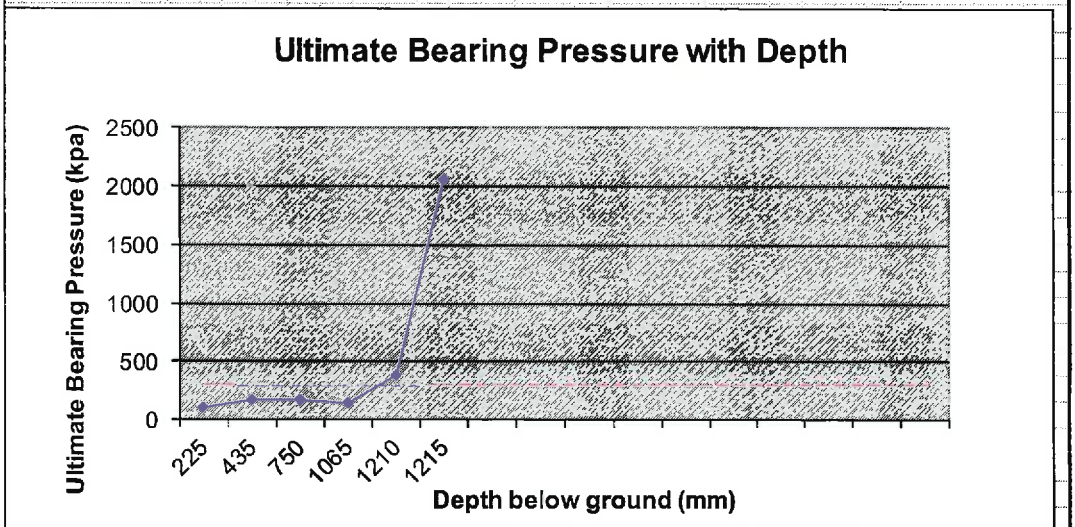
Designed: AGD Date: 20-Nov	Job Reference No. 180507	Sheet No. 49
	Murphys Orchard	Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1115	965	225	brown silt loam	2	150	75	**107**
E8	965	755	435	0	5	210	42	**168**
	755	440	750		8	315	39	**177**
	440	125	1065		6	315	53	**142**
	1385	1240	1210		10	145	15	**385**
	1240	1235	1215		3	5	2	**2061**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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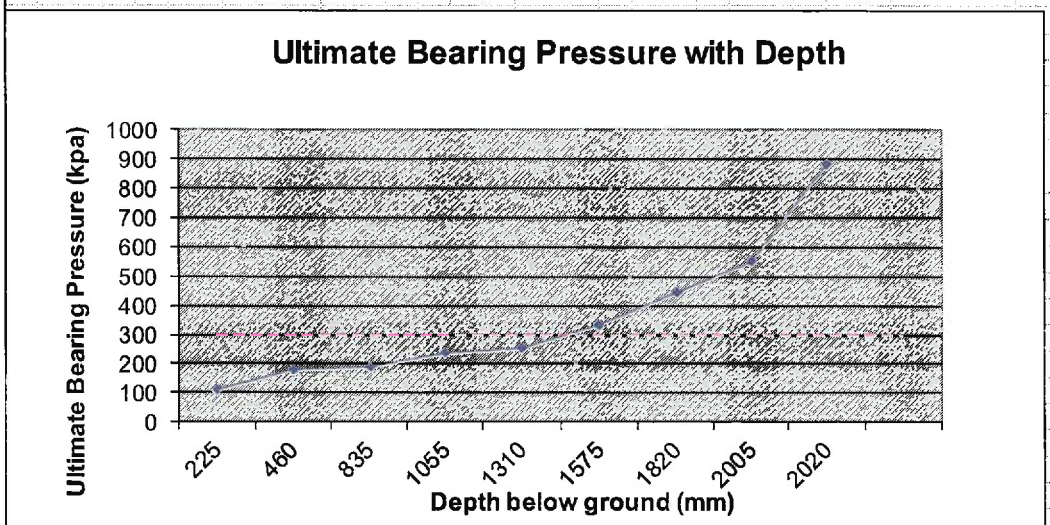
EQO nz	Job Reference No. 180507		Sheet No. 50
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm
Owner: The Orchards

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1110	960	225	silt loam	2	150	75	**107**
E9	960	725	460	0	6	235	39	**178**
	725	350	835		10	375	38	**184**
	350	130	1055		8	220	28	**234**
	1395	1140	1310		10	255	26	**248**
	1140	875	1575		15	265	18	**330**
	875	630	1820		20	245	12	**438**
	630	445	2005		20	185	9	**545**
	445	430	2020		3	15	5	**879**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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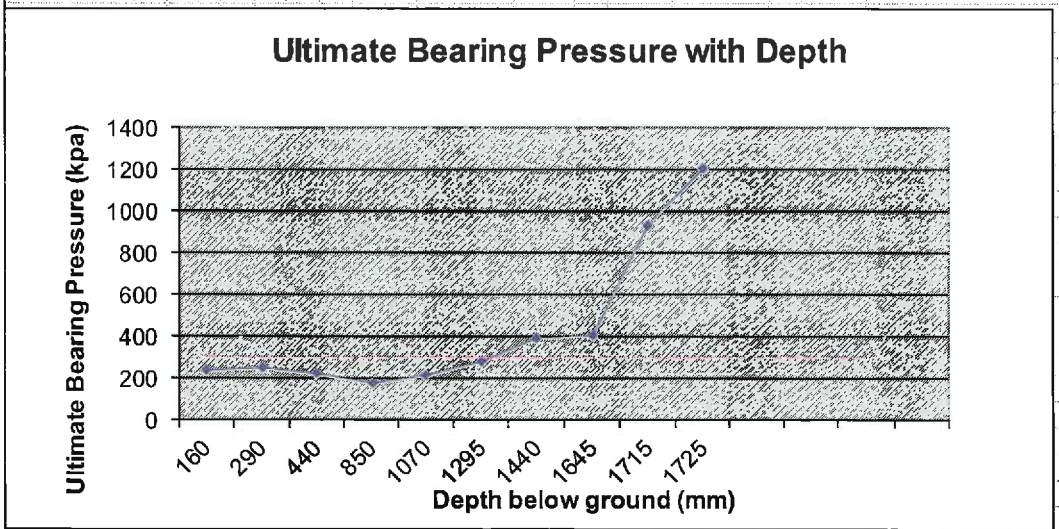
Job Reference No. 180507		Sheet No. 51
Murphys Orchard		Element: proposed building site
Designed: AGD	Date: 20-Nov	

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1115	1030	160	silt loam	3	85	28	**229**
E10	1030	900	290	0	5	130	26	**244**
	900	750	440		5	150	30	**219**
	750	340	850		10	410	41	**172**
	340	120	1070		7	220	31	**211**
	1340	1115	1295		10	225	23	**273**
	1115	970	1440		10	145	15	**385**
	970	765	1645		15	205	14	**403**
	765	695	1715		15	70	5	**927**
	695	685	1725		3	10	3	**1203**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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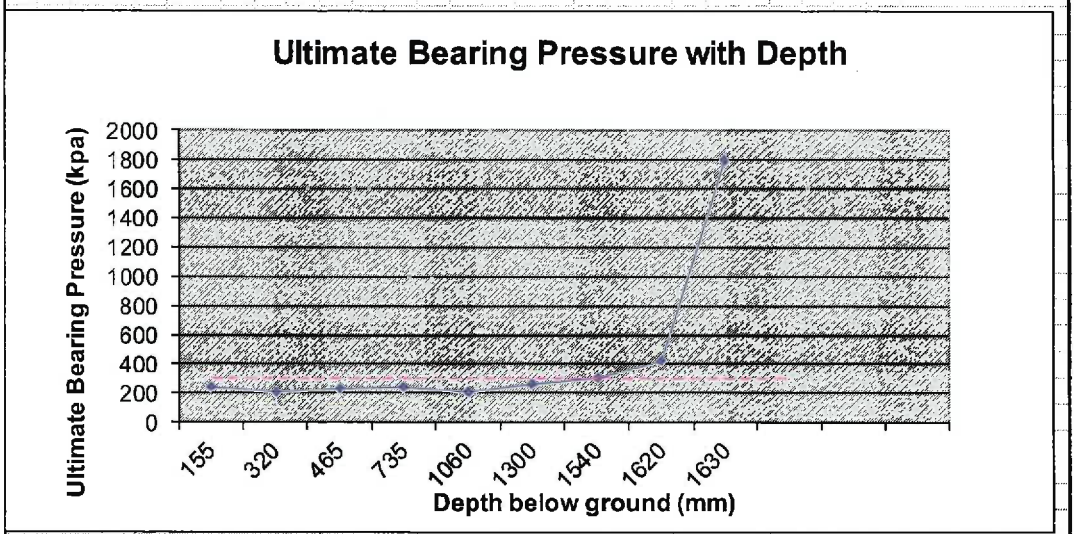
EQO nz	Job Reference No. 180507		Sheet No. 52
	Murphys Orchard		Element proposed building site
Designed: AGD	Date: 20-Nov		

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC start depth: 75 mm
Location: Reading st, Greytown

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1160	1080	155	brown silt loam	3	80	27	**240**
E11	1080	915	320	0	5	165	33	**203**
	915	770	465		5	145	29	**225**
	770	500	735		10	270	27	**237**
	500	175	1060		10	325	33	**206**
	1410	1170	1300		10	240	24	**260**
	1170	930	1540		12	240	20	**300**
	930	850	1620		6	80	13	**410**
	850	840	1630		5	10	2	**1789**

Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 53 Element proposed building site

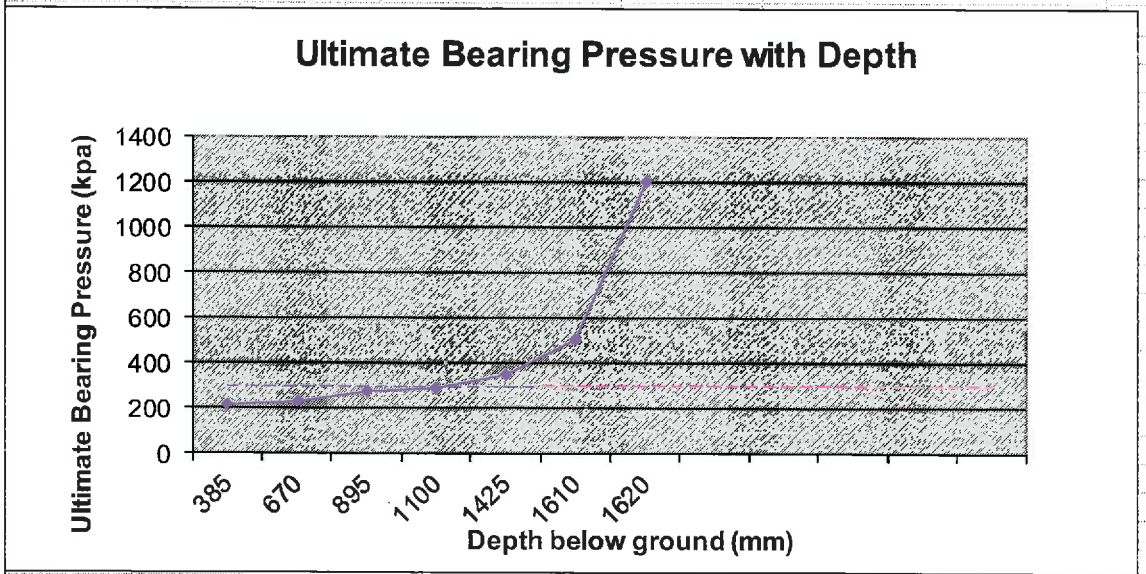
Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown

start depth: 75 mm

Test No.	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1160	850	385	brown silt loam	10	310	31	**213**
E12	850	565	670	0	10	285	29	**228**
	565	340	895		10	225	23	**273**
	340	135	1100		10	205	21	**294**
	1375	1050	1425		20	325	16	**352**
	1050	865	1610		18	185	10	**502**
	865	855	1620		3	10	3	**1203**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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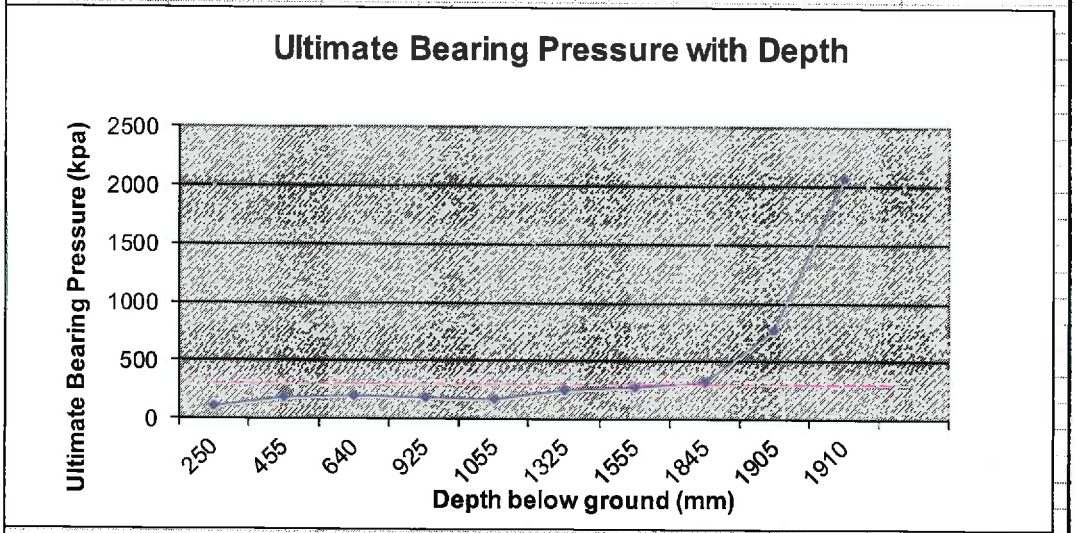
Designed: AGD Date: 20-Nov	Job Reference No. 180507 Murphys Orchard	Sheet No. 54 Element proposed building site

Penetration Test to give Approximate Bearing Capacity

Client: C.Percy
Council: SWDC
Location: Reading st, Greytown
start depth: 75 mm

Test No	start& finish mm		Depth mm	Soil Material	Blows	Penetration	Penetration per blow	NZS3604 bearing capacity kPa
	1105	930	250	brown silt loam	2	175	88	**95**
E13	930	725	455	0	5	205	41	**172**
	725	540	640		5	185	37	**186**
	540	255	925		7	285	41	**173**
	255	125	1055		3	130	43	**164**
	1400	1130	1325		10	270	27	**237**
	1130	900	1555		10	230	23	**269**
	900	610	1845		15	290	19	**308**
	610	550	1905		10	60	6	**763**
	550	545	1910		3	5	2	**2061**

Effective Refusal



depths are taken from natural ground level. Dashed line indicates NZS3604 requirements

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Appendix 27

Greater Wellington email regarding water races

From: Stephen Thawley Stephen.Thawley@gw.govt.nz
Subject: RE: Murphy's Orchard, 67 Reading Road, Greytown
Date: 17 September 2018 at 10:59 AM
To: Lucy Cooper lucy@perceptionplanning.co.nz
Cc: Lucy Harper Lucy.Harper@gw.govt.nz

Hi Lucy

Apologies for the delay in getting back to you. Last week I was off sick for most of the week, and the previous week I got caught up in a notified consent process for the majority of the week.

I've had a look at the maps, and I'm pretty confident that the water race features on the Murphys Orchard site would not be classified as a river/stream bed under s13 of the RMA, hence no s13 land use consents would be required if there were alterations made to these features. The only consent potentially required would be for a diversion of water under s14 of the RMA if they were being shifted, however we'd look into that closer to the time as there may be a possibility that that component could be covered under "general accordance" provisions in condition 1 of the SWDC consents for operation of the Moroa water race.

Hope this helps in your early planning work for this job.

Regards

Stephen

From: Lucy Cooper [mailto:lucy@perceptionplanning.co.nz]
Sent: Monday, 3 September 2018 10:03 AM
To: Stephen Thawley <Stephen.Thawley@gw.govt.nz>
Subject: Murphy's Orchard, 67 Reading Road, Greytown

Hi Stephen

Thanks for your time this morning. Please find attached a couple of images of the site. It's a big, irregular site, and the GIS plan of services shows the Moroa Race in pink on the nw and se boundaries of the portion of the site that has access to Reading Street. The architects have only just been engaged, but are already thinking about some interesting ways of dealing with stormwater on the site, e.g. a lake feature. It is unclear yet as to how this may interact with the water races on the site, but it's a key area that the three waters engineers will be looking at. The other aspect of the water races I need to consider is as we discussed on the phone - to what degree may these water races be a s13 RMA matter, and therefore trigger consideration under the provisions of the pNRP etc.

It would be great to get GW's advice early on these issues. As I mentioned, I'm already in touch with Lucy Harper and keeping her informed of how the development is rolling out, and she's put me in touch with the contaminated sites officer. Any advice or input you or other officers can provide would be gratefully received.

Thank you

Lucy







Lucy Cooper

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Appendix 28

Regional Consents

Non-notified resource consent application report and decision

Summary of decision

Activity:	To take and use groundwater from bore S26/0515 (4G/52/6/I) located in the Greytown groundwater zone for horticultural irrigation purposes
File Reference:	**WAR120275**
Date Granted:	18 May 2012
Commencement date:	18 May 2012
Applicant:	Andrew Murphy 67 Reading Street Greytown
Decision made under:	Section 104B and 108 of the Resource Management Act 1991 (the Act)
Consent Granted:	**[31733]: Discretionary Activity** Water permit to take and use groundwater from bore S26/0515 (4G/52/6/I) located in the Greytown groundwater zone for horticultural irrigation purposes
Location:	67 Reading Street, Greytown
Map Reference:	At or about map reference NZTM 1806891.5449205
Legal Description:	Pt Tahorahina IB Valuation No: 18230 108 12
Duration of Consent:	[31733]: 30 September 2017
Subject to conditions:	Attachment 1

Decision recommended by:	Suzanne Silvey	Resource Advisor, Environmental Regulation	
Decision peer reviewed by:	Christina Schierlitz	Resource Advisor, Environmental Regulation	
Decision approved by:	Shaun Andrewartha	Team Leader, Environmental Regulation	

Reasons for decision: resource consent WAR120275 [31733]

1. Background and proposal

Andrew Murphy (the applicant) has applied to the Greater Wellington Regional Council (GW) for a replacement consent to continue taking and using groundwater from bore S26/0515 (4G/52/6/I) for horticultural irrigation purposes. The bore is located at Reading Road, Greytown (see Figure 1 below) and is located in the Greytown groundwater zone (GGZ). The application is to replace consent WAR010237 which is due to expire on 30 September 2012.

The applicant has applied to continue taking water at their existing rates; these being 12,672m^3/year (110 days/year), at 115.2m^3/day (8 hours/day) for up to 5 days/week, at a maximum pumping rate of 4 litres/second (l/s) to irrigate up to 4 hectares (ha) of stone-fruits.

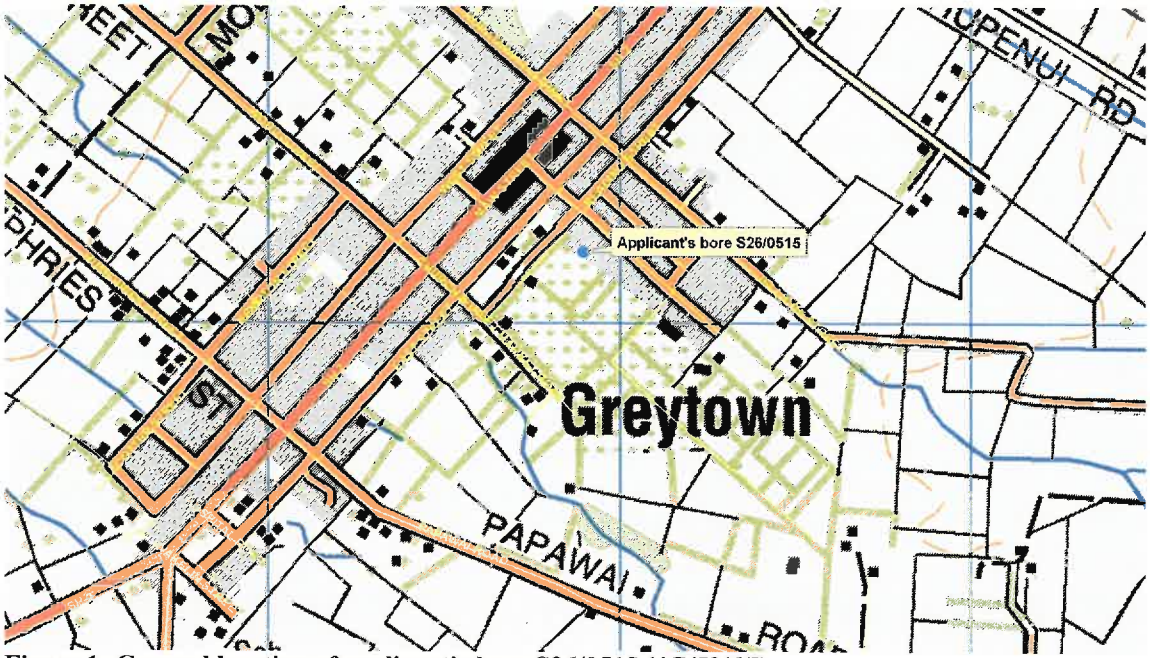

Figure 1: General location of applicant's bore S26/0515 (4G/52/6/I)

1.1 Resource consents required

Section 14 of the Resource Management Act 1991 (the Act) outlines requirements that the taking of water requires a resource consent unless permitted by a rule in a regional plan[1]. Rule 16 of the Regional Freshwater Plan for the Wellington Region (RFP) states that the taking of water that does not meet permitted activity standards in Rule 7 is a discretionary activity and requires resource consent. The proposed activity does not meet the standards and conditions of Rule 7[2] and therefore a resource consent is required for a **discretionary activity.**

[1] Section 14 allows for the taking of water for an individual's domestic needs, stock water, and fire fighting water.
[2] Rule 7 allows for up to 20,000 litres per day to be taken without resource consent subject to four conditions.

2. Consultation

In accordance with the GW's agreement with tangata whenua regarding consultation on non-notified consents, Rangitane o Wairarapa (RoW) and Kahungunu ki Wairarapa (KkW) were provided with a copy of the application. RoW had no concerns with the proposal. KkW did not respond so it is deemed that they have no concerns.

3. Notification decision

Section 95D provides the consent authority with a framework under which I have assessed this application. I consider the activity will have adverse effects that will be, or are likely to be no more than minor. Given this, I consider that public notification is not required under section 95A(1).

However, under section 95B a consent authority must decide under sections 95E and 95F if there are any affected persons or affected order holders in relation to the proposed activity. These are discussed in the following sections.

4. Determination of affected persons and order holders

Under section 95E(1) a consent authority must decide whether a person is affected by a proposed activity, if the adverse effects on the person are minor or more than minor (but are not less than minor).

Under section 95E(2)(a) a consent authority may disregard an adverse effect of the activity on a person if a rule or national environmental standard permits an activity with that effect and/or the person has given written approval to the activity under section 95E(3)(a). I consider there are no affected persons to this application.

Under section 95F a consent authority must decide if a person is an affected order holder in relation to the proposed activity. Currently there are no affected order holders under section 17A(2) in the Wellington region.

5. Environmental effects

5.1 Existing environment

The GGZ covers approximately 1,770ha and encompasses Greytown where the surrounding land use is predominantly for pastoral use within a semi-rural environment. The applicant's take is situated approximately 2.25 kilometres south of the Waiohine River in the GGZ. The best groundwater recovery appears to occur in the top 7.2 to 11+ metres of the unconfined aquifer. The aquifer has a direct hydraulic connectivity to surface waters, and is primarily replenished by the Waiohine River. Groundwater levels and transmissivity values in the aquifers are generally high.

Bore S26/0515 (4G/52/6/I) was drilled in 1974 and pump tested at a constant rate of 6 l/s for eight hours in February 1975. It is drilled to a depth of approximately 6m and is not known to be screened. It has a diameter of 75mm and has since been covered by a concrete casing so is not able to be accessed for monitoring or further pump testing.

5.2 Effects on groundwater allocation

Table 1 below shows there are currently 16 consented water takes in the GGZ (including the applicant's).

Consent No.	Name	Inst. take (l/s)	Vol/day (m^3)	Volume per year (m^3)	Bore reference
WAR010109	Borland R	1.5	59.4	1,663	4G/162/6/SI
WAR120041	Pinehaven Orchards Ltd	11.0	633.6	82,368	4G/205/11/I
WAR010197	Coley D K	4.0	116.1	9,285	4G/180/11/I
WAR010215	Greytown Villas Ltd	10.0	360.0	75,600	4G/168/12/SI
WAR010231	J R Orchards Ltd	2.8	240.2	50,442	4F/18/4.6/I
WAR010233	Slater B & J	18.0	583.2	32,076	4G/198/9/I & 4G/200/8.5/I
WAR010237	**Murphy A G**	**4.0**	**115.2**	**12,672**	**4G/52/6/I**
WAR030132	Hammond and Co	80.0	6912.0	1,451,520	5G/68/8/I & 5G/72/8/I
WAR040067	South Wairarapa District Council	60.0	5184.0	1,691,232	4G/230/11/P
WAR040115	Scott R I & C V	45.0	3888.0	583,200	4G/233/10/I
WAR050172	Atkinson SW & AE	1.0	86.4	605	4F/35/10/D
WAR050176	Smallwood Family Trust	36.0	3110.4	466,560	
WAR070083	Smith Dave	5.0	108.0	19,656	4G/186/6/I
WAR080557	JR's Papawai Orchards Ltd	32.0	1382.0	232,243	5G/97/12/I
WAR100168	Tosswill, Bob	15.0	700.0	70,000	4F/43/6/I
WAR990249	Bicknell J A	13.0	1123.2	235,872	5G/43/4.5/SI
Total			**24601.7**	**5014994**	

Table 1: Current consented water takes in the Greytown Groundwater Zone (as of 8 May 2012)

5.2.1 Current RFP framework

The RFP states the current safe yield of the GGZ is 20 million m^3/year of which 25.1% of the safe yield is currently allocated. The applicant has applied for their existing allocation so there will be no change to the total allocation from the GGZ. It is current practice to grant a maximum equivalent of 150 days allocation for irrigation takes, unless a SPASMO-IR recommendation is accepted by the applicant (see section 5.6.2). In this case the applicant agreed to retain their current allocation of 12,672m^3/year which is equivalent to 110 days.

5.2.2 Proposed conjunctive water management framework[3]

The GGZ will be incorporated into the Waiohine water management zone under the *Proposed Framework for Conjunctive Water Management.*

The *proposed framework for conjunctive water management report* classifies all abstractions in the water management zone (including the applicant's take) as Category A abstractions with a direct hydraulic connection to surface water, in this case the Waiohine River. Hence in the future it is likely that this abstraction and others in the GGZ will be considered as surface water takes from the Waiohine River. This is discussed further in section 5.4 below. The

[3] Wairarapa Valley groundwater resource investigation: Proposed framework for conjunctive water management. Report produced for GW by B. Hughes and M. Gyopari. May 2011

new *proposed framework for conjunctive water management report* also recommends that until allocation limits have been re-assessed in the upcoming Plan Review process, that no further water should be allocated from the Waiohine River category A management zone.

I am satisfied there will be no long term adverse effects on groundwater allocation as a result of granting this application.

5.3 Effects on groundwater levels

Groundwater levels in the Greytown aquifer have been monitored for many years. The trend in Figure 2 shows a slight increase throughout the 1990's but then drops slightly in 2005 before appearing to stabilise again. It is unclear at this stage, whether this marginal decline is due to an increased pumping of water takes, natural fluctuations in groundwater levels or due to degradation of the bed of the Waiohine River.

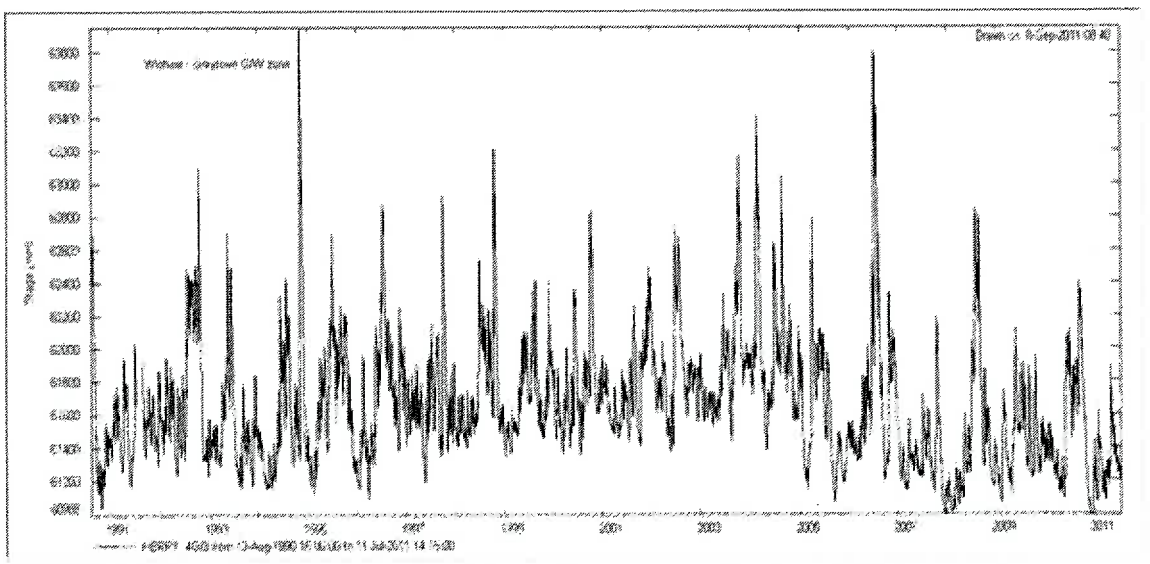

Figure 2: Groundwater levels in the Greytown aquifer from 1990 to present

The applicant has applied for the same rate of take and allocation from the aquifer. The high transmissivity and recharge rate of the aquifer in this area means that groundwater levels are generally stable. A low flow restriction will be applied as a condition of consent (see section 5.4 of this report) and because the applicant's take is small I consider that granting application WAR120275 will have no more than minor effects on groundwater levels.

5.4 Effects on surface water and minimum flows

The applicant's bore S26/0515 (4G/52/6/I) is located approximately 2.25 km south of the Waiohine River. At present there are no low flow restriction conditions applied to groundwater take consents within the GGZ but the latest information in the *proposed framework for conjunctive water management report* indicates that groundwater takes from the GGZ are essentially drawing water from the Waiohine River and as such, may be considered as surface water takes and that low flow restrictions should be applied.

Minimum flows are imposed to protect aquatic habitats and water quality in times of low flow and water shortages. Flows in the Waiohine River are monitored by GW at the Waiohine Gorge and because groundwater in the GGZ is considered to be in continuity with surface water, restrictions will now also be applied to groundwater take consents (classified as category A abstractions) in the GGZ. Whilst this low flow condition acknowledges the connectivity between aquifers and surface water, it is not aligned with low flow conditions applied to direct takes from the Waiohine River - direct takes are required to cease abstraction when flow in the Waiohine River falls below 3,395 litres/second.

At present the minimum flow, as defined in the RFP, for the Waiohine River is 2,300 l/s with restrictions being imposed upon surface water takes to cease abstraction when the flow falls below 3,040 l/s. At the time these limits were defined, there was limited low flow data available for the Waiohine River, and so the flow of 2,300 l/s was derived based on a correlation with the Ruamahanga River (Wairarapa Catchment Board 1980).[4]

A more conservative minimum flow of 2,765 l/s is proposed in the *Waiohine River instream values and minimum flow assessment report 2009*[5]. This document states,

> *"Instream habitat modelling and hydrological analysis predicts that a flow of 2,765 l/s at Waiohine Gorge is required to protect fish habitat in the Waiohine River as a whole, by ensuring no more than 10% habitat loss compared to the habitat available during mean annual low flow conditions."*

Based on the findings detailed in the '*Waiohine River instream values and minimum flow assessment report*' water takes in the Waiohine catchment should be managed so that a minimum flow of 2,765 l/s is maintained and be restricted from taking water when the flow at the Gorge gauging site is less than 3,395 l/s.

It is recommended that for groundwater takes within the GGZ the following regime be in place;

- When the flow in the Waiohine River at the Gorge gauging site is 3,395 litres/second (3.395m^3/s) or less the consent holder shall restrict the groundwater take to night time pumping only (between 7pm and 7am).

This groundwater level restriction condition will apply to all consented groundwater takes from the GGZ that are classified as Category A abstractions. The condition is worded in a manner that places the onus on applicants to ensure compliance with minimum flows. Information on minimum flows are available on GW's website or by contacting the office directly if they do not have access to the internet. If the applicant does not consider their bore is linked to surface water they will need to submit specific and detailed evidence

[4] Information taken from *Waiohine River instream values and minimum flow assessment, November 2009*; Laura Keenan, GW Environmental Monitoring and Investigations Department.

[5] *Waiohine River instream values and minimum flow assessment, November 2009*; Laura Keenan, GW Environmental Monitoring and Investigations Department.

to demonstrate that there is no direct hydraulic connection. No such evidence has been forthcoming in this case.

In summary, because the surface water level restriction condition will be placed on all consented takes in the GGZ (including the applicant's take) to maintain a minimum flow during periods of low flows in the Waiohine River, I do not consider that granting application WAR120275 will have any adverse effects on surface water or minimum flows.

5.5 Effects on other bores

The abstraction of groundwater from any bore has the potential to create an effect on nearby bores if the bore is located in the same aquifer as other bores, or if the aquifers are hydraulically connected.

Figure 3 below shows the location of the applicant's bore S26/0515 (4G/52/6/I) and adjacent bores.



Figure 3: Location of the applicant's bore S26/0515 (4G/52/6/I) and adjacent bores

There are 15 bores located within 500m of the applicant's bore. Hydraulic modelling undertaken during the assessment of consent application WAR010237 estimated that potential interference drawdown induced by this small take would be insignificant (approximately 0.008m). Given that transmissivity rates are high within this aquifer and the estimated interference drawdown effects are insignificant, I consider that there will be no adverse effects on other bores as a consequence of operating this groundwater take and any effects will be no more than minor.

5.6 Water conservation and efficient use

5.6.1 Policy 6.2.6 of the RFP

The application rate for any proposal should be less than the maximum application rate of 350m^3/hectare/week as detailed in Policy 6.2.6 of the RFP,

unless it can be demonstrated that a higher rate is efficient and necessary. The applicant's maximum weekly rate is 576m^3 (5 days/week) which equates to an application rate of 144m^3/hectare/week for 4 ha. This is below the maximum efficiency application rate and thus considered reasonable given the intended use. The applicant also uses a trickle irrigation system which is considered to use water more efficiently.

I have also recommended a condition relating to water conservation be included on the consent, which requires the reticulation system to be maintained so water does not run to waste.

5.6.2 SPASMO-IR irrigation allocation tool

From 1 July 2011 GW introduced the SPASMO-IR irrigation allocation tool (Soil Plant Atmosphere System Model for Irrigation)[6]. This model is designed to determine reasonable water use for the GW region and takes into account factors such as climate, soil and crop types as well as the area irrigated and rates of take. Currently this tool is being used as a guide to aid the determination of reasonable use until it has been adopted through the Regional Plan review process and as yet, does not carry any statutory weight.

SPASMO-IR does not currently have a stone-fruit option in order to undertake an accurate assessment of the applicant's water need. Therefore an assessment was done based on grapes as the crop type. Results indicate that the annual quantity needed for irrigation by the applicant would be 7,378m^3/year. However, because this assessment was not based on the applicant's actual crop type the SPASMO recommendation may not reflect the applicant's reasonable water use. Therefore, I consider the applicant's existing annual allocation which equates to 12,672m^3/year (equivalent to 110 days) reasonable.

6. Statutory assessment

6.1 Resource Management Act 1991

Part II (section 5) of the Act defines its purpose as the promotion of the sustainable management of natural and physical resources. Sections 6, 7 and 8 of Part II define the matters a consent authority shall consider when achieving this purpose.

Section 104(1)(b) of the Act outlines the matters a consent authority must have regard to. These matters include any actual and potential effects on the environment of allowing the activity, relevant National Environmental Standard(s), other regulations, relevant objectives, policies and rules of a Regional Plan, the Regional Policy Statement and proposed Regional Policy Statement[7], and any other matter considered relevant and reasonably necessary to determine the application.

[6] Developed for GW by The New Zealand Institute for Plant and Food Research - 2010
[7] The proposed RPS was notified on 21 March 2009

6.2 National Policy Statement

The National Policy Statement for Freshwater Management 2011 (NPSFM) took effect on 1 July 2011. I have considered the above NPS and I consider that the application is consistent with the objectives and policies in the NPSFM.

6.3 National Environmental Standard and other Regulations

There are no National Environmental Standards currently relevant to this application. However, The Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 took effect on 10 November 2010. The regulations apply to holders of water permits (resource consents) which allow freshwater to be taken at a rate of 5 litres/second or more. The regulations require most water takes to install a water meter, verify its accuracy and keep and submit records of water use to GW. Given the applicant's rate of take is less than 5 l/s the regulations do not apply. However the regulations do allow Regional Council's to impose measuring or reporting requirements on water takes not covered by the regulations (such as consents for less than 5 l/s) if considered necessary.

GW updated its Compliance Monitoring Strategy on 1 July 2011 which lists consents of less than 5 l/s located in the Waiohine A water management zone as being required to install a water meter. However, in certain circumstances this requirement can be waived. As this take is particularly small and the long-term future of the operation is uncertain (the applicant states that they are in the process of reducing their irrigated area because growing is getting more difficult due to neighbouring residential subdivisions, and they are currently investigating sub-division options for their own property), I do not consider that requiring them to invest in a water meter is necessary at this stage. However, I recommend a condition of consent that will require the applicant to install a water meter if requested to do so by GW in the future. They must also keep daily records of their water take by recording the rate of take by hours run, to support future applications for renewal of consent.

6.4 Regional Policy Statement and Proposed Regional Policy Statement

The Operative Regional Policy Statement for the Wellington Region (RPS) contains several objectives and policies aimed at maintaining the quality of the freshwater environment. These objectives and policies are intended to provide for the current and reasonably foreseeable needs of current and future generations. The relevant chapter of the RPS is chapter 5 (Freshwater). I consider that the proposed activity outlined in the application is consistent with the objectives and policies of this chapter.

The proposed RPS was notified on 21 March 2009. Decisions on submissions on the proposed RPS were approved by Council on 18 May 2010 and notified on 22 May 2010. The appeal period closed on 6 July 2010. Eight appeals have been received on the decision. The provisions in the proposed RPS must be considered pursuant to section 104(1)(b)(v) of the Act. Section 4.2 of the proposed RPS contains the relevant regulatory policies to be given particular regard when assessing and deciding on resource consent applications. I consider that, with the application of the recommended conditions of consent,

the proposed activity is consistent with the policies in section 4.2 of the proposed RPS.

6.5 Regional plans

6.5.1 Policies and objectives

The RFP has a number of objectives and policies that relate to the proposed activity. The most relevant objectives and policies to consider in assessing this application are listed below:

Policy 6.2.3: Management of aquifers in groundwater zones using allocation limits.

Policy 6.2.6: Maximum application rates when allocating water for irrigation.

Policy 6.2.8: Effects on surface water and other bores.

Policy 6.2.18: Water conservation and efficient use of water resources.

I have assessed the proposal against these policies and I consider that the proposal is consistent with these policies.

7. Main findings

I am satisfied that there will be no more than minor effects on the environment as a result of granting this application. In particular:

1. The proposed activity is consistent with the Purposes and Principles of the Resource Management Act 1991.

2. The proposed activity is consistent with the relevant objectives and policies of the RPS, proposed RPS, the RFP and the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010.

3. The actual or potential adverse effects of the proposed activity on the environment will be or are likely to be no more than minor.

4. Conditions of the consent will ensure that the adverse effects of the activity on the environment will be appropriately avoided, remedied or mitigated.

7.1 Duration of consent

Consented takes from the GGZ are being aligned with water takes from the Waiohine River and Ahikouka Groundwater Zone, so that they can all be reviewed at the same time following the upcoming Plan Review. Therefore, I recommend that this consent be granted for a duration of approximately five years until 30 September 2017.

8. Monitoring

Monitoring of the water take is classified as an unmetered take not requiring an inspection. However records of estimated water usage (m^3) are to be submitted annually based on the rate of take and number of hours run and so a monitoring charge will be applied. Charges relating to this monitoring are outlined in the cover letter enclosed with this report.

A water meter is not required to be installed at this time. However if GW require the applicant to install a meter, then it will be allocated a unique reference number. This is the water meter ID number (S26/0515) specified on the consent certificate.

The applicant should also keep daily records of their water take (based on the rate of take and number of hours run) to support future applications to renew their consent so that better information pertaining to actual usage is available.

The take will attract a State of the Environment monitoring charge in accordance with the *Resource Management Charging Policy (2011)*.

Application lodged:	04/05/12	**Application officially received:**	05/05/12
Applicant to be notified of decision by:	01/06/12	**Applicant notified of decision on:**	18/05/12
Time taken to process application:	10 working days		

9. Attachment 1 WAR120275 [31733]

General condition

1. The location, design, implementation and operation of the take shall be in general accordance with the consent application and its associated plans and documents lodged with the Wellington Regional Council on 4 May 2012.

   For the avoidance of doubt, where information contained in the application is contrary to conditions of this consent, the conditions shall prevail.

   Note: Any change from the location, design concepts and parameters, implementation and/or operation may require a new resource consent or a change of consent conditions pursuant to section 127 of the Resource Management Act 1991.

Rate and point of take

2. The rate at which water is taken from bore S26/0515 (4G/52/6/I) at or about approximate map reference NZTM: 1806891.5449205, shall not exceed 12,672m^3/year, at 115.2m^3/day at a maximum pumping rate of 4 litres/second.

   Note 1: This equates to 8 hours/day and 110 days/year based on the maximum pumping rate.

   Note 2: The annual take volume shall be assessed for the period 1 July to 30 June the following year.

Water measuring device/system

3. If so requested in writing by the Manager, Environmental Regulation, Wellington Regional Council, the consent holder shall install and maintain a sealed and tamper-proof water measuring device (water meter) as close as practicable to the point of take on bore S26/0515 (4G/52/6/I). The water meter shall measure both cumulative water abstraction and the instantaneous rate of take, and is capable of providing data in a form suitable for electronic storage. The water meter shall be calibrated to ensure that the error does not exceed +/- 5%. The water meter shall be installed and maintained by a suitably qualified person in accordance with manufacturer's specifications and industry best practice guidelines, and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

   Note 1: A suitably qualified person is an individual/company that is registered with the Water Measurement and Reporting Industry Accreditation Program or can demonstrate an appropriate standard of installation to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

   Note 2: Where industry best practice guidelines differ from manufacturer's specifications, the more stringent standard applies, unless special circumstances apply to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

Verification of the water measuring device/system

4. If the consent holder is requested in writing by the Manager, Environmental Regulation, Wellington Regional Council to install a water meter, the consent holder shall verify the accuracy of the water measuring device/system required under condition 3 by 30 June of the water year in which it is installed to determine if the actual volume of water taken is within +/- 5%.

   After the initial verification, the consent holder shall verify the accuracy of the water measuring device/system required under condition 3 at least every five years or at a greater frequency if directed in writing by the Manager, Environmental Regulation, Wellington Regional Council, to determine if the actual volume of water taken is within +/- 5%.

   Any verification of the water meter under this condition must be performed by a suitably qualified person, that is to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

   Note 1: A suitably qualified person is an individual/company that is registered with the Water Measurement and Reporting Industry Accreditation Program or can demonstrate an appropriate standard of installation to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

   Note 2: Where industry best practice guidelines differ from manufacturer's specifications, the more stringent standard applies, unless special circumstances apply to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

   Note 3: A water year runs from 1 July to 30 June.

5. Within one month of any verification being undertaken on the water meter as required by condition 4, the consent holder shall submit to the Manager, Environmental Regulation, Wellington Regional Council, a copy of verification certificate/and or evidence documenting the calibration as completed by the person who undertook the verification.

Keeping and supplying records

6. The consent holder shall record daily abstraction in (m^3 a day based on the rate of take and hours of operation) and shall forward a copy of these records to the Manager, Environmental Regulation, Wellington Regional Council by 31 July each year for the duration of this consent.

   Note 1: Records can be sent to notifications@gw.govt.nz. Please include the consent reference (WAR120275) and the name and phone number of a contact person responsible for the take.

   Note 2: If you are not using your water permit, you must still keep and send Wellington Regional Council a record specifying 'zero' when no water is taken.

Note 3: For the purposes of this consent a year will be deemed to run from 1 July to 30 June.

Low flow condition

7. When the flow in the Waiohine River at the Gorge gauging site is 3,395l/s (3.395m^3/second) or less the consent holder shall restrict the groundwater take from bore S26/0515 (4G/52/6/I) to night-time pumping only, between 7pm and 7am.

Note 1: The stream flow data for the Waiohine River can be accessed at Wellington Regional Council's website (www.gw.govt.nz/waiohine-river-at-gorge/). It is the consent holder's responsibility to regularly check the website or contact Wellington Regional Council to ensure compliance with this condition.

Irrigation system

8. The irrigation system and bore head connections shall be designed and maintained so that water is not run to waste and contamination of the aquifer and backflow are prevented.

Monitoring

9. If so requested by the Manager, Environmental Regulation, Wellington Regional Council, the consent holder shall make their bore available for the monitoring of water levels and water quality.

Review conditions

10. The Wellington Regional Council may review any or all conditions of this consent by giving notice of its intention to do so pursuant to section 128 of the Resource Management Act 1991, at any time within three months of the 30 June each year for the duration of this consent, for the purpose of:

- Reviewing seasonal groundwater allocation requirements; and/or
- Dealing with any adverse effects on the environment which may arise from the exercise of this consent, and which is appropriate to deal with at a later stage; and/or
- Enabling consistency with the relevant Regional Plan

Notes:

a) This resource consent does not guarantee that quantity or quality of water will be maintained or available.

b) Please contact the Wellington Regional Council, Environmental Regulation, if you plan to make any modifications to the bore, pump, or irrigation system. Any significant modifications may require you to apply for a change of consent conditions.

c) A resource management charge, set in accordance with section 36(2) of the Resource Management Act 1991 shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring, and supervision of resource consents and for the carrying out of its functions under section 35 (duty to gather information, monitor, and keep records) of the Act.

d) The Wellington Regional Council shall be entitled to recover from the consent holder the costs of any review, calculated in accordance with and limited to the Council's scale of charges in force and applicable at that time pursuant to section 36 of the Resource Management Act 1991.

e) In the event of undue interference with other bores/wells in the area and/or a long term sustained decline in groundwater levels becomes apparent through groundwater level monitoring undertaken in the aquifer where bore S26/0515 (4G/52/6/I) is located, the consent holder may be requested to reduce or stop pumping as maybe directed by the Manager, Environmental Regulation, Wellington Regional Council. Undue interference is defined as drawdown in neighbouring bores/wells that was not evaluated at the time the resource consent was processed.

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MEMO

TO	Stephen Thawley, Project Leader, Environmental Regulation
FROM	Kristina Carrick, Resource Advisor, Environmental Regulation
DATE	22 December 2014
FILE NUMBER	WAR120275 [33271]

Change to low-flow conditions on 15 consents in the Waiohine catchment

1. Background and proposal

In 2011 a number of water take consents were renewed for either taking water directly from the Waiohine River or indirectly from bores connected to the Waiohine River. The consents were processed on a non-notified basis and low-flow conditions were placed on the consents. At the time the consents were processed, updated minimum flows had been identified based on an internal report titled 'Waiohine River Instream Values and Minimum Flow Assessment' (November 2009). The report recommended increasing the minimum flow by 465 litres/second. Consequently, an updated minimum flow of 3,395 litres/second was derived and applied to replacement resource consents. This updated minimum flow was applied as the science presented in the aforementioned report evaluated the impact of water takes during periods of low river flow and was available to us. It was intended that the updated minimum flows would be included in the next regional plan.

Greater Wellington Regional Council (GWRC) has since progressed its regional plan review. One development in approach since the review commenced is that GWRC has decided to defer any changes to minimum flows to the Ruamahanga Whaitua, established in 2013, acknowledging that they are the most appropriate body to review exiting limits and recommend new limits, which will then inform the future consenting of water takes. Therefore the current minimum flow in the Regional Freshwater Plan (RFP) for the Waiohine River (3,040 litres/second) still applies in the Draft Natural Resources Plan.

As such, GWRC initiated a process which enabled 22 consent holders to apply to change the low-flow conditions on their consents to align with the existing minimum flow limits in the RFP.

2. Applicants

File	Consent ID	Applicant	Description	Location
WAR110305	33264	Engel Dairy Farm Ltd	to take surface water from the Waiohine River for irrigation of pasture **(change of conditions)**	Waihakeke Road, Carterton
WAR150002	33265	Bassett Farms 2007 Ltd	to take and use groundwater from a bore S26/1056 (4G/253/30/I) located within the Hodders Groundwater Zone for irrigation purposes **(change of conditions)**	196 Matarawa Road, Carterton
WAR110266	33266	E & J Warburton	to take and use groundwater from bore S26/0403 (4G/146/7.5/DI) in the Ahikouka Groundwater Zone for horticultural irrigation **(change of conditions)**	State Highway 2, Greytown
WAR130063	33267	B G & J E Slater	to take groundwater from bore 4G/198/9/I & 4G/200/8.5/I for irrigation of crops/horticulture **(change of conditions)**	Humphries Street, Greytown
WAR110363	33268	B G & J E Slater	to take and use groundwater from bore S26/0475 (4G/210/9/I) for horticultural irrigation **(change of conditions)**	2576 State Highway 2, Greytown
WAR110263	33269	Mourea Trust (Pauline Craig)	to take surface water from the Waiohine River for irrigation of pasture **(change of conditions)**	State Highway 2, Greytown
WAR110318	33270	Bruce Buchanan Ltd	to take surface water from the Waiohine River for industrial use **(change of conditions)**	State Highway 2, Carterton
WAR120275	33271	Andrew Murphy	to take and use groundwater from bore S26/0515 (4G/52/6/1) for horticultural irrigation **(change of conditions)**	67 Reading Street, Greytown
WAR110297	33272	A K Slater & Estate of C J Slater	to take and use groundwater from bore S26/0399 (4G/142/10/I) for irrigation of crops and pasture **(change of conditions)**	24 Hupenui Road, Greytown

WAR110287	33281	Leslie Wong	to take and use groundwater from bore S26/0561 (4G/93/9/I) for irrigation of crops and pasture **(change of conditions)**	2600 State Highway 2, Greytown
WAR110320	33282	K M & J C Gray	to take surface water from the Waiohine River for irrigation of crops and pasture **(change of conditions)**	33 Ahikouka Road, Greytown
WAR120040	33283	Pinehaven Orchards Ltd	to take groundwater from an existing bore BP34/0013 (4G/272/10/I) located in the Ahikouka Groundwater Zone for irrigation and frost protection purposes **(change of conditions)**	2471 State Highway 2, Greytown
WAR120041	33284	Pinehaven Orchards Ltd	to take groundwater from existing bore S26/0469 (4G/205/11/I) located in the Greytown Groundwater Zone for irrigation and frost protection purposes **(change of conditions)**	Udy Street, Greytown
WAR110265	33285	Berwick Holdings Ltd	to take and use groundwater from bore S26/0454 (4G/191/12/I) for irrigation purposes **(change of conditions)**	2412 State Highway 2, Greytown
WAR120239	33286	Smallwood Family Trust	to take and use groundwater from bore S26/0915 (4G/240/10/1) located in the Greytown Groundwater Zone for irrigation purposes **(change of conditions)**	Kuratawhiti Street, Greytown

Of the 22 consent holders who were invited to change consent conditions, 15 submitted an application, whilst 7 did not submit an application.

3. Details of change of condition

The applicants have applied to change the low-flow (restriction) condition on their resource consents under section 127(1) of the Resource Management Act 1991 (the Act).

In accordance with section 127(3) of the Act this application has been considered as a **discretionary activity**.

The low-flow conditions currently read (approximately):

For surface water takes

When the Waiohine River at the Greater Wellington Waiohine Gorge monitoring site falls below 3,395 litres/second the take shall cease.

For groundwater takes

When the Waiohine River at the Greater Wellington Waiohine Gorge monitoring site falls below 3,395 litres/second the consent holder shall restrict the groundwater take to night-time pumping only, 7pm – 7am.

Change to low-flow condition:

For surface water takes

When the Waiohine River at the Waiohine Gorge monitoring site falls below 3,040 litres/second the consent holder shall cease taking water.

For groundwater takes

When the Waiohine River at the Waiohine Gorge monitoring site falls below 3,040 litres/second the consent holder shall restrict the abstraction to a cumulative total of 12 hours/day. Also, no water shall be taken during the low flow conditions between 8am and 5pm in order to minimise evapotranspiration losses; unless otherwise a agreed to the satisfaction of the Manager, Environmental Regulation.

The matters to which the Greater Wellington Regional Council (as consent authority) shall have regard to when considering applications for change or cancellation of resource consent conditions are set out in section 104 of the Act. The circumstances in which it can make a decision to grant an application to vary consent conditions are set out in section 104B.

4. Consultation

In accordance with the Greater Wellington Regional Council's (GWRC) agreement with tangata whenua regarding consultation on non-notified consents, Rangitane O Wairarapa (RoW) and Kahungunu ki Wairarapa (KkW) were provided with a copy of the generic application form and details of those that had applied. KkW have not responded, it is therefore presumed they have no concerns with the proposal. RoW responded with some minor questions around the context and detail of the proposal. I sent a response via email and attached a draft copy of this report to provide them with further information.

5. Notification decision

A decision was made to process the applications on a non-notified basis on 22 December 2014. Further information on the notification decision is provided in document #1441858 for record of decision. In particular, this decision documents why Fish and Game NZ Ltd were not considered an affected party to these applications.

6. Assessment of environmental effects

Changing the minimum low-flow level on the aforementioned consents from 3,395 litres/second to 3,040 litres/second will allow for the abstraction of water on an extra 3.5days (on average). This will provide further flexibility for consent holders to continue taking water during low summer flow conditions.

The existing minimum flow level in the RFP was derived from available information at the time the plan was publicly notified. The minimum flow is set as a guide that provides an indication of flows in the river that will safeguard the life-supporting capacity of ecosystems, meet the needs of future generations and provide for adequate water quality. The minimum flow for the Waiohine River is based on water allocation plans prepared prior to the Act being passed into law by Parliament and historical methods that use a one in five year low-flow.

Whilst the reduction in the minimum flow will reduce habitat availability for a period of 3.5 days per year (on average) and is contrary to more recent science that evaluates minimum flows for ecological values, any adverse effects are considered to be minor given the small change in minimum flows to levels established prior to 2011.

Given the above, I am satisfied that changing the low-flow condition to the flow specified in the existing RFP will have no more than minor effects on the environment.

7. Statutory assessment

7.1 Part II

Part II of the Act outlines the purposes and principles of the Act. Section 5 defines its purpose as the promotion of the sustainable management of natural and physical resources. Sections 6, 7 and 8 of Part II define the matters a consent authority shall consider when achieving this purpose.

I am satisfied that the granting of the application is consistent with the purpose and principles in Part II of the Act.

7.2 Matters to be considered – Section 104-108

Section 104-108 of the Act provides a statutory framework in which to consider resource consent applications. All relevant matters to be considered for these applications to change conditions relating to low flow restrictions are summarised in the table below:

RMA section	Matter to consider	Comment
104(1)(a)	Actual or potential effects on environment	See Section 6 of this report
104(1)(b)(iii)	National Policy Statement for Freshwater Management 2014	The NPSFM is given effect to through two transitional policies (5.2.10A and 6.2.4A) in the RFP (see below)

RMA section	Matter to consider	Comment
104(1)(b)(v)	Regional Policy Statement	I consider that, with the application of the recommended conditions of consent, the proposed activity is consistent with the RPS
	Objective/Policy	*Comment*
	Objective 12	The quantity and quality of fresh water meets the range of uses and values for which it is required; safeguards its life supporting capacity, and has the potential to meet the reasonably foreseeable needs of future generations.
	Objective 13	The region's rivers, lakes and wetlands support healthy functioning ecosystems.
	Policy 40	Safeguarding aquatic ecosystem health in water bodies
	Policy 43	Protecting the aquatic ecological function of water bodies
104(1)(b)(vi)	Regional Freshwater Plan	I consider that, with the application of the recommended conditions of consent, the proposed activity is consistent with the Regional Freshwater Plan.
	Objective/Policy	*Comment*
	Policy 6.2.1	The new low flow consent conditions are based on minimum flows specified in policy 6.2.1
104(1)(c)	Any other matter	There are no other matters relevant to this application.

8. Duration of consent

The expiry dates of the resource consents remain unchanged.

9. Monitoring

The monitoring and charges associated with the consents remain unchanged.

10. Recommendation

The low-flow conditions currently read (approximately):

For surface water takes

When the Waiohine River at the Greater Wellington Waiohine Gorge monitoring site falls below 3,395 litres/second the take shall cease.

For groundwater takes

When the Waiohine River at the Greater Wellington Waiohine Gorge monitoring site falls below 3,395 litres/second the consent holder shall restrict the groundwater take to night-time pumping only, 7pm – 7am.

I consider that, pursuant to sections 104, 108 and 127 of the Resource Management Act 1991, the low-flow conditions on the consents listed in Table 2 should be amended to:

For surface water takes

When the Waiohine River at the Waiohine Gorge monitoring site falls below 3,040 litres/second the consent holder shall cease taking water.

For groundwater takes

When the Waiohine River at the Waiohine Gorge monitoring site falls below 3,040 litres/second the consent holder shall restrict the abstraction to a cumulative total of 12 hours/day. Also, no water shall be taken during the low flow conditions between 8am and 5pm in order to minimise evapotranspiration losses; unless otherwise a agreed to the satisfaction of the Manager, Environmental Regulation.

All other conditions of this consent are to remain unchanged.

Report recommended by:

Kristina Carrick
Resource Advisor, Environmental Regulation

Recommendation approved by:

Stephen Thawley
Project Leader, Environmental Regulation

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Non-notified resource consent application report and decision

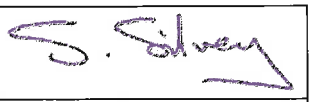
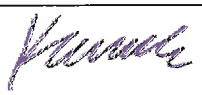
Summary of decision

File Reference:	**WAR170241**
Date Granted:	18 April 2017
Applicant:	Andrew Murphy 67 Reading Street Greytown 5712
Decision made under:	Sections 104B and 108 of the Resource Management Act 1991 (the Act)
Consent Granted:	**Operative Regional Plans** **[34635]: Discretionary Activity** Water permit – groundwater take **Proposed Natural Resources Plan** **[34635]: Restricted Discretionary Activity** Water permit – groundwater take
Activity:	To take and use groundwater from bore S26/0515 for horticultural irrigation purposes
Location:	Reading Road, Greytown
Map Reference:	At or about map reference NZTM 1806891.5449205
Legal Description:	Part Tahorahina 1B
Valuation No:	18230 108 12
Duration of Consent:	Approximately 10 years to expire on 30 September 2027
Consent conditions:	Attachment 1

Processing timeframes:

Application lodged:	22/03/17	**Application officially received:**	23/03/17
Applicant to be notified of decision by:	24/04/17	**Applicant notified of decision on:**	18/04/17
Time taken to process application:	16 working days		

Decision:

Decision recommended by:	Sue Silvey	Resource Advisor, Environmental Regulation	
Decision peer reviewed by:	Kristina Carrick	Resource Advisor, Environmental Regulation	
Decision approved by:	Stephen Thawley	Project Leader, Environmental Regulation	

Water allocation:

☑ Core i.e. counted for allocation purposes	☐ Other i.e. not counted for allocation purposes
Cat A Surface water allocation litres/sec (weekly average)	0.95

Reasons for decision report

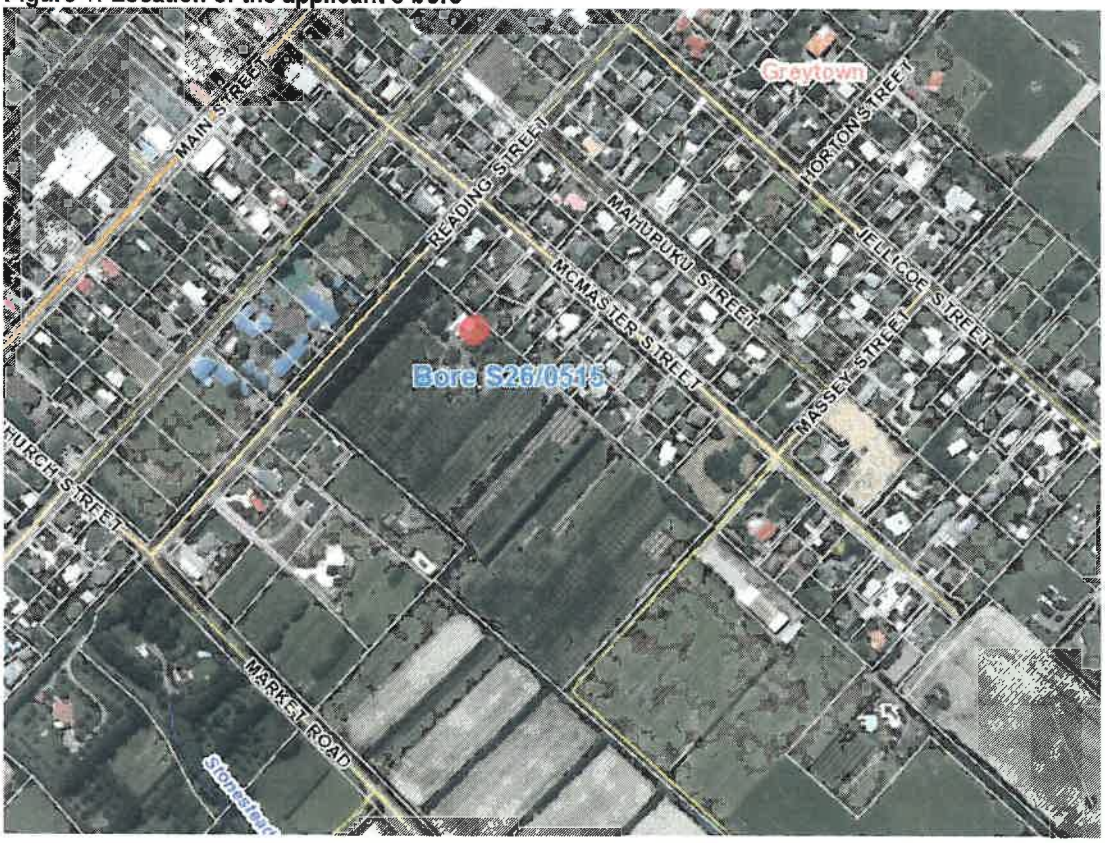
1. Background and proposal

The applicant has applied for a replacement water permit to take water from bore S26/0515 located in the Greytown groundwater zone.

The proposal is to

- continue taking up to 12,672m^3/year, and 115.2m^3/day (equivalent to 8 hours/day and 110 days/year), at a maximum pumping rate of 4 litres/second
- irrigate up to four hectares of stonefruit using a trickle irrigation system.

Figure 1: Location of the applicant's bore



2. Reasons for resource consent

2.1 Operative Regional Freshwater Plan

RMA section	Rule	Status	Comments
14	7	Permitted	The application involves the taking and use of more than 20,000 litres per day and the abstraction of water at a rate of more than 2.5 litres/second (l/s) and therefore requires consent
	16	Discretionary	

2.2 Proposed Natural Resources Plan

The Proposed Natural Resources Plan (PNRP) was publicly notified by the Council on 31 July 2015. All rules in the PNRP have immediate legal effect under section 86B(3) of the Act. As the application was lodged after 31 July 2015, the PNRP is relevant to determining the resource consents required, activity status, the notification decisions and the substantive assessment of the proposal under section 104 of the Act.

RMA section	Rule(s)	Status	Comments
14	R136 – R140	Permitted	The application does not meet any of the parameters and conditions of Rules 136-140 and therefore requires consent.
	R.R1	Restricted Discretionary	

The proposed activity is located near the Papawai Stream which is listed in the following schedules of the PNRP.

- Schedule C5 – site of significance to Ngati Kahungunu ki Wairarapa and Rangitane o Wairarapa.
- Schedule I – Important trout fishery rivers and spawning waters.

2.3 Overall activity status

Overall, the activity must be assessed as a discretionary activity under the operative Regional Freshwater Plan and a restricted discretionary activity under the Proposed Natural Resources Plan. As the activity status is different between the plans there is a need to undertake a weighting exercise. In this instance more weight is given to the operative plan (the more stringent of the two) and therefore the overall activity status is discretionary.

3. Consultation

Iwi authority	Comments
Rangitane O Wairarapa	Have no concerns at this time
Kahungunu ki Wairarapa	No comment provided, therefore it is assumed they have no concerns.

Other parties or persons	Comments
Department of Conservation	In accordance with the GWRC EReg and DoC MOU DoC were not consulted as an interested party.

4. Notification decision

A decision was made to process the application on a non-notified basis on 24 March 2017. Further information on the notification decision is provided in document #170241-2121644926-23.

5. Environmental effects

This section provides an assessment of the effects of the proposed activity on the environment. Information has been drawn from the application provided by the applicant and other information sourced during the processing of the application.

5.1 Water allocation

The applicant's bore has been classified as a Category A groundwater take with direct connectivity to surface water; in this case the Papawai Stream.

Regional Freshwater Plan (Policies 6.2.1 – 6.2.3)	Proposed Natural Resources Plan (Policies P107, P108 & R.P2)
Management zone: Greytown groundwater	Catchment management unit: Ruamahanga Catchment management sub-unit: Papawai
Core/capped allocation: 3,287,188m³/year	Core allocation: 8157 l/s (Ruamahanga) 440.66 l/s (Papawai)
Allocation limit: 20,000,000m³/year	Allocation limit: 7535 l/s (Ruamahanga) 65 l/s (Papawai)
Allocation status: 16.4%	Allocation status: 108.3% (Ruamahanga) 677.9% (Papawai)

I am satisfied that the allocation of water is within limits of the RFP.

Whilst the allocation limits in the PNRP are exceeded, as the rate of take has not increased and the allocation is within the total amount allocated to existing resource consents, the application meets Policy R.P2 of the PNRP.

5.2 Reasonable and efficient use of water

Regional Freshwater Plan	
Irrigation rate (Policy 6.2.6):	201.6/m³/ha/week.
Water conservation (Policy 6.2.18):	The amount of water applied for is considered reasonable given the intended use.

Proposed Natural Resources Plan	
Efficient use criteria (Policy P118):	The amount of water applied for meets Schedule Q test as the volumes of water requested are less than those recommended by Irricalc.
Unused water (Policy P119):	The applicant's previous consent did not require a water meter or record of days/hours to be submitted, as such this policy is unable to be assessed.

I am satisfied that the proposed activity is a reasonable and efficient use of water.

5.3 Localised effects

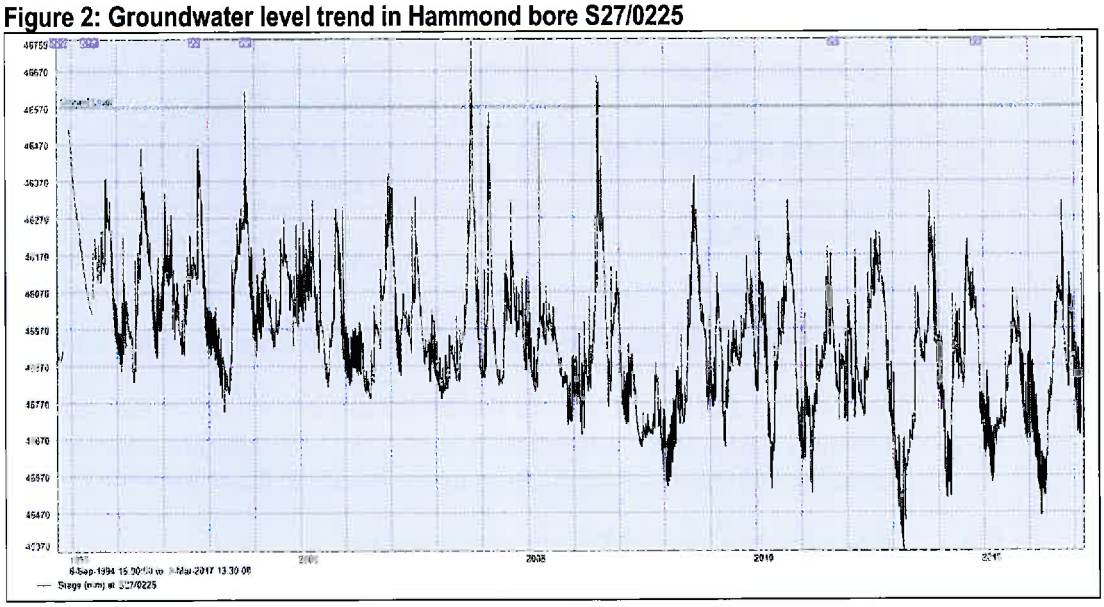
5.3.1 Groundwater interference effects

Given the high transmissivity in the aquifer, interference effects on other bores are expected to be insignificant. They are estimated to be 0.008metres at a distance of 500 metres and therefore considered to be less than minor.

5.3.2 Effects on groundwater levels

Groundwater levels are automatically monitored by GWRC in the Hammond bore S27/0225 which is 5m deep and located approximately 1.5km south of the applicant's bore. The static groundwater level trend in the Hammond bore appears to be relatively stable. As such I consider the applicant's take is likely to have less than minor effects on groundwater levels.

Figure 2: Groundwater level trend in Hammond bore S27/0225



5.4 Effects on surface water and minimum flows

Regional Freshwater Plan (Policies 6.2.1 – 6.2.2)	Proposed Natural Resources Plan (Policies P111 & P115)
Management point: Waiohine River at Gorge	Management point: Waiohine River at Gorge
Minimum flow: 3040 l/s	Minimum flow: 3040 l/s
Stepdown flow: N/A	Stepdown flow: N/A

As the applicant's bore is classified as Category A groundwater with direct connectivity with surface water a minimum flow condition will be applied in accordance with Policy P115 of the PNRP to reduce the take by 50% when flow in the Waiohine River at Gorge falls below 3040 l/s. The following regime will be applied;

When the flow in the Waiohine River at Gorge gauging site falls below 3040 litres/second the consent holder shall restrict the abstraction to 57.6m^3/day.

It is the consent holder's responsibility to regularly check the website to ensure compliance with this condition.

5.5 Summary of effects

Given the assessment above, it is considered that the proposed activity will not result in any more than minor effects when undertaken in accordance with the recommended consent conditions.

6. Statutory assessment

6.1 Part 2

Part 2 of the Act outlines the purposes and principles of the Act. Section 5 defines its purpose as the promotion of the sustainable management of natural and physical resources. Sections 6, 7 and 8 of Part 2 define the matters a consent authority shall consider when achieving this purpose.

I am satisfied that the granting of the application is consistent with the purpose and principles in Part 2 of the Act.

6.2 Matters to be considered – Section 104-108

Section 104-108 of the Act provides a statutory framework in which to consider resource consent applications. All relevant matters to be considered for this application are summarised in the table below:

RMA section	Matter to consider	Comment
104(1)(a)	Actual or potential effects on environment	See Section 5 of this report.

104(1)(b)(ii)	Other Regulations – Measurement & Reporting of Water Takes 2010	Standard conditions for water take consents meet the minimum requirements of these Regulations.
104(1)(b)(iii)	National Policy Statement for Freshwater Management 2014	The NPSFM is given effect to through Policy 6.2.4A in the RFP and Policy P110 in the PNRP. The application is to continue an established activity, and as discussed in Section 5 of this report, the adverse effects are no more than minor. Therefore, Policy 6.2.4A and Policy P110 does not relate to this proposal. I consider the application to be consistent with the objectives and policies of the NPSFM.
104(1)(b)(v)	**Regional Policy Statement**	I consider that, with the application of the recommended conditions of consent, the proposed activity is consistent with the RPS.
	Objective/Policy	*Comment*
	Policy 40	The water take is limited to a specific amount of water which will allow sufficient water to maintain aquatic ecosystem health
	Policy 44 & 45	The water take is reasonable and justified for its intended use.
	Policy 48 & 49	The principles of the Treaty of Waitangi and matters of significance to tangata whenua have been recognised and provided for.
104(1)(b)(vi)	**Regional Freshwater Plan**	I consider that, with the application of the recommended conditions of consent, the proposed activity is consistent with the RFP
	Objective/Policy	*Comment*
	Objectives 6.1.1 - 6.1.3	All objectives are considered to be met.
	Policy 6.2.3	Water will be taken in accordance with the allocation limits (see section 5.1 of this report).
	Policy 6.2.6 & 6.2.18	Water efficiency – policies met (see section 5.2 of this report).
	Policy 6.2.8	Intereference effects - policy met (see section 5.3.1 of this report).
104(1)(b)(vi)	**Proposed Natural Resources Plan**	I consider that, with the application of the recommended conditions of consent, the proposed activity is consistent with the PNRP
	Objective/Policy	*Comment*
	Objectives O4, O5, O8, O14, O23, O24, O25, O52	I consider that, with the application of the recommended conditions of consent, the proposed activity is consistent with these relevant objectives in the PNRP.

	Policy P4	Any adverse effects of the proposed activity have been minimised to the smallest amount practicable.
	Policy P6	The consent term (see section 8 of this report) will be synchronised to the sub-catchment common expiry date.
	Policy P7	Cultural, social, and economic benefits are recognised.
	Policy P17 & P19	The mauri of freshwater and cultural relationship of Maori with water has been recognised.
	Policy P107 & P108	The proposal fits within the conjunctive framework for water management
	Policy P109	A three year lapse date is recommended
	Policy P111 & P115	The imposition of minimum flow conditions (see section 5.4 of this report) will ensure that these policies are met
	Policy P118 & P119	Water efficiency - policies met (see section 5.2 of this report).
	Policy P123	Intereference effects - policy met (see section 5.3.1 of this report).
	Policy R.P1	Minimum flows in the Ruamahanga Whaitua – policy met (see section 5.4 of this report).
	Policy R.P2 & R.P3	Allocation limits in the Ruamahanga Whaitua – policy met (see section 5.1 of this report).
104(1)(c)	Any other matter	There are no other matters relevant to this application.
104(2A)	Value of investment for existing consents	I have considered the value of existing investment associated with this application.
104B	The consent authority may grant or refuse the application	If it grants the application, conditions may be imposed under section 108.
108	Conditions on resource consents	Standard conditions of consent for this activity type are recommended. Any additional conditions are outlined in Section 5 of this report. All conditions are documented in Attachment 1 to this report.

6.3 Weighting of the Proposed Natural Resources Plan

As the conclusion reached under the Regional Freshwater Plan assessment is consistent with that reached under the Proposed Natural Resources Plan there is no need to undertake a weighting exercise between the two Plans.

7. Main findings

In conclusion:

1. The proposed activity is consistent with the Purposes and Principles of the Resource Management Act 1991

2. The proposed activity is consistent with the relevant objectives and policies of the National Policy Statement for Freshwater Management 2014, the Regional Policy Statement, the Regional Freshwater Plan, the Proposed Natural Resources Plan.

3. The actual or potential adverse effects of the proposed activity on the environment will be or are likely to be no more than minor.

4. Conditions of the consent will ensure that the effects of the activity on the environment will be appropriately avoided, remedied or mitigated. Also monitoring conditions are consistent with the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010.

8. Duration of consent

I recommended a consent term for approximately 10 years to expire on 30 September 2027.

9. Monitoring

GWRC's Strategic Compliance Programme focusses on monitoring resource consents of higher risk and importance. Any water take with metering requirements is required to be monitored under our Strategic Compliance Programme. Key monitoring considerations for this water take are:

Monitoring consideration	Comment
No water meter required	As the water take is less than 5 litres/second a water meter is not required (unless requested in the future).
Submitting water use records	Daily water use records are required to be kept and submitted by 31 July each year.
No water meter verification	As the water take is less than 5 litres/second, no water meter verification is required.

Attachment 1: Consent conditions

General conditions

1. The location, design, implementation and operation of the take shall be in general accordance with the consent application and its associated plans and documents lodged with the Wellington Regional Council on 22 March 2017.

   For the avoidance of doubt, where information contained in the application is contrary to conditions of this consent, the conditions shall prevail.

   Note: Any change from the location, design concepts and parameters, implementation and/or operation may require a new resource consent or a change of consent conditions pursuant to section 127 of the Resource Management Act 1991.

2. This consent will lapse in three years from commencement unless given effect to prior to that date.

Rate and point of take

3. The rate at which water is taken from bore S26/0515 (4G/52/6/I) at or about approximate map reference NZTM: 1806891.5449205, shall not exceed 12,672m^3/year, at 115.2m^3/day at a maximum pumping rate of 4 litres/second.

   Note: This equates to 8 hours/day and 110 days/year based on the maximum pumping rate.

Water measuring device/system

4. If so requested in writing by the Manager, Environmental Regulation, Wellington Regional Council, the consent holder shall install and maintain a water meter (water measuring device) that measures all water authorised under this consent and meets the following requirements:

   - Sealed and tamper proof
   - Installed within 20 metres of the point of take unless an exception is granted by the Manager, Environmental Regulation, Wellington Regional Council, under section 10 of the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010
   - Measures cumulative water abstraction in m^3
   - Can measure the volume of water taken to within +/- 5% of the actual volume taken.
   - Resistant to corrosion and fogging
   - Capable of being fitted with an electronic datalogger, has a suitable output signal and has suitable data transfer ports
   - Be installed in accordance with industry best practice based on the Water Measurement Accreditation Programme, unless approval is obtained by the Manager, Environmental Regulation, Wellington Regional Council.
   - Be installed and maintained by a suitably qualified person

The above requirements shall all be to the satisfaction of the Manager, Environmental Regulation.

Note: This condition will be given effect to in the event of non-compliance of the rate of take, monitoring/reporting requirements of this consent, and/or any requirements of Greater Wellington Regional Council's Water Take Compliance Strategy.

5. If so requested in writing by the Manager, Environmental Regulation, Wellington Regional Council, the consent holder shall install a datalogger and telemetry unit on the water measuring device that is compatible with Wellington Regional Council's Water Use Data Management System. The data logger and telemetry unit shall record date and time stamped cumulative meter readings at least every 15 minutes, and transfer any meter readings within 24 hours.

Note: This condition will be given effect to in the event of non-compliance of the rate of take, monitoring/reporting requirements of this consent, and/or any requirements of Greater Wellington Regional Council's Water Take Compliance Strategy.

Accuracy and verification of the water measuring device/system

6. In the event that there are reasonable grounds established which show that the water measuring device/system may be inaccurate, the consent holder shall verify the accuracy of the water measuring device/system as directed by the Manager, Environmental Regulation, Wellington Regional Council. Verification of the water measuring device/system is to determine if the actual volume of water taken is within +/- 5%.

Any verification of the water measuring device/system under this condition must be performed by a suitably qualified person, that is to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

Within one month of any verification being undertaken on the water measuring device/system, the consent holder shall submit to the Manager, Environmental Regulation, Wellington Regional Council, a copy of the verification certificate/and or evidence documenting the calibration as completed by the person who undertook the verification.

Note: Reasonable grounds includes (but is not limited to) the water measuring device/system not been installed to industry best practice based on the Water Measurement Accreditation Programme .

Keeping and supplying records

7. The consent holder shall record the days and hours of water abstraction and shall forward a copy of these records to the Manager, Environmental Regulation, Wellington Regional Council by 31 July each year for the duration of this consent.

Note: If you are not using your water permit, you must still keep and send Wellington Regional Council daily records specifying 'zero' when no water is taken.

Low flow condition

8. When the flow in the Waiohine River at Gorge gauging site falls below 3040 litres/second the consent holder shall restrict the abstraction to 57.6m^3/day.

Note: The stream flow data for the Waiohine River can be accessed at Wellington Regional Council's website (www.gw.govt.nz). It is the consent holder's responsibility to regularly check the website to ensure compliance with this condition.

Irrigation/Reticulation system

9. The irrigation/reticulation system and bore head connections shall be designed and maintained so that water is not run to waste and contamination of the aquifer and backflow are prevented.

Monitoring

10. If so requested by the Manager, Environmental Regulation, Wellington Regional Council, the consent holder shall make their bore available for the monitoring of water levels and water quality.

Review conditions

11. The Wellington Regional Council may review any or all conditions of this consent by giving notice of its intention to do so pursuant to section 128 of the Resource Management Act 1991, at any time within three months of the 30 June each year for the duration of this consent, for the purpose of:

- Reviewing seasonal groundwater allocation requirements; and/or
- Dealing with any adverse effects on the environment which may arise from the exercise of this consent, and which is appropriate to deal with at a later stage; and/or
- Enabling consistency with the relevant Regional Plan(s)

Important notes relating to measuring and reporting of your water take:

1. A suitably qualified person is an individual/company that is registered with the Water Measurement Accreditation Programme or can demonstrate an appropriate standard of installation or verification to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

2. For water meter installation, where industry best practice guidelines differ from manufacturer's specifications, the more stringent standard applies, unless special circumstances apply to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council. Therefore verification of the water measuring device/system can only be achieved when the most stringent standard (either industry best practice or manufacturer's specifications) for installation has been achieved.

3. The annual take volume shall be assessed for the period 1 July to 30 June the following year.

General notes:

a) This resource consent does not guarantee that quantity or quality of water will be maintained or available.

b) Please contact the Wellington Regional Council, Environmental Regulation, if you plan to make any modifications to the bore, pump, or irrigation system. Any significant modifications may require you to apply for a change of consent conditions.

c) A resource management charge, set in accordance with section 36(2) of the Resource Management Act 1991 shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring, and supervision of resource consents and for the carrying out of its functions under section 35 (duty to gather information, monitor, and keep records) of the Act.

d) The Wellington Regional Council shall be entitled to recover from the consent holder the costs of any review, calculated in accordance with and limited to the Council's scale of charges in force and applicable at that time pursuant to section 36 of the Resource Management Act 1991.

e) In the event of undue interference with other bores/wells in the area and/or a long term sustained decline in groundwater levels becomes apparent through groundwater level monitoring undertaken in the aquifer where bore S26/0515 (4G/52/6/I) is located, the consent holder may be requested to reduce or stop pumping as maybe directed by the Manager, Environmental Regulation, Wellington Regional Council. Undue interference is defined as drawdown in neighbouring bores/wells that was not evaluated at the time the resource consent was processed.

Appendix 29

Moroa Water Race Bylaw

MOROA WATER RACE BYLAW 2007

Introduction

A. This bylaw is made by the South Wairarapa District Council in exercise of its powers and authority vested in the Council by Section 146 (b) (i) of the Local Government Act 2002.

B. This bylaw is enforceable throughout the Moroa Water Race District.

C. This bylaw is intended to assist efforts to maintain and enhance the quality of the Moroa Water Race to help ensure the future of this resource.

D. This bylaw compliments Greater Wellington Regional Council's resource consent(s) including the Code of Practice referred to therein for Moroa Water Race.

1. Interpretation

1.1 Defined terms

"The Council" means the South Wairarapa District Council.

"Bylaw" means this bylaw as altered, varied or amended from time to time.

"Owner or Occupier" means the owner or occupier of land in the supply area as recorded as such in the valuation roll of the district.

"District" means lands through which the Moroa Water Race runs and any land within five (5) metres of any branch of the Moroa Water Race is deemed to be within the Moroa Water Race Area.

"Farming purposes" means the provision of water for stock to drink.

"Water Race" has the meaning prescribed in the Local Government Act 2002, Part 1, Section 5 (1) and means the land occupied by a water channel (other than a main river) -

(a) constructed -
  (i) by or under the authority of a local authority:
  (ii) in, upon, or through land for the supply of water; and

(b) to be used -

(i) solely or principally for farming purposes; or
(ii) in the case of an existing water race, for any other purpose for which water from that water race may be used at the commencement of this section; and

(c) includes -
(i) a branch of a water race taken or made through land for the purpose of supplying water as referred to in paragraph (b); and
(ii) an alteration, extension, or widening of a water race or branch water race, whether done by the local authority or by any person with the approval of the local authority; and
(iii) a flood or other bank, or a dam, sluice, flume, bridge, gauge, meter, reservoir, or other waterworks relating to, or forming part of, a water race; and
(iv) buildings and machinery, pipes, and other materials on the land and within the limits of a water race or relating to, or used in connection with, a water race.

"Road" means a road as defined by the Local Government Act 1974.

"Required" means:

(a) required by notice in writing under the seal of the Council; or

(b) required by notice in writing signed by a duly Authorised Officer of the Council.

"Authorised Officer" means any person appointed by South Wairarapa District Council to be an authorised officer for the purpose of this bylaw.

"Stock" includes but is not limited to horses, sheep, dairy cows, and cattle.

2. Conditions of Use

2.1 Purpose

The primary purpose of the water race system is to supply water for stock watering purposes within the system area.

2.2 Permitted uses

Subject to the payment of the annual charges that may be determined from time to time by the Council, and without any further reference to the Council:

2.2.1 Water may be used for stock water purposes.

2.2.2 Water is allowed to enter the water race via the Greytown Storm Water system and Battersea Drainage Scheme.

2.2.3 In cases of extreme conditions the Council may impose further restrictions as it sees fit.

2.3 Prohibited Uses

No-one is to permit, allow or do any of the following:

2.3.1 Bathing or washing in a water race.

2.3.2 Any domestic fowl, be they water-fowl or otherwise, to stray into or upon the water race.

2.3.3 Contamination of the water race by chemicals, nutrients, or by any backflow from irrigation equipment such as pumping other than with the written consent of Council .

2.3.4 Any animal to linger in a water race and any stock to enter the water race.

2.3.5 Any activity carried out on land or in any building or yard to contaminate, to make less pure the water in the water race.

2.3.6 Obstruct the flow of water in the water race by any means whatsoever including undersized culverts, existing or new.

2.3.7 Ride, drive or lead any animals or propel, draw or convey any vehicle or chattels into, across, or through a water race except at the bridges, culverts or crossing places provided by the Council or constructed with the Council's written consent.

2.3.8 Any cuttings, clippings, twigs, branches or any other part of any tree or plant or any part of any fence to fall into or remain in the water race.

2.3.9 Draw off water either by gravity or pumping, or divert any water from a water race other than for stock water without the written consent of the Council.

2.3.10 Allow, either wilfully or through neglect, any pipe or other apparatus on their property to be out of repair so that water supplied from a water race is obstructed or wasted.

2.3.11 Permit a person who does not pay water race rates to take water from the race.

2.3.12 Widen or deepen any water race or alter the course of any water race without the written consent of the Council.

2.3.13 Permit or allow any Statutory Nuisance as defined under Section 29 of the Health Act 1956.

2.3.14 Obstruct any crossing point over a water race.

2.3.15 Remove, displace, alter, damage or interfere with any bank, dam, sluice, flume, bridge, gauge, meter, reservoir, pipe, or other work or thing used in supplying or distributing water from any water race without written consent of the Council.

2.3.16 Open the ground so as to uncover any culverts belonging to any water race or to lengthen or decrease the length of any such culvert without the written consent of the Council.

2.3.17 Make any structure over, in, or under a water race unless approved by the Council in writing.

2.3.18 Pipe the water race without written approval of the Council.

2.3.19 Sow, plant, or permit to grow any tree, hedge, shrub or other plant of any kind, within a distance of 5 metres from centre of a water race on one side and one meter from the edge of water race on the other side (nearest to the property boundary), except that:

(a) Crops and pasture are permitted; and
(b) Otherwise approved by the Council.

2.3.20 Erect any building or structures of any kind or any size within 5 metres of either side of any water race without the written authorisation of the Council.

2.3.21 Place any obstruction within a water race that would be a barrier to fish passage.

3. Council Responsibilities

Notwithstanding anything to the contrary that may appear in this bylaw the Council will ensure that the races are maintained at all times.

4. Cleaning

4.1 Owner and Occupier Obligations

Every owner or occupier of land through which a race runs shall:

4.1.1 Keep the water race, banks, and sides of the race in good order and condition and free from all silt, weeds, vegetation of all kinds, and from all other rubbish and obstructions of all kinds at their own cost. Any spraying of vegetation along the water race must comply with Rule 1 of the Regional Air Quality Management Plan, otherwise it will require a resource consent from the Greater Wellington Regional Council.

4.1.2 Keep and maintain the sides, banks, and other earthworks of the water race in such a condition as to prevent or mitigate any overflow, leakage or waste of water.

4.1.3 Allow any Council authorised person / contractor to have access to the water race for the purpose of gathering information for water quality audits of the water race.

4.1.4 Allow any Council authorised person / contractor to have access (with or without machinery) to the water race for the purpose of maintaining cleaning or improving the water.

4.2 Removal of Debris

After cleaning a water race or clearing or removing any debris from a water race or from the banks or sides of a race the owner or occupier of the land is to, without delay, at their own cost and expense, remove any and all clearings and cleanings and other obstructions from both sides of the race in such a manner and to such a distance from the race as may be necessary to both:

4.2.1 Prevent the materials from re-entering the race; and

4.2.2 To allow access to the race by any plant and machinery necessary to clean the race.

4.3 Maintaining, Cleaning and/or Improving the Races

4.3.1 When the Council, whether using its employees, contractors or otherwise, clears, cleans, renovates or improves any part of a water race or any land adjoining any part of the race, it may deposit all or part of the materials removed by or in the course of the work onto any part of the land contiguous or adjacent to the race, except where that land is a formed public road.

4.3.2 All such material deposited by the Council is to be placed in accordance with clauses 4.2.1 and 4.2.2 of this bylaw.

4.4 Failure to Repair or Clean the Race and Failure to Renew Existing Damaged or Undersized Culverts

4.4.1 If the owner or occupier fails, neglects or refuses to comply with any provision of this bylaw after having been required to do so in writing by the Council or authorised Council officer within the specified time, the Council may enter onto the land and, using its employees, servants, contractors, or any other persons and any plant that may be deemed to be necessary by Council, make good such failure, neglect or refusal and charge the owner or occupier with the cost and expense of the work, provided however that the provisions of Section 182 of the Local Government Act 2002 shall not be abrogated by the provisions of this bylaw.

4.4.2 Any expense incurred by the Council complying with clause 4.4 of this bylaw is a debt recoverable in a Court of competent jurisdiction.

4.4.3 Any remedy given by such Court shall in no way affect the liability of the owner or occupier to any penalty provided for the breach of this bylaw.

5. Existing Uses

5.1 If, at the date this bylaw comes into force there are existing:

5.1.1 Undersized or damaged culverts;

5.1.2 Trees, hedges, other plants or shrubs of any kind either growing or dead, in the form or nature of stumps or otherwise, in or on land and situated contrary to the provisions of Clause 2.3.18 and 2.3.19 of this bylaw and irrespective of how, when or by what means they came to be there;

or

5.1.3 Structures, buildings or yards of any kind or ponds impounding water which are situated contrary to provisions of Clause 2.3.20;

and

5.1.4 If in the reasonable opinion of the Council any of the things referred to in clause 5.1.2 and 5.1.3 are interfering with the flow of the water in any water race;

5.1.5 The Council shall notify the owner or occupier in writing of its intent to require the removal of such tree, hedge, other plants, shrub, structure, ponds, culvert, building and/ or yard;

and

5.1.6 The owner or occupier who objects to a requirements to remove an obstruction shall be given an opportunity to be heard by the Council before any final decision is made under this clause.

5.1.7 If, having heard the objection, the Council confirms its opinion that the obstruction must be removed, it will notify the owner or occupier accordingly and will consider whether compensation is payable to the owner or occupier.

5.1.8 If, after an objection has been heard and the Council has given notice in accordance with 5.1.7 an owner or occupier fails to remove an obstruction within a reasonable timeframe, 4.4.1 applies.

6. Extra or Abnormal Supplies

The Council may, at its own discretion, grant an extra supply of water from the water race for special purposes, including fire fighting, or for purposes not otherwise authorised by this bylaw, at a cost to be established by the Council at the time of its application. Such cost may be varied from time to time in accordance with the provisions of these bylaws.

7. Powers of Council

7.1 The Council may under powers given to it under the Local Government (Rating) Act 2002 and the Local Government Act 2002 and their Amendments establish, vary, alter, reduce, increase or remove charges and rates for the provision of the water race system.

7.2 The Council may alter the basis or manner or scale on which any or all such charges or rates are to be assessed as it sees fit in accordance with the powers delegated.

7.3 The Council may impose restrictions on the draw off of water from time to time.

8. Breaches of This Bylaw

Where any person:

8.1 Defaults in payment of any rate imposed on their land in respect of the supply of water; or,

8.2 Breaches any terms and conditions of clauses 3 and 4 of this bylaw; or,

8.3 Fails to do or perform any act, or thing, that he or she is required to do by these bylaws; or

8.4 Engages in any prohibited activity specified in clause 2; or,

8.5 Commits any other breaches of the terms and conditions of this bylaw;

Then they are in breach of this bylaw.

9 Penalties

9.1 Every person who commits a breach of any part of this bylaw is liable to a fine not exceeding $20,000 as provided for but not limited by section 242 of the Local Government Act 2002.

9.2 In addition to any penalty imposed by any court for a breach of this bylaw the Council may sue for and recover from any person the amount of damage done or caused to a water race or any works constructed by or under the control or jurisdiction of the Council in relation to the water race, or in respect of any water unlawfully taken or diverted or wasted or lost due to any non observance or performance of any of this bylaw.

10 Savings

10.1 Nothing in this bylaw shall be construed to be an undertaking or guarantee by, or oblige the Council to provide water in any water race either at all, or to any quantity or to any specified quality.

10.2 Nothing in this bylaw shall be construed to render the Council responsible or liable to any person or corporate body for the total or partial failure of any water supply from whatever cause such failure may arise.

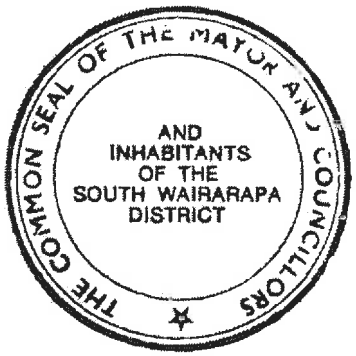
11 Bylaws to be Repealed

All bylaws concerning the water race system in force made by the Council or its predecessors are hereby repealed. This repeal shall not affect the past operation of any such repealed bylaws or the validity or invalidity of anything done or suffered, or any right required, or duty or liability incurred under those bylaws.

12 Commencement

12.1 This bylaw shall come into force on the 1 day of August 2008 being the day so fixed at a meeting of the South Wairarapa District Council at which the resolution reviewing this bylaw was confirmed.

12.2 The resolution to approve the proposed bylaw for notification was passed by the South Wairarapa District Council held on 23 day of July 2008



The Common Seal of the
South Wairarapa District Council
was affixed here
in the presence of

Chief Executive Officer

MAYOR

Appendix 30

Rules Assessment Table (operative Wairarapa Combied District Plan)

Assessment of Compliance of Proposed Development against Rules

Operative Plan

Land Use

Provision Reference	Detail	Complies?
4.5.1 Permitted Activities	The following are permitted activities: (a) Any activity listed as a District Wide Permitted Activity in the rules in Section 21.1, and which complies with the relevant standards in those rules and Section 4.5.2, and which is not otherwise specified as a controlled, restricted discretionary, discretionary or noncomplying activity under Sections 4.5 or 21. (b) Any activity not listed as a District Wide Permitted Activity in the rules in Section 21.1, and which complies with the relevant standards in Section 4.5.2, and which is not otherwise specified as a controlled, restricted discretionary, discretionary or noncomplying activity under Sections 4.5 or 21.	
4.5.2(a) Max Building Height	Dwellings: 10m Other buildings: 15m	Yes
4.5.2(b) Max height to boundary	3m height at the boundary with a 45 degree recession plan	Yes.
4.5.2(c) Min. building setback (excluding dwellings)	10m from front boundary of sealed roads 25m from front boundary of unsealed roads 5m from all other boundaries 25m from Significant Waterbody	Does not apply

Provision Reference	Detail	Complies?
	5m from any other waterbody	
4.5.2(d) Min. dwelling setback	10m from front boundary of sealed roads 25m from front boundary of unsealed roads 25m from all other boundaries (except if CT 2008 or younger, 10m) 25m from Significant Waterbody 20m from river with average width 3m+ 5m from any other waterbody 35m from edge of plantation forest under separate ownership 300m from boundary with untreated ag effluent disposal areas 150m from perimeter of a spray disposal area with e-coli concentrations less than 2,000cfu/100ml 75m from the perimeter of a surface disposal area w/ e-coli concentrations less than 2,000cfu/100ml 75m from perimeter of surface disposal area w/ e-coli concentrations less than 100cfu/100ml etc. 25m from perimeter of surface disposal area w/ e-coli concentrations less than 100cfu/100ml 500m from an intensive farming activity under separate ownership	No. Does not comply with external site 10m (front) and 25m (other) boundary setbacks. Resource consent needed under 4.5.5(e).
4.5.2(e) Number of dwellings	In Rural (PP) one dwelling per CT under 4ha, two dwellings per CT 4-100ha, and 3 dwellings per CT over 100ha One minor dwelling (additional to the number of dwellings permitted by 4.5.2(e)) shall be permitted per CT provided that it complies with the following standards (only relevant ones listed): The number of existing dwellings does not already exceed that permitted under Rule 4.5.2(e)(i), and; The minor dwelling is a max of 5m high and under 60m2 GFA, and; The minor dwelling is no further away than 30m from the main dwelling at the minor dwelling's most distant point.	No. Does not comply. Resource consent under Rule 4.5.5(e) required.
4.5.2(f) Noise limits	See Plan	Complies.
4.5.2(h) Signs	Any permanent sign shall be permitted provided it complies with the following standards: (1) One sign per site with a total face area not exceeding 3.0m2.	Does not comply. Resource consent under 4.5.5.(e) required.

Provision Reference	Detail	Complies?
	(2) One sign per vehicle crossing not exceeding 0.25m2 in face area, and limited to displaying the name of the property and/or business undertaken on the site and business operating details. Signs under this rule are excluded from complying with standards (10) and (11) below in relation to characters on the sign. (3) The maximum height of any sign shall not exceed 6.0 metres. (4) The sign must relate to the activity undertaken on the site and be located fully within the site of the activity to which it relates. (5) Where a sign is affixed to a building, the sign shall comply with the maximum height and setback requirements. (6) All signs must comply with the sight distance requirements in Appendix 5. (7) No sign shall be located where it conceals the visibility of an existing official traffic sign or traffic-controlling device. (8) No sign shall use reflective materials, or be illuminated, flashing or moving. (9) No sign shall be affixed to the exterior of any heritage item listed in Appendix 1.7 Heritage Items. (10) A sign shall have no more than six words or symbols and no more than 40 characters; and it is to be located so as to provide an unrestricted view to the motorist for a minimum distance of 180 metres.	
4.5.2(i)	Compliance with Appendix 5 standards	See separate table.
4.5.5(c) Restricted Discretionary Activities	Any activity that is not required for primary production and residential purposes that requires either: (a) the construction or use of a building over 25m^2 in gross floor area; or (b) the external storage of goods, products or vehicles (including contractor's yards); and is not otherwise listed as a controlled, restricted discretionary, discretionary or non-complying activity. Discretion is restricted to the following matters: (i) Siting of any building; (ii) Design and location of the access; (iii) Location, size and effects of any signage; (iv) Amenity and visual effects; (v) Landscaping and screening; (vi) Noise generated by the activity; (vii) Changes in the type and amount of traffic;	No. Does not comply. Independent residential unit will be operated as a show home. Will require resource consent.

Provision Reference	Detail	Complies?
	(viii) Effects of retail activities in the Rural Zone on the viability and vitality of the existing town centres of Masterton, Carterton Greytown, Martinborough and Featherston; (ix) Servicing and infrastructure requirements.	
4.5.5(e) Restricted Discretionary Activities	Any activity that does not meet one or more of the standards for permitted or controlled activities. Discretion is restricted to the following matters: (i) Avoiding, remedying or mitigating of any effects deriving from non-compliance with the particular standard(s) that is not met. Assessment Criteria Restricted Discretionary activities will be assessed against the relevant assessment criteria set out in Section 22.	Non-compliance with 4.5.2(e) and (h) will trigger this rule.
21.1.6 Indigenous Vegetation and Habitats	(e) the clearance or modification of indigenous vegetation that has been planted and managed specifically for commercial production forestry, horticulture or agriculture purposes is a permitted activity.	Complies
21.1.11 Glare and Artificial Light	The emission of light (including glare) meets the following standard: (i) A max artificial light level of 8 lux (lumens per square metre) measured at 1.5m above ground level **Is permitted**	Complies
21.1.12 Dust and Odour	The generation of airborne contaminants meets the following standard: (i) No nuisance at or beyond the boundary of the site to the extent it causes an adverse effect. This standard applies to contaminants which are not subject to a discharge consent and which are temporary or intermittent in nature, including dust; offensive objectionable odour **Is permitted**	Complies
21.1.13 Noise	(a) noise emission levels shall be subjected to the Zone rules for noise, and shall comply with the standards below: (b) General: (i) Sound levels shall be measured in accordance with NZS 6801:1999 (c) Construction Noise (i) construction noise shall be measured and assessed in accordance with NZS6803:1999 and shall not exceed the noise limits set out in Table 2 in that standard	Complies

Provision Reference	Detail	Complies?
	(ii) Provided that the provisions of the standard related to the duration of construction events and the more or less stringent noise limits applicable in such circumstances shall apply **Is permitted** Note: Vibration will be assessed as required either as excessive noise under Part 12 of the Act (enforcement procedures) or as unreasonable noise under Section 16 of the Act (duty to avoid unreasonable noise)	
21.1.16 Temporary Activities	Temporary activities which meet the following standards are permitted: (a) Activities ancillary to or incidental to building and construction shall be: (i) Limited either to the duration of the project or for a period not exceeding 12 months, whichever is the lesser; (ii) within the construction noise limits set out in 21.1.13	Does not comply because of the construction programme is likely to exceed 12 months, resource consent under this rule is required. Discretionary under catch all rule 21.6(a)
	(c) All material and debris from demolished or partly demolished buildings shall be removed from a site within 2 months of the demolition being completed	Complies
	(g) Any temporary sign shall be permitted provided it complies with the following standards: (i) Total face area no greater than 5.0m^2 (i) Any one sign shall not exceed 3.0m^2. (iii) Max height not exceed 6.0m. (vi) Not located on public road or any other public place (vii) Not conceal Appendix 5 sight distances (viii) Not conceal official sign etc (ix) Not reflective, illuminated etc.	Complies
21.1.23 Activities on Contaminated Land	The redevelopment of potentially contaminated land previously or currently used for an activity or industry listed on the modified Wairarapa Hazardous Activity and Industry List (Wairarapa HAIL) at Appendix 3.2 that, following subsurface investigations, is determined to be safe for the intended use is a Permitted Activity, provided that: (i) A subsurface sampling report prepared by a suitably qualified environmental scientist shall be provided to the Council confirming the potentially contaminated land is safe for the intended use. Note: Refer to Appendix 3.2 for guidance on the nature and level of sampling and reporting.	Complies. See AEE.

Provision Reference	Detail	Complies?
21.1.24 Network Utilities and Energy Generation Facilities	The construction, maintenance and upgrading of network utilities and energy generation facilities which meets the following standards is a permitted activity: [range of standards]	Complies
21.1.25 Roads, Access, Parking and Loading Areas		See separate table.
21.1.26 Water supply, Wastewater, and Stormwater	All new water systems, waste water systems and stormwater systems shall be provided in accordance with NZS 4404:2004 "Land Development and Subdivision Engineering".	Complies
21.1.27 Financial Contributions	All financial contributions shall be in accordance with the requirements of Section 23.	Complies
21.4.14 Roads, access, parking and loading	Any activity that does not comply with the requirements in Rule 21.1.25. Discretion is restricted to the following matters: (i) Development and site characteristics; (ii) Access; (iii) Availability of alternative private or public access, parking or loading areas; (iv) Design, layout, number and standard of parking and loading areas; (v) Design and construction of roads and access; (vi) Financial contributions.	**See separate table.**
21.6 Discretionary Activities	(a) any activity that does not comply with the standards for permitted activities or is otherwise not specified as a controlled or restricted discretionary activity	**Applies to non-compliance for temporary activities rule 21.1.16**

Rule 21.1.25 Roads, Access, Parking and Loading

Rule/Standard Ref	Standard	Observations/Commentary
21.1.25(a)	All new roading etc shall be provided in accordance with Appendix 5	Does not comply. No passing bays.

(b) Access	(i) all sites and activities shall have safe and practicable access from a public road. All vehicle crossings and intersections shall be positions and constructed in accordance with the standards in Appendix 5.	Complies
(c)(i) Parking and loading	(1) Every activity shall provide off-street parking and loading for vehicles associated with the activity and vehicles expected to visit or be stored on the site in connection with the activity, in accordance with table 21.1.25.1.	Does not comply because not all units have off-street parking.
	(2) Where any activity is changed or any building erected or altered, sufficient vehicle parking and loading shall be provided to meet the demands generated by the altered activity or building, in accordance with table 25.1.25.1	Complies
	(3) On sites where there are multiple activities, and each activity requires vehicle parking in terms of this plan, the total parking required shall be the combined total requirement for all activities. The Council will consider reducing parking requirements, where it is demonstrable that parking demands generated by each activity do not occur simultaneously and that operational hours or arrangements of those activities means shared parking will occur.	Does not comply. See Stantec report and AEE.
	(4) Loading bays and spaces may be counted as parking spaces according to the number of parking spaces able to be accommodated.	Complies
(c)(ii) Number of vehicle spaces	Where the calculation of required vehicle parking spaces results in a fraction of a whole space, any fraction less than or equal to one half shall be disregarded; and any fraction over one half shall count as one space.	Complies
	The area of required spaces, access drives, or aisles provided within a building shall be excluded from the gross floor area (GFA) of the building.	Not applicable
	Vehicle parking spaces shall be provided for activities in accordance with Table 21.1.25.1. If an activity is not listed, then the standard for the activity listed that is closest in nature to that proposed activity shall be applied. Parking requirements do not apply to temporary activities.	Complies
(c)(iii) Parking for the Disabled	(1) in accordance with NZS4121:2001	Will be designed to comply
(c)(iv) Vehicle access and manoeuvring space	(1) Each required park shall have practical access from the public road. Enter/exit site in a forward direction.	Complies
(c) (v) Vehicle parking and access	Dedicated vehicle parking space and access shall remain unobstructed by other activities and shall not be diminished by storage of goods or erection of any structure.	Will be designed to comply

aisles to remain clear		
(c)(vi) Design of parking and loading spaces	(1) Every park shall be designed and constructed in accordance with 2890.1:2004	Complies
	(2) Each required loading space shall be of a useable shape and have a min. length of 7.5m, min. width of 3.5m and a clear height of 4.5m. Sufficient manoeuvring space shall be provided to accommodate a 90 percentile 2-axle truck. In Commercial Zone, where an articulated vehicle is to be used, the layout shall be designed to accommodate such vehicles.	Complies
(c)(vii) Standards of construction of vehicle parking spaces	(1) All required spaces and access aisles shall be formed, sealed and marked and provided with surface water drainage	Shall be designed to comply

Compliance with Appendix 5 – Requirements for Roads, Access, Parking & Loading

Complies. See table 6 on pages 16-17 of Stantec Report.

Appendix 31

Operative District Plan Objective and Policy Assessment

Appendix 31 – Operative District Plan Objectives and Policy Assessment

Provision Reference	Detail	Observations/Commentary
Zone: Rural (Primary Production)		
4.3.1 Objective Rur1 Protection of Rural Character and Amenity	To maintain and enhance the amenity values of the Rural Zone, including natural character, as appropriate to the predominant land use and consequential environmental quality of different rural character areas within the Wairarapa.	The proposed development results in a loss of typically rural character and amenity through the creation of residential units in the form of a retirement village. In saying this, the proposed retirement village development is designed with its rural context in mind, with elements of the existing rural land use retained. This includes the retention of many of the existing orchard trees and views from dwellings out to the rural landscape being captured where possible. Ultimately, the minor loss of rural character from the site will be mitigated through the landscape design across the site which will encourage the use of landscaped connections through the site together with more traditional urban footpaths for example. The misalignment with the direction in this objective is also to be addressed through the proposed rezoning of the site by way of a Private Plan Change, which is submitted concurrently with this application for resource consent.
4.3.2 Rur1 Policy (d)	Maintain and enhance the amenity values, including natural character, of the differing Rural character areas through appropriate controls over subdivision and the bulk, location and nature of activities and buildings, to ensure activities and buildings are consistent with the rural character, including an appropriate scale, density and level of environmental effects.	The proposed development is not anticipated to maintain and enhance the existing amenity values experienced through the rural use of the site. Instead, the proposed development will introduce a new type of character to the existing environment, which will form a connection between the residential land uses at one end of the site and the small-scale rural activities at the other end. Being at the edge

		of the traditional residential boundary of the Greytown Village means that the site has the best of both worlds in terms of surrounding character, being both residential and rural in nature. The retirement village has been designed to ensure that the bulk, location and nature of activities and buildings will not give rise to significant adverse effects on the environment.
4.3.2 Rur1 Policy (e)	Manage subdivision, use and development in a manner which recognises the attributes that contribute to rural character, including: (i) Openness and predominance of vegetation (ii) Productive working landscape (iii) Varying forms, scale and separation of structures associated with primary production activities (iv) Ancillary living environment, with an overall low population density (v) Self-serviced allotments.	The proposed use and development of the Orchards site does not contribute to rural character in a traditional sense as a result of the significant urban type development proposed. However, the design of the development has been undertaken with the existing rural character of the site and surroundings in mind. Retention of orchard vegetation and views from the site to its rural neighbours have been retained where possible to continue to provide linkages between the existing rural use of the site and the future residential use. The proposed development will result in a reduction in openness. The current predominance of vegetation will also be greatly reduced as a result of vegetation removal from the site. The site will no longer be a productive working orchard. The buildings proposed as part of the retirement village have been designed and located in a way that is intended to complement existing dwellings in the wider Greytown township. It is acknowledged that the proposed development will result in a higher than anticipated population density for the rural environment and the allotments have been designed to enable them to be connected to reticulated Council services. Ultimately the proposed development does not align well with the direction in this policy and this is reflected by the need for the Private Plan Change application which accompanies this application.
4.3.4 Objective Rur2 Provision for Primary Production and Other Activities	To enable primary production and other land uses to function efficiently and effectively in the Rural Zone, while the adverse effects are avoided, remedied, or mitigated to the extent reasonably practicable.	While it is not explicit, it is understood that the 'other activities' stated in this objective are generally considered to be other types of rural activities in this set of provisions. The proposed retirement village activity is a departure from the direction provided in this objective to provide for the functioning of the Rural Zone. The design of the retirement village, does however

		take into consideration the current setting it is located within, being the edge of the existing Greytown township and amongst small scale rural land uses. Ultimately, while the proposed development does not retain a primary production land use, it is not anticipated that the adverse effects from the development of the retirement village will negatively impact on the ability of surrounding existing rural land uses to continue operating.
4.3.5 Rur2 Policy (a)	Provide for primary production activities as permitted activities in the Rural (Primary Production) Zone and Rural (Special) Zone, subject to such environmental standards as necessary to avoid, remedy or mitigate any adverse effects of primary production activities without unreasonably affecting landowners' ability to use their land productively.	The intended use of the site is a departure from the anticipated primary production activities typically located in the Rural Primary Production Zone. However, as stated above, the design of the proposed retirement village has been undertaken in a way that is sensitive to, and replicates where possible the existing rural character of the site. It is not anticipated that the development of the retirement village will result in adverse effects on other primary production activities in the vicinity of the site from continuing to operate.
4.3.5 Rur2 Policy (c)	Manage the establishment and operation of a range of other activities in the Rural Zone, such that their adverse effects on the environment are appropriately avoided, remedied or mitigated.	'Other activities' (being non primary production activities) in the Rural Zone have the potential to result in adverse effects on the environment and reverse sensitivity effects on other rural land uses. The proposed retirement village development has been designed to limit the effects of the proposal on the surrounding environment, particularly through the use of building setbacks, landscape design and by limiting the effects that will be present beyond the external site boundaries. Ultimately, wherever possible the adverse effects of the proposed development have been avoided, remedied or mitigated.
4.3.5 Rur2 Policy (d)	Ensure activities that are potentially sensitive to the adverse external effects of primary production and any other lawfully established activities, particularly those activities with significant external effects, are either appropriately sited, managed or restricted to avoid or mitigate these effects.	Greytown Primary school is located adjacent to the site. The School does generate noise, albeit sporadically and during daytime hours only. While the nature of this type of noise is not generally considered to be a problematic effect, it is a relationship that needs to be acknowledged and provided for (planting, physical relationship between two uses etc). The school is surrounded by residential development, much of it closer to the school than the proposed development. The Stantec report has considered the potential effects of the school from a traffic perspective, and concluded that the busy periods at the retirement village and school are not anticipated to

		overlap. It is therefore considered that the proposed development will have adverse traffic effects on the school.
4.3.5 Rur2 Policy (e)	Ensure that new primary production and other activities that may have significant external adverse effects are appropriately sited from sensitive land uses or are otherwise controlled to avoid or mitigate such effects.	The proposed retirement village development has been designed to ensure that it is does give rise to significant adverse effects, either during construction or once the village is operational. It is acknowledged that a the construction of a development of this scale has the potential to result in adverse effects for adjoining neighbours. The proposed staged developed will assist to manage this, by ensuring that the entire site is not being developed all at once. Ultimately, it is acknowledged that the suite of consent conditions proposed with the development, and the design of the development itself will manage effects to ensure that they not significant and are avoided where possible.
4.3.5 Rur2 Policy (f)	Provide interface controls on primary production and other activities that may have adverse effects on adjoining activities.	Interface controls such as building setbacks are used to mitigate effects between activities. Building setbacks on all external boundaries are being used to ensure that there is separation between the retirement village, residential activities and existing rural land uses.
4.3.7 Objective Rur3 Interzone Management	To ensure the amenity values of adjoining zones are reasonably protected from the adverse effects of activities within the Rural Zone.	The development site is surrounded by a mix of residential and small scale rural land uses. As a result, the site has been designed to protect the amenity of these different land uses wherever possible. The residential nature of the proposed development aligns well with existing residential development elsewhere in Greytown. In fact, the design for the villas within the proposed development have been taken from villa developments in the Greytown Village. Aspects of the current orchard land use will also be retained on the site. Ultimately it is considered that the proposed development will ensure the amenity values of adjoining zones are protected and the objective will be achieved.
4.3.8 Rur3 Policy (a)	Manage the effects of Rural Zone activities to ensure that the environmental qualities and characteristics in the adjoining zones are not unreasonably degraded, bearing in mind their location adjacent to a functioning primary production environment.	The proposed retirement village development has been specifically designed to ensure that it is integrated as much as possible into the surrounding environment. This includes the design and character of the proposed villas, the extent of vegetation to be retained in site and additional planned onsite landscaping. The number of access points to and from the site have been managed to ensure the development integrates into the surrounding environment, including at the

		frontages with Reading St and Market Road, while also ensuring that the area is not dominated by new vehicle accessways. Overall, the proposed development aligns well with this policy to maintain the characteristics and qualities of adjoining zones.
Tangata Whenua (Section 8)		
8.3.1 Objective TW1 Recognition of Values and Traditional Relationships	To recognise and provide for the cultural values and relationship of Tangata Whenua in managing the natural and physical resources and the effects of activities, while taking into account the principles of the Treaty of Waitangi.	There are no identified sites of significance to tangata whenua within the application site. The Council however recommended early engagement with tangata whenua which the Partnership have undertaken with members of Rangitāne, Kahungunu and the Māori Standing Committee. The consultation undertaken is further detailed in the AEE and at Appendix 9. Affordability and water quality were both issues that were raised by iwi through this consultation and these aspects have been addressed in the AEE.
8.3.2 TW1 Policy (a)	Recognise Tangata Whenua values and provide for Tangata Whenua to maintain and enhance their traditional relationship with the natural environment.	During consultation with iwi, no specific values with the site were identified, however the Partnership wishes to and will maintain an ongoing relationship with iwi to ensure their values are represented in appropriate ways through the development, including in the planting and landscape design.
8.3.2TW1 Policy (b)	Have particular regard to the exercise of kaitiakitanga by Tangata Whenua in the management of activities and resources	The role of iwi as kaitiaki of the land is acknowledged by the Partnership. Every effort has been made to ensure that the proposed development is managed to mitigate adverse effects on natural resources and the environment. An ongoing relationship with iwi will help to ensure that the kaitiaki role of iwi is maintained throughout the construction and operation phases of the retirement village.
8.3.2 TW1 Policy (c)	Protect waahi tapu, sites of cultural importance and other taonga	There are no identified sites within the application site. The recommended conditions include an accidental discovery protocol to ensure appropriate procedures are followed in the event a discovery is made during construction.
Transportation (Section 17)		
17.3.1 Objective TT1 Managing the Road Network	To maintain the safe and efficient operation and development of the road network from the adverse effects of land use while maintaining the network's ability to service the current and future needs of the Wairarapa.	The proposed development has been assessed for its effects on the surrounding roading network including effects on increased traffic generated by the proposed development. Overall, the effects associated with increased traffic can be mitigated through recommended road widening to meet New Zealand Standards and are not anticipated to result in significant adverse effects on the road network or its ability to service the needs of people in Greytown and

		the Wairarapa. Overall, the development has been designed to align with the direction provided by this objective.
17.3.2 TT1 Policy (b)	Establish controls and standards on land use and subdivision to avoid, remedy or mitigate any effects of the land use on the safe and efficient functioning and operation of the road network, including loading, parking and manoeuvring.	Parking, manoeuvring and access through the proposed retirement village has been designed to meet as many of the standards contained within the District Plan and NZS 4404:2010 as possible. While there are some aspects that are not strictly met, in relation to a need for passing bays and on-site parking requirements, the effect of these non-compliances can be managed appropriately within the site to ensure that no adverse effects are experienced beyond the site boundary and within the site, and the adverse effects are no more than minor. Overall, the proposed development will ensure the safe and efficient functioning and operation of the road network.
17.3.2 TT1 Policy (c)	Establish controls and standards on new intersections and access points onto roads to avoid, remedy or mitigate any adverse effects on the roads' safe and efficient functioning.	New access points onto the public road from the development, including new intersections, will be designed in accordance with the requirements of NZS 4404. Development of new intersections in line within NZ standards will ensure that there will be no adverse effects of the safe and efficient functioning of the surrounding roading network in accordance with the direction of the policy.
17.3.2 TT1 Policy (d)	Promote knowledge and understanding of good roading and access design.	Stantec have been involved in the proposed development from an early stage in the process and have been engaged by the Partnership to provide expert advice on the design and requirements in relation to compliance with both the District Plan and National Standards. This ensures that the development adheres to good roading and access design in alignment with this policy.
17.3.2 TT1 Policy (e)	Support and encourage the safe provision of non-vehicular forms of transport within the road network, including cycling and walking.	The close proximity of the proposed development with Greytown township is the perfect opportunity to encourage residents to use alternative modes of transport such as cycling, walking and mobility scooters instead of cars. Movement through the proposed site will be encouraged with a connecting series of landscaped pathways and cycling will be encouraged within the site. The limited speeds throughout the development of 20km/hr and 10 km/hr will ensure that there is a safe environment within the site for alternative transport modes to be undertaken. The recommended road widening of

		Market, Church and Reading Streets will also ensure that the road network is a safe place for all users.
17.3.2 TT1 Policy (f)	Ensure a coordinated approach to addressing capacity and safety issues within the road network, working with New Zealand Transport Agency in relation to State Highways.	The proposed development is not anticipated to result in any notable impact on the current operation of SH2. The distribution of traffic that is expected from the site and the likely peak traffic generation from the site is anticipated to occur outside the peak traffic generation hours for other activities, as outlined in the Stantec report.
17.3.2 TT1 Policy (g)	Protect natural, amenity and landscape values from the effects of new, reconstructed and upgraded transport infrastructure.	It is anticipated that any road widening required to ensure the safe and efficient operation of the road network will be minimal and is not likely to result in adverse effects on natural, amenity or landscape values within the vicinity of the application site.
Subdivision, Land Development and Urban Growth (Section 18)		
18.3.1 Objective SLD1 Effects of Subdivision and Land Development	To ensure subdivision and land development maintains and enhances the character, amenity, natural and visual qualities of the Wairarapa, and protects the efficient and effective operation of land uses and physical resources.	To get to the current retirement village design proposal, the process began with a site selection process and an analysis of the opportunities and constraints presented by the site. This was undertaken to ensure that the design considers the site context, its surroundings and ensures that where possible, the character, amenity and natural and visual qualities of the site are protected. While the proposed development results in a complete change in land use, elements of the existing rural land use will be retained through vegetation and development patterns which recognise the history of the site. Ultimately, it can be said that the development enhances the qualities of the site and is an efficient and effective use of a site in close proximity to the centre of Greytown.
18.3.2 SLD1 Policy (a)	Manage subdivision and land development in a manner that is appropriate for the character and qualities of the environmental zone in which it is located, while recognising that such change may alter the character and qualities	Development of the site will change the rural character of the site as discussed in relation to the relevant Rural Zone objectives and policies above. While this change in character cannot be avoided, there are elements and qualities of the site that will be retained and enhanced through the development including the retention of some vegetation and the enhancement and focal features that will be made of existing water races within the site boundary. Ultimately, while the character of the site will change, the retention of a number of existing qualities of the site will ensure that the history of the site and its rural land use are evident into the future.
18.3.2 SLD1 Policy (e)	Provide for higher density subdivision and development in the Residential Zone around community focus points, such as the central	While not currently residentially zoned, the site is located in a peri-urban context on the edge of existing residentially zoned land. As a

	business districts and main transport links, and to ensure the design and quality of proposed buildings and site development maintains or enhances neighbourhood character, residential amenity values and the efficient functioning of infrastructure and roads.	result, the site is surrounded by a mix of small-scale rural and residential land uses. This location provides the site with great connections to existing infrastructure, community facilities and into the heart of the Greytown township. The proposed development design has taken its inspiration from surrounding Greytown villas and from the existing rural orchard activity on the site. Ultimately, the development is higher in density than is traditionally anticipated in a rurally zoned site. For this reason a concurrent private plan change application is being lodged to recognise this fact and rezone the site to a residential zoning, which is a better reflection of the proposed future development potential for the site.
18.3.2 SLD1 Policy (f)	Limit the intensity of subdivision and land development in those rural parts of the Wairarapa in which significant intensification may have adverse effects on the risks from natural hazards, the operational requirements of key infrastructural and land use assets, water supply catchments, and the growth of urban areas.	The site is not subject to any known natural hazard risk and is able to connect to existing Council services for wastewater and potable water supply. As a result, it is considered that the proposed development is not inconsistent with the direction provided by this policy.
18.3.4 Objective SLD2 Effects of Servicing	To ensure that subdivision and land development is appropriately serviced to provide for the likely or anticipated use of the land.	The proposed development is able to be serviced as an extension of existing reticulated wastewater and potable water networks. As a result, the proposed aligns with the direction provided by this objective.
18.3.5 SLD2 Policy (a)	Ensure adequate infrastructure is provided by the subdivider/developer to allow new activities and development to connect to wastewater and water reticulation where adequate capacity exists to meet the needs of the development.	As stated above, the proposed development is able to be serviced as an extension of existing reticulated wastewater and potable water networks and aligns with the achievement of this policy.
18.3.5 SLD2 Policy (b)	Ensure that urban areas have adequate capacity in wastewater disposal and water supply to service future urban development demands, particularly in the South Wairarapa where the spare capacity is only available to service land zoned residential, commercial and industrial and not land zoned rural.	As stated above, the proposed development is able to be serviced as an extension of existing reticulated wastewater and potable water networks and aligns with the achievement of this policy. It is proposed that water will be stored on site to meet any firefighting needs.
18.3.5 SLD2 Policy (c)	Avoid, remedy or mitigate any adverse effects resulting from stormwater discharges.	Stormwater discharge will be managed onsite through a series of swales and raingardens. As designed, this stormwater disposal network will see a reduction in the stormwater anticipated to leave the site during storm events.

18.3.5 SLD2 Policy (e)	Promote infrastructure and servicing design solutions for development that avoids, remedies or mitigates significant adverse environmental effects on natural and physical resources, ecosystems, and amenity values (for example water bodies).	The infrastructure for the proposed site has been designed to avoid, remedy or mitigate the adverse effects arising from the proposed development. As connections can be provided to reticulated wastewater and potable water, it is not anticipated that these aspects of the development will result in adverse effects on the environment. The proposed development will manage stormwater on site through a series of connected swales and raingardens which will ultimately see the amount of stormwater discharged from the site reduced. Ultimately, these design solutions will ensure that adverse effects on the environment are avoided or mitigated and the direction in the policy is met.
18.3.7 Objective SLD3 Sustainable Infrastructure Development	To maintain sustainable and efficient public infrastructure that meets the additional demand generated by development and subdivision, while avoiding, remedying or mitigating adverse effects on the environment.	As stated above, the proposed development is able to be serviced as an extension of existing reticulated wastewater and potable water networks and aligns with the achievement of this objective. The infrastructure for the proposed site has been designed to avoid, remedy or mitigate the adverse effects arising from the proposed development
18.3.8 SLD3 Policy (a)	Require an equitable contribution from developers where new connections to the Councils' water supply or wastewater disposal services will contribute to a future need for upgrades or extensions to the services.	The applicant acknowledges that a fair contribution toward to the provision of services to the site is required. As such, it is anticipated that the applicant and Council will discuss the potential for a Development Agreement should this be a more suitable approach than using the Council's Development Contributions policy.
18.3.8 SLD3 Policy (b)	Require a contribution where an activity necessitates road upgrading to avoid, remedy, or mitigate adverse effects on the road or the wider environment.	
18.3.10 Objective SLD4 Managing Urban Growth	To provide for urban expansion adjoining existing urban areas where such growth does not adversely affect the safe and efficient use and development of land, roads and infrastructure.	The application site directly adjoins land zoned residential and rural. This peri-urban location makes the site suitable for natural growth in residential development as proposed in this application. The site specific, comprehensive design of the site has been undertaken so that the use of land on the site is efficient and effective, while ensuring that it meets the needs of its future residents.
18.3.11 SLD4 Policy (a)	Identify the urban environments of the Wairarapa within which further urban development is appropriate, including areas of potential growth.	SWDC has not identified the application site within its existing growth strategy, however discussions with the Council in the preparation of the application have indicated that they are supportive of a comprehensive and well-designed development for a retirement village on the current application site.

		The site is ideally located, providing sufficient space for a comprehensive retirement village development while also being located in close proximity to the existing community and facilities of Greytown.
18.3.11 SLD4 Policy (c)	Manage urban subdivision and land development to connect with the existing infrastructure and transportation network, according to the capacity limitations of that network and the potential requirements for upgrading its capacity.	As stated above, the proposed development is able to be serviced as an extension of existing reticulated wastewater and potable water networks and aligns with the achievement of this objective. The infrastructure for the proposed site has been designed to connect to existing services where possible and managed on-site in the case of stormwater. Ultimately I consider this approach will avoid, remedy or mitigate the adverse effects arising from the proposed development
18.3.13 Objective SLD5 Reserves and Open Space	To sustainably manage and develop the reserve and open space network to cater for current and future community needs and to protect and enhance significant environmental assets.	The design of the proposed development has given careful consideration to the anticipated recreational and amenity needs of future residents as well as retaining aspects of the current rural land use. As a result, the site provides significant areas of open space areas for the enjoyment of residents and their visitors.
18.3.14 SLD5 Policy (a)	Require a reserve contribution from new residential and visitor accommodation development, including rural subdivision creating vacant lots that have the ability to be developed for residential purposes, that is proportionate to the demand for passive and active community recreational requirements arising from the development, including the need to protect the Wairarapa's key environmental assets such as its coastal margins and natural features.	The applicant acknowledges that a fair contribution toward the provision of services to the site is required. As such, it is anticipated that the applicant and Council will discuss the potential for a Development Agreement should this be a more suitable approach than using the Council's Development Contributions policy.
General Amenity Values (Section 19)		
19.3.1 Objective GAV1 General Amenity Values	To maintain and enhance those general amenity values which make the Wairarapa a pleasant place in which to live and work, or visit.	The design of the proposed development has given careful consideration to the anticipated recreational and amenity needs of future residents as well as retaining aspects of the current rural land use. As a result, the site provides significant areas of open space areas for the enjoyment of residents and their visitors. Overall, it is anticipated that the proposed development will result in a high quality residential environment for older people and will ensure that the direction in this policy is met.
19.3.2 GAV1 Policy (a)	Recognise that temporary activities generally have a minor effect on amenity due to their short duration, provided that some limitations are imposed as necessary to avoid significant, albeit short-term, effects.	Temporary activities such as construction activities associated with the proposed development are recognised as having adverse effects on the surrounding environment. Management of these effects is

		proposed through the requirement of management plans to ensure potential effects are identified and appropriately managed.
19.3.2 GAV1 Policy (b)	Control the levels of noise, based on existing ambient noise and accepted standards for noise generation and receipt.	Noise levels generated during the construction and operation of the proposed retirement village are anticipated to comply with the provisions in the Wairarapa Combined District plan.
19.3.2 GAV1 Policy (c)	Manage the interface of different environmental zones to protect the sensitive zones from more noisy areas.	The application site is located on the interface between residential and small-scale rural zoning and land uses. As a result, the site itself, though currently zoned rural, will once developed, appear with a more residential character. A proposed private plan change to rezone the application site to residential will extend the existing residential zone to the Market Road edge.
19.3.2 GAV1 Policy (d)	Ensure vibrations occurring through the use of equipment or machinery does not cause adverse effects on the comfort of occupants of adjacent properties.	A noise management plan is proposed as part of the suite of conditions. It is considered this will deal with any effects of vibration arising from the site works and construction of the development.
19.3.2 GAV1 Policy (e)	Manage the intensity, location and direction of artificial lighting to avoid light spill and glare onto adjoining sites and roads, and to protect the clarity and brightness of the night sky.	The applicant is conscious of managing lighting on the development to ensure that any lighting is sympathetic to the surrounding environment and in particular, the potential for Greytown to be considered for Dark Sky Reserve status in future. As a result, detailed design will give careful consideration to lighting to ensure the requirements of this policy are met.
19.3.2 GAV1 Policy (f)	Manage activities with unacceptable visual effects on amenity values, in accordance with the qualities of each environmental zone. As a guide to determining if an activity has unacceptable visual effects, consideration will be given to other policies relevant to a particular activity or environmental zone.	While the proposed development will represent a change in character for the site and that experienced by the surrounding environment, the effects of the proposed development will be mitigated by the careful approach to site design, building location, landscaping treatment and the overall quality of the development.
19.3.2 GAV1 Policy (g)	Manage the levels of odour and dust by avoiding inappropriate odours and dust from adversely affecting sensitive activities on adjoining properties.	Management of dust associated with the site preparation and construction process will be considered in detail through a Environment Management Plan for the site, required as a condition of consent. It is considered that the effects of dust can be managed appropriately on site.
19.3.2 GAV1 Policy (h)	Avoid, remedy or mitigate the potential effects of subdivision and development on street trees.	No street trees will be affected as a result of the proposed development.

Appendix 32

Proposed District Plan Objective and Policy Assessment

Appendix 32: Proposed District Plan Objectives and Policy Assessment

Provision Reference	Detail	Observations/Commentary
Zone: Residential		
5.3.1 Objective Res1 Residential Amenity Values and Character	To maintain and enhance the character and amenity values of Wairarapa's residential areas, having due regard to the particular characteristics of each neighbourhood, and the need to provide for a diversity of residential lifestyles and non-residential services and activities.	The site is located within a currently mixed-use environment with neighbouring land uses spanning traditional residential, education (Greytown Primary School) and small-scale rural land uses. As a result, the site has been designed to reflect this surrounding character, with built form reflecting villas found elsewhere in Greytown and rural elements being reflected through open landscaped spaces around the site including the retention of some existing orchard trees. Overall, it is considered that the proposed development aligns well with the direction of this objective.
5.3.2 Res1 Policy (a)	Manage the Wairarapa's residential area under a single overall framework to provide for a wide range of lifestyles in a manner that is consistent with maintaining and enhancing an acceptable level of residential character and amenity values.	The proposed private plan change application will result in the rezoning of the site to the Residential zone with a character area overlay specific to the retirement village and the anticipated development. Overall, the proposed rezoning, together with the comprehensive site design will ensure that the provision of retirement accommodation for older people is complementary to the existing character and amenity values experienced elsewhere in Greytown.
5.3.2 Res1 Policy (b)	To provide residents with an acceptable level of certainty through environmental controls imposed on development and land use in the Residential Zone.	Once rezoned to residential, the provisions of the residential zone, together with the specific provisions relevant to the character area overlay will apply to the application site. These provisions will ensure that future development on the application site is managed to avoid, remedy or mitigate any actual or potential adverse effects on the environment.

5.3.2 Res1 Policy (c)	Apply specific management requirements as necessary to maintain and enhance the special character and amenity values of those residential areas with differing characters.	The Orchards Retirement Village Character Area, proposed as part of the private plan change to rezone the site will enable specific provisions to ensure the character and amenity values of the area are maintained and enhanced and are appropriate and consistent with the overall intent of the residential zone.
5.3.2 Res1 Policy (d)	Require comprehensive residential developments to be designed and developed to a high environmental standard through a specific management framework.	The approach to the design of the proposed retirement village has been considered as a unique comprehensive development to ensure that the site integrates well with its surrounding environment and to ensure that the different aspects of the proposed development work well together.
5.3.2 Res1 Policy (e)	Promote variety and innovation in residential development to meet the diverse needs of current and future generations, including opportunities to use renewable energy in housing design and siting.	The proposed development provides for a form of residential development not currently available in Greytown. While still residential in nature, it provides for the needs of an increasing aging population by providing specifically for those who are retired and looking for the safety, healthcare and social opportunities provided by living in a retirement village.
NEW PROPOSED POLICY	Provide for the development and operation of a retirement village in the Orchards Retirement Village Character Area shown on the Indicative Concept Plan (Appendix X) subject to such environmental standards as necessary to avoid, remedy or mitigate any adverse effects.	This policy has been specifically drafted for inclusion through the private plan change application. It recognises the need for a character area overlay within the residential zone to provide for the unique character and amenity associated with the development of a retirement village. The proposed standards of the overlay will ensure that adverse effects on the environment arising from the proposed development are avoided, remedied or mitigated.
Tangata Whenua (Section 8)		
8.3.1 Objective TW1 Recognition of Values and Traditional Relationships	To recognise and provide for the cultural values and relationship of Tangata Whenua in managing the natural and physical resources and the effects of activities, while taking into account the principles of the Treaty of Waitangi.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
8.3.2 TW1 Policy (a)	Recognise Tangata Whenua values and provide for Tangata Whenua to maintain and enhance their traditional relationship with the natural environment.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
8.3.2TW1 Policy (b)	Have particular regard to the exercise of kaitiakitanga by Tangata Whenua in the management of activities and resources	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment

8.3.2 TW1 Policy (c)	Protect waahi tapu, sites of cultural importance and other taonga	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
Transportation (Section 17)		
17.3.1 Objective TT1 Managing the Road Network	To maintain the safe and efficient operation and development of the road network from the adverse effects of land use while maintaining the network's ability to service the current and future needs of the Wairarapa.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
17.3.2 TT1 Policy (b)	Establish controls and standards on land use and subdivision to avoid, remedy or mitigate any effects of the land use on the safe and efficient functioning and operation of the road network, including loading, parking and manoeuvring.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
17.3.2 TT1 Policy (c)	Establish controls and standards on new intersections and access points onto roads to avoid, remedy or mitigate any adverse effects on the roads' safe and efficient functioning.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
17.3.2 TT1 Policy (d)	Promote knowledge and understanding of good roading and access design.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
17.3.2 TT1 Policy (e)	Support and encourage the safe provision of non-vehicular forms of transport within the road network, including cycling and walking.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
17.3.2 TT1 Policy (f)	Ensure a coordinated approach to addressing capacity and safety issues within the road network, working with New Zealand Transport Agency in relation to State Highways.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
17.3.2 TT1 Policy (g)	Protect natural, amenity and landscape values from the effects of new, reconstructed and upgraded transport infrastructure.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
Subdivision, Land Development and Urban Growth (Section 18)		
18.3.1 Objective SLD1 Effects of Subdivision and Land Development	To ensure subdivision and land development maintains and enhances the character, amenity, natural and visual qualities of the Wairarapa, and protects the efficient and effective operation of land uses and physical resources.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.2 SLD1 Policy (d)	Set minimum allotment sizes for the Residential and Rural Zones that provide a baseline for maintaining the character, scale and intensity of development of their Zones, including their servicing capacity, while recognising the differing constraints, qualities and characteristics within each zone.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.2 SLD1 Policy (e)	Provide for higher density subdivision and development in the Residential Zone around community focus points, such as the central	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment

	business districts and main transport links, and to ensure the design and quality of proposed buildings and site development maintains or enhances neighbourhood character, residential amenity values and the efficient functioning of infrastructure and roads.	
18.3.2 SLD1 Policy (f)	Limit the intensity of subdivision and land development in those rural parts of the Wairarapa in which significant intensification may have adverse effects on the risks from natural hazards, the operational requirements of key infrastructural and land use assets, water supply catchments, and the growth of urban areas.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.2 SLD1 Policy (g)	To provide for the subdivision of rural land for rural-residential purposes through minimum standards that seek to: i. Avoid or mitigate any significant potential adverse effects on the viability and operational requirements of any productive use of any adjacent rural or industrial land; ii. Ensure allotment sizes and the pattern of subdivision maintains the open rural character, particularly from public roads; iii. Ensure allotments are able to accommodate the likely use in accordance with the other requirements of the Plan; iv. Avoid adverse effects on the safe and efficient use of roads, and pedestrian and cycling networks; v. Satisfactorily avoid or mitigate the potential reverse sensitivity effects in relation to either nearby industrial and rural productive activities, activities allowed by the zoning, or anticipated urban growth; vi. Ensure the actual and potential effects on rural character, amenity and natural values will not be compromised by intensive and ad hoc urban development and/or through the cumulative effects of rural-residential development; vii. Ensure the sewage effluent from all lots can be effectively disposed without any potential adverse effects on the environment. viii. Ensure a potable water supply is available on each allotment.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.2 SLD1 Policy (i)	Protect the quality, character and values of the Wairarapa's rural environment from the cumulative effects of intensification by limiting subdivision below the rural minimum area standards to situations where there are special circumstances that would not create a precedent.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment

18.3.4 Objective SLD2 Effects of Servicing	To ensure that subdivision and land development is appropriately serviced to provide for the likely or anticipated use of the land.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.5 SLD2 Policy (a)	Ensure adequate infrastructure is provided by the subdivider/developer to allow new activities and development to connect to wastewater and water reticulation where adequate capacity exists to meet the needs of the development.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.5 SLD2 Policy (b)	Ensure that urban areas have adequate capacity in wastewater disposal and water supply to service future urban development demands, particularly in the South Wairarapa where the spare capacity is only available to service land zoned residential, commercial and industrial and not land zoned rural.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.5 SLD2 Policy (c)	Avoid, remedy or mitigate any adverse effects resulting from stormwater discharges.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.5 SLD2 Policy (d)	Ensure that owners of unserviced lots are responsible for providing a potable water supply and for the disposal of sewage and stormwater in a manner that avoids, remedies or mitigates any adverse effects.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.5 SLD2 Policy (e)	Promote infrastructure and servicing design solutions for development that avoids, remedies or mitigates significant adverse environmental effects on natural and physical resources, ecosystems, and amenity values (for example water bodies).	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.7 Objective SLD3 Sustainable Infrastructure Development	To maintain sustainable and efficient public infrastructure that meets the additional demand generated by development and subdivision, while avoiding, remedying or mitigating adverse effects on the environment.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.8 SLD3 Policy (a)	Require an equitable contribution from developers where new connections to the Councils' water supply or wastewater disposal services will contribute to a future need for upgrades or extensions to the services.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.8 SLD3 Policy (b)	Require a contribution where an activity necessitates road upgrading to avoid, remedy, or mitigate adverse effects on the road or the wider environment.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.10 Objective SLD4 Managing Urban Growth	To provide for urban expansion adjoining existing urban areas where such growth does not adversely affect the safe and efficient use and development of land, roads and infrastructure.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment

18.3.11 SLD4 Policy (a)	Identify the urban environments of the Wairarapa within which further urban development is appropriate, including areas of potential growth.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.11 SLD4 Policy (b)	Manage subdivision and development within growth areas on a comprehensive basis to ensure a structured and integrated pattern of development, with the environmental qualities of the land fully identified and sustainably managed.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.11 SLD4 Policy (c)	Manage urban subdivision and land development to connect with the existing infrastructure and transportation network, according to the capacity limitations of that network and the potential requirements for upgrading its capacity.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.11 SLD4 Policy (e)	The Greytown Future Development Area has been identified as an area of future urban growth. Growth within this area will be restricted until a Structure Plan has been developed for this area in consultation with the local community and has been approved by the South Wairarapa District Council.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.13 Objective SLD5 Reserves and Open Space	To sustainably manage and develop the reserve and open space network to cater for current and future community needs and to protect and enhance significant environmental assets.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.14 SLD5 Policy (a)	Require a reserve contribution from new residential and visitor accommodation development, including rural subdivision creating vacant lots that have the ability to be developed for residential purposes, that is proportionate to the demand for passive and active community recreational requirements arising from the development, including the need to protect the Wairarapa's key environmental assets such as its coastal margins and natural features.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.14 SLD5 Policy (b)	Ensure land acquired as a reserve contribution is located and designed to complement the recreational and open space needs and amenity of the District.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
18.3.14 SLD5 Policy (c)	Manage subdivision and development adjacent to or near reserves to ensure public access (or future public access) is provided at the time of subdivision and/or development.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
General Amenity Values (Section 19)		
19.3.1 Objective GAV1 General Amenity Values	To maintain and enhance those general amenity values which make the Wairarapa a pleasant place in which to live and work, or visit.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment

19.3.2 GAV1 Policy (a)	Recognise that temporary activities generally have a minor effect on amenity due to their short duration, provided that some limitations are imposed as necessary to avoid significant, albeit short-term, effects.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
19.3.2 GAV1 Policy (b)	Control the levels of noise, based on existing ambient noise and accepted standards for noise generation and receipt.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
19.3.2 GAV1 Policy (c)	Manage the interface of different environmental zones to protect the sensitive zones from more noisy areas.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
19.3.2 GAV1 Policy (d)	Ensure vibrations occurring through the use of equipment or machinery does not cause adverse effects on the comfort of occupants of adjacent properties.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
19.3.2 GAV1 Policy (e)	Manage the intensity, location and direction of artificial lighting to avoid light spill and glare onto adjoining sites and roads, and to protect the clarity and brightness of the night sky.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
19.3.2 GAV1 Policy (f)	Manage activities with unacceptable visual effects on amenity values, in accordance with the qualities of each environmental zone. As a guide to determining if an activity has unacceptable visual effects, consideration will be given to other policies relevant to a particular activity or environmental zone.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
19.3.2 GAV1 Policy (g)	Manage the levels of odour and dust by avoiding inappropriate odours and dust from adversely affecting sensitive activities on adjoining properties.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment
19.3.2 GAV1 Policy (h)	Avoid, remedy or mitigate the potential effects of subdivision and development on street trees.	Addressed in Appendix 31 Operative District Plan Objective and Policy Assessment

Appendix 33

Regional Policy Statement Objectives and Policies Assessment

Appendix 33: Regional Policy Statement Objectives and Policies Assessment

Provision Reference	Detail	Commentary/Assessment
3.9 Regional form, design and function		
Issue 1 Poor quality urban design	Poor quality urban design can adversely affect public health, social equity, land values, the vibrancy of local centres and economies, and the provision of, and access to, civic services. It can also increase the use of non-renewable resources and vehicle emissions in the region.	The design process used in the development of the retirement village has taken account of good urban design practices. The outcome proposed through the concept will ensure a quality development with significant benefits for older people in providing them with a safe, well designed and quality environment to live in.
Issue 2 Sporadic, uncontrolled and/or uncoordinated development	Sporadic, uncontrolled and/or uncoordinated, development (including of infrastructure) can adversely affect the region's compact form. This can, among other things, result in: (a) new development that is poorly located in relation to existing infrastructure (such as roads, sewage and stormwater systems) and is costly or otherwise difficult to service (b) development in locations that restrict access to the significant physical resource in the region – such as aggregate (c) the loss of rural or open space land valued for its productive, ecological, aesthetic and recreational qualities (d) insufficient population densities to support public transport and other public services (e) development in locations that undermine existing centres and industrial employment areas (f) loss of vitality and/or viability in the region's central business district and other centres of regional significance (g) displacement of industrial employment activities from established industrial areas (h) adverse effects on the management, use and operation of infrastructure from incompatible land uses under, over, on or adjacent.	The comprehensive nature of the proposed development means that the undesirable outcomes that come from sporadic and uncontrolled development will be avoided. While there is a small loss in rural land as a result of the proposed development, it is considered that this is outweighed by the social, cultural and economic benefits arising from the proposed development. Ain addition, the design of the development is such that any adverse effects on the surrounding environment have been avoided and mitigated wherever possible.

Issue 3 Integration of land use and transportation	A lack of integration between land use and the region's transportation network can create patterns of development that increase the need for travel, the length of journeys and reliance on private motor vehicles, resulting in: (a) increased emissions to air from a variety of pollutants, including greenhouse gases (b) increased use of energy and reliance on non-renewable resources (c) reduced opportunities for alternate means of travel (such as walking and cycling), increased community severance, and increased costs associated with upgrading roads (d) increased road congestion leading to restricted movement of goods and services to, from and within the region, and compromising the efficient and safe operation of the transport network (e) inefficient use of existing infrastructure (including transport orientated infrastructure).	Careful consideration of the potential impacts of the proposed development on the surrounding roading network have been taken into account from the initial design concepts. Recommended upgrades to adjacent roadways will ensure that any effects resulting from the increase in traffic from the site can be adequately accommodated by the existing road network. The site provides opportunities for cycling and walking access both within the site, and into the centre of Greytown located close by.
Objective 22	A compact well designed and sustainable regional form that has an integrated, safe and responsive transport network and: (a) a viable and vibrant regional central business district in Wellington city; (b) an increased range and diversity of activities in and around the regionally significant centres to maintain vibrancy and vitality; (c) sufficient industrial-based employment locations or capacity to meet the region's needs; (d) development and/or management of the Regional Focus Areas identified in the Wellington Regional Strategy ; (e) urban development in existing urban areas, or when beyond urban areas, development that reinforces the region's existing urban form; (f) strategically planned rural development; (g) a range of housing (including affordable housing); (h) integrated public open spaces; (i) integrated land use and transportation; (j) improved east-west transport linkages; (k) efficiently use existing infrastructure (including transport network infrastructure); and	As outlined in the DGSE Design Statement, and the information provided in the landscape concept plan and the Landscape and Visual Assessment, the proposed development has been designed to ensure a quality environment for older people to live and recreate in. Whilst the proposed development isn't part of the Council's strategic plan for growth at the current time, it is acknowledged that a former site for a retirement village has been developed for traditional residential purposes, so any growth that was relying on this area for accommodation for older people will need to be reviewed. It is acknowledged that the current site is rurally zoned which is not traditionally the ideal zoning for such development, however as outlined above, a private plan change and specific site overlay are proposed for the Wairarapa Combined District Plan to better reflect the future intended use for the site. The design of the proposed development including new intersections with the public road and recommended road widening will ensure that the development is appropriately integrated into the surrounding environment. Internal private roading networks as well

	(l) essential social services to meet the region's needs.	as pedestrian linkages will ensure safe access around and through the site. Overall, I consider that the proposed development is considered to be consistent with the direction provided in the Objective.
Policy 31 Identifying and promoting higher density and mixed use	District plans shall: (a) identify key centres suitable for higher density and/or mixed use development; (b) identify locations, with good access to the strategic public transport network, suitable for higher density and/or mixed use development; and (c) include policies, rules and/or methods that encourage higher density and/or mixed use development in and around these centres and locations, so as to maintain and enhance a compact, well designed and sustainable regional form.	The proposed development site is ideally located in that it provides a site large enough to enable a well-designed, comprehensive development for the continuous care of older people while being located close to existing amenities (including transport links) and to the centre of Greytown. The site is located within a currently mixed-use environment with neighbouring land uses spanning traditional residential, education (Greytown Primary School) and small-scale rural land uses. As a result, the site has been designed to reflect this surrounding character, with built form reflecting villas found elsewhere in Greytown and rural elements being reflected through open landscaped spaces around the site including the retention of some existing orchard trees. Overall, it is considered that the proposed development aligns well with the direction of this Policy.
Policy 55 Maintaining a compact, well designed and sustainable regional form - consideration	When considering an application for a resource consent, or a change, variation or review of a district plan for urban development beyond the region's urban areas (as at March 2009), particular regard shall be given to whether: (a) the proposed development is the most appropriate option to achieve Objective 22; and (b) the proposed development is consistent with the Council's growth and/or development framework or strategy that describes where and how future urban development should occur in that district; and/or (c) a structure plan has been prepared.	While the proposed development is not strictly consistent with the Council's growth strategy there is no available land elsewhere in Greytown, that is of sufficient size, topography and with connections and linkages to existing infrastructure and community facilities that would enable a comprehensive retirement village development to occur. The proposed development site was selected following a comprehensive site selection process and was deemed to be the most appropriate site for a development of this nature. As a result, it is considered that the proposed development site is the most appropriate way to provide for this type of development in the Wairarapa at this time. Overall, it is considered that the proposed development aligns well with the direction of this Policy.
Policy 56 Managing development in rural areas - consideration	When considering an application for a resource consent or a change, variation or review of a district plan, in rural areas (as at March 2009), particular regard shall be given to whether:	The 13.8ha site is currently zoned for rural land use and is used for cropping and as a stone fruit orchard. While the proposed development will result in a loss of this productive use of the site, it

	(a) the proposal will result in a loss of productive capability of the rural area, including cumulative impacts that would reduce the potential for food and other primary production and reverse sensitivity issues for existing production activities, including extraction and distribution of aggregate minerals; (b) the proposal will reduce aesthetic and open space values in rural areas between and around settlements; (c) the proposal's location, design or density will minimise demand for non-renewable energy resources; and (d) the proposal is consistent with the relevant city or district council growth and/or development framework or strategy that addresses future rural development; or (e) in the absence of such a framework or strategy, the proposal will increase pressure for public services and infrastructure beyond existing infrastructure capacity	is not anticipated that this will result in cumulative effects. This is due to the relatively small nature of the loss of productive land and the mixed use nature of land uses surrounding the site. While there will also be a loss of open spaces as a result of the retirement village development, the site has been designed to ensure the adverse effects on the surrounding environment are mitigated through careful consideration of building bulk and location, design and materials as well as a comprehensive landscaping concept for the site. As stated above, the proposed development is not currently aligned with SWDC's Growth Strategy however as outlined in the BERL reports, there is a need for such development given the future needs of the aging population and there are no facilities available in the Wairarapa of this scale at present. The proposed development is able to connect to existing Council services and as a result, will be appropriately serviced. Overall, it is considered that the proposed development aligns well with the direction of this Policy.
Policy 57 Integrating land use and transportation - consideration	When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district plan, for subdivision, use or development, particular regard shall be given to the following matters, in making progress towards achieving the key outcomes of the Wellington Regional Land Transport Strategy: (a) whether traffic generated by the proposed development can be accommodated within the existing transport network and the impacts on the efficiency, reliability or safety of the network; (b) connectivity with, or provision of access to, public services or activities, key centres of employment activity or retail activity, open spaces or recreational areas; (c) whether there is good access to the strategic public transport network; (d) provision of safe and attractive environments for walking and cycling; and (e) whether new, or upgrades to existing, transport network infrastructure have been appropriately recognised and provided for.	Careful consideration of the potential impacts of the proposed development on the surrounding roading network have been taken into account from the initial design concepts. Recommended upgrades to adjacent roadways will ensure that any effects resulting from the increase in traffic from the site can be adequately accommodated by the existing road network. The site provides opportunities for cycling and walking access both within the site, and into the centre of Greytown located close by. Overall, it is considered that the proposed development aligns well with the direction of this Policy.

Policy 58 Co-ordinating land use with development and operation of infrastructure - consideration	When considering an application for a resource consent, notice of requirement, or a plan change, variation or review of a district plan for subdivision, use or development, particular regard shall be given to whether the proposed subdivision, use or development is located and sequenced to: (a) make efficient and safe use of existing infrastructure capacity; and/or (b) coordinate with the development and operation of new infrastructure.	SWDC has indicated that this development comes at a time when the Council is considering 'planning for growth' and have made a commitment to providing infrastructure to beyond 2100. The proposed development benefits from being able to connect to existing reticulated services for wastewater and potable water and has been designed to accommodate stormwater through a soakage system contained within the development site. Overall, it is considered that the proposed development aligns well with the direction of this Policy.
Policy 59 Retaining highly productive agricultural land (Class I and Class II land) - consideration	When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district plan, particular regard shall be given to safeguarding productive capability on Class I and II land.	The front part of the site, adjacent to Reading Street, is identified as 'town' on the LUC and NZLRI maps. However, there is a pocket of LUC Class 1 land within the south east portion of the application site, and LUC Class 2 in the southern portion of the site. It is acknowledged that the proposed development is not consistent with the direction in this policy to retain productive agricultural land as it will result in the loss of some 13.8ha from productive use. While this relatively small area of land will be removed from productivity, it is considered that the development will not result in fragmentation of the rural area given the site's peri-urban location and that any adverse effects on neighbouring productive uses, including potential reverse sensitivity effects, will be avoided and mitigated as far as possible.

Appendix 34

Suggested Conditions

Suggested Recommended Conditions

The purpose of these suggested conditions is to enable constructive discussion between the Applicant and the Council, and demonstrates a willingness on behalf of the Applicant to ensure that the effects generated by the proposal are appropriately managed.

It is assumed that the Council will impose a number of standard conditions such as those related the delivery of infrastructure associated with the proposed development that accords with the Council's requirements under the Plan and standards such as NZS 4404:2010. Therefore, this set of suggested conditions does not address these matters at this stage. This set of suggested conditions are designed to address the outcomes and management measures specific to this development.

General

1. The Orchards Retirement Village will be registered under the Retirement Villages Act (2003).

2. Any management plans, reports or detailed designs required as condition of this consent may be provided for the entire development or for the relevant stage in accordance with the Staging Plan XXXX.

Prior to commencing works on site

Construction

3. At least 10 days prior to any works commencing on site the Consent Holder shall prepare and submit to Council for review a Construction Environment Management Plan (CEMP) to demonstrate how the Consent Holder shall control and/or mitigate any dust, silt run-off and sedimentation that may occur in accordance with *NZS 4404:2004 Land Development and Subdivision Infrastructure*.

4. The objective of the CEMP is to protect the environment from the potential and actual effects of earthworks and site preparation activities. Of particular importance is the control of dust from the earthworks, noting that the Moroa Water Race runs through the site means that proactive measures should be employed to protect water quality during construction activities.

5. Measures identified in the EMP shall include but not be limited to:

a) The name, contact details, experience and qualifications of the person/s nominated by the Consent Holder to supervise the implementation of, and adherence to, the CEMP.
b) Identification of all potential dust emissions, including from any tree felling and stump grinding activities;
c) Staging any earthworks in manageable amounts/areas to ensure practical dust mitigation is possible, supplemented by plans to demonstrate proposed staging and dust and silt migration mitigation
d) Details outlining how the earthworks will proceed to address risks to human health (in respect to dust and stormwater control and in relation to site workers and adjoining landowners) as required by SWDC Consent Reference 180203.
e) Wetting: Construction access roads (water cart)
Work areas (k-line)
f) The method and timeframe for rehabilitating any temporary construction and batter areas
g) Revegetation methodology
h) Low speeds on construction site access roads.
i) A construction noise management plan that addresses how noise will be managed to meet the noise levels specified in the Wairarapa Combined District Plan during site preparation works.

Alternative measures can be suggested by the Consent Holder or their contractor for consideration by Council.

6. All accepted measures outlined in the CEMP shall be implemented prior to the commencement of any earthworks and shall remain in place for the duration of the earthworks, until all exposed areas of earth are permanently stabilised. A Council engineer shall be contacted to inspect these works prior to commencement of earthworks on site or if any changes are proposed after the initial inspection.

7. At least 10 working days prior to the commencement of construction works on the site, the Consent Holder shall prepare and submit to the Council a Construction Management Plan (CMP) for review and acceptance. The objectives of the CMP shall be to provide guidance on the environmental management of construction activities authorised by this consent so as to avoid, remedy or mitigate the adverse environmental effects associated with the construction works.

8. The CMP must include (but is not limited to) the following:

a) The name, contact details, experience and qualifications of the person/s nominated by the Consent Holder to supervise the implementation of, and adherence to, the CMP.

b) A staging plan, identifying the construction of each phase of the project and the anticipated timeframe and scheduling for the construction works, including dates and the days and hours of construction.

c) A construction noise management plan that addresses how noise will be managed to meet the noise levels specified in the Wairarapa Combined District Plan during construction.

d) A plan identifying trees to be retained and a protection methodology in accordance with the guidance set out in Treecology's memo dated 05 March 2019.

9. At least 5 working days prior to commencing work within any Council road reserves, the Consent Holder shall submit a Traffic Management Plan to the Roading Engineer at Council, for acceptance. The Traffic Management Plan shall be prepared by a STMS. Where relevant this shall include reference to maintaining safe walking journeys for school children travelling between McMasters Street, Reading Street, Church Street, and Market Road and Greytown Primary School. All contractors obligated to implement temporary traffic management plans shall employ a qualified STMS on site. The STMS shall implement the Traffic Management Plan. A copy of the approved plan shall be submitted to the Group Manager - Planning and Environment Council at Council prior to works commencing.

10. At least 5 working days prior to commencing any work onsite, the Consent Holder shall arrange an onsite meeting with a Resource Management Engineer at Council and the contractors responsible for the works to ensure that all parties involved are aware of what is required of them during the earthworks and construction process. All prior to commencement of works conditions detailed in these Conditions (being conditions X to XX) shall be demonstrated to be met.

11. Prior to commencing any work on the site the Consent Holder shall install a construction vehicle crossing, which all construction traffic shall use to enter and exit the site. The minimum standard for this crossing shall be a minimum compacted depth of 150mm AP40 metal that extends 10m into the site. Should the construction crossing not prevent earthwork material from tracking onto the public roading network the Consent Holder shall install an appropriate wheel wash facility, in lieu of

the gravel construction crossing, for all construction traffic use prior to exiting the site(s).

12. Prior to the commencement of works on site the Consent Holder shall prepare and lodge with Group Manager - Planning and Environment for acceptance the final Earthworks Plan, which includes existing and finished ground levels and cross sections.

13. All works are to be undertaken in accordance with the approved Environmental Management Plan (EMP) (Condition XX) and Construction Management Plan (CMP) (Condition XX).

Firefighting Water Supply

14. The provision of fire hydrants with adequate pressure and flow to service all buildings and lots in the development with a fire fighting water supply in accordance with the NZ Fire Service Code of Practice for Firefighting Water Supplies SNZ PAS 4509:2008 (or superseding standard). Any alternative solution must be approved in writing by the Area Manager for the [what] branch of the New Zealand Fire Service.

Shared Green Spaces

15. A landscape planting and management plan (with supporting specifications) in accordance with the Landscape Concept Plans [PLAN REFS] shall be prepared and submitted to the Group Manager - Planning and Environment at least 10 days prior to any works on the land being developed for certification prior to construction commencing for the following shared green spaces:

    a) Orchard Gardens
    b) Swale Parkland
    c) Murphy's Garden
    d) Southern Entry Walk

16. The landscape planting and management plan shall contain:
    a) Reference to Landscape Concept Plans + other supporting material dated XXXX
    b) A plan of the planted area detailing the proposed plant species, plant sourcing, plant sizes at time of planting, plant locations, density of planting, and timing of planting.
    c) A programme of establishment and post establishment protection and maintenance (fertilising, weed removal/spraying, replacement of dead/poorly

performing plants, watering to maintain soil moisture, length of maintenance programme.

d) Tree protection measures in accordance with the methodology specified in the Treecology memo dated 05 March 2019.
e) the extent, materiality and finished levels of paving;
f) the location, materiality, height and design of fencing and retaining walls;
g) the details of drainage, soil preparation, tree pits, staking, irrigation; and
h) the construction details of all hard landscape elements (paving, fencing, gates, lighting etc).
i) An irrigation system

These plans shall be supported by specifications that describe in a written form the more specific technical landscape matters such as quality of materials.

17. All planting, including trees, shall be maintained in perpetuity thereafter to the satisfaction of the Group Manager - Planning and Environment. If any plant or tree should die or become diseased it shall be replaced within the next available planting season. This includes ensuring that all native shrubs and grasses proposed on the terrace edges and the knoll are irrigated and maintained to ensure survival and healthy growth.

Buildings

18. Prior to the commencement of any construction works, plans shall be submitted and certified by the Group Manager - Planning and Environment of the Council which detail independent residential unit typologies in accordance with the following:

    a. They are in general accordance with the architectural design objectives and materials listed within the DGSE Design Statement dated XXXX;

    b. The building footprint for any individual independent dwelling unit shall not less than 80m^2 and no more than 203m^2.

    c. No dwelling shall be more than three bedrooms.

    d. There shall be no encroachment of any dwellings into any of the areas shown in plan XXXX that are shown as boundary setbacks or shared green space areas.

    e. The overall building site coverage of the whole application site does not exceed 26%.

f. The total number of independent residential units across the whole application site does not exceed 180 units.

Accidental Discovery Protocol

19. If the Consent Holder:

a. does not have an archaeological authority from Heritage New Zealand Pouhere Taonga and discovers koiwi tangata (human skeletal remains), waahi taoka (resources of importance), waahi tapu (places or features of special significance) or other Maori artefact material, the Consent Holder shall without delay:

i. notify Council, Tangata whenua and Heritage New Zealand Pouhere Taonga and in the case of skeletal remains, the New Zealand Police.
ii. stop work within the immediate vicinity of the discovery to allow a site inspection by the Heritage New Zealand Pouhere Taonga and the appropriate runanga and their advisors, who shall determine whether the discovery is likely to be extensive, if a thorough site investigation is required, and whether an Archaeological Authority is required.

Any koiwi tangata discovered shall be handled and removed by tribal elders responsible for the tikanga (custom) appropriate to its removal or preservation. Site work shall recommence following consultation with Council, the Heritage New Zealand Pouhere Taonga, Tangata whenua, and in the case of skeletal remains, the New Zealand Police, provided that any relevant statutory permissions have been obtained.

b. discovers any feature or archaeological material that predates 1900, or heritage material, or disturbs a previously unidentified archaeological or heritage site, the Consent Holder shall without delay:

iii. stop work within the immediate vicinity of the discovery or disturbance and;
iv. advise Council, the Heritage New Zealand Pouhere Taonga and in the case of Maori features or materials, the Tangata whenua and if required, shall make an application for an Archaeological Authority pursuant to the New Zealand Pouhere Taonga Act 2014 and;

v. arrange for a suitably qualified archaeologist to undertake a survey of the site.
vi. Site work may only recommence following consultation with Council.

Signage

20. Details of the entrance signage including the final location, coloured elevation and materials plans shall be provided for approval of the Council's Group Manager - Planning and Environment. The entrance signs shall be restricted to:

    a. A maximum of three signs per frontage with the public road, with a total face area per sign of no more than 4m2.

    b. The sign must relate to the activity undertaken on the site and be located fully within the site of the activity to which it relates.

    c. Where a sign is affixed to a building, the sign shall comply with the maximum height and setback requirements.

    d. All signs must comply with the sight distance requirements in Appendix 5.

    e. No sign shall be located where it conceals the visibility of an existing official sign or traffic-controlling device.

    f. No sign shall use reflective materials, or be illuminated, flashing or moving.

Review

21. Within ten working days of each anniversary of the date of this decision the Council may, in accordance with Sections 128 and 129 of the RMA), serve notice on the Consent Holder of its intention to review the conditions of this resource consent for any of the following purposes:

    a. To deal with any adverse effects on the environment that may arise from the exercise of the consent which were not foreseen at the time the application was considered and which it is appropriate to deal with at a later stage.
    b. To deal with any adverse effects on the environment which may arise from the exercise of the consent and which could not be properly assessed at the time the application was considered.
    c. To avoid, remedy and mitigate any adverse effects on the environment which may arise from the exercise of the consent and which have been caused by a change in circumstances or which may be more appropriately addressed as a

result of a change in circumstances, such that the conditions of this resource consent are no longer appropriate in terms of the purpose of the RMA.