BASELINEGROUP

Private Plan Change Request

Leeston Dunsandel Road, Harmans Road and High Street, Leeston

CLIENT	ADDRESS	REFERENCE
Holly Farm	Leeston Dunsandel Road, Harmans Road and High Street, Leeston	6129

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Report Information

Reference:	6129
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REQUEST TO CHANGE THE SELWYN DISTRICT PLAN UNDER CLAUSE 21 OF THE FIRST SCHEDULE OF THE RESOURCE MANAGEMENT ACT 1991

Request by: D Marshall, L Martin & A Formosa, M & T Saunders, B Hammett and J & S Howson
C/- Baseline Group CLS Limited
PO Box 8177, Riccarton, Christchurch, 8440
Attn: Adrianne Tisch

To: Selwyn District Council
Involving the: Selwyn District Plan

Site Address: Leeston Dunsandel Road, Harmans Road and High Street, Leeston.

The landowners and allotments to which the request relates:

Owner(s)	Address	Legal Description	Record of Title	Land Area (ha)
L Martin & A Formosa	85 Leeston Dunsandel Road	Lot 1 DP 9138	CB418/133	0.8093
D Marshall	Leeston Dunsandel Road	Lot 3 DP 82846	CB47D/695	20.00
J & S Howson	60 Leeston Dunsandel Road	Lot 2 DP 365379	264986	5.4440
B Hammett	45 Leeston Dunsandel Road	Lot 4 DP 82846	CB47D/696	0.6011
S Farrant	33-35 Leeston Dunsandel Road	Lot 2 DP 421172	574790	1.4757
T Anderson	31 Leeston Dunsandel Road	Lot 1 DP 451172	574789	0.1572
Cochranes of Canterbury	125a High Street	Lot 2 DP 319397	76388	2.23
D Marshall	High Street	Lot 1 DP 82846	CB47D/693	29.5500
M & T Saunders	149 High Street	Pt RSs 5482 & 5483	CB368/10	0.4047
Total				60.672

The Plan Change Request seeks to rezone the subject site from Living 1 (deferred) zone, Living 2 (deferred) zone and Outer Plains zone to Living 1 zone and Living 2 zone in accordance with the Outline Development Plan in Appendix 2.

The Plan Change Request has been made under section 72(1), section 32, and the First Schedule of the Resource Management Act 1991.

Contents

1.0 Overview

D Marshall, L Martin & A Formosa, M & T Saunders, B Hammett and J & S Howson ("the applicants") apply for a Private Plan Change Request ("Plan Change") to the Selwyn District Council ("Council") pursuant to Section 21 of Schedule 1 of the Resource Management Act 1991 ("the Act"), to rezone approximately 60 ha of land west of Leeston township from Living 1 (deferred), Living 2 (deferred) and Outer Plains to 42 ha of Living 1 and 19 ha to Living 2.

The area subject to the Plan Change is bound by High Street to the south, Harmans Road to the west, Leeston Dunsandel Road to the north and residential activity to the east. A 5.4 ha land parcel lies north of Leeston Dunsandel Road. The land subject to the Plan Change will be referred to as "the site".

This request has been made under Section 21 of Schedule 1 and has taken into account the matters listed in Section 74 of the Act.

This Plan Change has been made in accordance with Section 22 of Schedule 1 and outlines the purpose of, and reasons for, the Plan Change and an evaluation report prepared in accordance with Section 32 of the Act. Where environmental effects are anticipated as a result of implementing the Plan Change, they have been described in this report.

The Plan Change is considered to be an appropriate method to lift the deferral over the Living 1 (deferred) and Living 2 (deferred), and to rezone the site to enable residential development. It is considered to be consistent with the objectives and policies of the Selwyn District Plan ("the Plan"), Canterbury Regional Policy Statement ("the CRPS") and Part 2 of the Act.

1.1 Description of the Site and Surrounding Area

Leeston township is approximately 40 km south west of Christchurch, and 20 km from Lincoln in the same direction. The township is surrounded by rural land and is approximately 6 km west of the shore of Lake Ellesmere /Te Waihora. Leeston is located between Christchurch and Rakaia and services surrounding towns such as Doyleston and Southbridge.

The site is located west of the existing urban form of Leeston and is bound by Leeston Dunsandel Road to the north, with a small area lying north of this road; Ellesmere College/ Te Kāreti o Waihora and residential development to the east; High Street to the south and Harmans Road to the west. The site has an area of 60.622 ha, is held in nine Records of Title and owned by eight parties, as listed previously in this report. The Records of Title are attached as Appendix 1.

The site is predominately flat, with minor topographic relief. The majority of the site has historically been used for agricultural purposes (grazing and cropping) and rural-residential purposes. The site is held in separate ownership and contains seven dwellings located throughout the site as well as multiple accessory buildings. Ellesmere College/ Te Kāreti o Waihora is a co-education secondary school (Year 7 to Year 13) with a student roll of 570 in 2019[1]. It is the only secondary school in Leeston, and services the wider Leeston and Selwyn area. The enrolment zone extends Rakaia River in the south to the Selwyn River in the north, and inland approximately 10 km north of State Highway 1[2].

The site adjoins the Living 1 zone west of Market Street, and dwellings accessed via Spring Place and Mountain View Place. An existing vacant allotment on Spring Place will form part of the ODP as a roading connection.

[1] Education Counts. (2019). *Ellesmere College – Student Population*. Accessed 19/06/2019. https://www.educationcounts.govt.nz/find-school/school/population/year?district=62&region=13&school=349

[2] Te Kete Iputangi. *Ministry of Education's School Finder Service*. Accessed 19/06/2019. https://nzschools.tki.org.nz/

Leeston Creek runs northwest to southeast from Killinchy, through the site and between the Spring Place and Mountain View Place cul-de-sac heads. It then runs through the Market Street culvert to High Street. Leeston Creek often floods upstream of the Market Street Culvert in high rainfall and flood events as the Market Street culvert is undersized for the flows in these events[3]. This is the main reason for deferring development on the Living 1 and Living 2 zones.

Birdlings Brook is a stream that runs from Killinchy to Waitatari/ Harts Creek and then into Te Waihora/ Lake Ellesmere. Birdlings Brooks runs through the southwest corner of the site near the intersection of High Street and Harmans Road. A public walkway "Marshall's on Birdlings Brook" and associated planting has been provided along the banks of Birdlings Brook within the site. The walkway connects Harmans Road and High Street.

The site is shown in Figure 1, below.

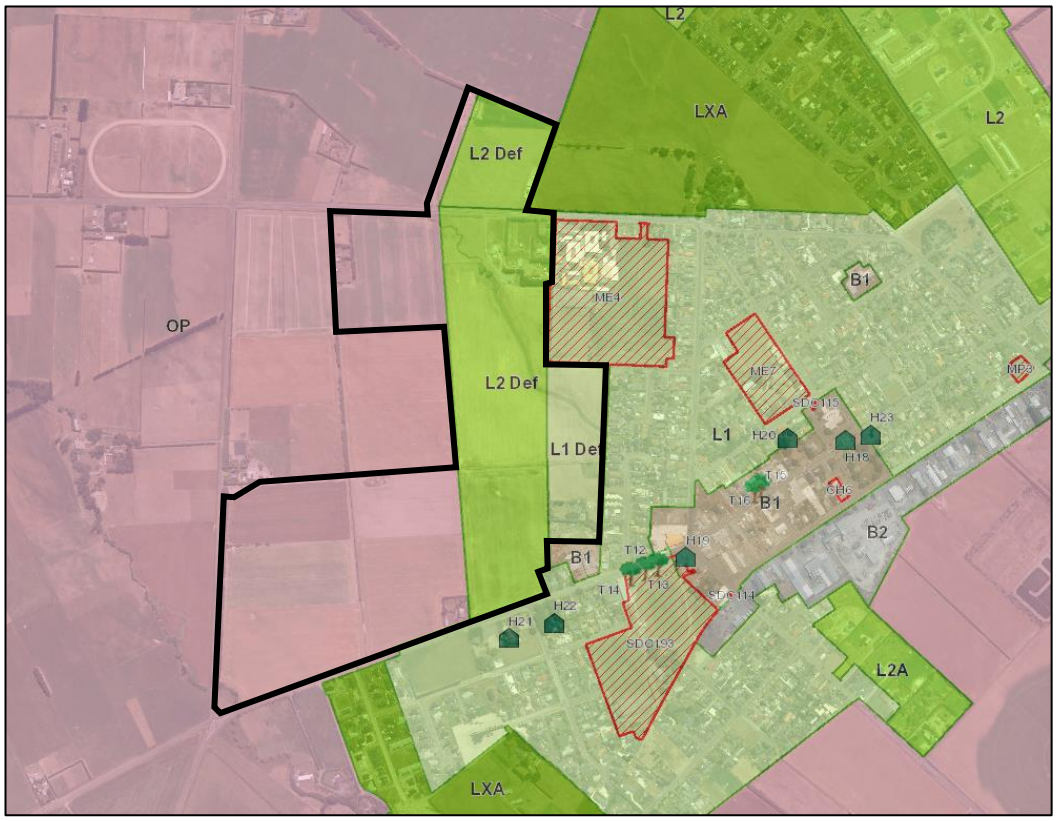


Figure 1: Site and Surrounds, with the site identified with a black outline

Leeston Dunsandel Road runs from Dunsandel township to Leeston township and turns into Market Street at the intersection of Leeston Dunsandel Road and Pound Road. Leeston Dunsandel Road is classified as an Arterial road under the Plan from Irvines Street (in Dunsandel) to Market Street (in Leeston). The eastbound speed limit reduces from 100 km/hr to 50 km/hr at the north west corner of 33 Leeston Dunsandel Road, approximately 100 m west of a vehicle entrance to Ellesmere College/ Te Kāreti o Waihora. A traffic calming measure is located where the speed limit changes.

Harmans Road runs from Caldwells Road, northeast of Doyleston, to the southwest corner of the site and terminates at the intersection of Harmans Road, Feredays Road and High Street. Harmans Road is classified as a local road in the Plan and has a speed limit of 100 km/hr where it adjoins the site.

[3] Selwyn District Plan Township Volume. (2016). *Policy B4.3.54 Explanation and Reasons.*

Leeston Road turns into High Street at the 'T' intersection with Manse Road. High Street runs through the centre of Leeston township and along the commercial and retail strip and changes to Feredays Road at the intersection of Harmans Road, Feredays Road and Southbridge Leeston Road. High Street has a speed limit of 50 km/hr through Leeston township and increases to 100 km/hr approximately 130 m west of the intersection of High Street and Clausen Avenue.

The original intention of the Plan Change was to include Lot 2 DP 82846 (56 Harmans Road), however this allotment is no longer included in the Plan Change. The current owner of this allotment has been invited to participate in the Plan Change, as including this allotment is seen as best practise for re-zoning. However, they do not wish to participate in the Plan Change. Likewise, the owners of Lot 1 DP 451172 Lot 2 DP 451172 and Lot 2 DP 319397 (125A High Street) were invited to participate but did not wish to be included in the Plan Change. A number of technical reports were completed when 56 Harmans Road was included in the Plan Change, and these reports have been unaltered where the removal of this allotment makes no material difference to the overall assessments as they relate to the remainder of the site.

The Plan Change seeks to lift the deferral on Lot 1 DP 451172 (31 Leeston Dunsandel Road), Lot 2 DP 451172 (33 – 35 Leeston Dunsandel Road) and Lot 2 DP 319397 (125a High Street) but does not seek to rezone the land. While in an ideal situation this area of land would be zoned Living 1 to be consistent with the Plan Change, the land owners did not wish to be included in the Plan Change. Leaving the deferral on this land is not seen to be appropriate in this case and it is considered to be more appropriate to lift the deferral and retain the Living 2 zoning. This is seen to be the best alternative going forward than to leave these land parcels with a deferred zoning.

1.2 Purpose of the Private Plan Change Request

The purpose of this Private Plan Change Request is to lift the existing deferral on the Living 1 (deferred) and Living 2 (deferred) zones on the western edge of Leeston, and rezone approximately 60 ha of land from the current zoning of Living 1 (deferred), Living 2 (deferred) and Outer Plains, to Living 1 and Living 2 zones.

The Plan Change site is made up of 5.3 ha of Living 1 (deferred); 22.8 ha of Living 2 (deferred); and 31.2 ha of Outer Plains zoned land. The following changes are proposed:

- Lift the deferral on 5.3 ha of Living 1 (deferred) to be Living 1;
- Lift the deferral on 1.6 ha of Living 2 (deferred) to be Living 2;
- Rezone 22.8 ha of Living 2 (deferred) to be Living 1;
- Rezone 13.9 ha of Outer Plains to Living 1; and
- Rezone 17.3 ha of Outer Plains to Living 2.

The Plan Change seeks to amend the Plan and insert an Outline Development Plan ("ODP") with site specific requirements to facilitate the future development of approximately 410 allotments, made up of 380 Living 1 and 30 Living 2 zoned allotments. The ODP is attached to this application as Appendix 2. The Plan Change seeks to use the existing Living 1 and Living 2 density requirements, being 650 m^2 for Living 1 and 5,000 m^2 for Living 2.

Uplifting the deferral and rezoning the application site is considered to reflect a sustainable and efficient use of the site for the growth of future generations and to provide additional housing opportunities within Leeston Township. The ODP will provide guidance and requirements to implement the Leeston North Stormwater Bypass and stormwater management to ensure development of the site does not increase the existing stormwater issues in Leeston.

1.3 Reason for the Private Plan Change Request

Growth

Selwyn District was the fastest growing district in New Zealand until 2018[4]. Council's 2031 – District Development Strategy, predicts growth in Leeston to increase by 49% by the year 2031. By 2031, Leeston will have a population of 3,402 and require the number of households to increase from 813 to 1,215. The Ellesmere Area Plan has calculated the area of undeveloped residential zoned land can accommodate a further 953 residential allotments, and no new greenfield areas need to be re-zoned by Council to accommodate the projected growth. The Ellesmere Area Plan does however note areas suitable for rezoning and greenfield development.

Nevertheless, the Plan Change is seen as providing land for development for future generations beyond 2031. The Plan Change will require any future development to be in general accordance with the ODP and implement stormwater management prior to any development of the site, reducing the risk of ad-hoc development and ensuring stormwater is appropriately managed.

Leeston has been identified as being an important service township, key activity centre and a projected growth area in the Ellesmere Area Plan. The development of the Plan Change site will encourage development, financial investment, employment during construction and additional residents and rate payers to Leeston. The Living 1 (deferred) and Living 2 (deferred) zone has been identified by the Council as part of the preferred and potential growth options for Leeston (once stormwater issues are resolved). The Outer Plains zoned area of the site is identified for possible future development in the Ellesmere Area Plan.

Urban Form

Rezoning the site to Living 1 and Living 2 is seen as a natural progression and extension of the residential zones in the Leeston township and will enable efficient and sustainable residential activities to be established in this area without significant loss of the rural land resource. Extending the Living 1 and Living 2 zones will provide a range of residential living environments in this area, adjacent to the existing residential areas on Spring Place, Mountain View Place and south of High Street.

Rezoning the site will assist in providing a compact township form, in an area as that has been shown to be able to be serviced by connections to road infrastructure, potable water, sewage, stormwater, telecommunications and electricity. In addition, the zone's location will enable its residents to take advantage of nearby community facilities, employment opportunities, social interaction, schooling and other public services.

Case Law

The Environment Court Case *Operation Homer Ltd v Selwyn District Council [C100/2007]* concluded that significantly out-of-zone development should be subject to a rezoning proposal rather than a non-complying resource consent. Therefore, the Plan Change is considered to be more appropriate than a significant non-complying subdivision.

[4] Selwyn District Council, *Selwyn's Potential Growth Path up to 2048*, accessed 19/06/2019, https://www.selwyn.govt.nz/property-And-building/planning/population

2.0 Key Features of the Plan Change

2.1 Density

It is proposed to change the zoning of the site from the current Living 1 (deferred), Living 2 (deferred) and Outer Plains to Living 1 and Living 2, creating average densities of 650 m^2 in the proposed Living 1 zone and 5,000 m^2 in the proposed Living 2 zone. The ODP includes specific guidance in terms of transport, reserves and stormwater networks. If implemented, the site could accommodate approximately 410 allotments, comprised of 380 Living 1 allotments and 30 Living 2 allotments.

The proposed re-zoning will align with the existing Living 1 and Living XA zones opposite the site, south of High Street. The alignment of the living zones on High Street will provide a more defined entrance and exit to the Leeston township when traveling along High Street.

2.2 Outline Development Plan

The ODP is an essential component of the Plan Change and has been prepared to provide guidance for the future development of the site. The ODP is attached in Appendix 2 and consists of five plans and associated text. The five plans show indicative transport, landuse, reserve and stormwater networks as well an overall plan.

The ODP also shows an indicative roading layout and reserve locations to guide any future development of the site. As is normally the case, the final design of the development including the precise layout of the lots will be determined at the time of subdivision. However, any future subdivision of the site is required to be generally in accordance with the ODP.

The ODP will require the section of the Leeston Creek that runs through the site to be vested to Council as reserve, providing a high level of amenity for residents.

The ODP indicates levels of service provided by the various roads and access ways, the proposed zoning for the entire area, existing features of importance and matters such as relevant servicing infrastructure, stormwater treatment areas and pedestrian ways and cycle ways.

2.3 Stormwater

The ODP outlines blue networks for stormwater management. A section along the northern boundary of Lot 2 DP 365379 (60 Leeston-Dunsandel Road) will be set aside for stormwater management required for the Leeston North Stormwater Bypass. This area will connect with the 'Martin' block and will divert stormwater from the Leeston Creek around Leeston rather than through Leeston.

A stormwater basin will be required for the stormwater from new residential development, an area for this has been shown on the ODP as being in the naturally low-lying area of the site. Additional stormwater management within the Leeston Creek has been indicated i.e. stormwater ponds. Specific calculations will be required at the time of subdivision to ensure the flow of the Leeston Creek will be less than pre-development rates.

2.4 Urban Design

The New Zealand Urban Design Protocol (2005) identifies seven essential design qualities that can act as guiding considerations in the structure planning process. These are referred to as the seven Cs and are assessed as follows.

Context - seeing buildings, places and spaces as part of whole towns and cities

The ODP shows that the development in west Leeston can be a coherent development, which provides a natural extension of the township. Development within the ODP area can provide for allotments sufficient in size and orientation to be recognised as an appropriate neighbourhood within Leeston. The reserves and cycle/pedestrian links will provide connections throughout the site and to the existing township.

Character - reflecting and enhancing the distinctive character, heritage and identity of our urban environment

While a portion of the site is outside of the existing township urban boundaries, as defined in the Ellesmere Area Plan, the Plan Change provides Living 1 and Living 2 densities to continue the urban form of Leeston. The low density component of the plan change area (proposed Living 2 zone) will create its own distinctive character through the establishment of open sites with extensive space for gardens and landscaping. The proposed Living 1 zone could provide generous residential allotments which complement the existing form and character of Leeston.

Choice - ensuring diversity and choice for people

The ODP provides for greater housing choice within Leeston township whereby sections of both Living 1 and 2 zones will be available for uptake west of the existing township. There will be good access to open spaces for all future residents provided by the reserve areas shown on the ODP and ample road and pedestrian access to these spaces. The green network provides an abundance of amenity and utility for residents to use and enjoy. The development will avoid future development occurring on an ad-hoc basis without the certainty of infrastructure and a confirmed growth pattern for the township.

Connections - enhancing how different networks link together for people

Roading connections are indicated on the ODP as being from Leeston Dunsandel Road, Spring Place, High Street and Harmans Road. These roading links, particularly with Spring Place, will provide connection through to the existing roading network and the township centre. The pedestrian and cycle links will provide connections to the reserves, roading network, and Ellesmere College/ Te Kāreti o Waihora. Future roading connections will be required through the ODP, providing connectivity for future development adjoining the site.

Creativity - encouraging innovative and imaginative solutions

It is anticipated that the future landowners will express their creativity through their individual requirements of house design. The plan change does not seek to limit such creativity beyond the existing provisions within the Plan.

Custodianship - ensuring design is environmentally sustainable, safe and healthy

The development will enhance the built environment by integrating with the existing pattern of development along High Street and adjoining Spring Place, whilst providing enhanced amenity through the natural features of the site including Leeston Creek, Birdlings Brook and connections to the township. The ODP will provide stormwater management guidance to ensure any future development does not exacerbate the flooding issues in Leeston.

Collaboration - communicating and sharing knowledge across sectors, professions and with communities.

This Plan Change has been prepared based on the applicant's knowledge of the site and discussions with Council.

Wider consultation has not been undertaken as the site is anticipated for residential development through the Living 1 (deferred) and Living 2 (deferred) zones. The Outer Plains area has been noted in the Ellesmere Area Plan for potential future development. Extensive consultation on the Ellesmere Area Plan has already been undertaken, and replicating this process is unhelpful.

2.5 Transport

A Transport Assessment has been prepared by Carriageway Consulting and is attached in Appendix 3. The Transport Assessment discusses the existing roading network; the potential increase in vehicle movements; and future compliance with the relevant transport rules of the Plan. It concludes the additional traffic and vehicle movements can be accommodated by the existing roading network and no upgrades are required to accommodate these.

Two roading connections are proposed onto High Street. The first forming an intersection with High Street and Chapman Street and providing a spine that runs directly through the site to Leeston-Dunsandel Road. The second access is proposed to form an intersection with High Street and Clausen Avenue. These indicative roads will provide north to south primary routes through the site.

An additional primary route will run east to west from Spring Place to Harmans Road. Secondary roads will provide connection between the north to south road and the east to west road and enable access to the land parcel north of Leeston Dunsandel Road.

Three future roading connections have been shown on the ODP to provide access to adjoining land that does not form part of the Plan Change. Two of these connect to 56 Harmans Road along this properties southern and eastern boundaries. A third future connection is indicated to provide a link to the land zoned Living XA and known as the 'Martin' block north of Leeston-Dunsandel Road.

Pedestrian and cycle links will provide access and linkages within the site, to Ellesmere College/ Te Kāreti o Waihora and to the town centre.

The Transport Assessment notes the speed limit is 100 km/hr along Harmans Road, part of Leeston-Dunsandel Road and High Street. The common trigger to reduce speed limits is development. Therefore, when development occurs the speed limit on Leeston-Dunsandel Road and High Street could be reduced to 50 km/hr west of Harmans Road. It is noted this is not a matter that can form part of the Plan Change and is not administered by the Act.

Overall, subject to the 100 km/hr speed limits being reduced (which could be achieved at subdivision stage), it is highly likely the Plan Change can be supported from a transportation perspective.

2.6 Services

A Servicing Report has been prepared by Baseline Group and is attached as Appendix 4. The Servicing Report identifies options for potable water supply, wastewater disposal, stormwater management, and confirmation of adequate telecommunications and power connections. The report concludes the site can be appropriately serviced by way of extending the existing service connections.

Wastewater

The Ellesmere Treatment Plant and reticulated wastewater services Leeston township. The site can be serviced by connections to the reticulated wastewater either by a gravity network to a central pump station or low pressure

systems on-site. Either options would sufficiently accommodate wastewater from the development of the site and discharge would be into the Ellesmere Wastewater Treatment Plant. As the site is not currently serviced, and existing pipe networks terminate prior to the site, the pipe network would need to be extended to supply the site.

Stormwater

Stormwater has been specifically discussed above in section 2.3.

Potable Water

Three existing wells supply Leeston with potable water supply; two on Gallipoli Street and one on Leeston and Lake Road. Council have advised the existing pump and pipe network does not have capacity to service future development of the site. In order to supply the site with potable water, Council purchased a utility allotment within the site and are in the process of installing a bore for potable water supply[5]. The utility allotment will supply the site with potable water and has been noted on the ODP as a utility allotment. A 100 m groundwater protection zone has also been shown on the ODP. Future allotments will be connected to Council's reticulated wastewater network; therefore, the groundwater protection zone will not be affected by development of the site.

Electricity and Telecommunications

Orion and Chorus NZ Ltd have confirm the site can be serviced with reticulated power and telecommunications from the existing networks. Details of connections can be confirmed at the time of subdivision. Confirmation letters are included in the Servicing Report.

2.7 Yield

The Plan Change, if implemented, could yield approximately 410 allotments (380 Living 1 allotments and 30 Living 2 allotments).

2.8 Geotechnical Considerations

A Geotechnical Investigation Report has been prepared by Soil and Rock Consultants and is attached as Appendix 5. The report concludes that the ground is suitable for subdivision, however further geotechnical investigation will be required at the subdivision stage to confirm Technical Categories of the site. The further investigation could provide recommended conditions or consent notices regarding the building foundations or site-specific geotechnical matters. It is considered a consent notice or conditions of consent relating to building foundations can be appropriately managed at subdivision stage.

2.9 Flood Hazards

The site is not identified within a flood hazard area under the Plan; however, flooding is a known issue in Leeston. A Flood Risk Report has been obtained from Environment Canterbury ("ECan") and is attached as Appendix 6. The report shows how the site behaved during significant flooding events starting from 1986 to 2013. The LiDAR map indicates the elevation of the site ranges from 20.5 – 24 m above mean sea level from the southeast corner to the northwest corner respectively, with a small portion of the site being 24 – 24.5 m above mean sea level in the west of the site along Harmans Road. The flood hazards on the site arise from flooding of the Leeston Creek. As discussed

[5] Meeting with Selwyn District Council Staff; Jocelyn Lewes, Murray England, Andrew Mazey, Mark Rykers and Rachael Carrutgers. July 2019.

previously, the Servicing Report provides options for stormwater management on the site to reduce the risk of flooding and ensure the flow of the Leeston Creek does is less than pre-development flows.

2.10 Preliminary Site Investigation

A Preliminary Site Investigation (PSI) has been prepared by Malloch Environmental and is attached in Appendix 7. The PSI concludes there is evidence of activities listed on the Hazardous Activities and Industries List (HAIL) having been undertaken on the site previously. The activities include contractors' yard, farm pit and pre 1940s buildings and are noted in Figure 3 of the PSI. Due to HAIL activities being on the site, a Detailed Site Investigation (DSI) will be required at the time of subdivision. The presence of HAIL activities on the site is not considered to preclude the Plan Change.

The PSI was undertaken when 56 Harmans Road was included in the Plan Change and notes a chemical store; commercial chemical contractors' yard; nursery use and pre 1940s buildings on 56 Harmans Road. As this parcel is not included in the Plan Change, these HAIL activities are no longer considered relevant to the Plan Change.

3.0 Proposed Amendments to the Selwyn District Plan

It is considered that the most effective way to achieve the Plan Change is to largely adopt the existing provisions for the Living 1 and Living 2 zones. No new objectives or policies are proposed as part of this Plan Change request, rather one policy referring to the deferred living zones will be deleted.

All requested changes to the Plan are shown as **bold and underlined**. Deletions are shown as ~~**bold with strikethrough.**~~

The following changes are sought to the Plan to enable the rezoning. It is anticipated any rules that need to be renumbered as a result of the proposed rules will be.

3.1 Planning Maps

Amendment 1

Amend Planning Maps (Township Volume) to reflect the Living 1 and Living 2 zone status of the site.

Amendment 2

Amend Planning Maps (Rural Volume) to reflect the Living 1 and Living 2 zone status of the site.

3.2 Appendices

Amendment 3

Add the Leeston Outline Development Plan to the Township Volume of the Plan as Appendix 50 (E50) (or the next available number).

3.3 Issues, Objectives and Policies

Amendment 4

Delete Policy B4.3.55 and the associated Explanation and Reasons zoning as follows:

~~**Policy B4.3.55**~~

~~**Ensure that land that is zoned for residential development but is presently subject to surface flooding is not developed for its zoned purpose until provision is made for the amelioration of that constraint.**~~

~~**Explanation and Reasons**~~

~~**Some land to the west of Leeston is presently subject to surface flooding at times of heavy rain. The principal reason for this is the presently limited capacity of the Market Street Culvert. From an engineering point of view there are several ways in which this problem can be ameliorated and some of these depend upon development decisions yet to be made. In order to ensure that residential development of the land affected does not proceed before this problem has been remedied the areas affected have been given a 'deferred' zoning that brings in to play a restriction on subdivision. It is intended that, once a remedy has been decided upon and implemented, the 'deferred' notation and subdivision restriction will be removed by Plan Change.**~~

3.4 Chapter 4 Living Zone Buildings

Amendment 5

Amend Rule 4.2.3 as follows:

Any Fencing in the Living 3 Zone, ~~**and**~~ the Living 2A Zone in Darfield, as identified in Appendix 47, **and the Living 2 Zone in Leeston, as identified on the Leeston Outline Development Plan in Appendix XX, except on any property boundary adjoining a Living 1 Zone** shall be limited to a maximum height of 1.2m, be at least 50% open, and be post and rail, traditional sheep, deer fencing, solid post and rail or post and wire only;

Except that nothing in the above controls shall preclude:

(i) the use of other fencing types when located within 10m of the side or rear of the principal building. Such fence types shall not project forward of the line of the front of the building.

(ii) fencing required by an Outline Development Plan and/or rule in this Plan as a noise barrier.

Amendment 6

Amend Rule 4.17.1 – Fences Adjoining Reserves as follows:

All development located within the Living Z zone or the High Street, Southbridge Outline Development Plan area (Appendix 45)**, and the Living 1 and 2 zones, as identified on the Leeston Outline Development Plan (Appendix XX)** that shares a boundary with a reserve or walkway shall be limited to a single fence erected within 5 m of any Council reserve that is at least 50% visually transparent where it exceeds 1.2 m in height (which shall be applied to the whole fence in its entirety).

3.5 Chapter 12 Living Zone Subdivision

Amendment 7

Delete references to Living 1 (Deferred) and Living 2 (Deferred) in Table C12.1 as follows:

Township	Zone	Average Allotment Size Not Less Than
Leeston	Living 1	650 m^2
	~~**Living 1 (Deferred)**~~	~~**4ha until deferral lifted, then 650 m^2**~~
	Living 2	5,000 m^2
	~~**Living 2 (Deferred)**~~	~~**4 ha until deferment lifted, then 5,000 m^2**~~

Amendment 8

Insert new rule 12.1.3.21 following Rule 12.1.3.20 as follows:

Leeston

12.1.3.21 In relation to the Living 1 and Living 2 zones in the Leeston Outline Development Plan in Appendix XX, any subdivision is to be in general accordance with the Outline Development Plan and shall comply with any standards referred to in that Outline Development Plan.

Amendment 9

12.1.3.22 At the time of the first subdivision within the Leeston Outlined Development Plan in Appendix XX, the stormwater management area on Lot 2 DP 365379 shall be vested to Council for the Leeston North Stormwater Bypass.

Amendment 10

Insert new rules under 12.1.6 Discretionary Activities – Subdivision General:

12.1.6.9 Any subdivision in the Leeston Outline Development Plan that is not in general accordance with the Outline Development Plan in Appendix XX.

12.1.6.10 Any subdivision in the Leeston Outline Development Plan which does not comply with Rule 12.1.3.22.

4.0 Statutory Framework

Section 73(2) of the Act enables any person to request a change to a district plan. Changes are required to be undertaken in the manner set out in Schedule 1 of the Act. This Plan Change has been prepared in accordance with Schedule 1.

Section 74 and 75 set out the matters which must be considered when undertaking a plan change. Before a plan change can be incorporated into a district plan, the following matters must be considered and are assessed below:

- *The functions of a territorial authority under section 31;*
- *The provisions of Part 2;*
- *An evaluation report prepared in accordance with section 32;*
- *Consistency with other District Plan Provisions*
- *Any regional policy statement or regional plan;*
- *Any management plans and strategies including iwi management plans;*
- *Any national policy statement, coastal policy statement and national planning standard.*

4.1 Functions of Section 31

Section 31 of the Act outlines the functions of a territorial authority for the purpose of giving effects to the Act. The following functions are considered relevant when considering the Plan Change Request:

(a) the establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the effects of the use, development, or protection of land and associated natural and physical resources of the district:

(b) the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of—

(i) the avoidance or mitigation of natural hazards; and

(ii) [Repealed]

(iia) the prevention or mitigation of any adverse effects of the development, subdivision, or use of contaminated land:

(iii) the maintenance of indigenous biological diversity:

(d) the control of the emission of noise and the mitigation of the effects of noise

(e) the control of any actual or potential effects of activities in relation to the surface of water in rivers and lakes

The Plan Change request includes an assessment of the objectives and policies in the Plan in Appendix 10. The proposed ODP will enable development controls to provide integrated management of the natural and physical resources on the site and provide direction regarding stormwater management, roading and pedestrian and cycle linkages.

The Plan Change site is currently zoned Living 1 (deferred), Living 2 (deferred) and Outer Plains. The Plan Change request seeks to lift the deferral of the Living 1 (deferred) and Living 2 (deferred) zones, and rezone the existing Living 2 (deferred) zone to Living 1 zone, as well as extend the Living 1 zone in the south of the site to be in line with the Living XA Zone on the south side of High Street. The Plan Change also seeks to re-zone part of the existing Outer Plains zone to the Living 2 zone. The surrounding area west of the site is currently zoned Outer Plains. The Living 1 zone adjoining the Outer Plains zone will be consistent with the surrounding Leeston Area; the Living XA zone south of the site directly adjoins the Outer Plains zone and the site north east of the site zoned Living XA and adjoins the Outer Plains zone.

Through the ODP, any future development of the site will be integrated with the surrounding residential environment in Leeston and an efficient use of land identified for future development. Therefore, the Plan Change is consistent with Section 31(a) of the Act.

The proposed ODP will provide guidance with regards to movement networks, roading, servicing requirements and stormwater management and any future subdivision will be required to be in general accordance with the ODP. Therefore, it is considered that any effects of any future subdivision (as a result of the Plan Change) would be able to be appropriately avoided, remedied or mitigated at the time of subdivision through conditions of consent. At the time of this Plan Change, future subdivision would be assessed as a restricted discretionary activity if all of the activity standards were met. Therefore, matters of discretion can be assessed and effects mitigated appropriately. Restricted discretionary activity status is the lowest threshold of subdivision in the Plan as provision has not been made for controlled subdivision, except subdivision for creating access, reserve or utility allotments.

The site is not identified as being within any natural hazard overlays. The ODP will provide guidance for the future subdivision of the site with regards to stormwater management, reducing the risk of flooding and mitigating effects.

The PSI undertaken concludes there is evidence of HAIL activities having been undertaken on the site previously. The activities include contractors' yard, farm pit and pre 1940s buildings and are noted in Figure 3 of the PSI. Due to HAIL activities being on the site, a DSI will be required at the time of subdivision. The presence of HAIL activities on the site is not considered to preclude the Plan Change.

The ODP will require Leeston Creek to be vested to Council as reserve. The reserve will provide a high level of amenity for residents. Birdlings Brook runs through the southwest portion of the site near the intersection of High Street and Harmans Road and a public walkway has been created and planted along the north eastern side of Birdlings Brook. The ODP will require future subdivision of the site to vest the reserve area identified on the ODP to Council.

An assessment of the noise and reverse sensitivity effects has been undertaken in the Assessment of Environmental Effects.

4.2 Part 2 Matters, Purpose and Principles

Part 2 of the Act sets out the purpose and principles of the Act. Each section of Part 2 is assessed as follows:

Section 5 - Purpose

Section 5(1) states the purpose of the Act is to promote the sustainable management of natural and physical resources. Section 5(2) further defines sustainable management as follows:

> *"sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while*
> *(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
> *(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
> *(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

The proposed rezoning of the site adjoining existing residential development and the Leeston Township is considered to be a sustainable use of the natural resources by providing residentially zoned land for future development and future generations. The ODP outlines the various vehicular and non-vehicular networks including roading, cycling and walking, ensuring a high level of walkability and movement networks. The proposed rezoning will provide residential land for future generations beyond 2031.

Part of the site is currently zoned Living 1 (deferred) and Living 2 (deferred) and is appropriate for development when stormwater issues are resolved. The servicing report has identified stormwater management practices and the ODP identifies land to be used for stormwater management to achieve an appropriate solution.

Future development of the site can be serviced via upgraded connections to Council's potable water and wastewater networks. Stormwater can be managed at the time of subdivision as any subdivision will be required to be in accordance with the ODP. The rezoning of the site includes a section of 60 Leeston Dunsandel Road that will be vested to Council through future subdivision and will play a vital role in the Leeston North Stormwater Bypass.

It is considered the result of the Plan Change will better achieve the purpose of the Act than retaining the land in its current form.

Section 6 – Matters of National Importance

Section 6 of the Act requires all persons exercising functions and powers under it to recognise and provide for the certain matters of national importance. The preservation of the natural character of rivers and their margins is listed as a matter of national importance. Leeston Creek and Birdlings Brook are identified as recreation reserves within the ODP and will create a buffer between the waterways and development. The management of significant risks from natural hazards is also listed as a matter of national importance. As discussed, the ODP requires stormwater to be managed to reduce the risk of flooding of Leeston Creek.

The Plan Change is considered to have taken into account and provide for the relevant matters of national importance.

Section 7 – Other Matters

Section 7 sets out other matters that must be given particular regard in achieving the purpose of the Act. Not all the matters are relevant to the Plan Change. The following matters are considered relevant to the Plan Change:

b) The efficient use and development of natural and physical resources
c) The maintenance and enhancement of amenity values
d) Intrinsic values of ecosystems
f) Maintenance and enhancement of the quality of the environment
g) Any finite characteristics of natural and physical resources

The proposal to utilise the land for a range of residential purposes is considered to be an efficient use of a natural and physical resource. It will enable a greater number of allotments to be created across the site than the current deferred and Outer Plains zoning. As the proposed site adjoins the Living 1 zone on Spring Place, Living XA zone north of Leeston Dunsandel Road and Living 1 and Living XA zones south of High Street, it will provide a logical extension to Leeston.

The rezoning will affect the amenity values of the site and adjoining sites as the site is going from rural to residential. While the amenity of the existing environment will change, the proposal represents sustainable mixed density residential development in an area that has been identified for future growth in Leeston.

Rural land is a finite resource and the site has been identified in the Ellesmere Area Plan as having high quality soils. However, the site has been identified for future growth and will provide a compact extension of Leeston.

Section 8 Treaty of Waitangi

Section 8 of the Act requires all persons exercising functions and power under it to take into account the principles of the Treaty of Waitangi / Te Tiriti o Waitangi.

This Plan Change request has been forwarded to Mahaanui Kurataiao Limited to provide comment. It is envisaged further engagement with Rūnanga may occur at the time of subdivision. It is considered the Plan Change will not be inconsistent with the principles of the Treaty of Waitangi / Te Tiritiri o Waitangi.

4.3 Section 32 Evaluation

Section 32 of the Act requires an evaluation report to be prepared which identifies the objectives of the proposal and determines if the proposal is the most appropriate way to achieve the purpose of the Act. A Section 32 evaluation report has been prepared and is attached in Appendix 8.

The evaluation report considers the following alternative methods for achieving the objectives of the Plan Change:

- Continue with the status quo (i.e. do nothing);
- Apply for a resource consent; and
- Initiate a private plan change.

The evaluation concludes the Plan Change is the most appropriate method.

4.4 District Plan Provisions

An assessment of the Plan Change against the relevant objectives and policies of the Selwyn District Plan (Township Volume) is attached as Appendix 9. The assessment discusses how the Plan Change is consistent with the objectives and policies and will not undermine the integrity of the Plan. As the Plan Change seeks to rezone the site to Living 1 and Living 2 zones, the objectives and policies of the Township Volume are considered to be relevant and the Rural Volume objectives and policies have not been assessed.

The assessment concludes that overall, the Plan Change will be consistent with the objectives and policies of the Plan.

4.5 Canterbury Regional Policy Statement

Under section 75(3)(C) of the Act, district plans are required to give effect to regional policy statements, therefore an application to change a district plan must also enable the plan, once changed, to give effect to the regional policy statement. The Canterbury Regional Policy Statement (CRPS) became operative on 15 January 2013 and provides a framework for managing and resolving these resource management issues and achieving the integrated management of natural and physical resources. Territorial authorities must give effect to the CRPS though District Plans. Chapter 5 Land use and infrastructure; Chapter 7 Fresh water; and Chapter 11 Natural hazards have been assessed in Appendix 10.

The assessment concludes the Plan Change is consistent with the objectives and policies of the CRPS.

4.6 Canterbury Land and Water Regional Plan

The Canterbury Land and Water Regional Plan ("LWRP") is administered by ECan and its purpose is to identify the resource management outcomes or goals for managing land and water resources in Canterbury to achieve the purpose of the Act. It identified the policies and rules needed to achieve the objectives and provides direction in terms of the processing of resource consent applications.

The site is identified as being with the following zones under the LWRP:

- Rakaia-Selwyn combined Surface and Groundwater Allocation zone;
- Semi-confined or unconfined aquifer; and
- Phosphorus Sediment Risk Area.

At the time of subdivision, development will need to comply with the provisions of the LWRP, or resource consents obtained for any non-compliances. The Servicing Report in Appendix 4 sets out that servicing future sites is

feasible. An assessment of the Plan Change against the relevant objectives and policies of the LWRP is attached in Appendix 11 and concludes the Plan Change is consistent with the objectives and policies of the LWRP.

4.7 Mahaanui Iwi Management Plan 2013

The Mahaanui Iwi Management Plan 2013 (IMP) was published in February 2013. The IMP reflects the six Papatipu Rūnanga that represent the hapū who hold mana whenua rights of land and water with the takiwā from the Hurunui River to the Hakatere (Ashburton) River and inland to Kā Tiritiri o Te Moana (the Southern Alps).

The IMP contains the values of the six Papatipu Rūnanga with regards to resource management. It covers:

- Kaitiakitanga;
- Ranginui;
- Wai Māori;
- Papatūānuku;
- Tāne Mahuta;
- Tangaroa;
- Tāwhirimātea; and
- Ngā Tūtohu Whenua.

The IMP also covers the catchments that are within the area of the IMP. In this case, the site is within the Te Waihora catchment area. The following aspects of the IMP are considered to be relevant are contained in Chapter 5 of the IMP; Papatūānuku as follows:

- Subdivision and Development;
- Stormwater;
- Discharge to Land;
- Earthworks;
- Silent Files; and
- Te Waihora.

An assessment of the policies in the IMP are assessed in Appendix 12. The assessment concludes the Plan Change is be consistent with the policies of the IMP. The application has been submitted to Mahaanui Kurataiao Limited to allow the appropriate Rūnanga to provide their comments on the Plan Change.

4.8 Selwyn 2031: District Development Strategy

The Selwyn 2031: District Development Strategy (Selwyn 2031) was adopted by Council in November 2014. The purpose of the Selwyn 2031 is to provide an overarching strategic framework for achieving sustainable growth across the district to 2031. The key actions in the Selwyn 2031 relevant to the Plan Change include:

- Cater for projected residential and business growth until at least 2031 through the development of over 900 hectares of land that has been rezoned and/or identified as a greenfield priority area within the Land Use Recovery Plan and District Plan;
- Strengthen key economic activities by protecting the function of Rolleston, Lincoln, Darfield and Leeston as Key Activity Centres;

- Safeguarding the continued operation of strategic infrastructure;
- Retain the district's sense of rural identity by adopting a consolidated approach to urban growth;
- Reinforce and enhance the character of each township by requiring outline development plan and the use of good urban design principles within new development areas;
- Provision of a range of housing types to meet the diverse range of social, cultural and economic needs of the community; and
- Achieve safe, functional and attractive living and business environments by requiring new development to occur in accordance with outline development plans, design guidelines and to give effect to higher strategic planning documents.

As a result of the Selwyn 2031, the Ellesmere Area Plan has been prepared to provide development guidance in Ellesmere. The Ellesmere Area Plan has been discussed below.

The Plan Change is considered to be consistent with, and will meet, the key actions of the Selwyn 2031. Additional residential zoned land will encourage the growth and strengthen a Key Activity Centre, while providing stormwater management to enable the development of stormwater infrastructure. The Living 1 zone will align with the existing Living XA zone on the south side of High Street, providing a clear and consolidated urban form, particularly when entering and existing Leeston on High Street. The Living 1 and Living 2 zones will provide a variety of housing and development options for Leeston.

4.9 Ellesmere Area Plan 2031

The Ellesmere Area Plan 2031 / Mahere-ā-Rohe o Waihora (EAP) was adopted by Council in September 2016. The EAP was developed to meet the key action item of developing Area Plans for Ellesmere and Malvern. The vision of the EAP is "To grow and consolidate Selwyn District as one of the most liveable, attractive and prosperous places in New Zealand for residents, business and visitors".

Leeston township is identified as a service township within the Ellesmere Area due to its central location, size, and its role as servicing the wider Ellesmere area. The EAP projected a 49% population growth in Leeston from 2,275 in 2015 to 3,402 in 2031 and notes areas for future development. The Living 1 (deferred) and Living 2 (deferred) zones are identified as LEE 1 in the Leeston Preferred Future Development Area Map; and the current Outer Plains zone is identified as an area for potential future low-density development.

The EAP notes the constraints of the LEE 1 area being stormwater management issues and localised flooding, servicing and loss of versatile soils. The ODP identifies areas to be utilised for stormwater management and the stretch of land to be vested to Council needed to complete the Leeston North Stormwater Bypass. The Servicing Report concludes future development of the site can be serviced by Council's reticulated network for water supply and wastewater disposal, subject to network extensions. While residential development may result in the loss of versatile soils, the Plan Change will lift the deferral on the Living 1 (deferred) and Living 2 (deferred) zones and provide for the anticipated residential development close to the Leeston town centre.

The Plan Change would also rezone part of the existing Outer Plain zone west of the Living 2 (deferred) zone and east of Harmans Road to a mixture of Living 1 and Living 2. This area is outside the existing township boundary and is an identified area for future low-density residential development. The Plan Change will, in most part, rezone the Outer Plains zone to Living 2; a low-density residential zone, as well as aligning the Living 1 zone with the Living XA zone on the south side of High Street, providing a clear entry and exit of the Leeston township.

While the EAP notes Council does not need to rezone any areas for greenfield development, the Plan Change will provide mechanisms to lift the deferral on land anticipated for residential development. The Plan Change will also provide for future residential development and the expansion of Leeston township beyond 2031. Taking into

account the above, the Plan Change is considered to be in general accordance with the vision and objectives of the Ellesmere Area Plan.

4.10 National Planning Standards

In 2017 the New Zealand Government introduced legislation to establish national planning standards to provide a standard approach to district and regional plans. The first set of national planning standards included a standard approach to zones that can be adopted by Local Councils. The Living 1 and Living 2 zones proposed for the Plan Change will align with the current Plan zoning and it is not proposed to add an additional zone to the Plan.

5.0 Description of Environmental Effects

Clause 22 (2) of Schedule 1 of the Act requires that where environmental effects are anticipated from the implementation of a Plan Change, the effects shall be described in such detail that corresponds with the scale and significance of such effects. The following is a description of the environmental effects that are anticipated from the implementation of the Plan Change.

The site is currently typical of rural properties in this general area, with areas of pasture interspaced with fences, lines of trees and a small number of houses. The site is rural in nature due to most of the site being subject a deferral. Uplifting the deferral and extending the Living 1 and Living 2 zones will ultimately generate a significantly more intensive residential land use over the site, which will alter the visual characteristics and nature of the site as well as the productivity of the land. However, the use of the land for a mix low and medium density residential development adjoining and linking to an existing township will also help provide living areas for current and future generations and is seen as a sustainable use of land close to the existing township.

5.1 Neighbourhood and Community Effects

The site is zoned Living 1 (deferred), Living 2 (deferred) and Outer Plains. Considering this, residential development is anticipated in the Living deferred zones once the deferral is lifted. Therefore, effects on the neighbourhood arising from residential development are anticipated where the site is zoned Living 1 (deferred) and Living 2 (deferred). Residential density greater than one dwelling per 20 ha is not anticipated the Outer Plains zone and any development greater than this density will change the character of the existing Outer Plains and the visual outlook from adjoining properties.

The proposed Living 1 zone will align with the existing Living XA zone on the south side of High Street and provide a clear entrance and exit to Leeston township and will be a natural extension of the Leeston urban environment. The Living 1 zone will also connect to the existing Living 1 zone on Spring Place, thereby complementing the existing residential environment and ensuring connections to the centre of the town. Any increase in density across the site will, to a degree, give the site a more enclosed feeling and reduce the open space character experienced in traditional rural farmland.

The proposed Living 2 zone will provide a visual and physical buffer (in the most part) between the Outer Plains zone and the Living 1 zone, particularly along Leeston Dunsandel Road and High Street as people enter and exit Leeston. Harmans Road will remain primarily rural, with the exception of the Living 2 zoned area on the south eastern portion of Harmans Road. The average allotment size in the Living 2 zone will be 5,000 m^2 and will be required to have rural fencing such as post and rail or fence and rail, retaining a sense of openness between the Living 1 and Outer Plains zone.

The location of the stormwater management area and Leeston Creek will create a high level of amenity, sense of openness and natural gathering areas for the neighbourhood. The proposed ODP provides a number of walking and cycling connections to these neighbourhood spaces and reserves.

5.2 Reverse Sensitivity Effects

Reverse sensitivity arises where a new incompatible activity is introduced into an environment, which has the potential to limit the operation of existing activities. In this case, there is potential for the Living 1 zone adjoining the Outer Plains zone to create reverse sensitivity issues.

Commonly, reverse sensitivity effects occur because of odour or noise generated from normal lawful farming activities, creating a disturbance for residents of newly developed sites, particularly if new residents are not familiar with normal farming practices. The Outer Plains zone is typically used for cropping or grazing for animals. Cropping activities could result in effects from spraying or harvesting and grazing of animals could result in noise

or odour effects. It is noted at the time of the Plan Change, all the adjoining sites (outside of the Plan Change site) zoned Outer Plains contain dwellings, accessory buildings and farm buildings closer to the respective road and access than to the site and noise coming from the sheds and machinery in the sheds is away from the site and proposed Living 1 zone.

Leeston is a rural town by nature and has an urban centre within a rural environment. Being 40 minutes from Christchurch and 20 minutes from Lincoln should lend itself to be a rural township. Having Living 1 or Living XA zoned sites adjoin the Outer Plains zone is not uncommon in Leeston. There are a number of areas where this occurs; north of the site where the land known as the 'Martin block' is zoned Living XA and adjoins an Outer Plains zone; and south east of the site where land zoned Living 1 and Living XA adjoins the Outer Plains zone for approximately 1,050 m. The existing planning and zone boundaries in Leeston indicate that the Living 1 zone and Outer Plains zone are not incompatible in the rural environment.

South of the application site is an allotment zoned Business 1. This land is used as a traditional agricultural machinery retailer; Cochranes of Canterbury and is surrounded by existing residential development on the east and southwest without any known incidences of adverse effects arising. There is potential that noise from the retailer may affect the amenity of future residential development experienced on the subject site and give rise to reverse sensitivity effects. The Business zoned site currently adjoins the Living 1 zone and residential development along the east and south west boundaries, as well as Living 1 (deferred) and Living 2 (deferred) to the north and west, respectively. It is not uncommon for the Business zoned sites to adjoin Living 1 sites and therefore, taking into account the surrounding environment, the two zones are not incompatible.

5.3 Effects on Versatile Soils

The Pan Change will enable the development of the site from farmland into a mix of residential activities in the Living 1 and Living 2 zones. The change from rural to residential will have an effect on the site's soils resources. As residential development occurs in the Canterbury Plains, there is a threat to the amount of economically viable farmland remaining. Farmland is considered to be an important physical resource for the region as a whole, providing meat, milk, and fibre for national and international consumption.

It is for this reason that regional and district polices, and strategies have been established to ensure development occurs in a manner that retains the farmland resource. The focus of many of these documents is to promote sustainable development within or adjoining existing settlements. The proposed plan change is located adjoining the existing township of Leeston, and while there will be a loss of productive rural farmland as a result of the proposed rezoning, it is considered that the location of this site, and its adherence to the policies and strategies designed to protect rural farmland, this loss of rural farmland will not have a significant adverse effect on the overall quality and area of rural farmland in the Selwyn District, but rather will provide for future development and housing, without compromising larger more viable farming enterprises now and into the future.

The Plan Change will rezone land from Outer Plains to Living 1 and Living 2. The site has been identified in the Ellesmere Area Plan as having Class 2 and 3 soils. The geotechnical report concludes the site is appropriately defined as 'deep soil site' and Class D applies to the site. If the Plan Change is approved and implemented, approximately 30 ha of Outer Plains zoned land would be rezoned to Living 1 and 2 zones and would be developed in accordance with the zone requirements. Zoning approximately 17 ha of Outer Plains to Living 2 is not considered to preclude or eliminate small scale agriculture or horticulture activities on these sites.

The soils in this area are suited to cropping and grazing and, once rezoned, the land will be no longer be available for production. However, it is accepted that despite this environmental effect the land is well suited for residential development. This has been evidenced in part by the various planning processes that have been undertaken to identify land like this as suitable for residential use over the last few years, in particular the Ellesmere Area Plan.

The location of the site in the immediate vicinity of Leeston and its proximity and ability to connect to services, together with the increased demand for safe land in proximity to Christchurch, are considered to mitigate any argument for the retention of soils for productive purposes in this case.

5.4 Effects on Ecosystem

Birdlings Brook runs through the site in the south west corner, is a tributary to Waitatari/ Harts Creek, and a public walkway forms part of the well-known walking block 'Harmans Loop'. The public walkway along Birdlings Brook is planted with native vegetation and is fenced around the stream edge preventing any stock from accessing the water.

Birdlings Brook travels through Birdlings Reserve in a north west – south east direction, then underneath a large culvert on High Street and reappears on the southern side of High Street, eventually connecting with Harts Creek and then into Lake Ellesmere/Te Waihora. The *Te Waihora Catchment Flow Review; Ecological Values and Flow Recommendations at Minimum Flow Sites* report[6] notes that a portion of Birdlings Brook, recorded at Leggs Road and Lockhead Road, has low to moderate ecological values. No assessment of ecological value was undertaken where Birdlings Brook runs through the site.

The implementation of the Plan Change could have adverse effects on the ecosystem values of Birdlings Brook as stormwater will be discharged from the stormwater management area in the southern half of the site to the existing network that discharges into Birdlings Brook further south of the site. The stormwater management area will be required to provide treatment of stormwater from future development and any future discharge is likely to be a better quality than currently discharges into Birdlings Brook.

It is not proposed to alter the shape or form of Birdlings Brook, rather this area of the site been identified as a potential reserve area and would be vested to Council at the time of subdivision. This would provide a high level of amenity for future the residential allotments within the site and for the wider community and residents whom exercise using the Harmans Loop down High Street, Harmans Road and Leeston Dunsandel Road.

The Leeston Creek runs through the site from northwest to southeast and through the existing residential area of Leeston. The Leeston Creek is required to be vested to Council as reserve, creating a high level of amenity for residents and create a natural buffer between development and the creek.

There are no other known ecosystems of any significance on this site given its historical use for open pastoral land. Given that the surrounding area is predominantly either residential to the east and south of the site or rural farmland to the north and west of the site, it is considered that there are no other significant ecosystems in the surrounding area.

5.5 Effects on Infrastructure

Wastewater

The servicing report confirms residential activities on the site can be provided with connections to the reticulated wastewater network, subject to required extensions. The final engineering design will confirm the nature of the new infrastructure and upgrades to existing infrastructure that are required.

[6] Golder Associates for Environment Canterbury. May 2011. *Te Waihora Catchment Flow Review; Ecological Values and Flow Recommendations at Minimum Flow Sites*. Report No. R11/124.

Potable Water

The Servicing Report has confirmed the utility allotment within the site can accommodate a new well for public supply and can provide potable water to development of the Plan Change site.

Stormwater

Stormwater management areas will be required to be provided for any future development, in accordance with the ODP. The stormwater management areas will provide stormwater attenuation and treatment for stormwater before discharging into Birdlings Brook and Leeston Creek.

Residential development has the potential to adversely affect the stormwater issues that exist in Leeston township, mainly from run-off from roof and hard-surfaces. The Plan Change includes an ODP that requires a portion of the northmost allotment to be vested to Council prior to any subdivision for the Leeston North Stormwater Bypass. This stretch of land will connect with the Martin Block and provide stormwater management to take flows from Leeston Creek to reduce flooding in high rainfall events.

The ODP includes stormwater management around Leeston Creek and in the southern quadrant of the site. The stormwater management areas will be designed at the time of subdivision to accommodate stormwater from the development so that Leeston Creek does result in flows higher than predevelopment flows.

It is considered any adverse stormwater effects can be appropriately mitigated through the stormwater management requirements and guidelines in the ODP at the time of subdivision.

Geotechnical

The Geotechnical Investigation has confirmed the ground across the site is suitable for residential development and can be mostly defined as Technical Category (TC) 1, with a small portion in the south west corner of the site near Birdlings Brook, is defined as TC 2. Further site specific geotechnical investigation and specific foundation design will be required at the subdivision and building development stage.

Traffic

The nature and volume of traffic generated from the site will change as a result of this plan change due to an increase in the number of residential dwellings on the site. Much of this traffic will be directed onto either High Street, Leeston-Dunsandel Road and Spring Place. The Transportation Assessment has concluded the existing roading network, including intersections, can accommodate the increase traffic flows arising from the implementation of the Plan Change and no changes or improvements to the existing roading network are required to accommodate the traffic flows.

Temporary

There is likely to be temporary effects arising at the time of development of the site through the construction phase of development such as visual effects, traffic effects arising from trucks and construction machinery, noise effects and potentially dust effects. However, given current building regulations, District Plan and ECan requirements relating to building and construction and the temporary nature of such development, it is considered any adverse effects arising from construction can be appropriately mitigated through conditions of consent at the time of residential development.

5.6 Contamination effects

The PSI concludes there is evidence of activities on the HAIL being undertaken on the site previously through agriculture, contractor's yards and pre 1940s building. While these activities pose a potential risk to human health, a DSI and any remediation required can be undertaken at the time of subdivision. Contaminants could enter land or water from implementing the Plan Change from surface run-off. However, it is considered adverse effects arising from contaminants entering land or water can be appropriately mitigated through the subdivision process, remediation of potential existing contaminants and stormwater management.

5.7 Positive Effects

Implementation of the Plan Change will result in a number of positive effects within the Leeston township and wider community. These have been described as follows;

The northern most portion of the site will be vested to Council at the time of subdivision which will enable the Leeston North Stormwater Bypass to be constructed. The bypass will divert water from Leeston Creek to the Martin block and around Leeston township. This will reduce the flows in Leeston Creek and will reduce the risk of flooding in high rainfall events. Additional stormwater management areas are required as part of the ODP to ensure water flows in Leeston Creek are less than predevelopment flows.

Additional residential land in Leeston provides for additional housing and development opportunities. This has the potential to encourage new residents into Leeston and create more jobs during the construction phase. The site would provide residential land within close proximity to services and facilities, while maintaining a compact township form.

Walking and cycling linkages have been indicated on the ODP and will encourage walking, cycling and other non-vehicular modes of transport within the site. Walking and cycling connections have been made to Leeston Creek reserve, the stormwater management reserve and to Ellesmere College / Te Kāreti o Waihora.

6.0 Consultation

Consultation has been carried out with Selwyn District Council staff throughout the preparation of the Plan Change, particularly when the Plan Change was first being contemplated in 2017 and in July 2019. Council staff did not raise concern over the proposal, rather offered suggestions with regards to stormwater management, servicing and roading connections. Some of the suggestions have been incorporated into the ODP.

The Plan Change initially included 56 Harmans Road, however this allotment is no longer included in the Plan Change due to a change of ownership. The new owner of this allotment has been consulted, however did not wish to partake in the Plan Change. Technical reports were completed when 56 Harmans Road was included in the Plan Change.

Consultation has been undertaken with the owners of 33 Leeston Dunsandel Road, 56 Harmans Road and 125a High Street in the initial stages of the Plan Change. No concerns were raised with the proposal; however, the parties did not wish to participate. The necessary area for stormwater management has been identified in the ODP to enable the deferral to be lifted and it is considered appropriate to lift the deferral on all properties that are subject to the deferral, rather than Council undertaking a Public Plan Change to lift the deferral.

A copy of the Plan Change document has been submitted to Mahaanui Kurataiao Limited (MKT) for their consideration. It is anticipated that comments and suggestions will be received prior to public notification or as a submission.

7.0 Conclusion

The Plan Change to rezone the site from Living 1 (deferred), Living 2 (deferred) and Outer Plains, to Living 1 and Living 2 zones is considered to be the best method to achieve the purpose of the Act, while being consistent with the objectives and policies of the Selwyn District Plan (Township Volume) and the Canterbury Regional Policy Statement. The Plan Change is considered to be a sustainable and effective way to lift the existing deferral, provide stormwater management areas for the site and provide for additional housing options in Leeston for future generations.

The Plan Change will result in an additional 60 ha of residential zoned land, being 42 ha of Living 1 zoned land and 19 ha of Living 2 zoned land. This could provide for an additional 410 residential allotments in Leeston. Any adverse effects that may arise from implementing the Plan Change are able to be appropriately avoided, remedied or mitigated through ODP and conditions of consent on future subdivision consents. The ODP will provide guidance and requirements for any future development of the site including stormwater management areas and recreation reserves.

Future development can be serviced with reticulated potable water and wastewater connections, subject to network extensions. Stormwater can be appropriately managed so that post development stormwater flow rates in Leeston Creek do not exceed pre-development flow rates.

Rezoning the site will enable the Living 1 zone to better align with the existing Living XA zone and urban boundary south of High Street. The Plan Change will provide a more defined urban boundary and township edge when traveling along High Street and Leeston Dunsandel Road and will provide residential allotments with close proximity to community, sport and education facilities, commercial activities and the town centre.

The Plan Change is considered to meet the purpose and principles of Part 2 of the Act and is seen as a sustainable and effective way to develop land for future generations.

BASELINEGROUP

Appendix 1: Records of Title

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**885820**
Land Registration District	**Canterbury**
Date Issued	18 April 2019

Prior References
CB47D/695

Estate	Fee Simple
Area	19.7308 hectares more or less
Legal Description	Section 2 Survey Office Plan 534245

Registered Owners
David Bell Marshall and Brant John Hammett

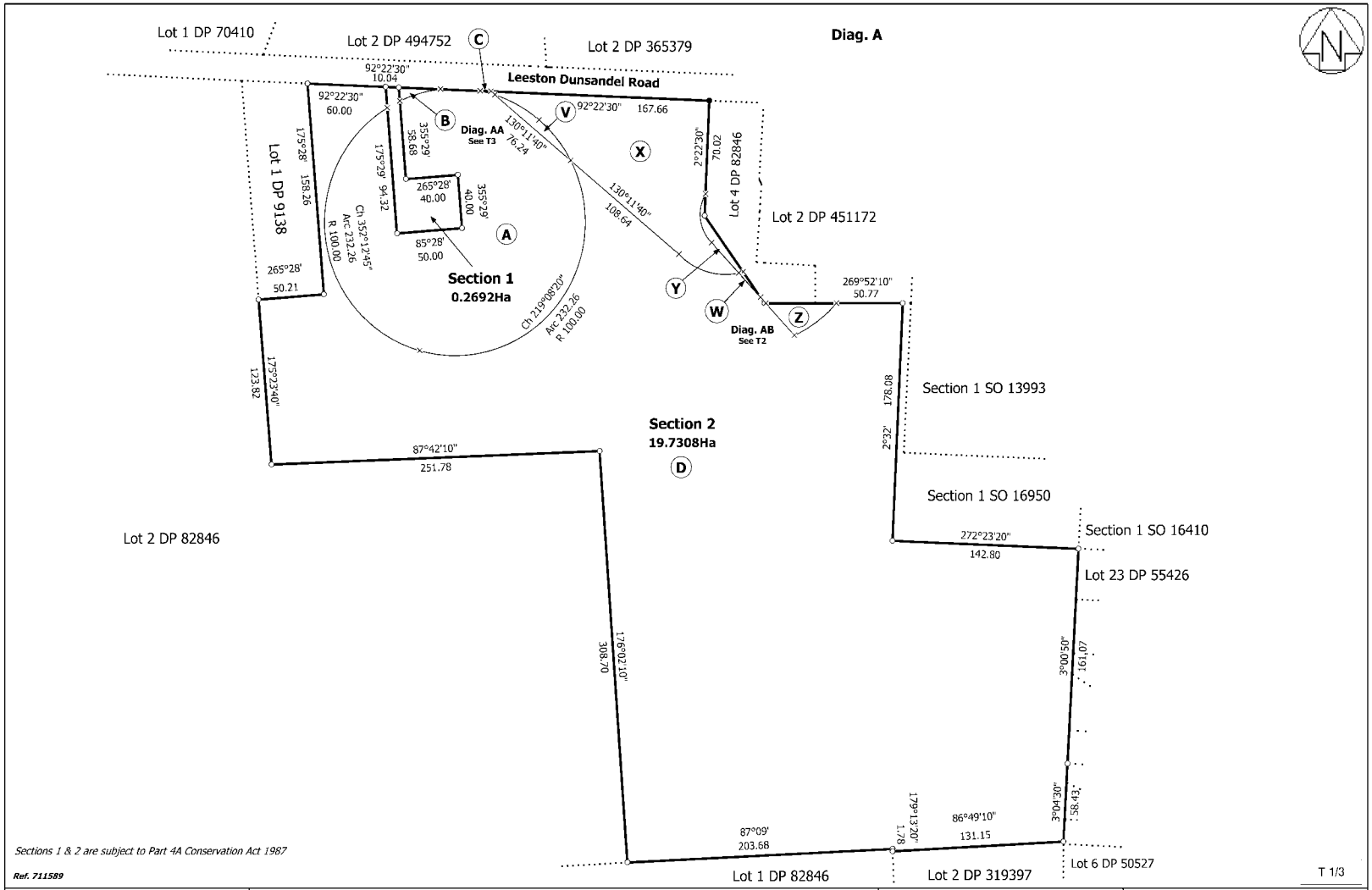
Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

A464240.8 Consent Notice pursuant to Section 221(1) Resource Management Act 1991 by The Selwyn District Council - 29.6.2000 at 12.25 pm

Land Covenant in Covenant Instrument 11408319.5 - 18.4.2019 at 4:35 pm



Selwyn DISTRICT COUNCIL

HIGH STREET, LEESTON
PRIVATE BAG 1, LEESTON
PH: (03) 324-8080 FAX: (03) 324-3531

REF No.....

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of Subdivision Consent Application R304071

CONSENT NOTICE PURSUANT TO SECTION 221 RESOURCE MANAGEMENT ACT 1991

To: The District Land Registrar
Canterbury Land Registration District

TAKE NOTICE that the land hereinafter described is subject to conditions in relation to a subdivision consent as follows:-

> *" That the area marked "X & Y" on the survey plan not be used for the disposal of sewage effluent and the areas marked "W,Y & Z" not be used for the extraction of water."*

AND THAT you are hereby requested to register the same pursuant to Section 221 of the Resource Management Act 1991.

DESCRIPTION OF LAND

All that piece of land containing 20.0000 Ha being Lot 3 DP 82846 (Canterbury Registry)

DATED this 12th day of May 2000

SIGNED for and on behalf of
THE SELWYN DISTRICT COUNCIL
pursuant to Section 252 of the
Local Government Act 1974

_____ Authorised Officer

12.25 29.JUN00 A 464240.8

PARTICULARS ENTERED IN REGISTER
LAND REGISTRY CANTERBURY
FOR REGISTRAR-GENERAL OF LAND

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**CB47D/693**
Land Registration District	**Canterbury**
Date Issued	29 June 2000

Prior References
CB34B/33 CB35D/108

Estate	Fee Simple
Area	29.5500 hectares more or less
Legal Description	Lot 1 Deposited Plan 82846

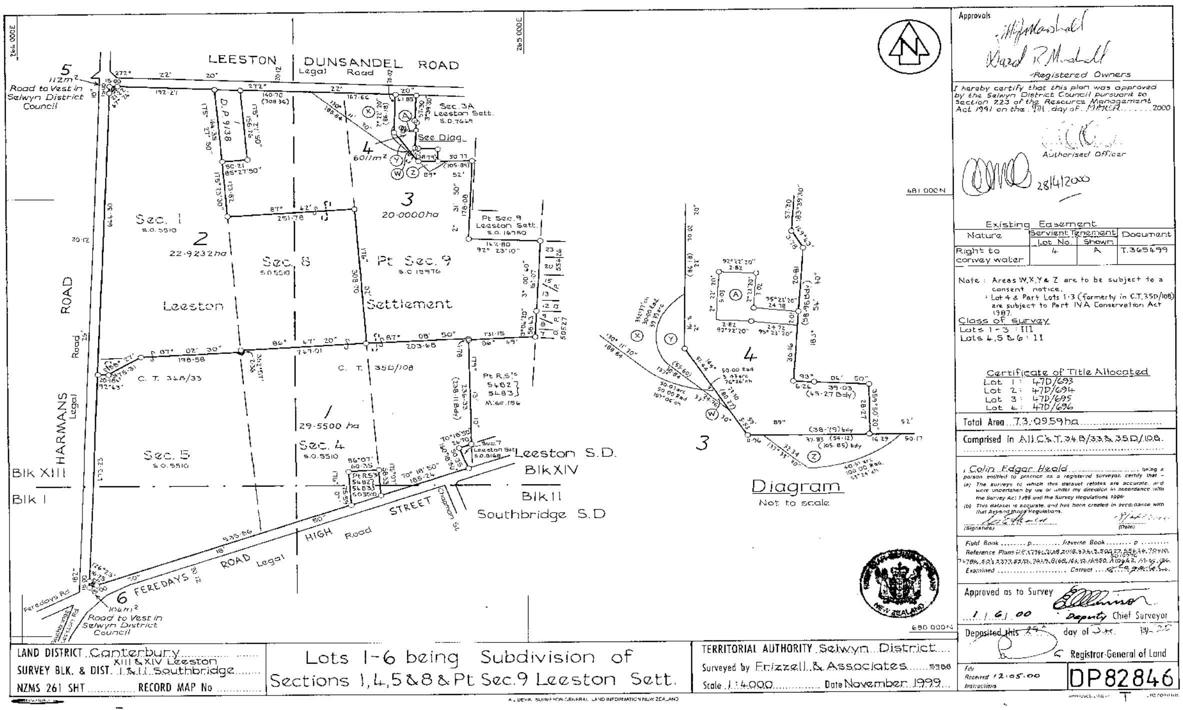
Registered Owners
David Bell Marshall

Interests

Subject to Part IV A Conservation Act 1987 (affects part formerly CT CB35D/108)

Subject to Section 11 Crown Minerals Act 1991 (affects part formerly CT CB35D/108)

9769661.2 Mortgage to Bank of New Zealand - 4.7.2014 at 1:19 pm


LEESTON DUNSANDEL ROAD
HARMANS ROAD
FEREDAYS ROAD
HIGH STREET
Diagram
Not to scale
Leeston Settlement
Leeston S.D.
Blk XIV
Blk II
Southbridge S.D
Approvals
Registered Owners
Existing Easement
Right to convey water
Certificate of Title Allocated
Total Area 73.0959 ha
Colin Edgar Heald
Approved as to Survey
Deputy Chief Surveyor
Registrar-General of Land
LAND DISTRICT Canterbury
SURVEY BLK. & DIST. XIII & XIV Leeston, I & II Southbridge
NZMS 261 SHT
RECORD MAP No
Lots 1-6 being Subdivision of Sections 1,4,5 & 8 & Pt Sec.9 Leeston Sett.
TERRITORIAL AUTHORITY Selwyn District
Surveyed by Frizzell & Associates
Scale 1:4000
Date November 1999
DP82846

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**CB47D/696**
Land Registration District	**Canterbury**
Date Issued	29 June 2000

Prior References
CB35D/108

Estate	Fee Simple
Area	6011 square metres more or less
Legal Description	Lot 4 Deposited Plan 82846

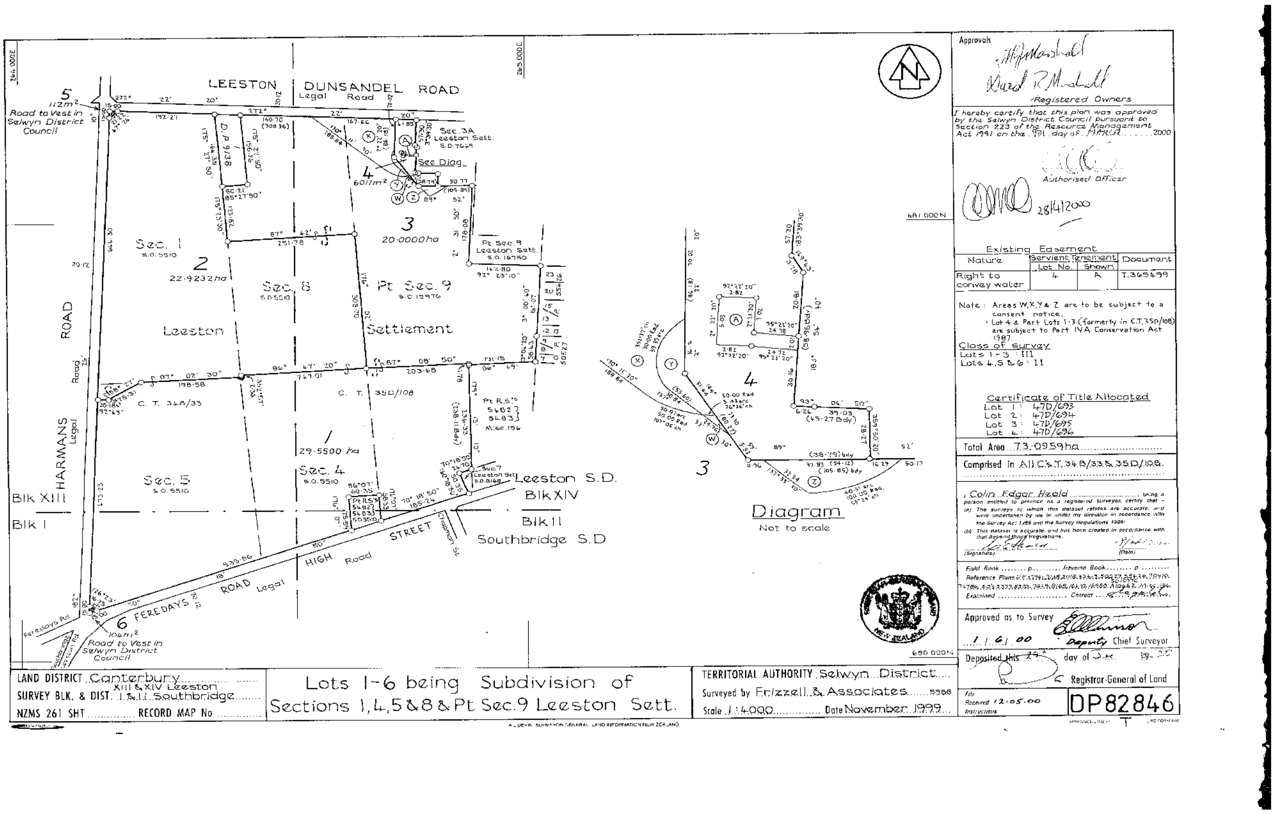
Registered Owners
Brant John Hammett

Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

10120809.3 Mortgage to Bank of New Zealand - 30.7.2015 at 4:48 pm


LEESTON DUNSANDEL ROAD
HARMANS ROAD
FEREDAYS ROAD
HIGH STREET
Diagram
Not to scale
Existing Easement
Certificate of Title Allocated
LAND DISTRICT Canterbury
SURVEY BLK. & DIST. XIII & XIV Leeston, I & II Southbridge
Lots 1-6 being Subdivision of Sections 1,4,5&8 & Pt Sec.9 Leeston Sett.
TERRITORIAL AUTHORITY Selwyn District
Surveyed by Frizzell & Associates
Scale 1:4000 Date November 1999
Total Area 73.0959 ha
DP82846

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**CB368/10**
Land Registration District	**Canterbury**
Date Issued	28 August 1925

Prior References
DI 5C/S1804

Estate	Fee Simple
Area	4047 square metres more or less
Legal Description	Part Rural Section 5482 and Part Rural Section 5483

Registered Owners
Mark Harcourt Saunders and Trudy Lee Saunders

Interests

A352619.3 Mortgage to ANZ Banking Group (New Zealand) Limited - 21.5.1998 at 12.46 pm

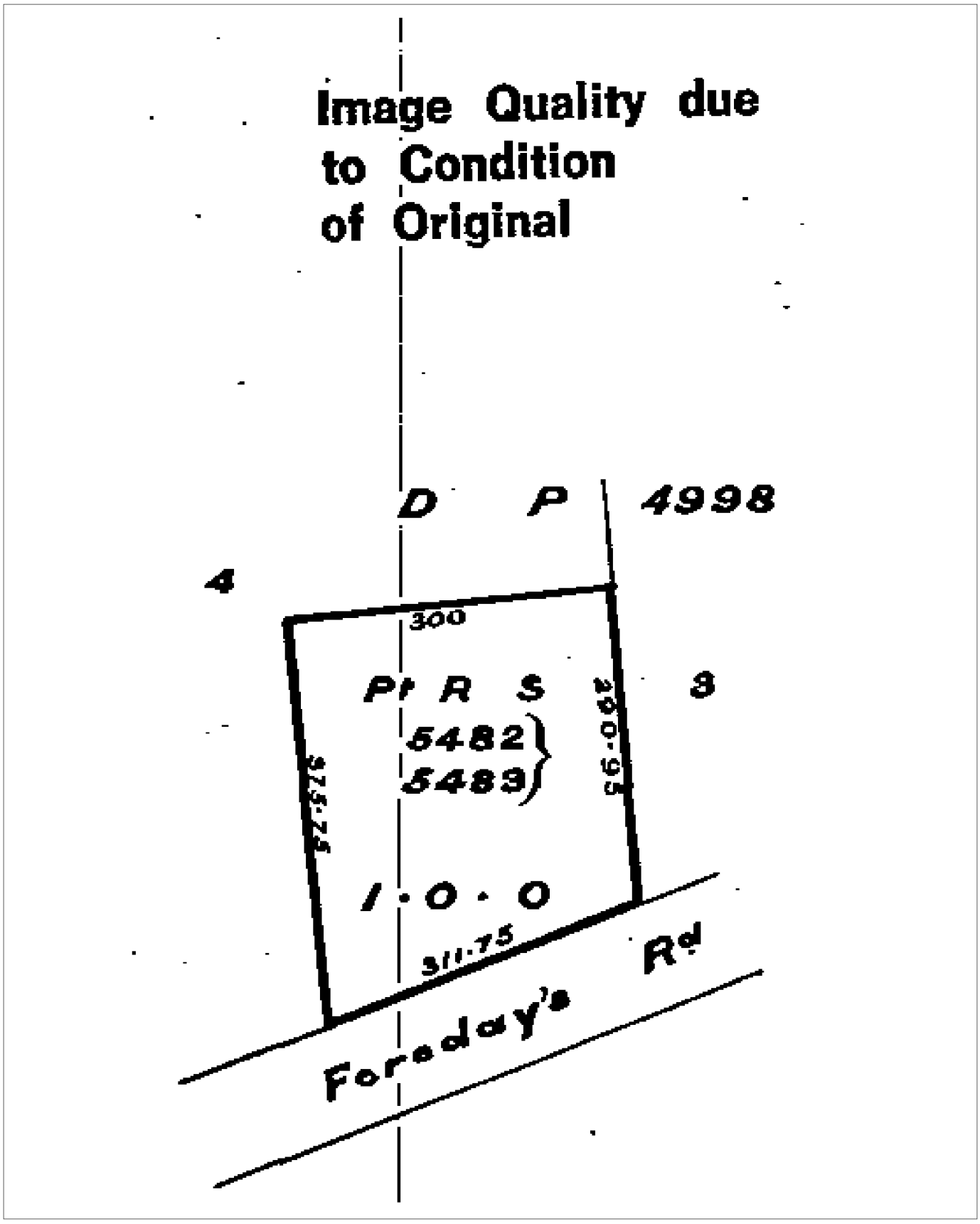


Image Quality due
to Condition
of Original
D P 4998
4
300
Pt R S
5482
5483
3
275.75
270.95
1·0·0
311.75
Foreday's Rd

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**CB418/133**
Land Registration District	**Canterbury**
Date Issued	28 June 1929

Prior References
CBPR88/17 WA 5C/190

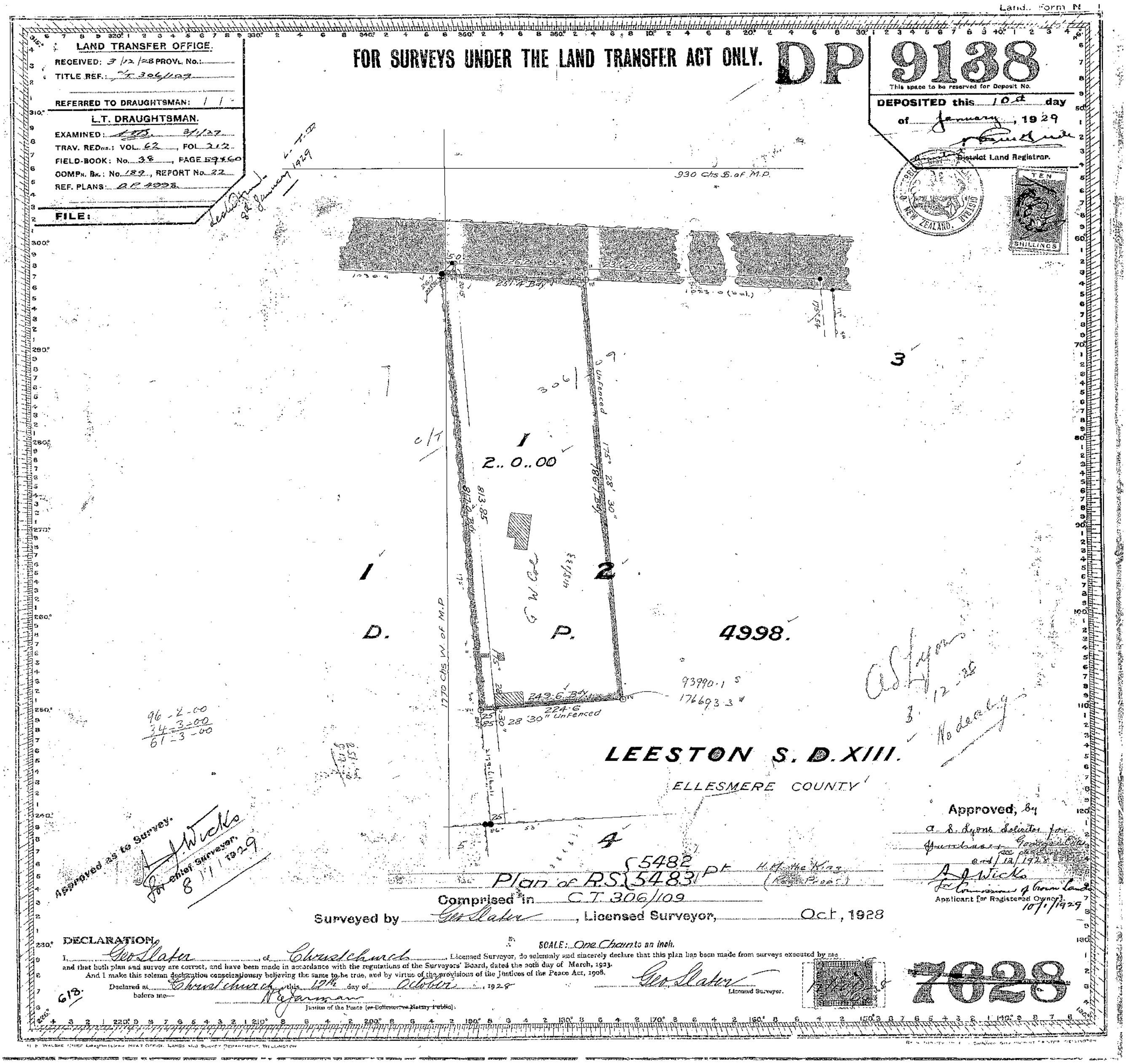
Estate	Fee Simple
Area	8094 square metres more or less
Legal Description	Lot 1 Deposited Plan 9138

Registered Owners
Liam James Gilbert Martin and Alice Beatrice Formosa

Interests

Subject to Section 206 Land Act 1924

10517207.2 Mortgage to Bank of New Zealand - 12.8.2016 at 3:02 pm



LAND TRANSFER OFFICE.
RECEIVED: 3/12/28 PROVL. No.:
TITLE REF.: C.T. 306/109
REFERRED TO DRAUGHTSMAN:
L.T. DRAUGHTSMAN.
EXAMINED:
TRAV. RED: VOL. 62, FOL. 212
FIELD-BOOK: No. 38, PAGE 59+60
COMP. BK.: No. 129, REPORT No. 22
REF. PLANS: D.P. 4998
FILE:
FOR SURVEYS UNDER THE LAND TRANSFER ACT ONLY.
DP 9138
This space to be reserved for Deposit No.
DEPOSITED this 10th day of January 1929
District Land Registrar.
TEN SHILLINGS
930 Chs E. of M.P.
Unfenced
1
2..0..00
813.85
175° 28' 30"
1
2
D.
P.
4998.
3
1770 Chs W. of M.P.
243.6
224.6
28 30" Unfenced
93990.1 S
176693.3 W
LEESTON S. D. XIII.
ELLESMERE COUNTY
4
96-2-00
34-3-00
61-3-00
Approved as to Survey.
for Chief Surveyor
8/1/1929
Plan of R.S. 5482 / 5483 pt
H.M. the King
Comprised in C.T. 306/109
Surveyed by Geo Slater, Licensed Surveyor, Oct, 1928
Approved, by
Applicant for Registered Owner
10/1/1929
DECLARATION.
I, Geo Slater of Christchurch, Licensed Surveyor, do solemnly and sincerely declare that this plan has been made from surveys executed by me and that both plan and survey are correct, and have been made in accordance with the regulations of the Surveyors' Board, dated the 20th day of March, 1923.
And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the Justices of the Peace Act, 1908.
Declared at Christchurch this 12th day of October 1928
before me—
Justice of the Peace
Geo Slater Licensed Surveyor.
SCALE: One Chain to an inch.
7028

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**264986**
Land Registration District	**Canterbury**
Date Issued	22 March 2006

Prior References
CB40D/900

Estate	Fee Simple
Area	5.4440 hectares more or less
Legal Description	Lot 2 Deposited Plan 365379

Registered Owners
John Leslie Howson, Sandra Helen Howson and Michael John Kirwin Lay

Interests

A220915.4 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 20.2.1996 at 10.55 am

Appurtenant hereto is a right to drain water created by Easement Instrument 6797244.3 - 22.3.2006 at 9:00 am

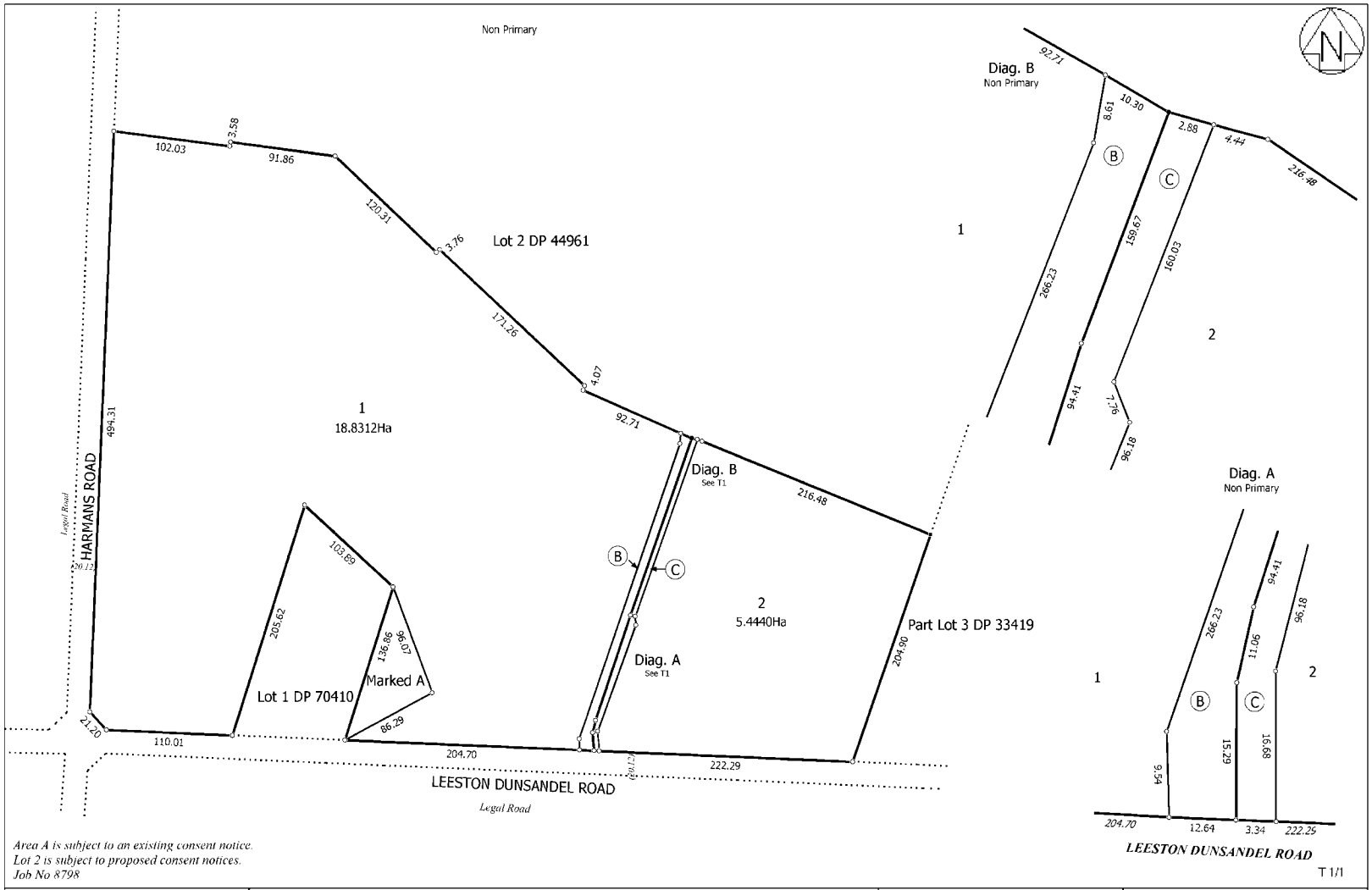
The easements created by Easement Instrument 6797244.3 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right (in gross) to drain water over part marked C on DP 365379 in favour of Selwyn District Council created by Easement Instrument 6797244.4 - 22.3.2006 at 9:00 am

The easements created by Easement Instrument 6797244.4 are subject to Section 243 (a) Resource Management Act 1991

6797244.5 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 22.3.2006 at 9:00 am

7950559.2 Mortgage to Bank of New Zealand - 2.10.2008 at 10:36 am



Area A is subject to an existing consent notice.
Lot 2 is subject to proposed consent notices.
Job No 8798

Land District: Canterbury Digitally Generated Plan Generated on: 23/03/2006 12:54am Page 3 of 3	Lots 1 & 2 Being Subdivision of Lot 1 DP 71998	Surveyor: Julie Marie McMillan Firm: Glasson Potts Fowler Ltd	Digital Title Plan DP 365379 Deposited on: 22/03/2006

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of Subdivision Consent Application R301389

CONSENT NOTICE PURSUANT TO SECTION 221 RESOURCE MANAGEMENT ACT 1991

To: The District Land Registrar
Canterbury Land Registration District

TAKE NOTICE that the land hereinafter described is subject to conditions in relation to a subdivision consent as follows:-

"That the area shown marked "A" on the survey plan not be used for the disposal of sewage effluent."

AND THAT you are hereby requested to register the same pursuant to Section 221 of the Resource Management Act 1991.

DESCRIPTION OF LAND

All that piece of land containing 24.2750 hectares being Part Lot 1 on DP 33419 (Canterbury Registry)

DATED this 25 day of October 1995

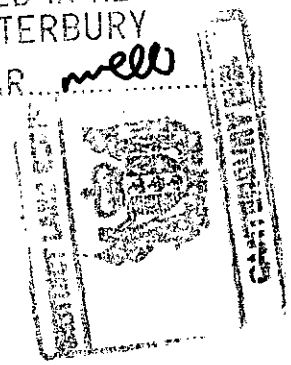
SIGNED for and on behalf of
THE SELWYN DISTRICT COUNCIL
pursuant to Section 252 of the
Local Government Act 1974

Principal Officer

10.55 20.FEB96 A 220915 /4

PARTICULARS ENTERED IN REGISTER
LAND REGISTRY CANTERBURY
ASST LAND REGISTRAR mell

Con 1900



Selwyn DISTRICT COUNCIL

HIGH STREET, LEESTON
PRIVATE BAG 1, LEESTON
PH: (03) 324-8080 FAX: (03) 324-3531

REF No.....

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of Resource Consent Application R307631

CONSENT NOTICE PURSUANT TO SECTION 221 RESOURCE MANAGEMENT ACT 1991

To: The District Land Registrar
Canterbury Land Registration District

TAKE NOTICE that the land hereinafter described is subject to conditions in relation to a subdivision consent as follows:-

"That prior to any building consent being issued for the erection of a dwelling on Lot 2 that underground electricity supply and telecommunications be supplied to the net area of the lot.

That prior to the habitation of any dwelling, a vehicle crossing to serve Lot 2 is to be formed and sealed in accordance with the requirements of Appendix 13 (Transport) of the Proposed District Plan (Townships Volume). The position of the vehicle crossing is to receive the prior approval of the Council's Asset Manager.

That Lot 2 is required to be connected to the reticulated sewer system within six months of a connection becoming available.

That Lot 2 is required to be connected to the reticulated water system within six months of a connection becoming available.

That Lot 2 has been created as an unserviced site. There will be no credit for any reserve contribution for the underlying Certificate of Title.

AND THAT you are hereby requested to register the same pursuant to Section 221 of the Resource Management Act 1991.

DESCRIPTION OF LAND

All that piece of land of 5.4918 hectares being Lot 2 DP 365379 (Canterbury Registry)

DATED this 10th day of February 2006

SIGNED for and on behalf of
THE SELWYN DISTRICT COUNCIL
pursuant to Section 252 of the
Local Government Act 1974

Authorised Officer

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**76388**
Land Registration District	**Canterbury**
Date Issued	07 February 2006

Prior References
37039 CB29B/337

Estate	Fee Simple
Area	2.3033 hectares more or less
Legal Description	Lot 3 Deposited Plan 50527 and Lot 2 Deposited Plan 319397

Registered Owners
Cochranes of Canterbury Limited

Interests

Land Covenant in Transfer 954069.2 - 9.9.1991 at 9.42 am (affects Lot 3 DP 50527)

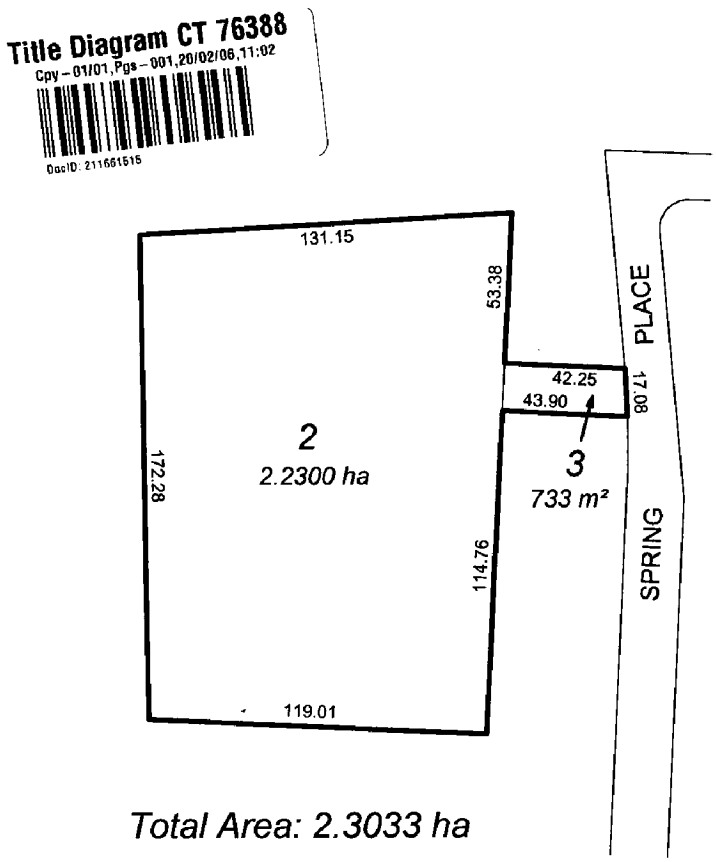
5289899.1 Mortgage to ANZ Banking Group (New Zealand) Limited - 19.7.2002 at 11:47 am

Subject to Section 241(2) Resource Management Act 1991 (affects DP 319397)

Appurtenant to Lot 2 DP 319397 is a right to convey electric power, water and telephonic communications created by Easement Instrument 6742330.3 - 7.2.2006 at 9:00 am

Some of the easements created by Easement Instrument 6742330.3 are subject to Section 243 (a) Resource Management Act 1991

8260956.1 Variation of Mortgage 5289899.1 - 25.8.2009 at 9:02 am


Title Diagram CT 76388
Cpy – 01/01, Pgs – 001, 20/02/06, 11:02
DocID: 211661515
131.15
53.38
PLACE
42.25
43.90
17.08
2
2.2300 ha
3
733 m²
172.28
114.76
SPRING
119.01
Total Area: 2.3033 ha

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**574789**
Land Registration District	**Canterbury**
Date Issued	16 March 2012

Prior References
CB515/163

Estate	Fee Simple
Area	1592 square metres more or less
Legal Description	Lot 1 Deposited Plan 451172

Registered Owners
Terrence John Anderson

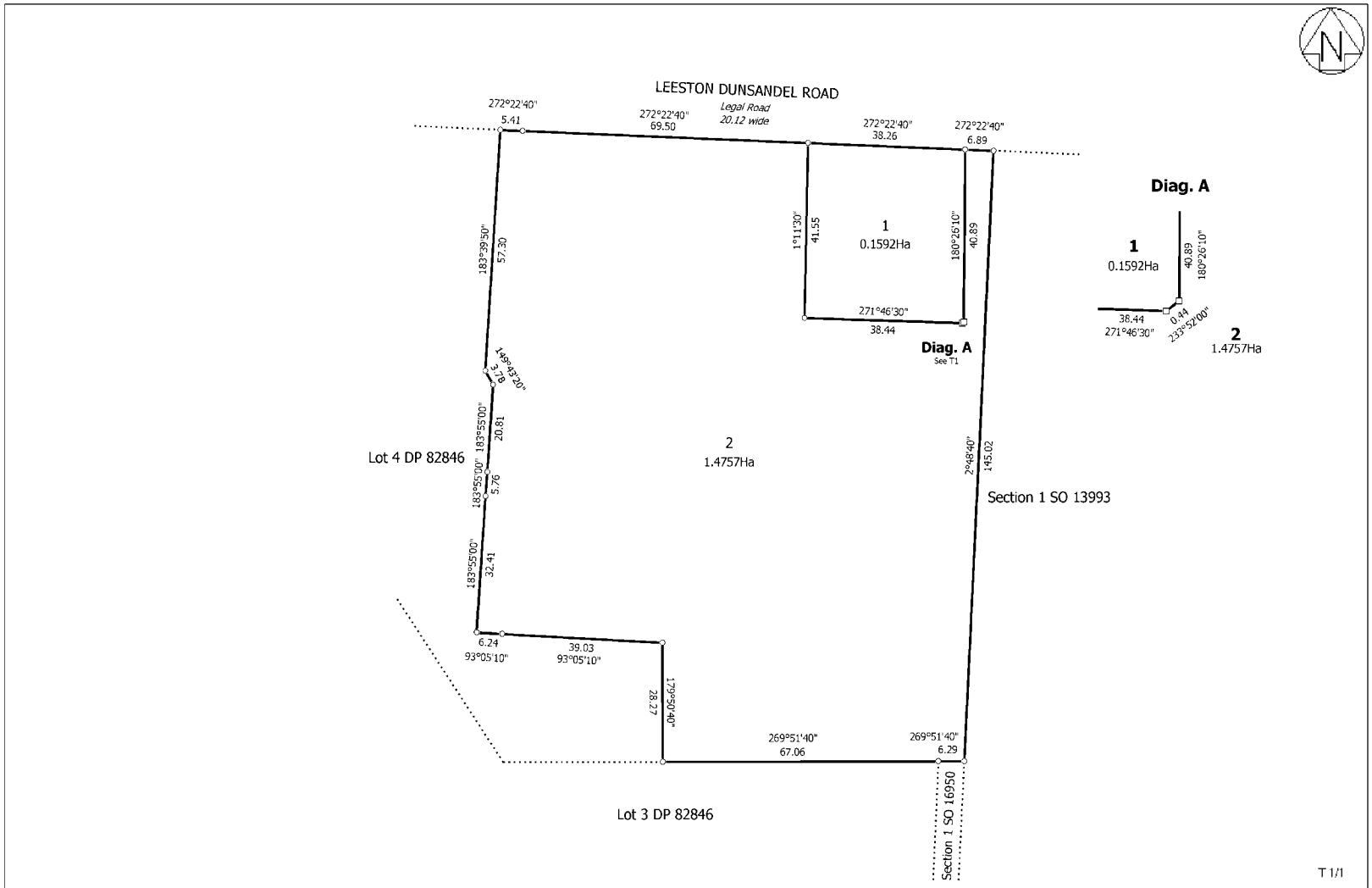
Interests

Subject to Section 206 Land Act 1924

Land Covenant in Easement Instrument 9183413.1 - 5.10.2012 at 9:29 am

Fencing Covenant in Transfer 9186214.1 - 5.10.2012 at 3:08 pm

10402539.3 Mortgage to Kiwibank Limited - 2.5.2016 at 2:50 pm



Land District: Canterbury Digitally Generated Plan Generated on: 02/04/2012 09:44am Page 2 of 2	Lots 1 & 2 being Subdivision of Section 3A Leeston Settlement	Surveyor: Craig Martin Tinkler Firm: Clark Land Surveyors (2004) Ltd	Title Plan DP 451172 Deposited on: 16/03/2012

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**574790**
Land Registration District	**Canterbury**
Date Issued	16 March 2012

Prior References
CB515/163

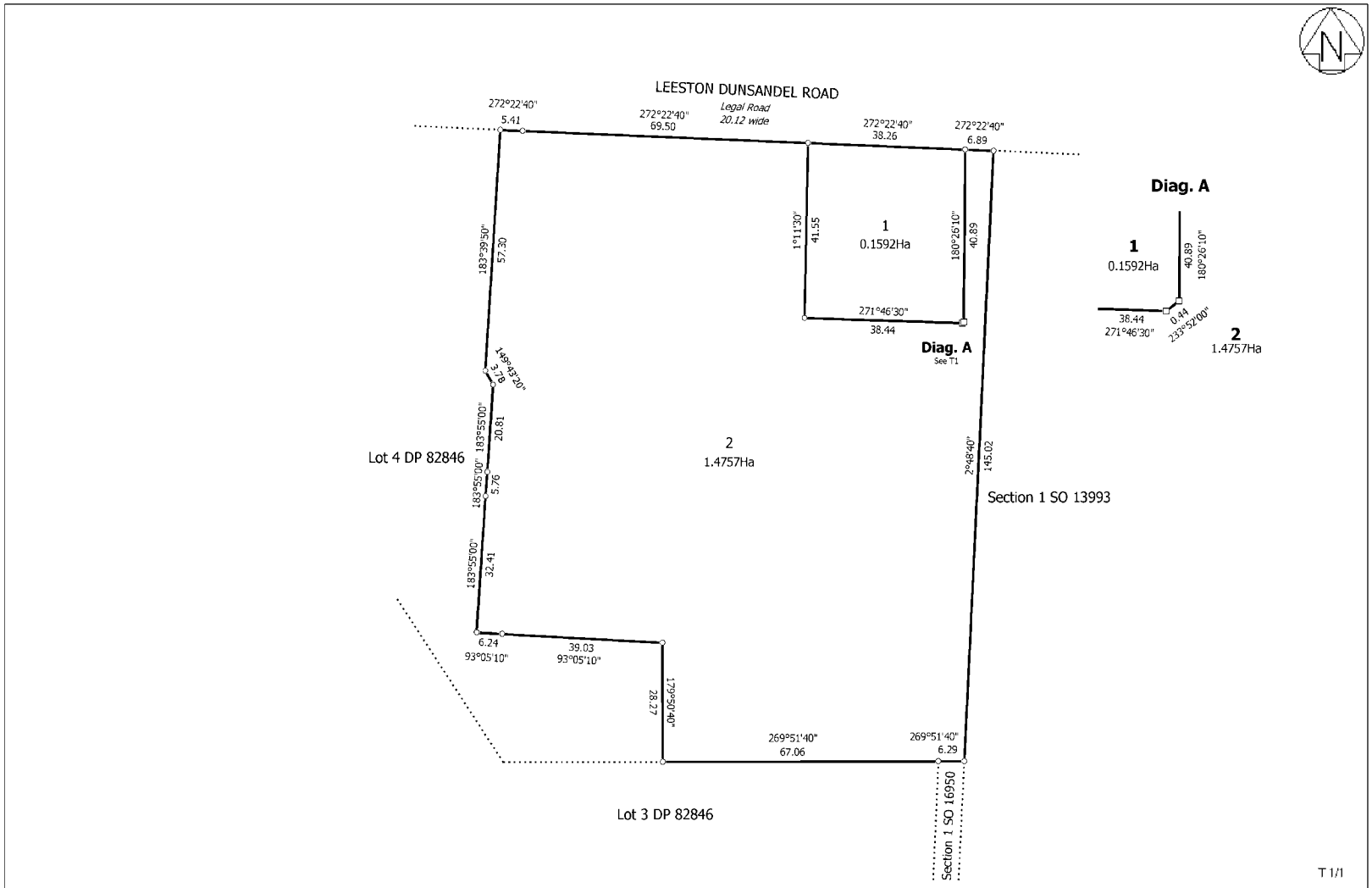
Estate	Fee Simple
Area	1.4757 hectares more or less
Legal Description	Lot 2 Deposited Plan 451172

Registered Owners
Sharon Ann Farrant

Interests

Subject to Section 206 Land Act 1924

Land Covenant in Easement Instrument 9183413.1 - 5.10.2012 at 9:29 am



Appendix 2: Outline Development Plan

Introduction

This Outline Development Plan (ODP) is for the development of approximately 60 ha of land west of Leeston township. The development area is bound by Leeston Dunsandel Road to the north, with one section north of Leeston Dunsandel Road; Spring Place and Ellesmere College / Te Kāreti o Waihora to the east; High Street to the south and Harmans Road to the west.

The ODP has been broken down into four components – Land Use, Transport Network, Green Network and Blue Network.

Land Use

The ODP area provides for residential development in accordance with the Living 2 zone and Living 1 zone standards.

Movement Network

The movement network will provide connections to the existing roading network, residential areas and Leeston township. The ODP includes primary and secondary roads, as well as walkway and cycleway linkages throughout the ODP area. For the purposes of the ODP, the built standard for the 'Primary Road' will be the equivalent to the Plan standards for a Collector Road or Local-Major Road standards, and a 'Secondary Road' will be the equivalent to the Plan standards for a Local-Major or Local-Intermediate Road.

The ODP provides for an integrated transport network incorporating:

- A primary road following a north to south alignment from Leeston Dunsandel Road to High Street. This primary road will align with Chapman Street;
- A second primary road following a north to south alignment from the intersection of High Street and Clausen Avenue and meeting with the east to west primary road;
- A third primary road following an east to west alignment from Spring Place to Harmans Road. This road will connect with the north to south primary roads and will connect the rural and urban environments;
- Two secondary roads; one connection the north to south and east to west primary roads. The other secondary road will provide access to the northern block of the site north of Leeston Dunsandel Road; and
- Pedestrian, cycle and non-vehicular linkages to encourage alternative modes of transport and to provide connections throughout the ODP site and to Ellesmere College / Te Kāreti o Waihora.

The remaining roading network must be able to accommodate progressive development over time and roading connections must be arranged and aligned in a way that long term connectivity is achieved to provide a safe and efficient roading network and non-vehicular linkages.

Green Network

A minimum of four reserves are required to be established throughout the development area. The reserves could be located as follows:

- Birdlings Brook in the south west corner of the site at the corner of Harmans Road and High Street;

- Stormwater management areas should be provided with surrounding reserve areas;
- Leeston Creek and its margins are to be vested to Council as reserve. The reserve should run for the entire length of Leeston Creek within the development site and should be provided with walkways along the Creek to provide a high level of amenity. Any bridge infrastructure over Leeston Creek shall be designed to avoid adverse effects on the flow of the Leeston Creek; and
- A reserve connecting the development block north of Leeston Dunsandel Road with Leeston Dunsandel Road and Leeston Creek reserve.

The reserves can be accessed by road, pedestrian and cycle linkages and private land parcels.

Council's open space requirements cited in the Long Term Plan and Activity Management Plans should be referred to during subdivision design.

Blue Network

Stormwater:

The ODP area is subject to high ground water level and localised flooding in high rainfall events. Detailed stormwater solutions are to be determined by the developer in collaboration with Council at the time of subdivision. Stormwater management areas have been identified at the northern most part of the site to be vested to Council for the purposes of the Leeston North Stormwater Bypass; Leeston Creek; and the naturally low point of the site for stormwater attenuation. Stormwater management and flow rates will need to be detailed at the time of subdivision to ensure that Leeston Creek and the Market Street Culvert have flow rates that are at predevelopment rates, or lower. Most of the stormwater from the site will need to be managed using the north strip and the low point management areas, rather than Leeston Creek, however Leeston Creek could be utilised for stormwater management provided the flows remain at pre-development rates.

The stormwater management area in the north of the ODP must be vested to Council for the Leeston North Stormwater Bypass prior to any residential development on the site so that the impact on the Leeston Creek and Market Street Culvert does not increase the risk of flooding.

Stormwater management and attenuation areas must be designed by a suitably qualified engineer so that the impact of flooding in not increased. The stormwater management area has been located in the natural low point of the site. The stormwater management area should be connected to the surrounding roads through pedestrian and cycle links and should have sufficient street frontage to allow for passive surveillance, create a sense of openness, and provide a high level of amenity.

Sewer:

Upgrades to the existing wastewater infrastructure in Leeston will be required to service the site and discharge into the Ellesmere Treatment Plant.

Water:

The water reticulation will be an extension of the existing reticulated network. Council owns a utility allotment within the site that will provide potable water for the future development.

The provision of infrastructure to service the ODP shall align with the Council's indicative infrastructure staging plan, unless an alternative arrangement is made by the landowner/developer and approved by Council.

BASELINEGROUP

Leeston Plan Change

Scale	1:2000 @A1, 1:4000@A3
Date	23 May 2019
Design	EL
Drawn	EL
Review	AT

Rev.	Date	Amendment
A	30/05/2019	New layout
B	13/06/2019	New layout & ODP amendments
C	20/06/2019	Layout & Legend amendments
D	29/07/2019	ODP Road Layout amendments
E	02/08/2019	Adding future connections
F	07/08/2019	Layer adding
G	21/08/2019	Ground water protection zone change

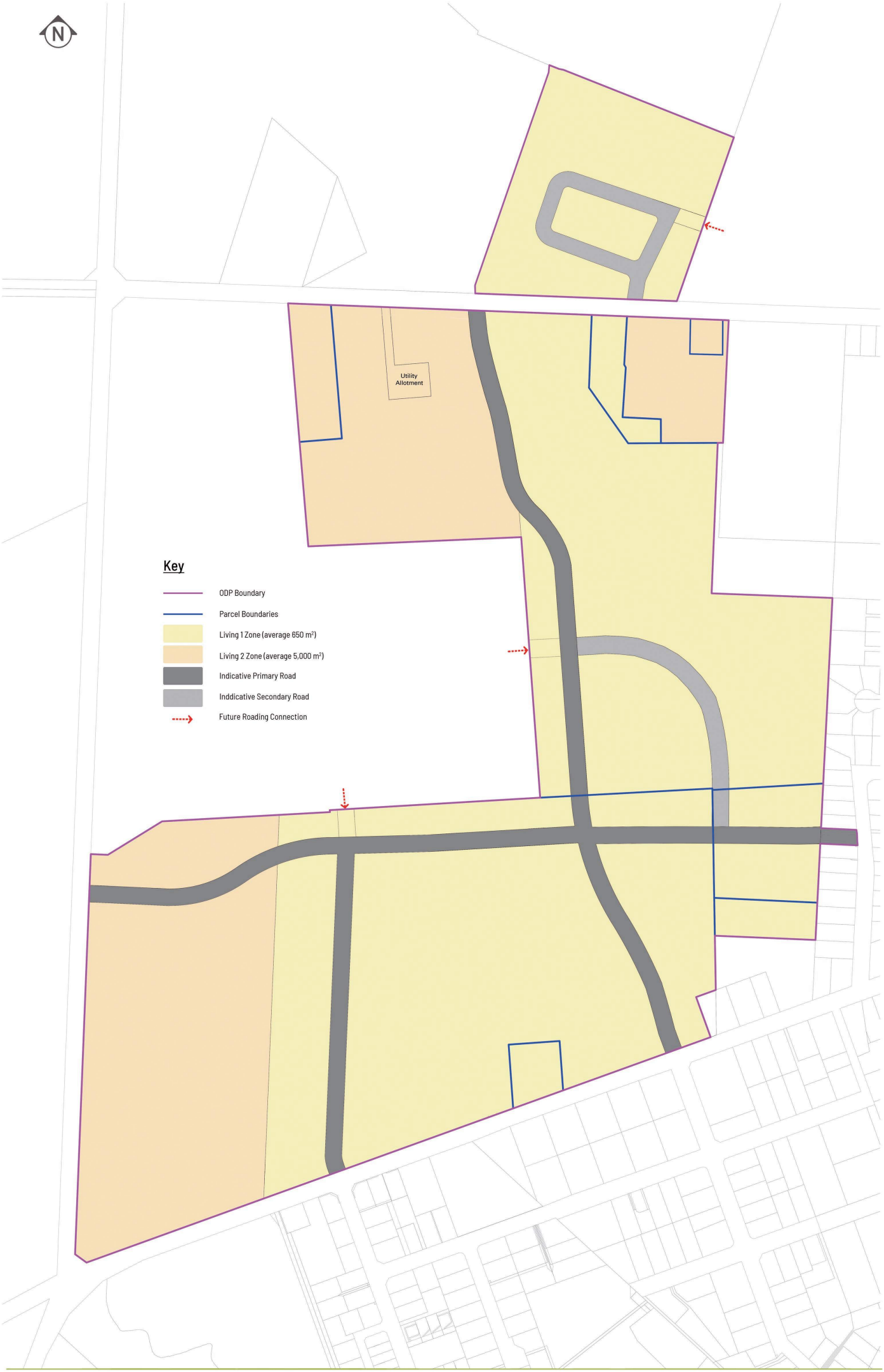
Revision G

Sheet 1

PLANNING | SURVEYING | ENGINEERING

Outline Development Plan - Overall

T 03 339 0401 | E info@blg.nz | www.blg.nz



BASELINEGROUP

Leeston Plan Change

Scale	1:2000 @A1, 1:4000@A3
Date	23 May 2019
Design	EL
Drawn	EL
Review	AT

Rev.	Date	Amendment
A	30/05/2019	New layout
B	13/06/2019	New layout & ODP amendments
C	20/06/2019	Layout & Legend amendments
D	28/07/2019	ODP Road Layout amendments
E	02/08/2019	Adding future connections
F	07/08/2019	Layer adding
G	21/08/2019	Ground water protection zone change

Revision G

Sheet 2

BASELINEGROUP

Leeston Plan Change

Scale	1:2000 @A1, 1:4000@A3
Date	23 May 2019
Design	EL
Drawn	EL
Review	AT

Rev.	Date	Amendment
A	30/05/2019	New layout
B	13/06/2019	New layout & ODP amendments
C	20/06/2019	Layout & Legend amendments
D	29/07/2019	ODP Road Layout amendments
E	02/08/2019	Adding future connections
F	07/08/2019	Layer adding
G	29/08/2019	Ground water protection zone change

Revision G

Sheet 3

BASELINEGROUP

Leeston Plan Change

Scale	1:2000 @A1, 1:4000@A3
Date	23 May 2019
Design	EL
Drawn	EL
Review	AT

Rev.	Date	Amendment
A	30/05/2019	New layout
B	13/06/2019	New layout & ODP amendments
C	20/06/2019	Layout & Legend amendments
D	29/07/2019	ODP Road Layout amendments
E	02/08/2019	Adding future connections
F	07/08/2019	Layer adding
G	21/08/2019	Ground water protection zone change

Revision G

Sheet 4

BASELINEGROUP

Appendix 3: Transport Assessment

Brant Hammett

Proposed Private Plan Change Leeston

Transportation Assessment

CARRIAGEWAY CONSULTING
traffic engineering | transport planning

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1. Introduction

1.1. Brant Hammett proposes to submit a private plan change request to Selwyn District Council for rezoning an area of approximately 58.4ha of land at Leeston (**the plan change area, the site**). If the plan change is adopted, it will rezone the site from a mix of Living 1 Deferred, Living 2 Deferred and Outer Plans and to a mix of Living 1 and Living 2 zoning.

1.2. This Transportation Assessment sets out an evaluation of the transportation issues associated with the development of the plan change area including changes in travel patterns that are likely to arise. Where potential adverse effects are identified, possible ways in which these can be addressed are set out.

1.3. This report is cognisant of the guidance specified in the New Zealand Transport Agency's '*Integrated Transport Assessment Guidelines'* and although travel by private motor vehicle is addressed within this report, in accordance with best practice the importance of other transport modes is also recognised. Consequently, travel by walking, cycling and public transport is also considered.

2. Site Overview

2.1. Location

2.1.1. The development site is located on the western side of Leeston and as noted above is presently zoned as a mix of Living 1 Deferred, Living 2 Deferred and Outer Plans in the Selwyn District Plan (**District Plan**).

2.1.2. The location of the site in the context of the local area is shown in Figure 1 and in more detail in Figure 2.

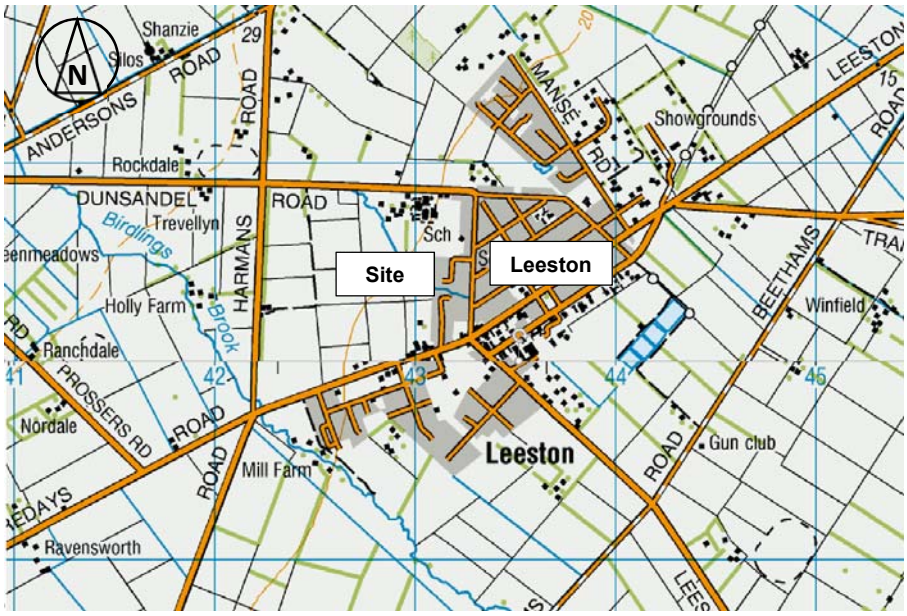


Figure 1: General Location of Plan Change Area

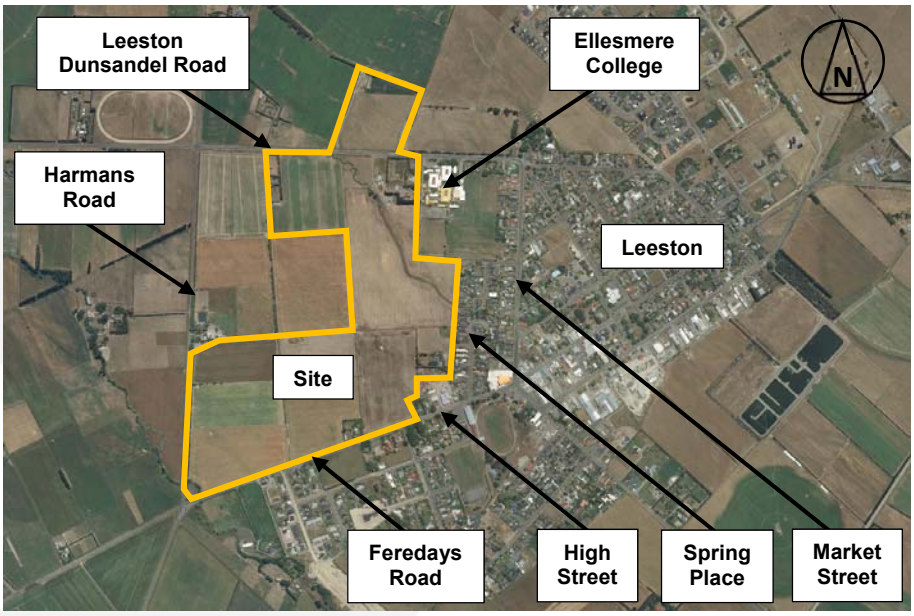


Figure 2: Aerial Photograph of Plan Change Area and Environs

2.2. Road Hierarchy

2.2.1. The District Plan classifies Feredays Road and Leeston Dunsandel Road as Arterial Roads, which "*connect areas of district importance (and) connect the districts townships and other important places and activities together*". These types of road are "*required to minimize, and control local road and property access to ensure they operate efficiently*" (District Plan, Definitions).

2.2.2. High Street and Market Street are Collector Roads which "*distribute and collect local traffic within and between neighbourhood areas*". These roads "*balance the necessary traffic movement function against the property access function that they also need to provide*" (District Plan, Definitions).

2.2.3. Harmans Road and Spring Place are Local Roads and "*their primary function is to provide property access, and they generally have lower traffic volumes*" (District Plan, Definitions).

3. Current Transportation Networks

3.1. Roading Network

3.1.1. Towards the west of the site, Harmans Road has a flat and straight alignment, with two traffic lanes but these are not marked with a centreline or edgeline markings. The seal is 6.5m wide with grassed verges of 8m on either side. The road is subject to a 100km/h speed limit.

Photograph 1: Harmans Road Looking North

3.1.2. Towards the northwest of the plan change area, Harmans Road meets Leeston Dunsandel Road at a 'stop' controlled crossroads where traffic on Leeston-Dunsandel Road retains the right of way. There are no auxiliary turning lanes, and sight distances are excellent in all directions. The speed limit on all intersection approaches is 100km/h.

Photograph 2: Leeston Dunsandel Road / Harmans Road Intersection Looking East

3.1.3. Leeston-Dunsandel Road has a flat and straight alignment, with two traffic lanes of 3.3m and sealed shoulders of less than 0.5m. It has a centreline and edgeline markings.and the road is subject to a 100km/h speed limit.

Photograph 3: Leeston Dunsandel Road Looking East

3.1.4. At its eastern end, Leeston-Dunsandel Road becomes more urbanised and the speed limit reduces to 50km/h at a small threshold treatment adjacent to the current urban boundary. In this location the movement lanes remain at 3.3m each but there are parking lanes on each side. Ellesmere College is located on the southern side of the road, just east of the speed limit threshold.

Photograph 4: Urban Section of Leeston Dunsandel Road Looking East

3.1.5. Approximately 1km east of Harmans Road and 0.35km east of the speed limit threshold, Leeston Dunsandel Road meets Pound Road at a priority intersection. However the priority of the road is given to the west-south approaches, meaning that Pound Road traffic has to yield,

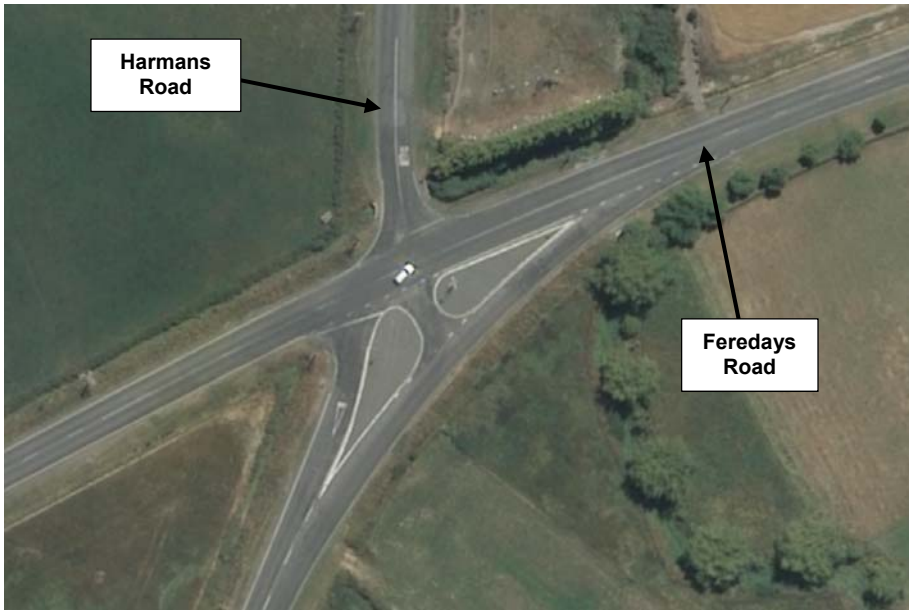
and the through traffic experiences are sharp 90-degree curve. Towards the south of the intersection the road is known as Market Street.

3.1.6. Market Street has two traffic lanes and an 11m seal width, and is kerbed. The alignment is flat and straight. Parking is permitted on both sides of the road although there is no formal parking lane, rather there is an intermittent grass verge which is sealed in locations to provide for parking. There are numerous private driveways on both sides which serve residential properties.

Photograph 5: Market Street Looking East

3.1.7. At its southern end, Market Street meets High Street at a priority ('stop') controlled intersection, with Leeston and Lake Road forming the southern approach. The intersection does not have any auxiliary tuning lanes.

3.1.8. Towards the southwest of the plan change area, Harmans Road meets Feredays Road at a 'stop' controlled crossroads where traffic on Feredays Road retains the right of way. There is an auxiliary turning lane for the east to south movement, due to the angle at which the southern approach meets the intersection, but no other auxiliary lanes. Sight distances are excellent in all directions. The speed limit on all approaches is 100km/h.



Photograph 6: Arial Photograph of Feredays Road / Harmans Road Intersection

3.1.9. Feredays Road has a flat and straight alignment, with two traffic lanes of 3.5m and sealed shoulders of around 0.5m. It has a centreline and edgeline markings, and in most locations has a grassed verge of around 7m width. The western part of the road is subject to a 100km/h speed limit, but this reduces to 50km/h approximately 200m east of Harmans Road at a small speed threshold treatment.

Photograph 7: Feredays Road Looking East

3.1.10. There are several priority intersections on Feredays Road to the east of Harmans Road. Approximately 350m to the east of the Feredays Road / Harmans Road intersection, Clausen Avenue joins from the south. This serves the Millbridge Estate residential subdivision. The intersection is 'give-way' controlled and has kerbing on the southern side. There are no auxiliary lanes for turning traffic.

Photograph 8: Feredays Road / Clausen Avenue Intersection Looking West

3.1.11. Approximately 750m to the east of the Feredays Road / Harmans Road intersection, Chapman Street joins from the south. Chapman Street serves residential development, and is formed with two traffic lanes. The intersection is priority 'give-way' controlled and has excellent sight distances on each side. Immediately west of the intersection is a short parking lane of 2.7m width (potentially associated with parking for the church) but on the eastern side the grassed verge remains in place.

Photograph 9: Feredays Road / Chapman Street Intersection Looking West

3.1.12. Feredays Road changes its name to High Street and some 230m east of Chapman Street, Spring Place joins High Street from the north. The intersection does not have any signs or markings.

Photograph 10: High Street / Spring Place Intersection Looking East

3.1.13. Spring Place is a cul-de-sac which has two traffic lanes. The carriageway width varies, being 8.5m wide towards the north but towards the south there is a grassed berm located between the carriageway and the kerbs, meaning that carriageway width reduces to 5.7m. There are numerous private driveways on both sides of the road.

Photograph 11: Southern Section of Spring Place Looking South

3.1.14. The High Street / Market Street intersection is located approximately 150m east of Spring Place.

3.2. Non-Car Modes of Travel

3.2.1. Since the plan change area is largely rural, there is limited infrastructure for non-car users in the immediate vicinity. However there is a footpath that runs along the southern side of High Street and Feredays Road as far as Clausen Avenue, where it then turns into the subdivision. This is 1.5m wide. There are also 1.5m footpaths on the eastern side of Spring Place, both sides of Market Street and on southern side of Leeston Dunsandel Road between Market Street and Ellesmere College.

Photograph 12: Footpath on Southern Side of Feredays Road / High Street

3.2.2. There is no specific infrastructure provided for cyclists or buses in the immediate area.

4. Current Transportation Patterns

4.1. Traffic Flows

Prevailing Traffic Flows

4.1.1. Selwyn District Council carries out regular traffic counts on the key vehicle routes throughout the district. Data recorded in the MobileRoad database shows that the current traffic flows are:

- Harmans Road: 250 vehicles per day;
- Feredays Road (east of Harmans Road): 3,100 vehicles per day;
- High Street (east of Spring Place): 4,060 vehicles per day
- Spring Place: 220 vehicles per day;
- Leeston Dunsandel Road: 600 vehicles per day; and
- Market Street: 1,000 vehicles per day.

4.1.2. The peak hour traffic flows on a road are typically no more than 15% of the daily volume, which suggests that in the peak hours the likely volumes are:

- Harmans Road: 35 vehicles (two-way);
- Feredays Road (east of Harmans Road): 470 vehicles (two-way);
- High Street (east of Spring Place): 610 vehicles (two-way);
- Spring Place: 33 vehicles (two-way);
- Leeston Dunsandel Road: 90 vehicles (two-way); and
- Market Street: 150 vehicles (two-way).

4.1.3. Since Leeston is a small town (recorded as less than 2,000 people in 2018), the low traffic flows are not unexpected. It can also be expected that ambient traffic growth is negligible since it will primarily be influenced by growth of the settlement, which has been limited.

4.1.4. The Austroads Guide to Traffic Management Part 3 ('*Traffic Studies and Analysis'*) sets out a process by which the level of service of a road can be calculated. This shows that under these traffic flows, Harmans Road, Spring Place, Leeston Dunsandel Road and Market Street all provide Level of Service A, the best available. Feredays Road provides Level of Service B and High Street provides Level of Service C, both of which continues to represent a good level of service.

4.1.5. The Austroads Guide to Traffic Management Part 3 ('*Traffic Studies and Analysis'*) also sets out thresholds regarding the need for detailed traffic analyses at intersections, and the traffic flows below which detailed analyses of unsignalised intersections are unnecessary. An extract from this is replicated below.

Major Road Type	Traffic Volumes (Vehicles Per Hour)	
	Major Road	Minor Road
Two lane road	400	250
	500	200
	600	100

Table 1: Extract from Table 6.1 of Austroads Guide to Traffic Management Part 3 (Intersection Volumes below which Capacity Analysis is Unnecessary)

4.1.6. Based on this, no analysis has been carried out at any of the intersections since the traffic flows fall below these thresholds and the intersections will therefore operate under free-flow conditions.

4.2. Non-Car Modes of Travel

4.2.1. Given that the area around the site is rural, it can reasonably be expected that it will be relatively infrequently used by pedestrians and cyclists. The small size of Leeston means that volumes of these road users will be small, other than around the college at the start and end of the academic day. As such, the current levels of provision are considered to be adequate.

4.2.2. There is one scheduled public transport services that operates in Leeston. This is a commuter service to and from Christchurch, which runs once a day. It departs Leeston at 7am and the return journey arrives in Leeston at 5:50pm. The bus stop is located on Chervier Street, meaning that the service passes along High Street adjacent to the plan change area.

4.3. Road Safety

4.3.1. The NZTA Crash Analysis System has been used to establish the location and nature of the recorded traffic crashes in the vicinity of the plan change area. In view of the low traffic flows, a ten-year period has been adopted and therefore all reported crashes between 2009 and 2019 were identified, for the area bounded by Harmans Road, Leeston Dunsandel Road, Market Street, High Street and Feredays Road (and including their respective intersections).

4.3.2. This showed that there have been 16 reported crashes.

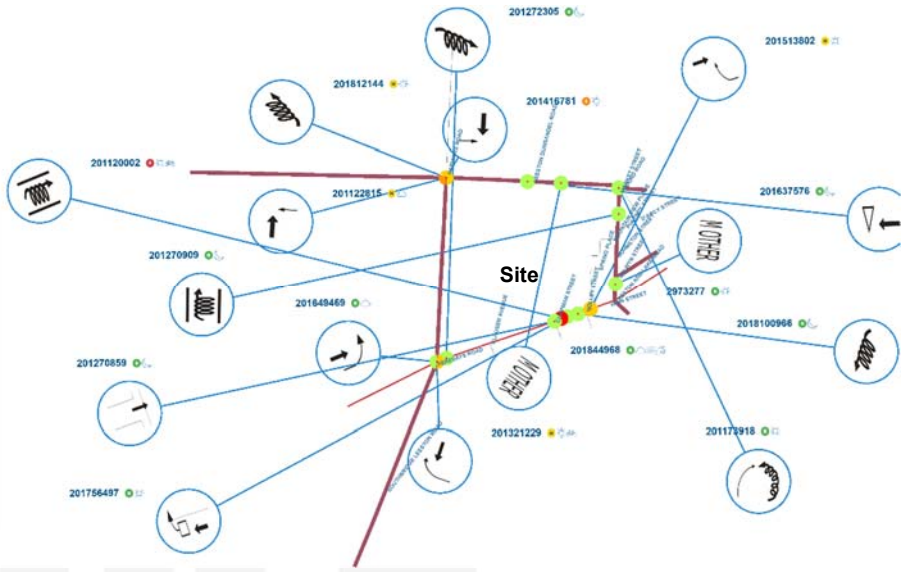


Figure 3: Location and Nature of Crashes

4.3.3. No crashes have been recorded on Harmans Road itself. However there have been two crashes at the Feredays Road / Harman Road intersection:

- One crash occurred when a car turning right from west to south was struck by a car travelling west to east which overtook them when turning. This did not result in any injuries;
- One crash occurred when a car emerging from the southern approach to the intersection struct a cyclist travelling east to west on Feredays Road. This resulted in minor injuries.

4.3.4. Three crashes have been recorded at the Leeston Dunsandel Road / Harman Road intersection:

- Two crashes occurred when a car travelling from north to south on Harmans Road failed to stop and was struck by a car travelling from east to west. In one case brake failure was noted as a contributing factor. One crash resulted in minor injuries and the other resulted in serious injuries; and
- One crash occurred when an eastbound driver lost control, left the road and struck a powerpole. This resulted in minor injuries.

4.3.5. Three crashes have been recorded on Leeston Dunsandel Road:

- One crash occurred around 250m west of the college, when a vehicle struck a cow. This did not result in any injuries;
- One crash occurred immediately adjacent to the college, when a driver attempted a u-turn but skidded on ice and left the road. This did not result in any injuries;
- One crash occurred at the curve where Leeston Dunsandel Road becomes Market Street. A driver travelled around the curve too quickly, crossed the centreline and struck an oncoming vehicle. This did not result in any injuries.

4.3.6. Two crashes have been recorded on Market Street:

- One crash occurred on the northern section of Market Street when a driver struck a powerpole. The crash report notes that driver intoxication was a contributing factor, and the crash did not result in any injuries;
- One crash occurred on the southern section of Market Street when a driver carried out a u-turn movement too quickly, lost control and struck a parked vehicle. The crash did not result in any injuries.

4.3.7. Six crashes have been recorded on Feredays Road / High Street:

- One crash occurred just east of the Feredays Road / Harmans Road intersection when an eastbound driver lost control and left the road. The crash report notes that driver intoxication was a contributing factor, and the crash did not result in any injuries;
- One crash occurred at the Feredays Road / Chapman Street intersection, when a driver emerging from Chapman Road failed to turn and went straight ahead, leaving the road on the northern side. The crash report notes that driver intoxication was a contributing factor, and the crash did not result in any injuries;
- One crash occurred between Chapman Street and Spring Place when a driver swerved to avoid a cat and struck a concrete block by the side of the road. The crash did not result in any injuries;
- One crash occurred between Chapman Street and Spring Place when a driver turning from the east into a driveway was struck from the rear by a following vehicle. The crash did not result in any injuries;
- One crash occurred between Chapman Street and Spring Place when a cyclist fell off their cycle and was struck by a vehicle. The crash report notes that cyclist intoxication was a contributing factor, and the crash resulted in fatal injuries to the cyclist;
- One crash occurred at the High Street / Spring Place intersection when a driver turning right into Spring Place struck a vehicle travelling from west to east on High Street. The crash resulted in minor injuries.

4.3.8. The reported crashes took place at different locations and/or had different contributing factors. On this basis, it is considered that there are no safety-related deficiencies in the roading network.

5. Proposal

5.1. The proposed plan change will facilitate a change of activity to enable more intensive residential development to occur. The part of the plan change area to the north of Leeston Dunsandel Road is expected to have 41 residential lots with the bulk of the plan change area towards the south having 328 lots. An indicative subdivision plan for the area is shown below.

Figure 4: Indicative Subdivision Plan (Extract from Baseline Group Drawing)

5.2. It can be seen that the plan change area is expected to be well-connected to the adjacent roading networks. Two road links are shown onto Feredays Road / High Street, directly opposite Clausen Avenue and Chapman Street. Both of these form routes through the plan change area such that there is also a new road link onto Leeston Dunsandel Road towards the north. Photographs 7 and 8 above show the current configurations of these intersections.

5.3. With regard to the connection onto Spring Place, there is presently an allotment which is undeveloped of 16.5m width, where a roading connection is proposed.

Photograph 13: Location of Proposed Roading Connection onto Spring Place

5.4. There are also connections to the east onto Harmans Road, and the northernmost part of the plan change area has one road connection onto Leeston Dunsandel Road.

6. Traffic Generation and Distribution

6.1. Traffic Generation

6.1.1. Traffic generated by residential developments is known to vary for a variety of reasons, with one such reason being the proximity (or otherwise) to employment and community facilities. Where a dwelling is some distance from these types of facilities, the traffic generation rates tend to be lower than for residences that are closer due to 'trip chaining', that is, the tendency of a resident to carry out multiple visits to different destinations during the same trip away from the dwelling.

6.1.2. In this case, it is likely that some traffic will be associated with employment locations in Leeston but there is also likely to be travel to/from local destinations also. As a result, it is likely that there will be commuting to/from the township. Accordingly, for this analysis a rate of 8 vehicle movements per day per residence has been used, with 1 vehicle movement per residence occurring in each of the peak hours.

6.1.3. In the morning peak hour, 90% of these vehicles are likely to be exiting the site, with 65% of the generated vehicle movements entering the plan change site in the evening peak hour.

Period	Area North of Leeston Dunsandel Road			Area South of Leeston Dunsandel Road		
	In	Out	Total	In	Out	Total
Morning Peak Hour	4	37	41	33	295	328
Evening Peak Hour	27	14	41	213	115	328
Per Day	164	164	328	1,312	1,312	2,624

Table 2: Traffic Generation of the Proposed Plan Change

6.2. Trip Distribution

6.2.1. In terms of the distribution of trips, residents travelling towards Rolleston, Lincoln and Christchurch (the greatest centres of employment) will travel eastwards, as routes towards the immediate north of the plan change area are indirect. Travel towards the west will only be towards locations such as Dunsandel and across the Rakaia River in the direction of Ashburton.

6.2.2. On this basis, it can be expected that around 10% of generated traffic will travel to/from the west with the balance traveling eastwards.

6.2.3. Drivers tend to select routes which minimise their journey time. Consequently it can be expected that people living in the northernmost part of the plan change area will use Leeston Dunsandel Road and Market Street to travel eastwards, rather than travelling through the site which is slightly longer and will be slower. Drivers living towards the south will use the route via High Street.

6.2.4. It is expected that volumes on Harmans Road will increase only slightly since there are few residences for which this is a convenient route (in the order of 20 residences). However, the connection through to Springs Road will be convenient for around 60-70 residences.

6.2.5. Overall then, for the purposes of this analysis, the following distribution has been used

Area	Number of Residences	Route	Morning Peak Hr		Evening Peak Hr	
			In	Out	In	Out
North of Leeston Dunsandel Road	40	10% west via Leeston Dunsandel Road	0	4	3	1
		90% east via Leeston Dunsandel Road	4	32	23	13
Eastern side	70	10% west via Spring Place and Feredays Road	1	6	5	2
		90% east via Spring Place and Feredays Road	6	57	41	22
Western side	20	10% north via Harmans Rd then west on Leeston Dunsandel Rd	0	2	1	1
		90% south via Harmans Road then east on Feredays Road	2	16	12	6
Northern side	50	10% west via Leeston Dunsandel Road	1	5	3	2
		90% east via Leeston Dunsandel Road	5	41	29	16
Southern side	190	10% west via Spring Place and Feredays Road	2	17	12	7
		90% east via Spring Place and Feredays Road	17	154	111	60
Total	**370**	-	**38**	**334**	**240**	**130**

Table 3: Traffic Distribution of Proposed Plan Change

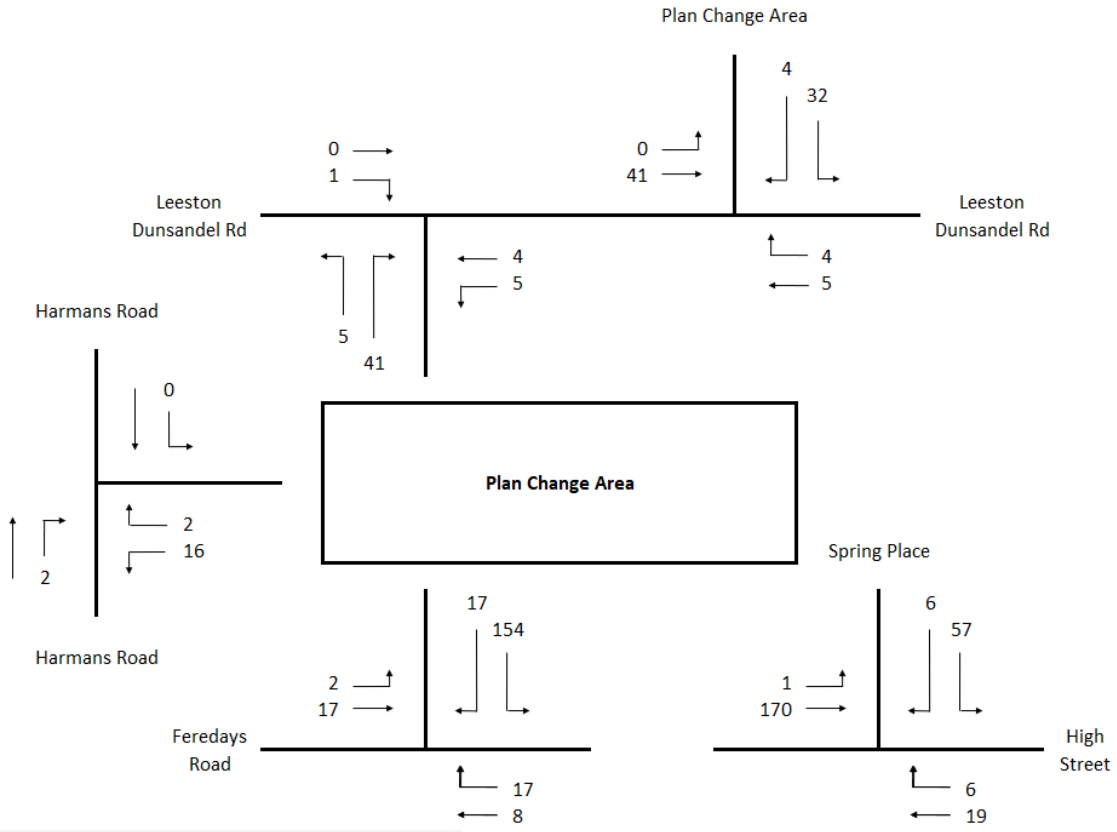


Figure 5: Traffic Generation, Morning Peak Hour

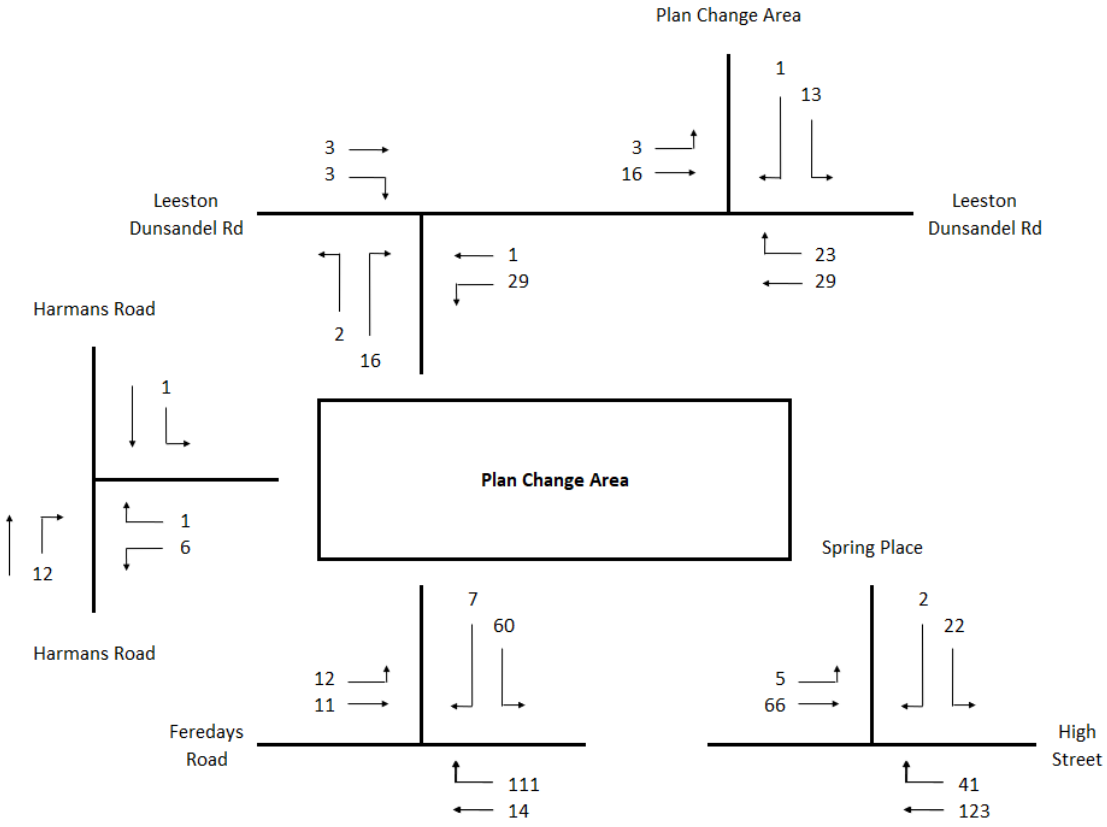


Figure 6: Traffic Generation, Evening Peak Hour

7. Effects on the Transportation Networks

7.1. Roading Network Capacity

7.1.1. The changes in traffic flows are as follows:

Road	Current Traffic Volumes		Traffic Volumes Generated by Plan Change		Total Traffic Volumes with Plan Change	
	Per Day	Peak Hour	Per Day	Peak Hour	Per Day	Peak Hour
Harmans Road	250	35	144	18	394	53
Feredays Road (east of Harmans Road)	3,100	470	352	44	3452	514
High Street (east of Spring Place)	4,060	610	2,016	252	6076	862
Spring Place	220	33	560	70	780	103
Leeston Dunsandel Road (east)	600	90	656	82	1256	172
Leeston Dunsandel Road (west)	600	90	96	12	696	102
Market Street	1,000	150	656	82	1656	232

Table 4: Traffic Flows on Adjacent Road Network

7.1.2. The Austroads Guide to Traffic Management Part 3 ('*Traffic Studies and Analysis*') has again been used to assess the level of service allowing for the traffic generated by the proposal. This shows that the roads will continue to provide the same levels of service other than Feredays Road which changes from Level of Service B to Level of Service C. This continues to represent a good level of service.

7.2. Intersection Capacity

7.2.1. The traffic volumes continue to fall below the thresholds at which there is a need for detailed traffic analyses at most locations, and therefore the intersections will continue to operate under free-flow conditions. The intersection with the heaviest traffic flows is at High Street / Spring Place and therefore this has been modelled using the computer software package Sidra Intersection and the results are summarised below.

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
High Street (east(	R	8.7	0	A	7.1	1	A
Spring Place	L	8.4	0	A	6.5	0	A
	R	10.6	0	B	11.1	0	B
High Street (west)	L	5.6	0	A	5.6	0	A

Table 5: Assessment of High Street / Spring Place Intersection, with Full Development of Plan Change Area

7.2.2. It can be seen that even at the most heavily-trafficked intersection, queues and delays remain low with excellent levels of service provided for each turning movement.

7.3. Potential Upgrading of Existing Roads

7.3.1. The existing roads in the area have the following characteristics:

- Harmans Road: 20m legal width, 6.5m formed width, no footpath;
- Feredays Road / High Street: 20m legal width, 7.0m movement lanes, footpath on eastern section;
- Spring Place: 17m legal width, 5.7m to 8.5m movement lanes, footpath on eastern side;
- Leeston Dunsandel Road: 20m legal width, 6.6m movement lanes, footpath on eastern section;
- Market Street: 20m legal width, 11m movement lanes, footpath on both sides.

7.3.2. Since the plan change request will increase the traffic flows on these roads, an assessment has been carried out to ensure that they remain appropriate for the greater volumes.

7.3.3. At Harmans Road, the current carriageway width of 6.5m is appropriate for a Local Road, and the small increase in traffic associated with the plan change is unlikely to justify a change in status of the road. No changes are therefore considered necessary for Harmans Road.

7.3.4. As an Arterial Road, Feredays Road should have a carriageway width of at least 7.5m to meet the District Plan requirements. Although the movement lanes are marked as less than this, the seal width meets this requirement. Further, west of the plan change area, the increase in traffic is low (9% over the prevailing volumes) which is insufficient to justify any improvement. East of the accesses into the plan change, the increase in traffic is greater (more than 40%) but the overall traffic flow remains relatively low.

7.3.5. Leeston Dunsandel Road is similarly an Arterial Road requiring a 7.5m wide carriageway. Again, this is provided, although the movement lanes are marked as less than this. The increases towards the west of the plan change area are modest and although there is a doubling of the traffic flows to the east of the plan change area, the total volume of 180 vehicles (two-way) in the peak hour equates to an average of just one vehicle movement very 20 seconds. No changes are therefore considered necessary for Leeston Dunsandel Road.

7.3.6. High Street is presently a Collector Road and therefore should have a carriageway width of at least 11m with a footpath on both sides. This is not achieved, since there is a footpath only on the southern side, and the carriageway width is around 8.5m (including the shoulders). However this additional width appears to be related to the provision of a parking lane, which is not present on High Street. The proposed plan change will not affect parking in the immediate area, and the extent of frontage development on High Street means that significant on-street parking is unlikely to arise.

7.3.7. Market Street is also a Collector Road, but over much of its length currently meets the Council's requirements. There are localised sections where there is no parking lane in favour of a grassed verge being provided, but this does not appear to currently adversely affect the operation of the road.

7.3.8. Spring Place is presently a Local Road with a 5.7m to 8.5m formed width. In view of the number of lots that would be served, an appropriate classification would be as a Local Major road, for which a legal width of 17m is appropriate (as is provided) but which requires two traffic lanes plus a parking lane within an 8.5m carriageway. This will require the southernmost section of

Spring Place to be reconfigured slightly, with the removal of the grassed berms (which will replicate the cross-section of the road further north).

7.3.9. Overall then, it is considered that only Spring Place requires some amendment as a result of the traffic generated by the proposed plan change.

7.3.10. Within the site itself, there are no impediments to achieving compliance with the District Plan in respect of the legal or formed widths of the roads.

7.4. Form of Access Intersections

7.4.1. The intersection modelling undertaken above was carried out on the basis of the plan change area being served by priority intersections. Even assessing the intersection with the greatest traffic volumes, queues and delays were very low.

7.4.2. The legal widths of the frontage roads are sufficiently wide to accommodate priority intersections, and this form of provision would be consistent with the existing intersections in the immediate vicinity. The flat and straight alignments of the existing roading network mean that excellent sight distances will be achieved at the intersections

7.4.3. Accordingly it is considered that priority intersections are an appropriate general form of intersection to serve the plan change area.

7.5. Non-Car Modes of Travel

7.5.1. It is likely that the development will lead to increased volumes of walking and cycling in the area, but the location of Leeston means that these trips will either be within the township or for longer-distance recreational purposes.

7.5.2. As noted above, within the site there are no reasons why the appropriate levels of provision could not be made. Externally, the roads provided the appropriate level of provision for pedestrians.

7.5.3. In respect of cycling, the District Plan sets out that for urban roads, Collector and Arterial Roads should have specific provision for cyclists. However there is no provision made on Feredays Road, High Street, Market Street or Leeston Dunsandel Road. This is an existing deficiency on the roading network, but there are no reasons why provision could not be made on the relevant roads. It is considered that this is a matter than should be addressed at the time that land use or subdivision consent is sought.

7.6. Road Safety

7.6.1. The crash history in the vicinity of the plan change area does not indicate that there are particular features or factors that would be affected by the proposed plan change.

7.6.2. It is anticipated that the proposed roads and intersections associated with development of the plan change area will meet current guides and standards, and as such, can be expected to function safely.

7.6.3. Based on site visits, there are no deficiencies in respect of sight distances at any of the intersections onto the external roads. However at the proposed roading connection onto Spring Road there is a transformer located on the southwestern quadrant of the intersection. This may affect the sight distance in this location and thus may need to be relocated.

Photograph 14: Transformer on Spring Place

7.6.4. The proposal allows for new accesses into the plan change area to the immediate north of Clausen Avenue and Chapman Street, meaning that these would become crossroads. Both of these intersections lie within the 50km/h speed limit zone (meaning that they will not be high-speed crossroads) and in practice there will be little traffic crossing Feredays Road – rather, vehicles will turn to the east and west. Accordingly it is not considered that this form of intersection will result in any road safety concerns.

8. District Plan Matters

8.1. Introduction

8.1.1. The District Plan sets out a number of transportation-related Rules with which any development is expected to comply. Although this is a plan change request, a review against these has been undertaken in order to ensure that the proposal is able to comply with the relevant Rules, or whether exemptions to the Rules should be considered as part of the plan change provisions.

8.1.2. Since the proposal will extend the current urban area of Leeston, the review has been undertaken against the Township Volume of the District Plan.

8.2. Rule 5.1: Road and Engineering Standards

8.2.1. The land is relatively flat and so the slope (Rule 5.1.1.1) and road gradients (Rule 5.1.1.2) will be compliant.

8.2.2. The road formation is required to meet Appendix E13.3.1 and E13.3.2. The first of these relates to the provision of new roads (as is expected to occur) and the 'green field' nature of the plan change area means that these provisions can be achieved.

8.2.3. Under Appendix E13.3.1.4, cul-de-sacs are restricted to a maximum length of 150m, but two of the four cul-de-sacs proposed are more than 200m in length. It is considered that this can be addressed through minor redesign of the subdivision plans in due course.

8.2.4. Appendix E13.3.2 addresses intersection spacing. The classification of roads within the plan change area has not yet been determined but it would be reasonable at this stage to expect that they will be Local Roads and as such, a separate between intersections of 75m is required. This is achieved.

8.2.5. For completeness, the two access intersections onto Feredays Road do not meet this requirement because they align with Clausen Avenue and Chapman Road. However this has been done as a specific aspect of the design

8.3. Rule 5.2: Vehicle Accessways

8.3.1. The proposed lots will all have access onto a legal road (Rule 5.2.1.1) and all of the roads *within* the site onto which access is gained have the same classification meaning that there is no preference as to where the accessways should be located (Rule 5.2.1.2). Externally, vehicle crossings can connect to the most appropriate road as defined under this Rule.

8.3.2. The site is relatively flat so achieving appropriate gradients should not be problematic (Rules 5.2.1.3 and 5.2.1.4).

8.3.3. The crossings are required to meet Appendix E13.2.1, which stipulates the requirements for the minimum widths. These can all be achieved.

8.3.4. There is no reason why more than six lots should share a private accessway, rather than being accessed by a road (Rule 5.2.1.7).

8.4. Rule 5.3: Vehicle Crossings

8.4.1. Any vehicle crossing is required to meet Appendices E13.2.2, E13.2.3, E13.2.4 and E13.2.5.

8.4.2. Appendix E13.2.2 addresses the separation of accesses and intersections. For intersections between Local Roads, a 10m separation distance is required and there are no reasons why this cannot be achieved internally.

8.4.3. Externally, there are likely to be non-compliances with this Rule at Spring Road, where there are driveways proximate to the proposed roading connection. However there is no ability to relocate this point of access since the remaining lots are all developed.

8.4.4. One reason for this Rule (which is common to most District Plans) is to ensure that drivers do not become confused about the intentions of other drivers turning ahead of them (that is, whether they are unsure whether a driver is turning into an access or into an intersection). In this case, Spring Place is a Local Road and therefore drivers can be expected to have a high degree of familiarity with the layout. Speeds will also be low. Consequently, this non-compliance can be supported (although will require detailed assessment at the time of subdivision).

8.4.5. Appendix E13.2.3 addresses sight distances from vehicle crossings, and in this case 45m is required since the roads will be subject to a 50km/h speed limit. It is possible that compliance with this provision will not be achieved, because in some locations the sight distance will be constrained by the presence of intersections or curves in the road geometry, which limit the sightline. However the intersection or curve will also mean that drivers have to slow (and in the case of an intersection, potentially stop) which will result in speeds that are much lower than the maximum permitted. Accordingly, it is considered that the plan change provisions could seek to exempt certain lots from complying this this particular provision, or an assessment of the non-compliance could be made at the time a subdivision consent is applied for.

8.4.6. Appendix E13.2.4 addresses the design and siting of vehicle crossings. One crossing per site can be achieved (Appendix E13.2.4.2), and the distance between crossings and the crossing width can be achieved (Appendix E13.2.4.5).

8.4.7. Appendix E13.2.5 addresses the standard of vehicle crossings. Since residential activity is proposed, standard vehicle crossings are required and these can be provided.

8.4.8. The crossings can be sealed (Rule 5.3.1.2).

8.4.9. The subdivision plan indicates that direct access is proposed onto Leeston Dunsandel Road and Feredays Road. These are both Arterial Roads, and thus the arrangement is not permitted under Rule 5.3.1.4 unless the speed limit is 70km/h or less. In this case, there is proposed development to the west of the 50km/h / 100km/h speed limit threshold on both roads.

8.4.10. Speed limits are set based on a number of factors, but one aspect is the extent to which there is frontage development. As such, given that the site is currently rural, the frontage roads having a speed limit of 100km/h is not unusual nor unreasonable. However the presence of development means that there is a (technical) case for reducing the speed limit. Such an outcome is very common, for example, speeds around the Faringdon subdivision in Rolleston were 100km/h prior to the development of the area, and afterwards were reduced to 50km/h.

8.4.11. It is expected therefore that the speed limit thresholds will move further west as a result of the development of the proposed plan change area, such that both Arterial Roads will be subject to a 50km/h speed limit from immediately east of Harmans Road.

8.5. Rule 5.4: Traffic Sight Lines – Road/Rail Crossings

8.5.1. The site is not in close proximity to a road/rail crossing.

8.6. Rule 5.5: Vehicle Parking and Cycle Parking

8.6.1. The number of parking spaces per lot can be achieved and the spaces can be designed to be accessible at all times (Rule 5.5.1.1 / Appendices E13.1.1 and E13.1.2).

8.6.2. Regarding the design of the parking spaces and maneouvring areas (Rule 5.5.1.2), there are no reasons why pedestrian areas will be obstructed (Appendix E13.1.5.2), garages can be of the appropriate size (Appendix E13.1.6), and the site is relatively flat and so gradients will not be exceeded (Appendices E13.1.7 and E13.1.8).

8.6.3. For on-site maneouvring, the layouts are able to be designed to ensure that vehicles do not reverse from the site unless this is a permitted activity, and the parking spaces can be designed to be accessed with just one reverse movement (Appendix E13.1.9). Queuing space can be provided (Appendix E13.1.10) and illumination is not required (Appendix E13.1.11).

8.7. Summary

8.7.1. The layout of the plan change area is capable of complying with the bulk of the requirements of the District Plan, although there are a small number of exceptions.

- Appendix E13.3.1.4: there are two cul-de-sacs than are more than 200m in length compared to a requirement for 150m;
- Appendix E13.3.2: the two access intersections onto Feredays Road align with Clausen Avenue and Chapman Road rather than being separated by 75m;
- Appendix E13.2.2: there will be driveways on Spring Road that are closer than 10m from the proposed new road intersection;
- Appendix E13.2.3: sight distances are likely to be lower than requited under the Plan for driveways close to intersections and curves; and
- Rule 5.3.1.4: Vehicle crossings onto Arterials Roads subject to a speed of more than 70km/h are not permitted.

8.7.2. For the reasons set out above, these non-compliances can be supported at this stage.

9. Conclusions

9.1. This report has identified, evaluated and assessed the various transportation matters of a proposed plan change to facilitate residential development within the settlement of Leeston.

9.2. Overall it is considered that the traffic generated by the development arising from the plan change can be accommodated on the adjacent roading network without capacity or efficiency issues arising, even when allowing for full site development. In most instances, traffic volumes remain below the thresholds at which a detailed traffic analysis is required of intersections, meaning that the intersections will operate under free-flow conditions. Even at the most heavily-trafficked intersection, queues and delays remain low with the plan change site developed.

9.3. The crash history in the vicinity of the plan change area does not indicate that there would be any adverse safety effects from the proposal. New transportation infrastructure which will be provided will meet appropriate guides and standards (or exemptions from the District Plan will be sought when land use and subdivision consents are applied for).

9.4. The indicative subdivision plan will largely meet (or is capable of meeting) the majority of transportation requirements of the District Plan. At this stage, five likely non-compliances with the Plan have been identified but at this stage, all can be supported. One matter to highlight is that in order for development of the plan change area to progress, the speed limit thresholds on both Feredays Road and Leeston Dunsandel Road will need to move to just east of Harmans Road such that those sections of road are subject to a 50km/h rather than the current 100km/h. This is a common outcome of development, but nevertheless, is outside the remit of the RMA.

9.5. Overall, and subject to the preceding comments, the proposed plan change can be supported from a traffic and transportation perspective.

Carriageway Consulting Limited
August 2019

CARRIAGEWAY
CONSULTING

traffic engineering | transport planning

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Appendix 4: Servicing Report

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Engineering Servicing Report

Leeston Plan Change

CLIENT	ADDRESS	REFERENCE
Holly Farm	High Street, Harmans Road and Leeston Dunsandel Road, Leeston	6129

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Report Information

Reference:	6129
Title:	Engineering Servicing Report
Client:	Holly Farm
Filename:	6129 – ENG-RPT-Servicing Report
Version:	4
Date:	August 14, 2019
Prepared by:	James Hopkins
Reviewed by:	Clayton Fairbairn

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Contents

1 Introduction

This purpose of this report is to demonstrate the serviceability of the proposed plan change area in north-west Leeston as indicated in Figure 1, below.

The proposed plan change area will have the potential to comprise approximately 380 new lots. Currently the area is zoned a mixture of Living 1 and Living 2 zone (both with deferred status) and outer plains zone in Selwyn District Council Plan. The proposed plan change will address the servicing issues that led to the deferred zoning as well as increasing the density of the zoning. Furthermore additional lower density land is included in the plan change area. The proposed plan change area is shown in green in Figure 1 below.

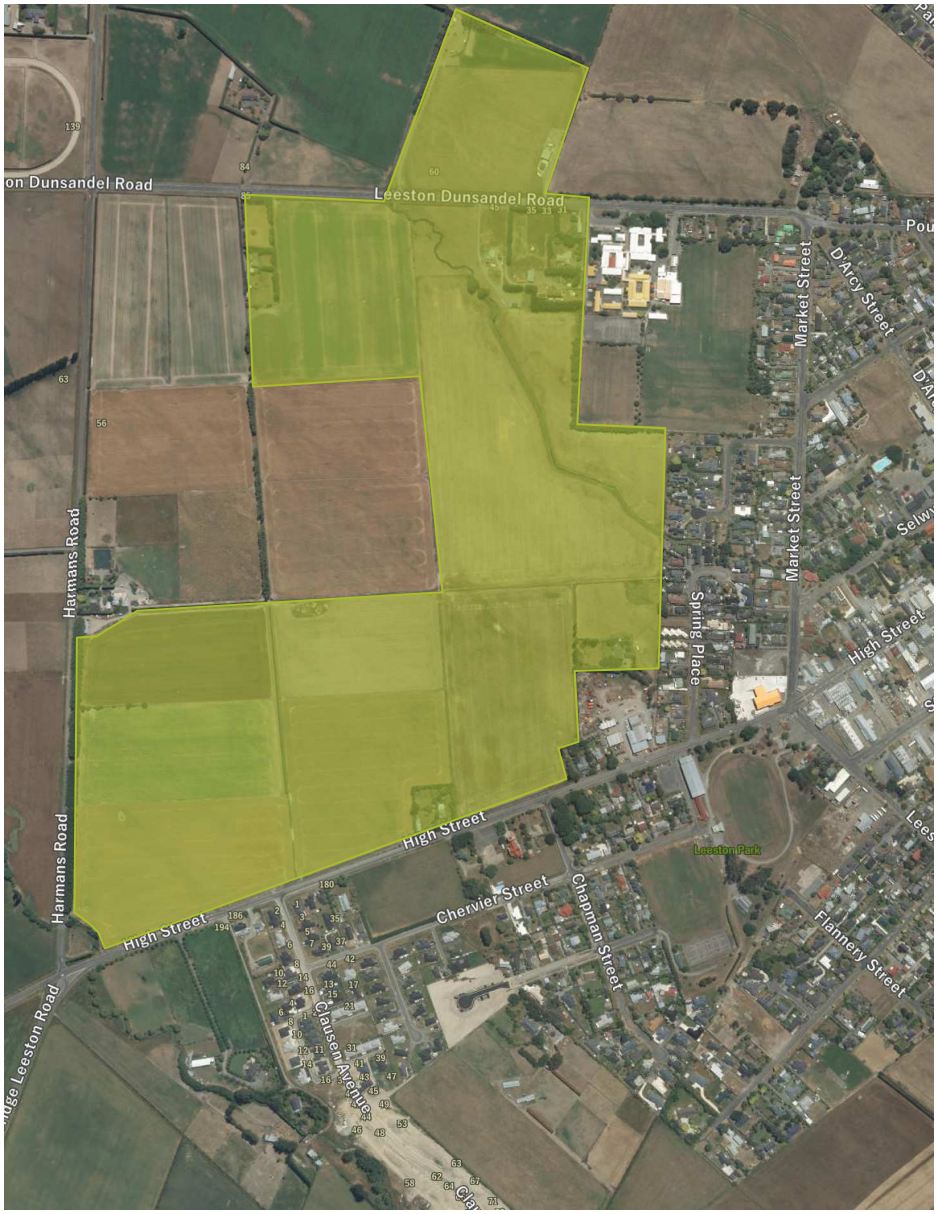

Figure 1: Plan Change Area

2 Wastewater

2.1 Existing Infrastructure

The wastewater infrastructure in Leeston generally comprises of gravity reticulation with 7 pump stations that discharge to a wastewater treatment facility located southeast of the township. An existing DN150 sewer main is located in High Street, terminating outside number 129, in the south east corner of the proposed plan change area. This sewer conveys wastewater from existing dwellings surrounding the plan change area via a trunk main in Leeston and Lake Road to the Ellesmere treatment plant.

2.2 Potential Disposal Method

There is currently no wastewater reticulation servicing the subject site. Surrounding existing dwellings are connected to the existing Leeston gravity sewer network. The following is a discussion of four options for wastewater disposal from the proposed plan change area. Two options are proposed to service the subject site. The general layout showing key components of the wastewater system servicing the plan change area can be seen in the Outline Serving Plan in Appendix A.

Option 1: Gravity network discharging to central pump station

Sewer from each lot would discharge via gravity laterals and gravity wastewater mains in the street to a new communal pump station within the plan change area. The pump station would be owned and operated by the Selwyn District Council (Council) and would pumped flows which would discharge via a new rising main into the existing trunk sewer or existing rising main and subsequently onto the existing wastewater treatment plant. Gravity networks are generally preferred due to their inherently lower operations and maintenance costs.

Option 2: Low Pressure on-site systems pumping to communal pressure mains

In locations where standard gravity infrastructure is not viable a common alternative is low pressure wastewater systems utilising individual pump stations on each lot, pumping via a shared small diameter rising main. With low pressure systems in new developments Council typically would own and maintain the pressure pipe within the road reserve, while the pump stations would be the responsibility of the individual property owners. Low pressure systems are particularly beneficial in sites where:

- There is insufficient natural fall for gravity network without an excessive number of pump stations; or
- Weak or soft ground conditions may result in settlement of pipes resulting in loss of grade; or
- Seismically induced ground settlement may result in settlement of pipes resulting in loss of grade; or
- Ground conditions make excavation for deep gravity pipes expensive or dangerous.

Low pressure systems have a potential secondary benefit of managing peak flows. Individual pump stations can be controlled by a control module that communicate with a central system that can manage individual pump operation times to avoid or minimise pumping during peak flows in the downstream network.

Option 3: Vacuum Sewer

The option of vacuum sewer, was not investigated as it is difficult to economically justify in developments of fewer than 400 lots and they are better suited to substantially worse ground conditions than encountered in the plan change area.

Option 4: On site treatment and disposal

Due to high groundwater conditions in the proposed plan change area the option of on site treatment and disposal is not viable.

2.3 Preferred Options

Both options 1 and 2 are viable options for wastewater disposal for the plan change area. At the time of subdivision consent the advantages and disadvantages of each option can be assessed in detail and the best option selected.

2.4 Available capacity in the existing network and treatment facility

Wastewater from the proposed plan change area would be transported via gravity pipes to the existing wastewater network in High Street. The wastewater main in High Street joins the main trunk sewer in Leeston and Lake Road. The trunk sewer subsequently turns northeast to the wastewater treatment plant.

Design flows have been calculated following Selwyn District Council's Engineering Code of Practice (SDC ECoP).

The following assumptions have been used in the calculations:

- Average sewer flow (ASF) of 220L/person/day (0.00255 L/s);
- Average population density of 2.7 persons/lot;
- Peak flow factor of 2.5;
- Wet weather flow factor of 2.0;
- Number of lots = 380;
- The average dry weather flow from the plan change area is calculated as 2.6 L/s; and
- The design maximum flow (MF) for the plan change area is estimated to be 13.1 L/s.

Based on discussions with Council officers at a pre-application meeting it is understood that some upgrading of the trunk sewer downstream of the plan change area may be required to accommodate the additional flows generated by the plan change area. Council have indicated that the cost of this upgrade would need to be met by the developers at the time of subdivision.

The Ellesmere Area Plan has identified an expected growth in population of 49% by 2031 compared to 2015 (an average rate of 3% per annum for 16 years). It has also been identified at a pre-application meeting with Council that the existing infrastructure will not have sufficient capacity for this growth without further capital investment. Discussions with Council staff has identified that the existing wastewater treatment plant needs to be upgraded to accommodate the projected growth. It is expected that this would be manged by Council via development contributions.

3 Stormwater

3.1 Existing Infrastructure

The Leeston Creek currently flows through the plan change area. Discussions with the Council have identified that downstream of the plan change area the Leeston Creek is known to be under capacity. Council is currently in the process of upgrading the drain north of the plan change area to reduce flooding risk (discussed further in 3.2 below). Therefore the preferred stormwater discharge point for the plan change area is the Birdling Brook via an attenuation stormwater pond. There are two possible connection points. The first point is an existing 2,300 by 1,900 box culvert at the intersection of High Street and Harmans Road. The second point is an existing DN600 culvert opposite Chapman Street.

3.2 Leeston North Stormwater Bypass

The Selwyn District Council Activity Management Plan (Vol 4 2018) indicates that a Leeston North Stormwater bypass will be constructed by 2021. Once the diversion network is fully operational, the volume of water entering Leeston via the Leeston Creek will be less, leaving the township less susceptible to flooding. Stage one of this upgrade has already been completed, the remainder of the upgrade relies on a portion land at the northern extent of the plan change area and land within the land parcel to the east known as the Martin Block. Despite this upgrade no additional runoff from the plan change area would be permitted to be discharged in to the Leeston Creek.

3.3 Pre-development Flows

The plan change area is approximately 60 Ha and comprises of relatively flat pastoral land. It has been estimated that the pre-development time of concentration is approximately 30 minutes. Assuming a runoff co-efficient of 0.35 the undeveloped primary flow in a critical duration event (for the local system) can be estimated using the rational method as 830 L/s. It has been established that land to the northwest of the Leeston Creek (approximately 20% of the plan change area) currently drains to the Leeston Creek. Land to the south and east of the Creek discharges to Birdlings Brook, either via the box culvert at the corner of High Street and Harmans Road (approximately 8 Ha, 13% equating to approximately 108 L/s) or via the culvert at Chapman Place (67% of the plan change area, equating to approximately 556 L/s).

In longer duration events the critical duration is governed by the time of concentration (Tc) to critical locations in the greater stormwater network. Typically this is at the downstream end of the network and the critical duration is in the order of hours rather than minutes. As there is adequate land set aside in the proposed Outline Development Plan (ODP) to construct a stormwater attenuation basin this is not considered critical for the plan change.

3.4 Post-development Flows

In general fully developed residential land has a runoff coefficient of 0.55 (as stated in the SDC ECOP Section 5.12.3). Therefore there is a 57% increase (0.55/0.35) in runoff in the 10% AEP event. The time of concentration is expected to reduce from approximately 30 minutes to 25 minutes, however the presence of a stormwater attenuation basins designed for long duration events would mitigate this. The primary discharge from the stormwater management pond would be to the existing DN600 culvert at Chapman Place. As it is proposed to divert 33% of the plan change area from the Leeston Creek and the box culvert at the corner of Harmans Road then the attenuation basin would be required to over-attenuate the incoming flows to offset this.

3.5 Proposed Stormwater System effects

The proposed gravity stormwater network would discharge to a newly constructed stormwater treatment facility. The treatment facility would include an attenuation pond that would attenuate runoff to pre-development flow rates prior to discharge. Birdlings Brook also has no residual capacity to accept an increase of stormwater flows resulting from increased hardstand. Council requires stormwater from a 2% AEP storm to be attenuated. Attenuation can be provided in the form of an attenuation basin located in the southern portion of the plan change area which is the natural low lying area.

Pipes would be designed based on stormwater volume discharging from the catchment area. First flush runoff from the hardstand areas of the proposed plan change area would drain via kerb and channel to sumps. Sumps would be constructed with a nominal storage depth below the outlet pipe to promote settling of sediment and be fitted with submerged outlets to reduce hydrocarbons discharged to the downstream system.

Each sump would discharge into the attenuation pond via designed pipes. Stormwater from the roof would also pass through designed stormwater pipes to the attenuation pond located at the south of the subdivision. Stormwater would then be discharged into the existing gravity network in Chapman place (where the peak flow rate would be less than the undeveloped flow rates for events up to and including the critical duration for the Birdlings Brook).

The attenuation basin would be sized to manage long duration events (in the order of several hours) where flow rates are substantially lower than in the shorter duration events. A significant positive side effect of this design criteria is that shorter duration events (typically less than 1 hour) become over-attenuated, meaning the flows in shorter duration events would be substantially less than predeveloped. In longer duration events the existing DN600 pipe would not be operating at its peak flow rate so there would be no flooding impact on the downstream pipe network.

Secondary flows from the stormwater management ponds would be split two ways, with some flows being directed towards Chapman Place, with the balance being directed west towards the existing 2,300 x 1,900 box culvert.

Overall the proposed centralised stormwater management area will provide the following key benefits:

- No additional flows are directed towards the Leeston Creek
- Long duration events will be attenuated to ensure post-development flows are less than pre-development flows, ensuring no increase in flooding to the existing pipe networks immediately downstream of the plan change areas, as well as the Leeston Creek or Birdlings Brook.
- Short duration events will be over-attenuated, meaning the flows in the local pipe networks immediately downstream of the plan change area will reduce compared to the natural runoff from the undeveloped land in its current state.
- First flush runoff will be treated to current best practice standards to minimise contaminants such as hydrocarbons, heavy metals and total solids are captured within the treatment facilities and therefore do not result in reduction in downstream water quality.

The general layout of the proposed stormwater system showing key connection points is shown in the outline service plan in Appendix A.

4 Water Supply

4.1 Existing Infrastructure

Water in Leeston is supplied from three wells, two located on Gallipoli Street with a third on Leeston and Lake Road which is used to supply water during the peak periods. Water is pumped and distributed via a network of pipes to households and commercial entities. Existing water supply pipes are present in High Street near the south eastern corner of the plan change area and Leeston Dunsandel Road near the north eastern corner of the plan change area. SDC have advised that the existing pump and pipe network does not have sufficient capacity to service the plan change area, thus augmentation of the existing system is required.

Council has recently purchased a utility allotment within the plan change area and a bore is in the process of being designed and constructed.

4.2 Proposed Servicing

The plan change area is proposed to be serviced via a mains pressure on-demand reticulation system. The existing Utility allotment will be utilised to make this possible. It is anticipated that the additional bore will provide the additional capacity required for the plan change area.

Within the plan change area a new network of water mains and submains would reticulate the water to the net area of each new allotment.

The general outline of the proposed water servicing of the plan change area can be seen in the Outline Servicing Plan in Appendix A

4.3 Water Supplies for Firefighting

For firefighting purposes, the classification for the subdivision would be FW2 (from SNZ PAS 4509:2008 New Zealand Fire Service Firefighting Water Supplies Code of Practice) based on all properties being residential, non-sprinklered structures. This classification requires at least one fire hydrant to be located within 135 m of any dwelling, and two hydrants located within 270m of any dwelling. Each hydrant must have the capacity to provide a minimum of 12.5 L/s with a minimum residual pressure of 100 kPa. It is envisaged that the augmentation of the existing water supply network would ensure that this requirement can be met with standard fire hydrant spacing.

5 Roading

5.1 Integrated Transport Assessment

Carriageway Consulting has been contacted for Integrated Transport Assessment (ITA) to evaluate the effects of the proposed Plan Change on the adjacent transportation networks. Roading and traffic matters that are covered by ITA are not discussed further in this report.

5.2 Existing Infrastructure

The site is bound by High Street on the south, Harmans Road on the west, Leeston Dunsandel Road on the north and existing residential development on the east. Ellesmere College bounds the plan change area in the north eastern corner. A small portion of the site lies north of Leeston Dunsandel Road.

As there has been a separate transport assessment the nature and suitability of the existing roading network is not discussed further in this report.

5.3 Proposed Internal Roads

A network of new roads within the plan change area would be formed with kerb and channel, cycle lanes (as appropriate), footpaths and grass berms in general accordance with the SDC ECoP. Linkages would be provided for pedestrians and cyclists in accordance with the ODP at the time of subdivision. The internal roads would have connections with Harman Road to the west, Leeston Dunsandel Rd to the north, Spring St to the East and two connections to High Street to the south.

To the north of Leeston Dunsandel Rd a semi-detached block of the plan change area would have a separate internal ring road connecting to Leeston Dunsandel Rd.

The key roads in the proposed plan change area can be seen in the ODP.

6 Electrical and Telecommunications

Orion have confirmed that the plan change area can be serviced with reticulated power from the existing network. A copy of the letter from Orion confirming is attached in Appendix 2.

Chorus NZ Ltd have confirmed that the plan change area can be serviced with reticulated power from the existing network. A copy of the letter from Chorus confirming the ability to connect is attached in Appendix 2.

Each lot can be serviced by underground utilities.

7 Conclusion

This servicing report has been prepared to accompany the proposed plan change application. Based on the preliminary design and discussions to date, the proposed plan change area can be serviced in general accordance with the requirements of SDC ECOP, NZS 4404:2010 and good engineering practice.

Wastewater can be reticulated via gravity or low pressure network and can be discharged via the existing trunk main to the existing wastewater treatment facility.

Stormwater can be collected via a gravity pipe network and directed to stormwater treatment and attenuation basins prior to discharging to Birdlings Brook.

Water supply can be full pressure mains, with a new bore and pump located within the plan change area to augment the existing Leeston water supply network. Fire fighting capacity can be provided with new hydrants in accordance with SNZ PAS 4509:2003.

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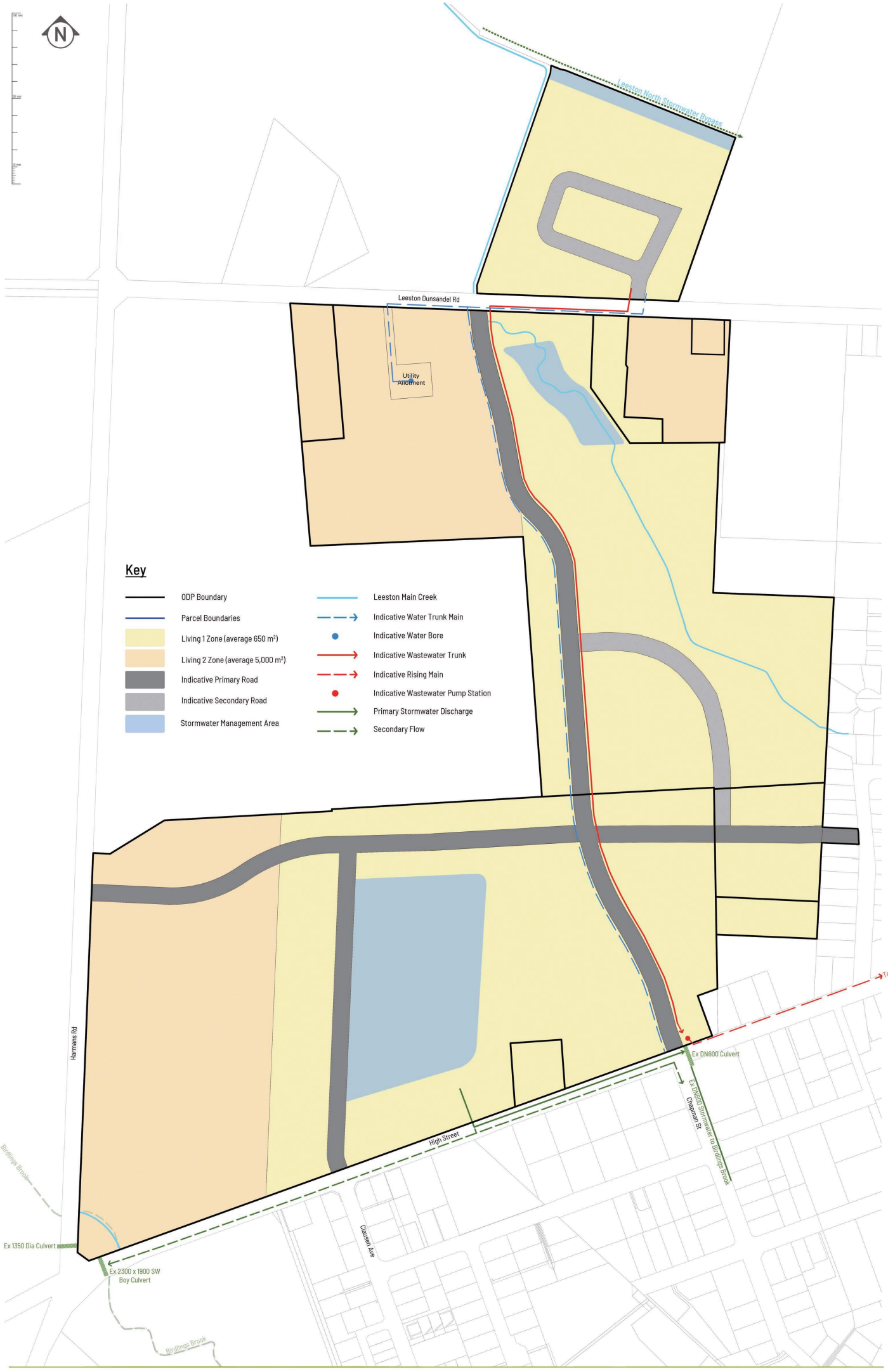
Appendix 1: Outline Servicing Plan



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Leeston Plan Change

Scale	1:2000 @A1, 1:4000@A3
Date	31 July 2019
Design	JH
Drawn	EL
Review	

Rev.	Date	Amendment
A	31/07/19	
B	21/08/19	Match latest ODP

Revision B

Sheet 1

PLANNING | SURVEYING | ENGINEERING

Outline Servicing Plan

T 03 339 0401 | E info@blg.nz | www.blg.nz

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Appendix 2: Confirmation of Power and Telecommunications network capacity

Chorus Network Services
PO Box 9405
Waikato Mail Centre
Hamilton 3200
Telephone: 0800 782 386
Email: tsg@chorus.co.nz

Sub Div Ref: LSN41929

14 August 2017

Your Ref:

Baseline Group

Attention: Jalesh
Dear Sir / Madam

SUBDIVISION RETICULATION – LSN: 56 Harmans Road, Leeston. 375 Lots (Simple 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 $690,000.00 (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

Hollie Jackson
Network Services Coordinator

Direct: +64 3 363 9722
Email: craig.marshall@oriongroup.co.nz
Ref: **ES335997**

18 August 2017
Re: 56 Harmans Road

C/O
Jalesh Devkota
Baseline Group
Level 1 140 Welles Street
Christchurch 8011

jalesh@blg.nz

Dear Sir,

Proposed sub-division connection to the Orion network
Lots 1-4 DP 82846, Lot 1 DP 9138, Lot 2 DP 365379, Lot 2 DP 319397 and part RS 5482,5483
Harmans and Dunsandal Leeston roads, Leeston

I refer to your letter and the above-named property(s). I have investigated your request and comment as follows;

1. Orion has the capacity on the network to meet your request

2. There are no specific connections available for this sub division; however,

3. A connection could be made available for one or more dwellings with an alteration to the Orion network.

4. There will be costs associated with providing the connection(s). These costs will be the responsibility of the property owner, not Orion.

5. To comply with Orion's network security conditions an alternative feed from adjoining developments may also be required.

6. This type of work would be a typical design build project. If you decide to proceed; have your designer forward their proposal to Orion for approval. Orion will forward Terms and Conditions for acceptance.

The terms and conditions presented to the applicant will encompass Orion's policies and practices current at the time.

Please don't hesitate to contact me on (03) 363 9722 if you have any questions, or email me at Craig.marshall@oriongroup.co.nz.

Yours faithfully

Craig Marshall
Reticulation Support Engineer

BASELINEGROUP

Appendix 5: Geotechnical Investigation

Soil&Rock Consultants

For well-grounded solutions

GEOTECHNICAL INVESTIGATION REPORT

PROPOSED LAND USE CHANGE
LEESTON

PREPARED FOR LOUISE AND BRENT HARKERS

C17120
6 OCTOBER 2017

Document Control Record

Document Prepared By:

Soil & Rock Consultants
Unit 11, 114 Sawyers Arms Road
Papanui

PO Box 5486
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Document Control

Document Title	Geotechnical Investigation Report		
Project	Proposed Land Use Change	**Project Number**	C17120
Client	Louise and Brent Harkers	**Revision**	A
Prepared By		Callum Nicholas Engineering Geologist	
Reviewed By		Matthew Naylor Principal Geotechnical Engineer	
Authorised By		Zeljko Viljevac Senior Hydrogeologist/Engineering Geologist (MSc)	

Revision History

Rev	Date	Amendment	Prepared By		Reviewed By		Authorised By	
A	06/10/2017	Issued to Client	CN		MN		ZV	

DISTRIBUTION:

Louise and Brent Harkerss		PDF
Soil & Rock Consultants		PDF

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1 Introduction

1.1 Project Brief

Soil & Rock Consultants have been engaged by Mike Vincent of Baseline Group Ltd on behalf of Louise and Brent Harkers to undertake a geotechnical investigation in connection with a proposed subdivision and development of land north-west of Leeston ('the site'). The purpose of this investigation is to develop a geological model of the site, assess its future land performance providing comment on the suitability to subdivide the land, and address the requirements of Section 106 of the Resource Management Act 1991.

Where relevant, reporting has been conducted in accordance with the Ministry of Business, Innovation and Employment December 2012 'Repairing and Rebuilding Houses Affected by the Canterbury earthquakes' Guidance (MBIE Guidelines) and relevant updates and clarifications.

This report summarises our findings and recommendations and may be used to support a Building Consent application to the Selwyn District Council.

1.2 Scope of Works

The following work has been undertaken for this geotechnical investigation:

- A site walk-over to assess site conditions;
- Review of the New Zealand Geotechnical Database (NZGD) and other available relevant geological or geotechnical information;
- Shallow geotechnical testing comprising 16 hand augerholes (AH) and Scala Penetration Tests (DCP);
- Geotechnical testing comprising one Test Pits (TP) excavated with machine excavator along with Dynamic Cone Penetrometer test (DCP - Scala) carried out beside TP to a target depth of 3.0m;
- Assessment against Section 106 of the RMA and comment on the suitability to subdivide;
- Recommendations for new residential foundations; and
- Preparation of this report detailing all the above.

2 Site Description

The subject site (Figure 1), located in north-west Leeston, and is bounded by High Street to the south, Harmans Road to the west, Leeston Dunsandel Road to the north, Ellesmere College to the north-east and residential sections of Leeston to the east, covering an approximate total area of 77.9ha.

The site consists of the following lots:

- Lot 1 DP 82846 (pastoral and agricultural containing wheat, beans and lucerne).
- Lot 2 DP 82846 (pastoral and agricultural containing wheat, beans and lucerne).
- Lot 2 DP 365379 (pastoral land).
- Lot 3 DP 82846 (pastoral land, small creek approximately 0.5m deep 5.0 meters wide flows north-east through the Lot).

The site and surrounding areas are categorised by the Canterbury Earthquake Recovery Authority (CERA) as N/A Rural & Unmapped.

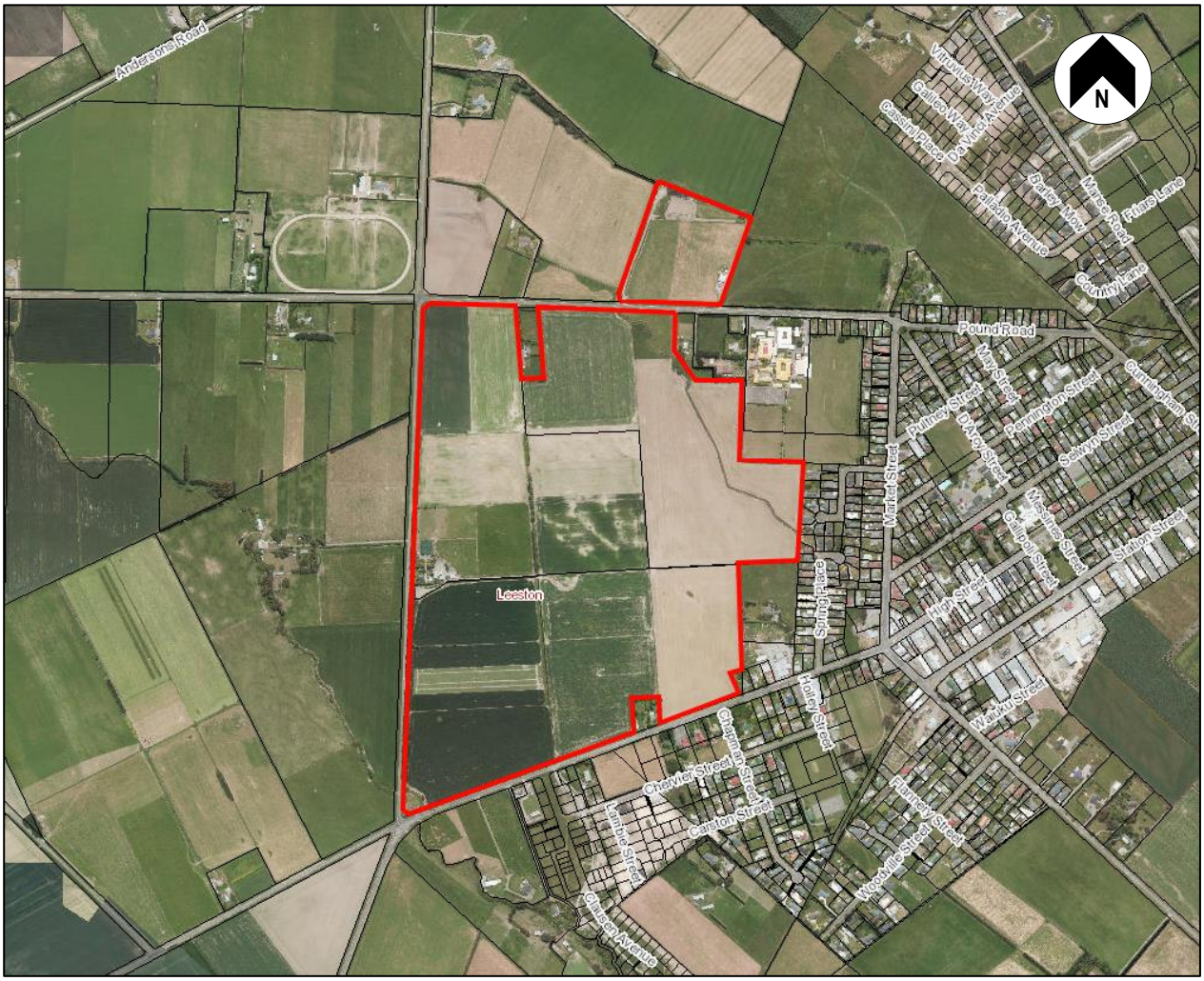

Figure 1. Site location (red) **(Canterbury Maps Imagery, obtained 21/08/17)**

3 Proposed Development

Soil & Rock Consultants were not in receipt of any preliminary drawings showing the proposed development. However, based on the correspondence we understand a residential subdivision with associated roads, drainage, and infrastructure is proposed. No plans have been received showing the number of lots to be divided into.

4 Site History

Aerial photographs of the site were assessed from Canterbury Maps website (https://mapviewer.canterburymaps.govt.nz/). Photographs showed the site in 1946 was similar to its present day condition and was used as pastoral and agricultural land. Between 1967 and 1975, a shed has been built on Lot 2 DP 365379 otherwise the site was unchanged. Between 1990 and 1994 some residential development of the dwelling on Lot 2 DP 82846 and surrounding area has took place.

5 Geological Model

5.1 Published Regional Geology

The regional geological Maps (GNS – Geology of the Christchurch Area, 2008) indicates the site is underlain by grey river alluvium beneath plains or low-level terraces (Q1a).

5.2 Nearby Geotechnical Data

Geotechnical data was taken from nearby ECan Wells and Boreholes and is summarised in Table 1 below.

Table 1: Nearby Geotechnical Data

Borehole	Distance from Site (m)	Depth to Gravel (m)	Gravel Thickness (m)
M36/7817	Onsite	1.2	> 12.8
M36/5682	42	1.2	> 9.8
M36/2992	61	Unconfirmed	> 28.0
M36/2149	75	0.9	> 10.7
M36/2064	123	0.6	> 52.4
M36/0781	156	0.6	> 51.0

5.3 Site Specific Investigation

Following an initial site walkover and location of services the Soil & Rock site investigation comprised:

- 16 hand augerholes with Scala penetrometer tests undertaken through the augerholes from surface namely;
  - (i) Four across Lot 3 DP 82846;
  - (ii) Four across Lot 2 DP 82846; and
  - (iii) Eight across Lot 1 DP 82846.
- One test pit with Scala penetrometer test located in Lot 2 DP 365379

Originally fieldwork was to consist of 17 test pits but wet weather and soft ground made machine access to test pit locations impractical. After discussions with Selwyn District Council geotechnical engineer Ian McCahon, it was agreed to switch to hand augers for the remainder of the testing with an understanding that later phases will undergo further site investigation deep testing.

A visual-tactile field classification of the subsoils encountered during hand augerhole drilling was carried out in accordance with 'Guidelines for the Field Classification and Description of Soil and Rock for Engineering Purposes' (NZGS, 2005) and Scala Penetrometer testing was carried out in accordance with NZS 4402:1988, Test 6.5.2, 'Dynamic Cone Penetrometer'.

Investigation details are provided in Table 2. The tests were positioned to provide the most effective coverage of the site. Test locations and relative levels (RL) were recorded by handheld GPS and are therefore approximate only.

Table 2: Site Specific Investigation

Test ID.	RL(m)	Termination Depth (m bgl)	Notes
AH01	26	0.7	Gravel Obstruction. Groundwater not encountered.
AH02	26	0.5	Gravel Obstruction. Groundwater not encountered.
AH03	25	0.9	Gravel Obstruction. Groundwater not encountered.
AH04	26	0.6	Gravel Obstruction. Groundwater not encountered.
AH05	26	0.5	Gravel Obstruction. Groundwater not encountered.
AH06	24	0.5	Gravel Obstruction. Groundwater not encountered.
AH07	25	0.6	Gravel Obstruction. Groundwater not encountered.
AH08	26	1.0	Gravel Obstruction. Groundwater not encountered.
AH09	26	0.7	Gravel Obstruction. Groundwater not encountered.
AH10	25	0.6	Gravel Obstruction. Groundwater not encountered.
AH11	25	1.4	Gravel Obstruction. Groundwater at 1.1m
AH12	26	1.5	Gravel Obstruction. Groundwater not encountered.
AH13	25	0.8	Gravel Obstruction. Groundwater not encountered.
AH14	24	1.2	Gravel Obstruction. Groundwater not encountered.
AH15	26	1.7	Gravel Obstruction. Groundwater at 0.7m
AH16	26	1.6	Gravel Obstruction. Groundwater not encountered.
TP01	26	1.6	Gravel Obstruction. Groundwater not encountered.

All test locations are presented on drawing C17120 /1 in Appendix A and hand augerhole and Scala Penetrometer results showing detailed soil descriptions, test pit results and blows per 100mm penetration are presented in Appendix B.

5.4 Site Subsurface Conditions

Subsurface conditions based on those encountered within the hand augerholes and the test pit site are summarised in Table 3.

Table 3: Simplified soil profile

Soil Type	Depth to Top of Layer (m)	Layer Thickness (m)	Relative Density / Consistency
SILT, trace sand, trace gravel (Topsoil/non engineered fill)	0.0	0.3 – 0.7	Very soft to firm
SILT, trace to minor sand, trace to minor gravel	0.3 – 0.7	0.2 – 1.2	Soft to firm
[1] PEAT, minor silt	1.7	1.5	Soft
GRAVEL	0.5 – 1.8	> 10	Dense

[1]PEAT encountered in AH15

1.8 meters to gravel in the south-west corner of the site.

5.5 Groundwater

Groundwater was measured within augerholes AH11 and AH15 on the day of our investigation at 0.7m and 1.1m and 0.6m in TP01. Groundwater is expected to vary seasonally and due to irrigation abstraction. It should be noted that fieldwork was undertaken shortly after heavy rainfall and flooding in the area.

5.6 Site Subsoil Classification

NZS 1170.5:2004 outlines criteria for the assessment of different site subsoil classes. The alluvial soils of the Canterbury plains are generally classified as either 'Class D' or 'Class E' subsoil due to the considerable depth to bedrock (locally from 100m to in excess of 1km). In accordance with the standard Class D applies to this particular site defining it as a 'deep soil site'.

6 Geotechnical Assessment

6.1 Lateral Displacement

6.1.1 Global Lateral Movement & Lateral Spreading

The site is not mapped on the NZGD for global lateral movement and lateral spreading but a creek that runs through Lot 3 DP 82846 which is approximately 0.5m deep and 5m wide. This may potentially cause lateral spread adjacent to its banks.

6.2 Expected Future Land Performance

The site may have a potential for liquefaction based on the deeper natural silts within the south-west corner. Further deep testing with a CPT rig is likely to be required for a subdivision consent application for quantitative liquefaction assessment and to help determine a MBIE Technical Category.

7 Resource Management Act Requirements

Section 106 of the Resource Management Act 1991 states a consent authority may refuse to grant a subdivision consent, or may grant a consent subject to specific consent conditions if the land is likely to be subject to erosion, falling debris, subsidence, slippage or inundation.

- The site is not located near any major water ways but a creek flows north-east through Lot 3. As a result some lower lying areas may be susceptible to erosion adjacent to the creek.
- Falling debris from upslope land slippage or rock fall is unlikely at this site in the absence of any elevated land in proximity to the site.
- Slope stability is not considered to be a significant hazard. Earthquake-induced lateral movement is considered to be minor to moderate, in accordance with the MBIE criteria (December 2012). Lateral ground movement is most likely to occur within the land immediately surrounding the creek and inside bends. The rest of the site is well removed from the areas of land highlighted as susceptible to lateral spreading and the risk is considered minimal.
- Limited subsidence and inundation by ejected matter (i.e. sand, silt and water) could occur from future liquefaction of the site soils from a future large earthquake. Subsidence is expected to be within the limits of Technical Category 1 across most of the site. In south-west corner subsidence might be within TC2 limits in accordance with the most recent MBIE criteria (December 2012).
- Peat long term differential settlement due to consolidation of the peat in south-west corner.
- Assessment of inundation from flooding is not part of our current brief and has therefore not been assessed. If according to Selwyn District Council held records the site has the potential to be flooded we recommend a flood assessment be carried out by a suitably experienced Engineer.

8 Geotechnical Ultimate Bearing Capacity

With reference to Scala Penetrometer results an Ultimate Bearing Capacity (UBC) of 150kPa is available within the natural soil at 0.3m – 0.6m and 300kPa is available at a depth of 0.45m to 1.7m bgl in accordance with (Stockwell 1977). A Strength Reduction Factor of $\Phi = 0.5$ should be applied to the Ultimate Bearing Capacity, which should then equal or exceed the factored Ultimate Limit State design actions. Foundations should be founded below topsoil, fill or peat within good ground as defined by NZS3604.

9 Recommendations

9.1 Site Zoning and Preliminary Foundation Options

The current scope of field investigations and assessments were primarily intended to support the currently proposed Plan Change and Subdivision Consent application. Based on the results of the desk study and field work, we consider the ground across the site to be suitable for construction of typical residential building in accordance with NZS3604:2011. Across most of the site, these may be supported on TC1 foundations. In the south-west corner of the site the deeper foundations and /or TC2 foundations will be required in accordance with the MBIE December 2012 guidelines.

At this initial stage, the following residential foundation preliminary options are considered appropriate:

9.1.1 TC1 foundation options as per NZS3604:2001

For the majority of land founded on shallow gravel above 1m, and above the groundwater table:

- Type A, timber floor suspended on shallow piles;
- Type B, timber floor suspended on shallow piles with concrete perimeter foundation; and
- Type C, Concrete slab.

9.1.2 TC2 type foundations as given within Part A of the MBIE December 2012 guidelines.

These foundation options may be suitable for the south-west corner where the gravel is deeper. These consist of various slab-on-grade reinforced concrete foundations:

- Option 1 comprising 800mm granular fill supporting NZS3604:2011 reinforced concrete slabs or Construction Considerations
- Options 2, 3 and 4 comprising robust stiffened slab and beam foundations) or typical NZS3604:2011 suspended timber floor sub-floor and foundation systems with stiffened perimeter footings.
- Deep posthole foundations or short piles in areas of peat, founded on natural gravel to support suspended floors.

9.2 Pavement Areas

Vegetation, any organic or deleterious material, topsoil and non-engineered fill should be removed from the site under pavement areas prior to aggregate placement. Based on our observations during testing we consider the natural ground at the site should provide an adequate subgrade for the proposed pavement areas. We recommend for preliminary design a CBR value of 2% or a modulus of subgrade reaction of 20kPa/mm, for flexible or rigid pavements respectively with adequate subgrade drainage.

The thickness of the basecourse would depend on the final CBR/modulus of subgrade reaction used for the subgrade and the traffic loads anticipated. The compaction of the basecourse should be carried out with a static roller of appropriate static weight and energy.

10 Further Geotechnical Involvement

Following development of subdivision plan, the site should be subject to further geotechnical investigation to better define the TC1 and TC2 zones. This investigation would support the subdivision consent application, as well as the preparation of an earthworks specification. During the earthworks and civil engineering works, geotechnical observations will lead to the issue of an earthworks completion report, back by a Statement of Professional Opinion. Following completion of the earthworks, Lot specific geotechnical assessment can be carried to the TC of each lot and recommend an appropriate foundation design. We recommend geotechnical, civil and structural engineers liaise closely during the detailed design stage for building foundations.

11 Conclusions

We consider the site is geotechnically suitable to subdivide for a residential development. Based on our investigation we consider that the ground performance can be considered equivalent to residential Technical Category 1 (TC1) for most of the site and TC2 in the south-west corner, while the site is considered to have minor to moderate global lateral movement and lateral stretch potential for ULS events. Future dwelling foundations should comprise TC1 and TC2 foundation options provided within Part A of the MBIE December 2012 guidelines.

12 Limitations

This report has been prepared for the sole benefit of our Client, Louise and Brent Harkers, with respect to the particular brief given to us. The reliance by other parties on the information or opinions contained within this report shall, without our prior review and agreement in writing, be at such parties' sole risk.

The recommendations given in this report are based on site data from discrete locations. Inferences about the subsoil conditions away from the test locations have been made, but cannot be guaranteed. We have inferred a geotechnical model that can be applied for our analyses, however, variations in ground conditions from those described in this report could exist across the site. Should conditions differ to those outlined in this report we ask that we be given the opportunity to review the continued applicability of our recommendations.

Investigation and analysis of seismic events has resulted in modifications to building codes including MBIE Guidelines, and further changes are expected with time. The findings and recommendations of this report may require modification to accommodate any changes before building works are implemented. It is recommended that the findings of this report be reviewed if there is any delay in the implementation of building works beyond the immediate future.

The investigation was confined to geotechnical aspects of the site and did not involve assessment or testing for environmental contaminants or flooding potential. Our investigation and assessments have also not taken into account possible fault rupture that may cause deformations and displacements of the ground directly below the site. This is outside of the scope of our engagement and beyond the realms of geotechnical investigation and assessment, and from recent accounts nearly impossible to predict.

13 References

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15. Tonkin & Taylor Limited, 2013. Liquefaction vulnerability study, Prepared for Earthquake Commission.

16. Zhang, G, Robertson, PK & Brachman, RW 2002. Estimating Liquefaction-Induced Ground Settlements from CPT for Level Ground, Canadian Geotechnical Journal, vol. 39, pp. 1168-1180

APPENDIX A
TEST LOCATION PLAN

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Approximate True North Direction

Legend:

- Approx. Location of Hand Augerholes completed by Soil & Rock Consultants
- Approx. Property Boundaries
- Approx. Location of Test Pit completed by Soil & Rock Consultants

Notes:

1. Soil & Rock Consultants Test Location Plan adapted from Google Maps
2. Locations of features are approximate only
3. Original sheet size A4
4. Buried services to be located prior to construction

Soil&Rock Consultants
For well-grounded solutions

DATE:	August 2017
DRAWN:	CN
SCALE:	SCALE BAR
CAD REF:	C17120/TLP

SITE PLAN
GEOTECHNICAL INVESTIGATION
LEESTON PLAN CHANGE
CHRISTCHURCH

DRAWING NO:
C17120/TLP

SHEET 1 OF 1

APPENDIX B
HAND AUGERHOLE, TEST PIT
&
SCALA PENETROMETER LOGS

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CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH01

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	CN
Drilled By:	MG	Coordinates:	1542345 E, 5154731 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Pasture
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2 (Blows per 100mm Increment)	Comments
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft, wet, non-plastic, trace rootlets.(TOPSOIL)		0.0	0, 0, 2, 3, 4	
ALLUVIAL DEPOSITS	0.5		SILT, trace to minor fine sand, light brownish grey. Soft, moist, wet, non-plastic. (ALLUVIAL DEPOSITS) Trace fine to medium rounded gravel, wet.		0.5	4, 17, 10, 17, 25	
	1.0		END OF BORE. 0.70 METRES. GRAVEL OBSTRUCTION		1.0		
	1.5				1.5		
	2.0				2.0		

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

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CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH02

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	CN	Coordinates:	1542595 E, 5154760 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Soil
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2 (Blows per 100mm Increment)	Comments
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft to soft, moist wet, non-plastic. (TOPSOIL)		0.0	0, 0.5, 0.5, 1, 1	
A. DEPOSITS	0.5		SILT, trace to minor fine sand, greyish light brown, mottled brownish orange. Soft to firm, moist to wet, non-plastic. (ALLUVIAL DEPOSITS) Trace to minor fine to medium sub-rounded to rounded gravel.		0.5	3, 8, 10, 17, 25	
	1.0		END OF BORE. 0.50 METRES. GRAVEL OBSTRUCTION		1.0		
	1.5				1.5		
	2.0				2.0		

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

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CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH03

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	CN	Coordinates:	1542850 E, 5154542 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	25m	Surface Conditions:	Near Level, Grass
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft to soft, moist to wet, non-plastic. (TOPSOIL)	
ALLUVIAL DEPOSITS	0.5		SILT, trace to minor fine sand, light brown, mottled brownish orange. Soft to firm, moist to wet, non-plastic. (ALLUVIAL DEPOSITS)	
			Minor fine to medium sand.	
			Trace fine to medium sub-rounded to rounded gravel.	
			Minor fine to medium sub-rounded to rounded gravel.	
	1.0		END OF BORE. 0.90 METRES. GRAVEL OBSTRUCTION	
	1.5			
	2.0			

SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2

(Blows per 100mm Increment)

DEPTH (m)	0	5	10	15	20
0.0	0				
	0				
	1				
	2				
	3				
0.5	3				
	4				
	5				
	8				
	16				
1.0	25				
1.5					
2.0					

Comments

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH04

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	CN	Coordinates:	1542343 E, 5154525 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Soil
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2 (Blows per 100mm Increment)	Comments
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft to soft, moist to wet, non-plastic. (TOPSOIL)		0.0	0, 0, 1, 2, 2	
ALLUVIAL DEPOSITS	0.5		SILT, trace to minor fine sand, light brown, mottled orange. Soft to firm, moist to wet, non-plastic. (ALLUVIAL DEPOSITS) Wet. Grey, mottled orange, wet to saturated.		0.5	3, 3, 7, 17, 20, 25	
	1.0		END OF BORE. 0.60 METRES. GRAVEL OBSTRUCTION		1.0		
	1.5				1.5		
	2.0				2.0		

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH05

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	CN
Drilled By:	MG	Coordinates:	1542593 E, 5154544 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Soil
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft to soft, moist, non-plastic. (TOPSOIL)	
A. DEPOSITS	0.5		SILT, trace to minor fine sand, light brownish grey. Soft, moist, non-plastic. (ALLUVIAL DEPOSITS) Trace fine sub-rounded gravel.	
	1.0		END OF BORE. 0.50 METRES. GRAVEL OBSTRUCTION	
	1.5			
	2.0			

SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2

(Blows per 100mm Increment)

DEPTH (m)	0	5	10	15	20
0.0	0				
	1				
	3				
	2				
	3				
0.5	8				
	4				
	5				
	2				
	8				
1.0	12				
	10				
	13				
	20				
	25				
1.5					
2.0					

Comments

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

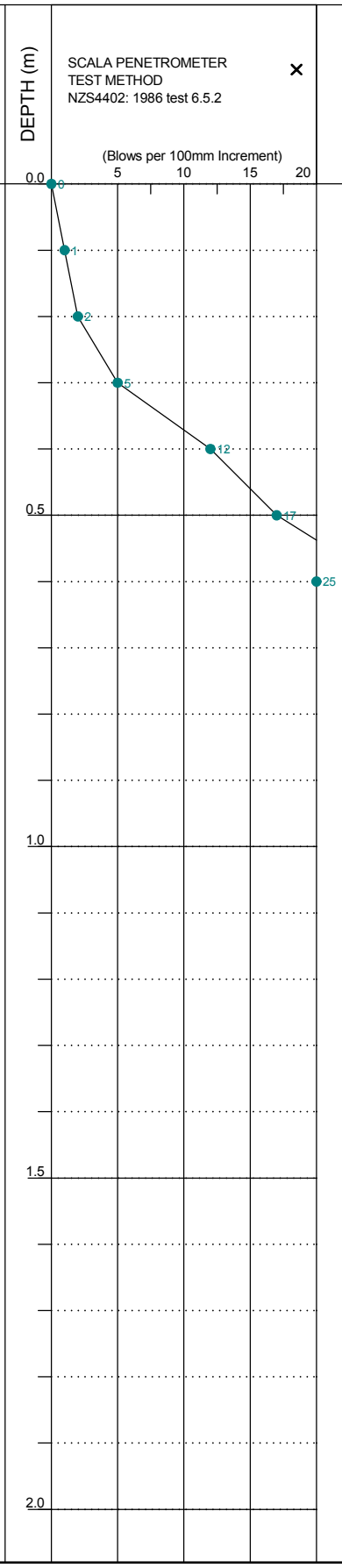
PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH06

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	CN
Drilled By:	MG	Coordinates:	1542948 E, 5154408 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	24m	Surface Conditions:	Near Level, Grass
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Soft, moist, non-plastic. (TOPSOIL)	
A. DEPOSITS	0.5		SILT, trace to minor fine sand, greyish light brown, mottled orange. Soft, moist to wet, non-plastic. (ALLUVIAL DEPOSITS) Trace to minor fine sub-rounded to rounded gravel.	
			END OF BORE. 0.50 METRES. GRAVEL OBSTRUCTION	



Comments

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH07

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	CN
Drilled By:	MG	Coordinates:	1542747 E, 5154395 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	25m	Surface Conditions:	Near Level, Grass
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Soft, moist to wet, non-plastic. (TOPSOIL)	
ALLUVIAL DEPOSITS	0.5		SILT, trace to minor fine sand, light brownish grey, mottled orange. Soft to firm, moist, non-plastic. (ALLUVIAL DEPOSITS)	
			Trace to minor sub-rounded to rounded gravel.	
	1.0		END OF BORE. 0.60 METRES. GRAVEL OBSTRUCTION	
	1.5			
	2.0			

SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2

(Blows per 100mm Increment)

DEPTH (m)	0	5	10	15	20
0.0	0				
	1				
	2				
	2				
	4				
0.5	3				
	7				
	10				
	20				
	25				
1.0					
1.5					
2.0					

Comments

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

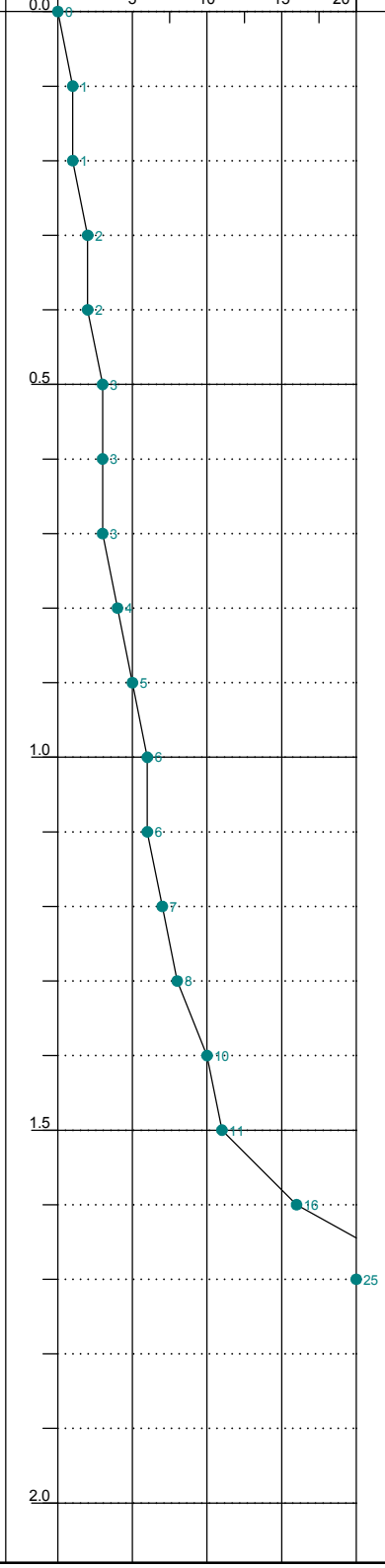
PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH08

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	MG	Coordinates:	1542271 E, 5154356 N	Reviewed By:	MN
Date Started:	10/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Grass
Date Finished:	10/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft to soft, wet, non-plastic. (TOPSOIL)	
ALLUVIAL DEPOSITS	0.5		SILT, trace to minor fine sand, light brown, mottled brownish orange. Soft to firm, wet, non-plastic. (ALLUVIAL DEPOSITS)	
	1.0		Trace fine to medium sub-rounded to rounded gravel.	
	1.5		END OF BORE. 1.00 METRES. GRAVEL OBSTRUCTION	
	2.0			



Comments

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH09

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	CN	Coordinates:	1542555 E, 5154262 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Grass
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2 (Blows per 100mm Increment)	Comments
TOPSOIL/FILL	0.0		SILT, trace fine sand trace fine to medium sub-rounded to rounded gravel, dark brown. Soft to firm, moist, non-plastic. (TOPSOIL/FILL)		0.0	0 5 10 15 20	
			Mixed light brown, mottled brownish orange.				
	0.5		Dark brown.		0.5		
			Minor fine to medium sub-rounded to rounded gravel.				
			END OF BORE. 0.70 METRES. GRAVEL OBSTRUCTION				
	1.0				1.0		
	1.5				1.5		
	2.0				2.0		

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

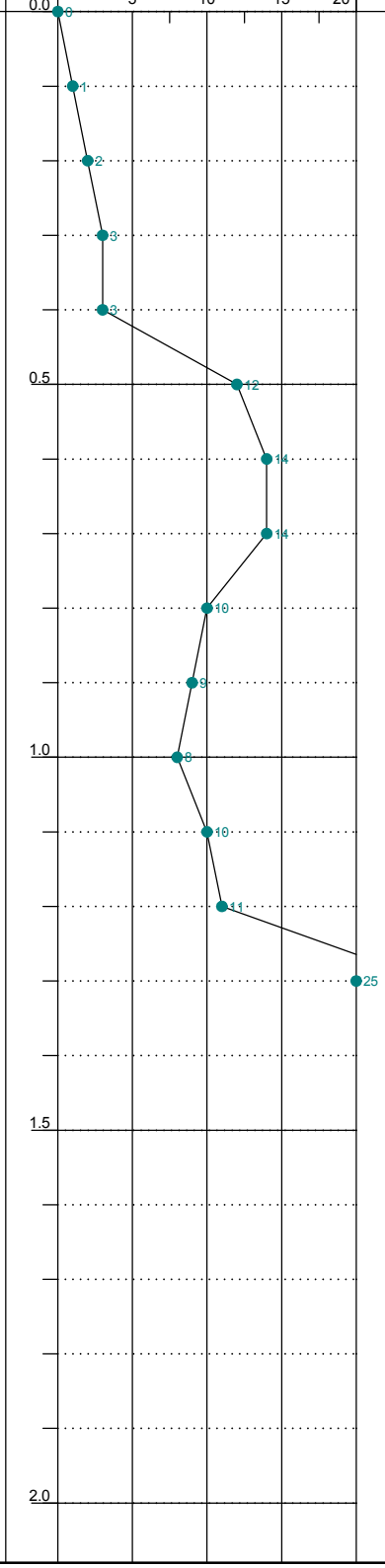
PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH10

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	CN	Coordinates:	1542837 E, 5154266 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	25m	Surface Conditions:	Near Level, Grass
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft to soft, wet, non-plastic. (TOPSOIL)	
ALLUVIAL DEPOSITS	0.5		SILT, trace to minor fine sand, light brown, mottled brownish orange, Soft to stiff, wet, non-plastic. (ALLUVIAL DEPOSITS)	
			Trace fine to medium sub-rounded to rounded gravel.	
	1.0		END OF BORE. 0.60 METRES. GRAVEL OBSTRUCTION	
	1.5			
	2.0			



Comments

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH11

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	MG	Coordinates:	1542352 E, 5154126 N	Reviewed By:	MN
Date Started:	10/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Pasture
Date Finished:	10/8/17	Water Level:	1.1m	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft to soft, wet, non-plastic. (TOPSOIL)
ALLUVIAL DEPOSITS	0.5		SILT, minor fine sand, light brown. Soft to firm, wet, non-plastic. (ALLUVIAL DEPOSITS)
			Minor to some fine sand.
	1.0		Trace to minor fine sand, light grey, mottled brownish orange,
			Dark grey, saturated.
	1.5		END OF BORE. 1.40 METRES. GRAVEL OBSTRUCTION
	2.0		

WATER LEVEL (m)

SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2

(Blows per 100mm Increment)

DEPTH (m)	5	10	15	20
0.0	0			
	1			
	1			
	2			
	1			
0.5	2			
	3			
	4			
	5			
	5			
1.0	3			
	3			
	4			
	5			
	5			
1.5	7			
	8			
				25
2.0				

Comments

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH12

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	CN	Coordinates:	1542619 E, 5154126 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Pasture
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft, moist to wet, non-plastic. (TOPSOIL)
ALLUVIAL DEPOSITS	0.5		SILT, trace to minor fine sand, greyish light brown. Soft to firm, moist, non-plastic. (ALLUVIAL DEPOSITS)
			Mottled brownish orange.
			Light brown, moist to wet.
			Wet.
			Minor fine sand.
	1.0		Dark grey streaks, moist.
			No dark grey streaks, trace fine to medium sub-rounded gravel.
	1.5		END OF BORE. 1.50 METRES. GRAVEL OBSTRUCTION
	2.0		

WATER LEVEL (m)

SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2

(Blows per 100mm Increment)

DEPTH (m)	5	10	15	20
0.0	0			
	0			
	0.5			
	0.5			
	1			
0.5	1			
	2			
	2			
	2			
	6			
1.0	6			
	6			
	9			
	16			
	15			
1.5	12			
	25			
2.0				

Comments

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH13

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	CN
Drilled By:	MG	Coordinates:	1542846 E, 5154103 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	25m	Surface Conditions:	Near Level, Grass
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2 (Blows per 100mm Increment)	Comments
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Soft, wet, non-plastic. (TOPSOIL)		0.0	0	
ALLUVIAL DEPOSITS	0.5		SILT, trace fine sand, light brown, mottled orange. Soft, moist to wet, non-plastic. (ALLUVIAL DEPOSITS)		0.5	3	
			Light brownish grey with heavy orange mottling.			5	
			Minor fine sand, trace fine subrounded gravel.			7	
	1.0		END OF BORE. 0.80 METRES. GRAVEL OBSTRUCTION		1.0	12	
						15	
						17	
						25	
	1.5				1.5		
	2.0				2.0		

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH14

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	CN
Drilled By:	MG	Coordinates:	1542632 E, 5153991 N	Reviewed By:	MN
Date Started:	8/8/17	Ground Elevation:	24m	Surface Conditions:	Near Level, Pasture
Date Finished:	8/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Very soft, moist to wet, non-plastic, trace rootlets. (TOPSOIL)	
ALLUVIAL DEPOSITS	0.5		SILT, trace to minor fine sand, light brown, heavy orange mottling. Soft, moist, non-plastic. (ALLUVIAL DEPOSITS)	
			Streaked grey, Firm.	
	1.0		Dark grey, mottled orange.	
			END OF BORE. 1.20 METRES. GRAVEL OBSTRUCTION	
	1.5			
	2.0			

SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2

(Blows per 100mm Increment)

DEPTH (m)	5	10	15	20	Comments
0.0	0				
	0.5				
	0.5				
	1				
	2				
0.5	3				
	3				
	3				
	3				
	4				
1.0	7				
		14			
			17		
				20	
				25	
1.5					
2.0					

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH15

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	MG	Coordinates:	1542333 E, 5153916 N	Reviewed By:	MN
Date Started:	10/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Pasture
Date Finished:	10/8/17	Water Level:	0.7m	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"
TOPSOIL	0.0	SILT, trace fine sand, dark brown.Very soft to soft, wet, non-plastic. (TOPSOIL)
ALLUVIAL DEPOSITS	0.5	SILT, minor fine sand, light brown, mottled brownish orange. Soft to firm, wet, non-plastic. (ALLUVIAL DEPOSITS)
		Moist to wet.
		Minor to some fine sand.
	1.0	Wet to saturated.
		PEAT, minor silt, dark brown to black. Soft, saturated.
	1.5	
	2.0	END OF BORE. 1.70 METRES. GRAVEL OBSTRUCTION

WATER LEVEL (m)

SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2

(Blows per 100mm Increment)

DEPTH (m)	5	10	15	20
0.0	0			
	0			
	1			
	2			
	3			
0.5	2			
	2			
	3			
	3			
	4			
1.0	5			
	6			
	3			
	3			
	3			
1.5	4			
	7			
	10			
				25
2.0				

Comments

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Auger Hole No: AH16

Sheet 1 of 1

Drill Type:	50mm Hand Auger	Project No:	C17120	Logged By:	MG
Drilled By:	MG	Coordinates:	1542215 E, 5153782 N	Reviewed By:	MN
Date Started:	10/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Grass
Date Finished:	10/8/17	Water Level:	Groundwater not encountered	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2 (Blows per 100mm Increment)	Comments
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Soft, moist to wet, non-plastic. (TOPSOIL)		0.0	0, 2, 3, 3, 2	
ALLUVIAL DEPOSITS	0.5		SILT, minor fine sand, light brown, mottled brownish orange. Soft to firm, moist to wet, non-plastic. (ALLUVIAL DEPOSITS)		0.5	2, 3, 4, 4, 4	
			Moist.				
			Light grey, heavy orange mottling.				
	1.0				1.0	4, 4, 5, 5, 5	
			Trace to minor fine sand.				
			Dark grey, no orange mottling.				
	1.5		Wet to saturated.		1.5	8, 21, 25	
			END OF BORE. 1.60 METRES. GRAVEL OBSTRUCTION				
	2.0				2.0		

HAND AUGER WITH SCALA CHCH LOG C17120_AH02-AH17_08-08-17_11-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

Unit 11, 114 Sawyers Arms Road, Christchurch 8542. Phone 03 352 4519

www.soilandrock.co.nz

Soil&Rock Consultants
For well-grounded solutions

CLIENT: Louise and Brent Harkerss

PROJECT: Geotechnical Investigation, Leeston

Test Pit No: TP01

Sheet 1 of 1

Drill Type:	16 Tonne Wheeled Excavator	Project No:	C17120	Logged By:	CN
Drilled By:	Densem Contractors Ltd	Coordinates:	1542833 E, 5154999 N	Reviewed By:	
Date Started:	8/8/17	Ground Elevation:	26m	Surface Conditions:	Near Level, Grass
Date Finished:	8/8/17	Water Level:	0.6m	Shear Vane Number:	N/A

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST METHOD NZS4402: 1986 test 6.5.2 (Blows/100mm)	LABORATORY TESTS
TOPSOIL	0.0		SILT, trace fine sand, dark brown. Soft, moist, non-plastic, trace rootlets. (TOPSOIL)		0.0	5 10 15	
ALLUVIAL DEPOSITS	0.5		SILT, trace fine sand, light brownish grey, mottled orange, Soft to firm, moist, non-plastic. (ALLUVIAL DEPOSITS)		0.5		
	1.0		Fine to coarse sandy fine to coarse sub-rounded to rounded GRAVEL, trace silt, grey, Dense, saturated.	▽	1.0		
	1.5				1.5		
	2.0		END OF TEST PIT. 1.6 METRES. HOLE COLLAPSE		2.0		
	2.5				2.5		
	3.0				3.0		

COMMENTS:

TEST PIT LOG C17120_TP01_08-08-17_DRAFT.GPJ S+R_2012-AGS - REVISED.GDT 5/10/17

BASELINEGROUP

Appendix 6: Flood Hazard Assessment

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

15 August 2017

Baseline Group
40 Welles Street
Christchurch Central
Christchurch 8011
Attn: Jalesh Devkota

Dear Jalesh

LOT 1, 2, 3, & 4 DP 82846, LOT 1 DP 9138, LOT 2 DP 319397, LOT 2 DP 365379, PART RS 5482 & 5483, SECTION 7 LEESTON SETT – HIGH STREET, LEESTON

Flood Risk

The property is located in an area that can be affected by surface water runoff and ponding during local rainfall events.

The property has not been regularly monitored by Environment Canterbury following local rainfall events, and information on past flooding is limited to photographs taken in 1986 and 2013.

Photograph No. **621** was taken on 24/08/1986 following a rainfall event where 72.7 mm was recorded at Greenpark, 81.3 mm at Lincoln, 96.8 mm at Burnham and 105.1 mm at Dunsandel in the 72 hours to 9 am on 23/08/1986. The return period of the rainfall at Greenpark and Lincoln is estimated at 2 - 5 years, with the slightly heavier rainfall at Burnham and Dunsandel having an estimated return period of 5 - 10 years. Antecedent conditions at the time were relatively wet due to rainfall earlier in the month.

Photographs No. **0393**, **0408**, **0421**, **0788**, and **0802** were taken on 23/06/2013 following a rainfall event where 117.6 mm was recorded at Leeston in the 72 hours to 9 am on 22 June 2013. This rainfall had a return period of approximately 10 years, however this was following a rainfall of more than 60 mm earlier in the week.

The photographs show rainfall runoff flowing across the property and ponding behind barriers to flow and in natural depressions. Note that in both cases the photographs were taken 24 hours or more after the bulk of the rain had fallen, and therefore will not show flooding at its peak. In larger flood events it is likely that more extensive areas than those shown as flooded in the photographs will be affected.

The property is within part of the Selwyn District that has been flown by LiDAR; an airborne laser system that maps the ground topography. The accuracy of this topographical survey is considered to be in the order of ± 150 mm or better. Enclosed for your information is a **map showing ground level variations** at the property derived from LiDAR data obtained in 2015. These levels are presented in meters above mean sea level (m.a.m.s.l.) – Lyttelton 1937 Datum.

Selwyn District Council have begun modelling of rainfall runoff across the district and this investigation is due to be completed early next year. Until this work is completed, the best available information about rainfall runoff at the property is limited to the flooding photographs and LiDAR data.

Our Ref: HAZA/FLD/ASS/CHC/17556
Your Ref:
Contact: Callum Margetts

Chapter 11 of the Canterbury Regional Policy Statement provides a framework for managing natural hazard risk in Canterbury. Policy 11.3.2 of this document states that development should be avoided in areas subject to inundation in a 200 year return period flood event unless a range of conditions are met. These include the requirement for new buildings to have a floor level above the 200 year return period design flood level.

Yours sincerely

Callum Margetts

Natural Hazards Analyst

Encl. Photograph No. 621 (24/08/1986)
Photographs No. 0393, 0408, 0421, 0788, & 0802 (23/06/2013)
2015 LiDAR Map

621. Leeston. (West) 24/08/1986

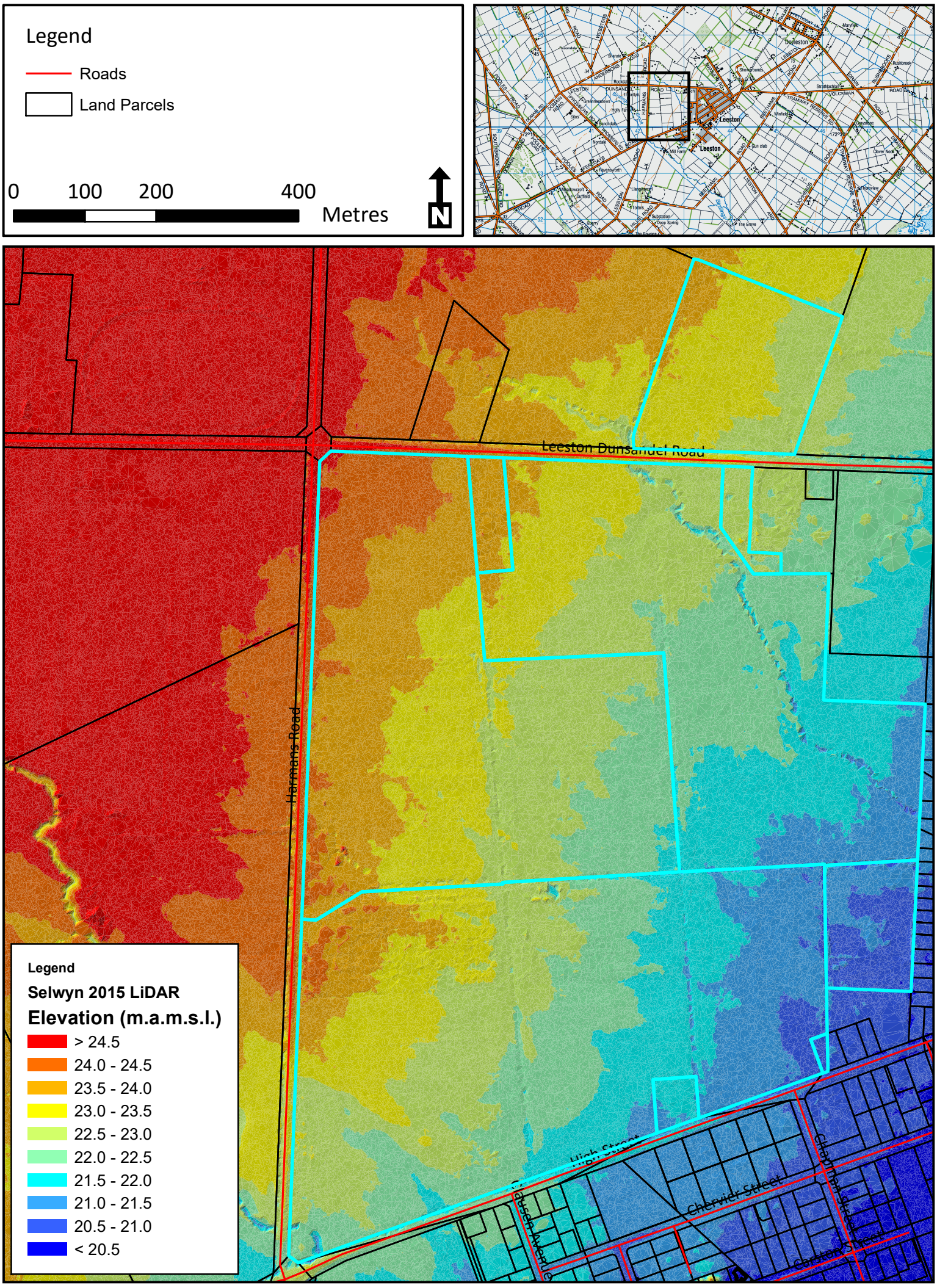

0393 - Leeston. Looking west - 23-06-2013

0408 - Leeston. Looking south toward Leeston Dunsandel Road - 23-06-2013

0421 - Leeston. Looking north-east along High Street - 23-06-2013

0788 - Looking south-east across Harmans Road toward Leeston - 23-06-2013

High Street, Leeston - 2015 LiDAR Map



BASELINEGROUP

Appendix 7: Preliminary Site Investigation

Soil Contamination Risk
Stage 1 - Preliminary Site Investigation Report

Proposed Plan Change
Leeston Dunsandel Road, Harmans Road and High Street, Leeston

July 2017

Malloch Environmental Ltd

801 East Maddisons Road, Rolleston 7614

021 132 0321

www.mallochenviro.co.nz

Asbestos Surveys • Soil Contamination Investigations • Environmental Planning

CONTENTS

APPENDICES

1 Executive Summary

The subject site involves seven adjacent rural lots in western Leeston, totalling approximately 79ha, mostly bounded by Leeston Dunsandel Road, Harmans Road and High St, Leeston, Canterbury. It is proposed to apply for a plan change that will eventually allow residential development of the area. This will ultimately result in a change of use following subsequent subdivision and disturbance of soils. The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Health) Regulations 2011 (NESCS) require an assessment of the likelihood of soil contamination being present. It is noted also that Malloch Environmental Ltd is obligated to consider the requirements of Section 10 (4) of the Health and Safety at Work (Asbestos) Regulations 2016. This report details the work undertaken to assess the risks.

The vast majority of the plan change area has been used for pastoral uses all its known history and it is highly unlikely that there would be a risk to human health if these areas were to be developed for an eventual residential use.

However, a variety of current and historic HAIL uses have been confirmed on a number of smaller areas within the proposed plan change area. The uses on these areas include a commercial agrichemical applicators yard, contractor's yards, a possible farm pit and a number of locations with pre 1940's buildings, which pose a significant lead risk. All of these uses have the potential to have caused contamination of soil that may pose a risk to human health, and further detailed investigations would be required for these areas at subdivision stage. It is expected that even if contamination is present, the logistical and financial costs to remediate any contamination would not be so onerous to preclude eventual residential development and use.

In terms of the proposed plan change the site does not have any significant risks that could not be worked through during the subsequent subdivision and development stages.

In terms of planning status at the time of writing of this report, the NESCS does apply to the site and resource consent is required if any of the activities outlined in the NESCS are proposed that involve the identified risk areas.

2 Objectives of the Investigation

This report has been prepared in accordance with the Ministry for the Environment's "Contaminated Land Management Guidelines No 1: Reporting on Contaminated Sites in New Zealand". This report includes all requirements for a Stage 1 preliminary site investigation report. This is one of the methods described in Section 6(3) of the NESCS to establish whether the regulations apply. The objective is to determine whether there is any risk of potential contamination that would warrant further investigation.

3 Scope of Work Undertaken

The scope of the work undertaken has included:

- Review of Selwyn District Council property files
- Obtaining ECan data from the Listed Land Use Register (LLUR)
- Search of LINZ NZ orchard database
- Review of historic aerial photos
- Review of historic titles
- Site visit
- Interviews with former and current owners
- Preparation of report in accordance with MfE guidelines

4 Site Identification

The site is located to the west of the township of Leeston, generally in the area bounded by Leeston Dunsandel Road, Harmans Road and High St, Leeston, Canterbury, as shown on the plan in **Figure 1** below. The site is legally described as Lots 1 - 4 DP 82846, Lot 2 DP 365379, Lot 1 DP 9138, Pt RS 5482 and Pt RS 5483 and has a total area of approximately 79 ha.

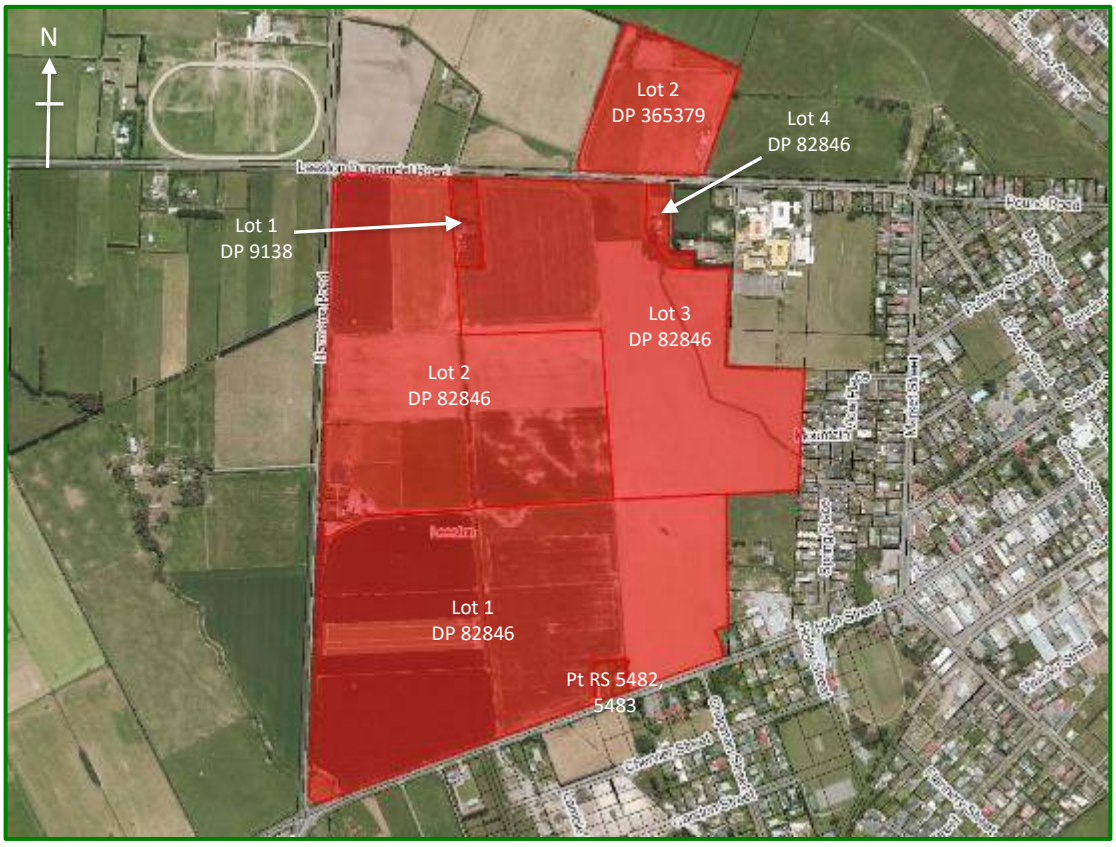


Figure 1 – Location Plan

5 Site Description and Surrounding Environment

The subject site is flat rural land on the outskirts of the township of Leeston. There are dwellings and associated outbuildings on Lot 4 DP 82846, Lot 1 DP 9138, Lot 2 DP 82846 and Pt RS 5482/3. Lot 2 DP 365379 has a number of sheds on it, including a large commercial type shed. The remaining lots have no buildings or structures on them and are in pasture. Leeston Creek runs through the eastern part of Lot 3 DP 82846. The subject site is clearly defined by existing hedges and fences. The surrounding area is residential to the east and south, with Ellesmere College to the north-east of the subject site. There is similar rural farmland to the north and west. The main street of Leeston lies approximately 300m to the east.

6 Geology and Hydrology

The ECan GIS describes the soils and soil trace elements as shown below:

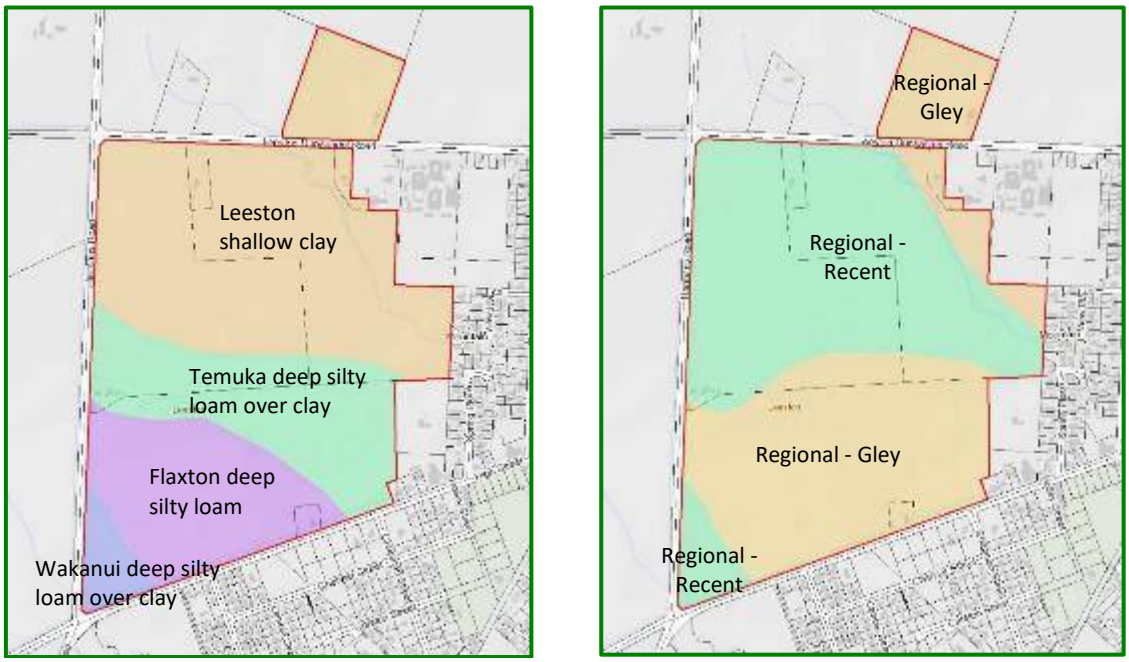


Figure 2 – Soils Plan

Wells in the area indicate that topsoils are underlain by a one metre layer of clay and then sandy gravels. The site lies over the unconfined/semi-confined gravel aquifer system. Ground water levels recorded on nearby bore logs are between 0.8m and 2.8m deep. The direction of ground water flow is generally in a south-easterly direction. There are a number of active domestic supply wells within close proximity of the subject site, including one on the subject site. The nearest active downgradient community supply well is approximately 400m to the south-east. Leeston Creek runs through Lot 3 DP 82846. There are open drains which run down the northern side of Leeston Dunsandel Rd, the western side of Harmans Rd and the northern side of High St. Birdlings Brook also passes through the south-western corner of Lot 1 DP 82846. There are various farm drains across the property.

7 Site History

7.1 Previous Site Ownership and Use

Historic Certificates of Title were searched for each lot on the subject site. Due to the complexity and number of titles, reproducing a summary for each lot in this report would involve multiple pages and does not add value to the reader. Accordingly, a brief summary only is provided. Full

details of the ownership history can be provided by request to Malloch Environmental Ltd if required.

The lots have been owned mostly by farming families since the early 1900s. The occupations listed have almost exclusively been farming related for all of the lots.

A summary of the Historic Titles viewed is included in **Appendix A.**

7.2 District Council Records

The Selwyn District Council property file was searched and no references directly related to soil contamination risk were found. Building permits/consents included:

Lot 2 DP 365379
1973 – Erect a haybarn

Lot 2 DP 82846
1971 – Install septic tank
1978 – House extension additional bedrooms
1988 – House repairs
1989 – Solid fuel heater
1990 – Cover over stockyards
1991 – 128m² car shed
1992 – Hayshed
1996 – Upgrade garage to sleepout

Lot 4 DP 82846
1980 – House extension – washhouse and toilet
1985 – Garage
2001 – Solid fuel heater
2002 – Double garage

Lot 1 DP 9138
1963 – House extension – washhouse and bathroom
1965 – Polite storage shed
1966 – Garage
1967 – Implement shed
1974 – House extension
1975 – Tanker room
1977 – Septic tank and drainage
1982 – Solid fuel heater
1987 – Reclad dwelling in stucco
1992 – Double garage
2011 – Solid fuel heater

Pt RS 5482 & 5483
1966 – Machinery shed
1968 – Septic tank
1996 – Solid fuel heater
1998 – House extension – additional bedrooms

7.3 Regional Council Records

The ECan Listed Land Use Register Statement lists Lot 2 DP 82846, 56 Harmans Rd, on the subject site for 'A10 - Persistent pesticide bulk storage or use' with horticultural activities noted in the 2003 to present day aerial photographs. The site is listed as 'not investigated'.

There are also adjacent sites listed on the LLUR. Ellesmere College at 21 Leeston Dunsandel Rd is listed for 'A10 - Persistent pesticide bulk storage or use' with sports fields noted in the 1984 to present day aerial photographs. Holley House at 125A High St is listed for 'G3 - Landfill sites' with a pit noted. WH Cochrane and Sons Ltd, also at 125A High St, is listed for 'A17 - Storage tanks or drums for fuel, chemicals or liquid waste' with a diesel storage tank noted in the 1950s/1960s. All of these adjacent sites are listed as 'not investigated'. See LLUR Statement in **Appendix C.**

Resource consent information was sourced from the GIS mapping system. There is an active resource consent for Lot 2 DP 82846 on the subject site for bore water take. Adjacent sites have resource consents for earthworks in the Leeston Creek and storm water discharge.

7.4 LINZ Records

The LINZ Orchard layer does not show the subject site or adjacent sites as having listed orchards.

7.5 Review of Historic Aerial Photographs

A total of seven aerial photos (see copies in **Appendix B**) have been used to assess the historic use of the site as detailed below:

- The earliest photo is from **1942** and has been sourced from ECan's GIS. The subject site is mostly in farming pasture. There is a dwelling, sheds and what appears to be some animal pens on Lot 4 DP 82846. There is a dwelling, garage and sheds on Lot 1 DP 9138. There are also dwellings and sheds in the south-western corner of Lot 2 DP 82846 and on Pt RS 5482/3. The surrounding land is similar rural farmland. The township of Leeston can be seen to the east. To the east of Lot 4 DP 82846 a larger building can be seen which is the old flax mill being used as a boot manufacturing factory. A shallow depression in the ground can be seen beyond the subject site, below the southern boundary of the dogleg part of Lot 3 DP 82846.
- A photo from **1966** is sourced from ECan's GIS and shows that an additional shed has been built in the southern part of Lot 4 DP 82846. The dwelling on Lot 1 DP 9138 has been replaced and some sheds have been constructed to the south of the dwelling. The shallow depression seen on adjacent land has been excavated further. There are no other significant changes on the subject site or the surrounding area.
- A photo from **1975** is sourced from ECan's GIS and shows that a shed has been built on Lot 2 DP 365379 and a shed built on Pt RS 5482/3. The dwelling has been extended and a garage built on Lot 1 DP 9138. There are no other significant changes on the subject site or the surrounding area.
- A photo from **1984** is sourced from ECan's GIS and shows no changes to the subject site. Ellesmere College has been built to the east of the subject site. The pit below the southern boundary of the dogleg of Lot 3 DP 82846 appears to have been increased in size.

- A photo from **1994** is sourced from ECan's GIS shows that additional sheds have been built to the east and south of the dwelling on Lot 2 DP 82846. There are no other significant changes on the subject site or the surrounding area.
- A photo from **2004** is sourced from ECan's GIS and shows that a tunnel house has been built to the north of the dwelling on Lot 2 DP 82846. An extension has been added to the rear of the dwelling at Lot 4 DP 82846, along with a shed to the south of the dwelling. There are no other significant changes on the subject site or the surrounding area.
- The most recent aerial photo reviewed, dated **2012**, sourced from ECan's GIS shows that the shed on Lot 2 DP 365379 has been replaced by a larger shed along with some smaller sheds. The area around these sheds appears to be used for the storage of building materials or machinery. There is also machinery or building materials stored at the north-western corner of this lot, as well as some sort of market gardening occurring in the northern part of the lot. A garage has been built to the east of the dwelling on Lot 4 DP 82846. More sheds have been built on Lot 2 DP 82846 and there is machinery stored around these sheds, as if it was being used as a contracting yard.

7.6 Local Information

An interview with a former owner of the site, Murray Marshall, was conducted on the 17th July, 2017. The subject site was the location of the family farm where Murray grew up. Murray recalls that the family home was on Harmans Rd, opposite Holly Farm. He remembers that Lot 1 DP 9138 and Pt RS 5482/5483 were always separate lots and not part of the family farm. The farm was one of the first dairy farms in the district and ran a few dozen cows as well as growing crops. He doesn't recall seeing any sheep farming or any sheep yards on the site. There was also no farm pit as the family used the pit at Holly farm on the opposite side of Harmans Rd.

7.7 Site Visit

A site visit was carried out on 18th July 2017. The following points of interest were noted:

- **Pt RS5482/5483, 149 High Street** – An older dwelling and outbuildings exist on this lot. The site appears to be used for a lifestyle rural residential use.
- **Lot 1 DP 9138, 85 Leeston Dunsandel Road** – An older dwelling and outbuildings exist on this lot. The site appears to be used for a lifestyle rural residential use.

- **Lot 4 DP 82846, 45 Leeston Dunsandel Road** - An older dwelling and outbuildings exist on this lot. A number of the outbuildings were in a very deteriorated state. The site appears to be used for a lifestyle rural residential use. A number of the fences included recycled old painted corrugated iron.




- Lot 2 DP 365379, 60 Leeston Dunsandel Road – the area containing buildings appears to be the work yard for contractors. The shed was unlocked and open when visited but no-one was present to advise on uses. The site had two above ground fuel tanks. One was a newer looking petrol tank, and the other an older tank likely for diesel. At the north west corner, it appeared to be used as a transport yard of some sort. The gate to access that area was locked so close inspection was not possible.


Petrol tank

Diesel tank appears plumbed into garage

Main shed, mix of concrete and dirt floor

Transport yard??? North western corner

- Lot 2 DP 82846, 56 Harmans Road – This address is the residential and commercial base for Ellesmere Chemical Applicators, and also grows and sells camellias and rhododendrons. The surrounding paddocks are also under the same ownership. The

current owner Brent Harkerss was interviewed. He advised they had been at the site for about 16 years and prior to that the various outbuildings were solely farm related. The site includes the older original dwelling, which has had significant repairs and partial replacement following a fire. An adjacent sleepout is clad in cement board which is likely to contain asbestos. The cladding was in good condition. Various outbuildings exist to house vehicles and machinery. A raised shed contained the hazardous chemical store and adjacent to that was concrete pad used for a chemical mixing and wash down area. These discharged to a large yard sump which drained to an underground store tank. This tank had an overflow pipe running into the adjacent drain. A modern diesel tank sat outside one of the sheds. The paddocks have been used for grazing stock and it is thought there was some sort of small farm pit or old quarry in the north of the south-eastern paddock. Mr Harkerss said the grass grew well in this area due to the claypan having been removed and was visually different to the surrounding paddock.

Camelia and rhododendron nursery

Outbuildings adjacent to nursery

Sleep out clad in cement board

Dwelling

Diesel tank

Chemical store

Chemical mixing and washdown area

Underground washdown tank

Overflow pipe to drain

Portable tank, various storage of containers

Former hay shed, now vehicle store

8 HAIL Uses and Possible Types of Contaminants Associated with Past Use

The Hazardous Activities and Industries List (HAIL) compiled by The Ministry for the Environment include the following categories (*in italics*) that could be associated with the historical uses of the site with a summary of the risk of these activities having been carried out on the site.

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
17. Storage tanks or drums for fuel, chemicals or liquid waste

The majority of the subject site, currently in paddocks, has been used for pastoral activities for its known history. The normal uses of fertilisers and pastoral weed controls associated with these uses are unlikely to have caused soil contamination which would pose a risk to human health.

However, the area around the dwelling and sheds on Lot 2 DP 82846 has been and is still currently being used as chemical spraying contracting business. There is a chemical storage shed in this yard, as well as a washdown area and washdown water storage tanks. There is a possibility that chemical spillage and leakage could have contaminated the soils in this area. Contaminants of concern include heavy metals, organophosphorus/nitrogen pesticides (ONP), and acidic herbicides.

There is also a small nursery to the north of the dwelling on Lot 2 DP 89846 which is used for the growing of camellias and rhododendrons since at least 2004. Given the recent nature of this activity, it is unlikely that persistent organochlorine pesticides (OCP) have been used. It is likely that modern chemicals have been used in this area that may have caused contamination of the soils. Contaminants of concern include heavy metals and ONP.

There are currently fuel storage tanks on Lot 2 DP 82846 and Lot 2 DP 365379. Leakage and spillage of fuels may have contaminated the soils in these areas. It is likely that fuel tanks have existed in other locations on the site over the years, as is normal for a farm working yard area. Contaminants of concern include heavy metals and hydrocarbons.

G - Cemeteries and waste recycling, treatment and disposal

3. Landfill sites

There is evidence to suggest that there is a former farm pit in the eastern part of Lot 1 DP 82846. It cannot be ruled out that uncontrolled dumping has occurred in the pit. Contaminants of concern include heavy metals, hydrocarbons, asbestos and OCP.

I - Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment

There have been dwellings and farm buildings on all of the lots except Lot 2 365379 and Lot 1 DP 82846, from at least the 1940s. There is a high risk that lead paint has been used on those buildings. Any natural deterioration or intentional removal, prior to the modern-day risk mitigating methods, may have caused contamination of the soil. Contaminants of concern are heavy metals.

There have also been multiple buildings constructed during the 1970s and 1980s when the use of asbestos containing materials was commonplace. There is a possibility that asbestos from construction of the buildings and deterioration over time may have contaminated the soils around these buildings.

9 Basis for Soil Guideline Values (SGV)

9.1 Activity Description

This report has been written for the following potential activities:

- Plan change and future subdivision of the site for residential use,
- Soil disturbance associated with the future residential development of the site.

9.2 Zoning

The subject site is currently zoned Rural – Outer Plains in the western part of the site and Residential - Living 2 deferred in the eastern part of the site.

9.3 Soil Guideline Values

Human health soil contaminant standards for a group of 12 priority contaminants were derived under a set of five land-use scenarios, and are legally binding under The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Health) Regulations 2011 (NESCS). These standards have been applied where applicable. For contaminants, other than the 12 priority contaminants, the hierarchy as set out in the Ministry for the Environment Contaminated Land Management Guidelines No 2 has been followed. For soil, guideline values are predominantly risk based, in that they are typically derived using designated exposure scenarios that relate to different land uses. For each exposure scenario, selected pathways of exposure are used to derive guideline values. These pathways typically include soil ingestion, inhalation and dermal adsorption. The guideline values for the appropriate land use scenario relate to the most critical pathway.

The land-use scenarios applicable for this site would be 'residential 10% produce', and 'outdoor/maintenance workers' as a proxy for construction workers disturbing soils.

10 Site Characterisation and Recommendation

The investigations undertaken have revealed that the subject site has been used for a variety of sheep, beef, dairy and crop farming for its known history. There is evidence of pre-1940s buildings, chemical storage, fuel storage and a farm working and maintenance yard. All of these uses pose a risk of contamination of the soil that may pose a risk to human health.

It is recommended that a detailed site investigation is carried out on the risk areas outlined in the plan below, at the subdivision stage.

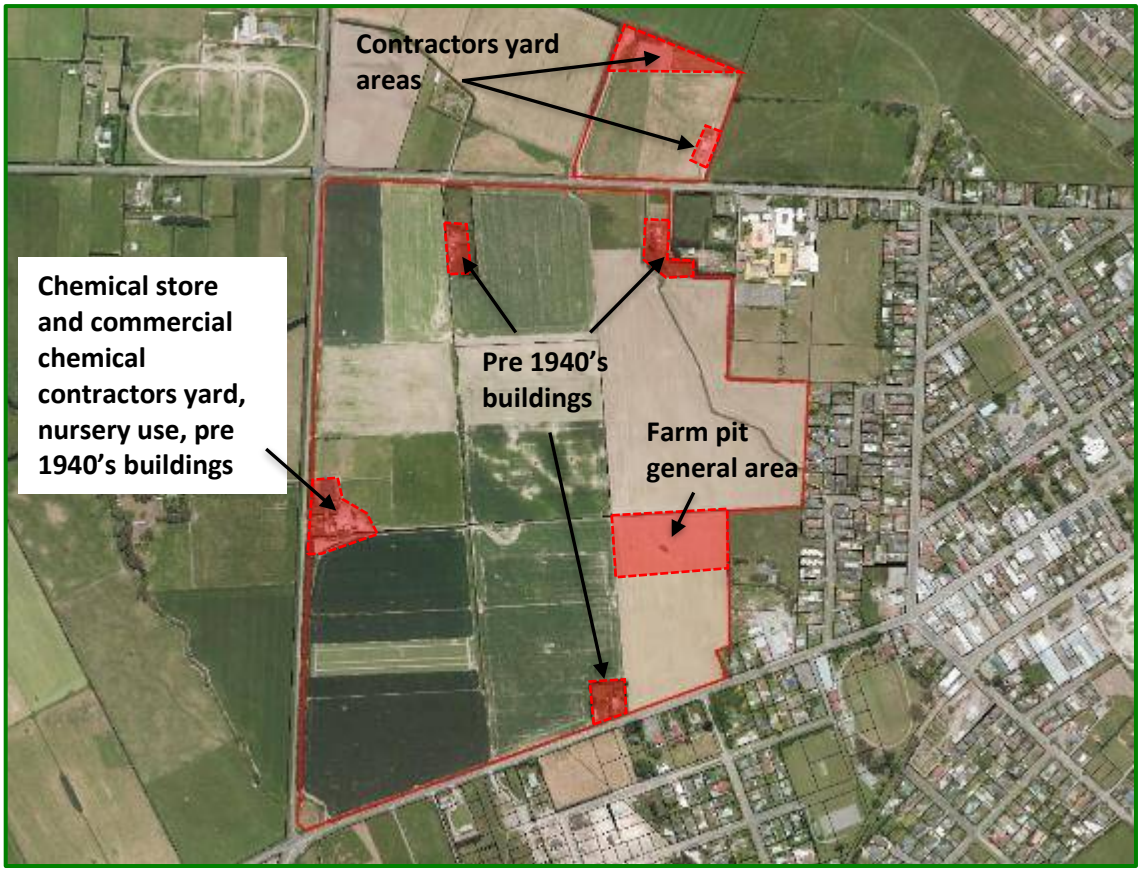


Figure 3 – Risk Area Plan

For the remainder of the subject site there is no evidence of HAIL activities or industries having occurred, now or in the past. The area of the subject site that is not highlighted as a risk area is considered suitable for residential development with no further investigations required.

11 Planning Status

In terms of the NESCS section 5 (7) states that the land is considered to be covered if an activity or industry described in the HAIL is being undertaken on it; or has been undertaken on it; or it is more likely than not that an activity is being or has been undertaken on it. Section 6 describes the methods for determining whether the land is as described in section 7. Method 6 (3) is to rely on a Preliminary Site Investigation.

This Preliminary Site Investigation has found that there is evidence of HAIL activities having occurred on the site and resource consent is required should any of the activities outlined in the NESCS be proposed that involve the identified risk areas.

12 Conclusion

The vast majority of the plan change area has been used for pastoral uses all its known history and it is highly unlikely that there would be a risk to human health if these areas were to be developed for an eventual residential use.

However, a variety of current and historic HAIL uses have been confirmed on a number of smaller areas within the proposed plan change area. The uses on these areas include a commercial agrichemical applicators yard, contractor's yards, a possible farm pit and a number of locations with pre 1940's buildings, which pose a significant lead risk. All of these uses have

the potential to have caused contamination of soil that may pose a risk to human health, and further detailed investigations would be required for these areas at subdivision stage. It is expected that even if contamination is present, the logistical and financial costs to remediate any contamination would not be so onerous to preclude eventual residential development and use.

In terms of the proposed plan change the site does not have any significant risks that could not be worked through during the subsequent subdivision and development stages.

13 Limitations

Malloch Environmental Limited has performed services for this project in accordance with current professional standards for environmental site assessments, and in terms of the client's financial and technical brief for the work. Any reliance on this report by other parties shall be at such party's own risk. It does not purport to completely describe all the site characteristics and properties. Where data is supplied by the client or any third party, it has been assumed that the information is correct, unless otherwise stated. Malloch Environmental Limited accepts no responsibility for errors or omissions in the information provided. Should further information become available regarding the conditions at the site, Malloch Environmental Limited reserves the right to review the report in the context of the additional information.

Opinions and judgments expressed in this report are based on an understanding and interpretation of regulatory standards at the time of writing and should not be construed as legal opinions. As regulatory standards are constantly changing, conclusions and recommendations considered to be acceptable at the time of writing, may in the future become subject to different regulatory standards which cause them to become unacceptable. This may require further assessment and/or remediation of the site to be suitable for the existing or proposed land use activities. There is no investigation that is thorough enough to preclude the presence of materials at the site that presently or in the future may be considered hazardous.

Report written by:

Chris Peacock
Environmental Engineer

Report reviewed and certified by a suitably qualified and experienced practitioner as prescribed under the NESCS (soil):

Nicola Peacock, CEnvP
Principal Environmental Engineer

Appendix A – Historic Certificates of Title List

- 264986.pdf
- CB13F-980.pdf
- CB15K-422.pdf
- CB209-18.pdf
- CB26K-792.pdf
- CB301-174.pdf
- CB302-149.pdf
- CB302-94.pdf
- CB313-121.pdf
- CB322-139.pdf
- CB322-3.pdf
- CB341-98.pdf
- CB34B-33.pdf
- CB35D-108.pdf
- CB368-10.pdf
- CB409-27.pdf
- CB40D-900.pdf
- CB418-133.pdf
- CB47D-693.pdf
- CB47D-694.PDF
- CB47D-695.PDF
- CB47D-696.PDF
- CB502-34.pdf
- CB521-198.pdf
- CB521-200.pdf
- CB529-173.pdf
- CB541-175.pdf
- CB541-205.pdf

Appendix B – Historic Aerials

1942 Aerial

Information in this map has been derived from various sources including the Kaikoura District, Hurunui District, Waimakariri District, Christchurch District, Environment Canterbury Regional Council, Selwyn District, Ashburton District, Waimate District, Mackenzie District, Timaru District and Waitaki District's databases.

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Information on this map may not be used for the purposes of any legal disputes. The user should independently verify the accuracy of any information before taking any action in reliance upon it.

N

0 0.1 0.2 0.3 0.4 Kilometres

Scale: 1:7,000 @A4

Map Created by Malloch Environmental Ltd on 2:46:51 p.m.

1966 Aerial

N

0 0.1 0.2 0.3 0.4 Kilometres

Scale: 1:7,000 @A4

Map Created by Malloch Environmental Ltd on 2:48:42 p.m.

1975 Aerial

Information in this map has been derived from various sources including the Kaikoura District, Hurunui District, Waimakariri District, Christchurch District, Environment Canterbury Regional Council, Selwyn District, Ashburton District, Waimate District, Mackenzie District, Timaru District and Waitaki District's databases.

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Information on this map may not be used for the purposes of any legal disputes. The user should independently verify the accuracy of any information before taking any action in reliance upon it.

N

0 0.1 0.2 0.3 0.4 Kilometres

Scale: 1:7,000 @A4

Map Created by Malloch Environmental Ltd on 3:00:00 p.m.

1984 Aerial

Information in this map has been derived from various sources including the Kaikoura District, Hurunui District, Waimakariri District, Christchurch District, Environment Canterbury Regional Council, Selwyn District, Ashburton District, Waimate District, Mackenzie District, Timaru District and Waitaki District's databases.

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Information on this map may not be used for the purposes of any legal disputes. The user should independently verify the accuracy of any information before taking any action in reliance upon it.

N

0 0.1 0.2 0.3 0.4 Kilometres

Scale: 1:7,000 @A4

Map Created by Malloch Environmental Ltd on 3:03:25 p.m.

1994 Aerial

N

0 0.1 0.2 0.3 0.4 Kilometres

Scale: 1:7,000 @A4

Map Created by Malloch Environmental Ltd on 3:04:28 p.m.

2004 Aerial

N

0 0.1 0.2 0.3 0.4 Kilometres

Scale: 1:7,000 @A4

Map Created by Malloch Environmental Ltd on 3:05:05 p.m.

2012 Aerial

Information in this map has been derived from various sources including the Kaikoura District, Hurunui District, Waimakariri District, Christchurch District, Environment Canterbury Regional Council, Selwyn District, Ashburton District, Waimate District, Mackenzie District, Timaru District and Waitaki District's databases.

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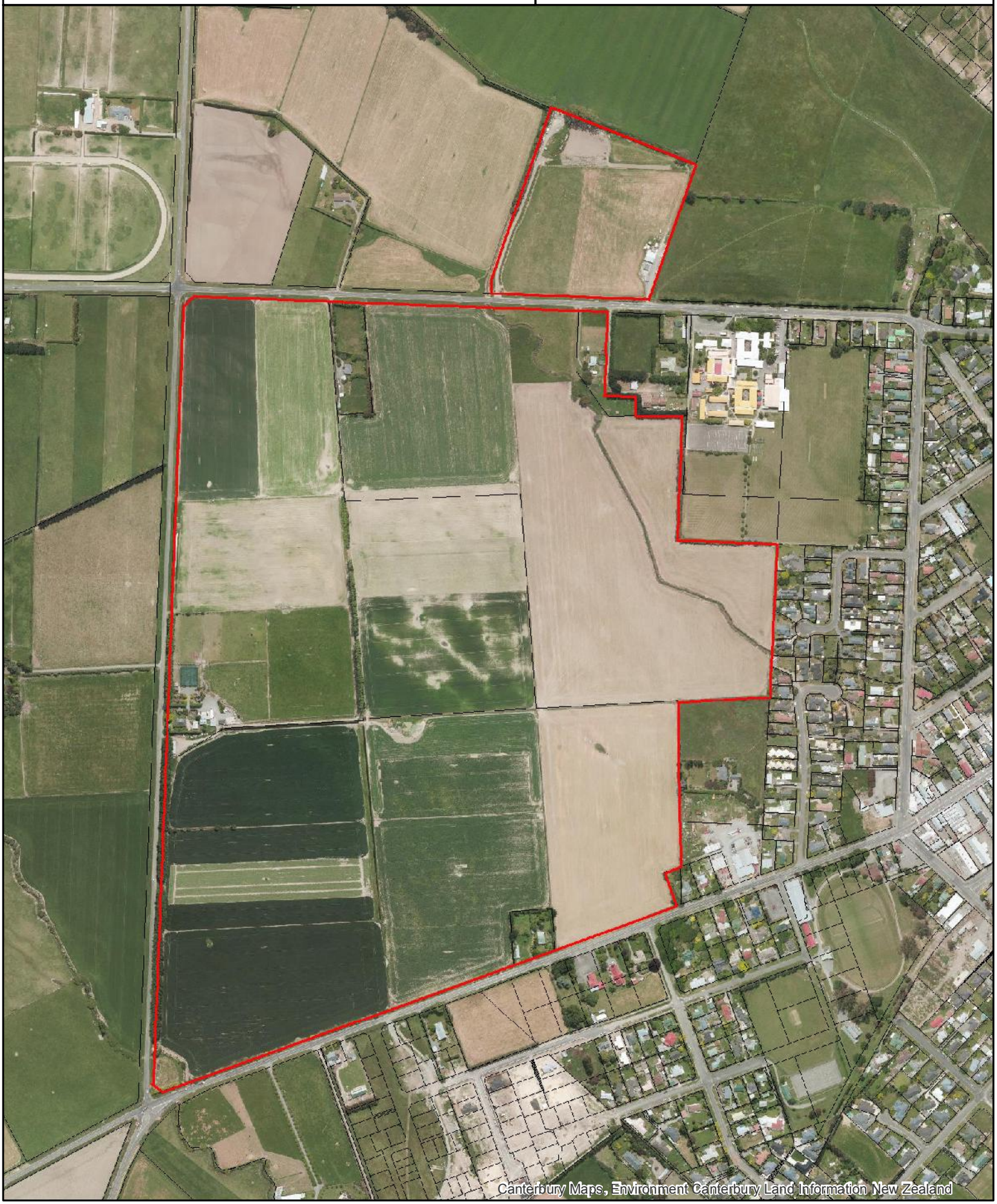
N

0 0.1 0.2 0.3 0.4 Kilometres

Scale: 1:7,000 @A4

Map Created by Malloch Environmental Ltd on 3:07:59 p.m.



Appendix C – LLUR Statement

Property Statement
from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

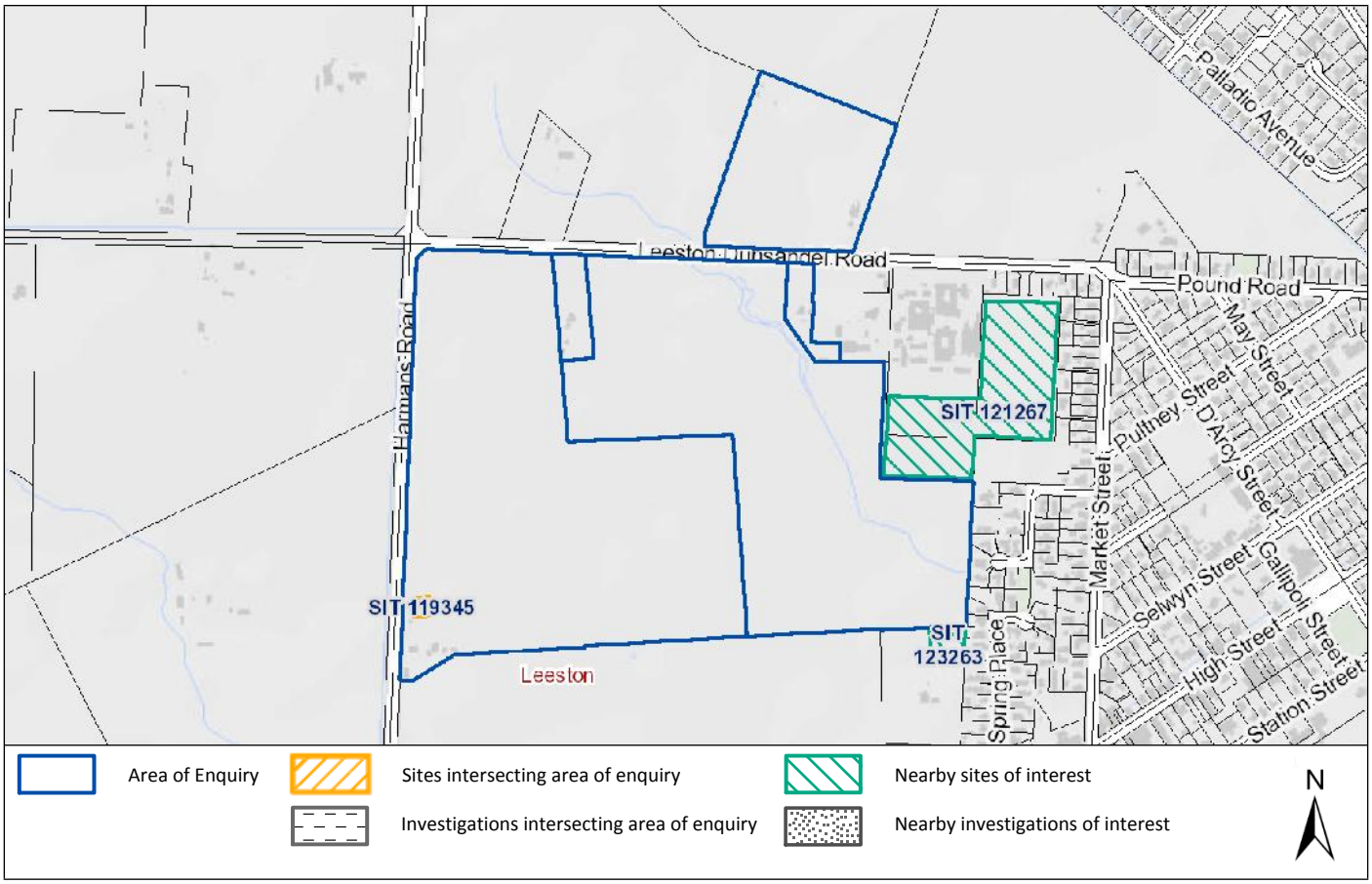
Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	17 July 2017	
Land Parcels:	Lot 4 DP 82846	Valuation No(s): 2410011300
	Lot 2 DP 82846	Valuation No(s): 2410011600
	Lot 1 DP 9138	Valuation No(s): 2410011500
	Lot 3 DP 82846	Valuation No(s): 2410011303
	Lot 2 DP 365379	Valuation No(s): 2410010801



The information presented in this map is specific to the area within a 100m radius of property you have selected. Information on properties outside the serach radius may not be shown on this map, even if the property is visible.

Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
119345	56 Harmans Road, Leeston	56 Harmans Road, Leeston	A10 - Persistent pesticide bulk storage or use;	Not Investigated
121267	Ellesmere College	Section 2 SO 13993, Leeston Dunsandel Road	A10 - Persistent pesticide bulk storage or use;	Not Investigated
123263	Spring Place, Leeston	Spring Place, Leeston	G3 - Landfill sites;	Not Investigated

Please note that the above table represents a summary of sites and HAILs intersecting the area of enquiry within a 100m buffer.

Information held about the sites on the Listed Land Use Register

Site 119345: 56 Harmans Road, Leeston (Intersects enquiry area.)

Site Address:	56 Harmans Road, Leeston
Legal Description(s):	Lot 2 DP 82846

Site Category:	Not Investigated
Definition:	Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
2004	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

11 Nov 2015 This record was created as part of the Selwyn District Council 2015 HAIL identification project.

11 Nov 2015 Area defined from 2003 to present aerial photographs. Horticultural activities (persistent pesticides) were noted in aerial photographs reviewed.

Investigations:

There are no investigations associated with this site.

Site 121267: Ellesmere College (Within 100m of enquiry area.)

Site Address:	Section 2 SO 13993, Leeston Dunsandel Road
Legal Description(s):	Section 1 SO 13993,Section 1 SO 16950,Section 2 SO 13993

Site Category:	Not Investigated
Definition:	Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
1984	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

28 Jan 2016 This record was created as part of the Selwyn District Council 2015 HAIL identification project.

28 Jan 2016 Area defined from 1984 to present aerial photographs. Sports fields (persistent pesticides) were noted in aerial photographs reviewed.

Investigations:

There are no investigations associated with this site.

Site 123263: Spring Place, Leeston (Within 100m of enquiry area.)

Site Address:	Spring Place, Leeston
Legal Description(s):	Lot 2 DP 319397

Site Category:	Not Investigated
Definition:	Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
?	?	Landfill sites

Notes:

5 Nov 2014	This record was created as part of the Selwyn District Council 2015 HAIL identification project.
5 Nov 2014	Pit (to check)

Investigations:

There are no investigations associated with this site.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ171189.

Disclaimer: ***The enclosed information is derived from Environment Canterbury's Listed Land Use Register and is made available to you under the Local Government Official Information and Meetings Act 1987 and Environment Canterbury's Contaminated Land Information Management Strategy (ECan 2009).***

The information contained in this report reflects the current records held by Environment Canterbury regarding the activities undertaken on the site, its possible contamination and based on that information, the categorisation of the site. Environment Canterbury has not verified the accuracy or completeness of this information. It is released only as a copy of Environment Canterbury's records and is not intended to provide a full, complete or totally accurate assessment of the site. It is provided on the basis that Environment Canterbury makes no warranty or representation regarding the reliability, accuracy or completeness of the information provided or the level of contamination (if any) at the relevant site or that the site is suitable or otherwise for any particular purpose. Environment Canterbury accepts no responsibility for any loss, cost, damage or expense any person may incur as a result of the use, reference to or reliance on the information contained in this report.

Any person receiving and using this information is bound by the provisions of the Privacy Act 1993.

Property Statement
from the Listed Land Use Register

Visit www.ecan.govt.nz/HAIL for more information about land uses.

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

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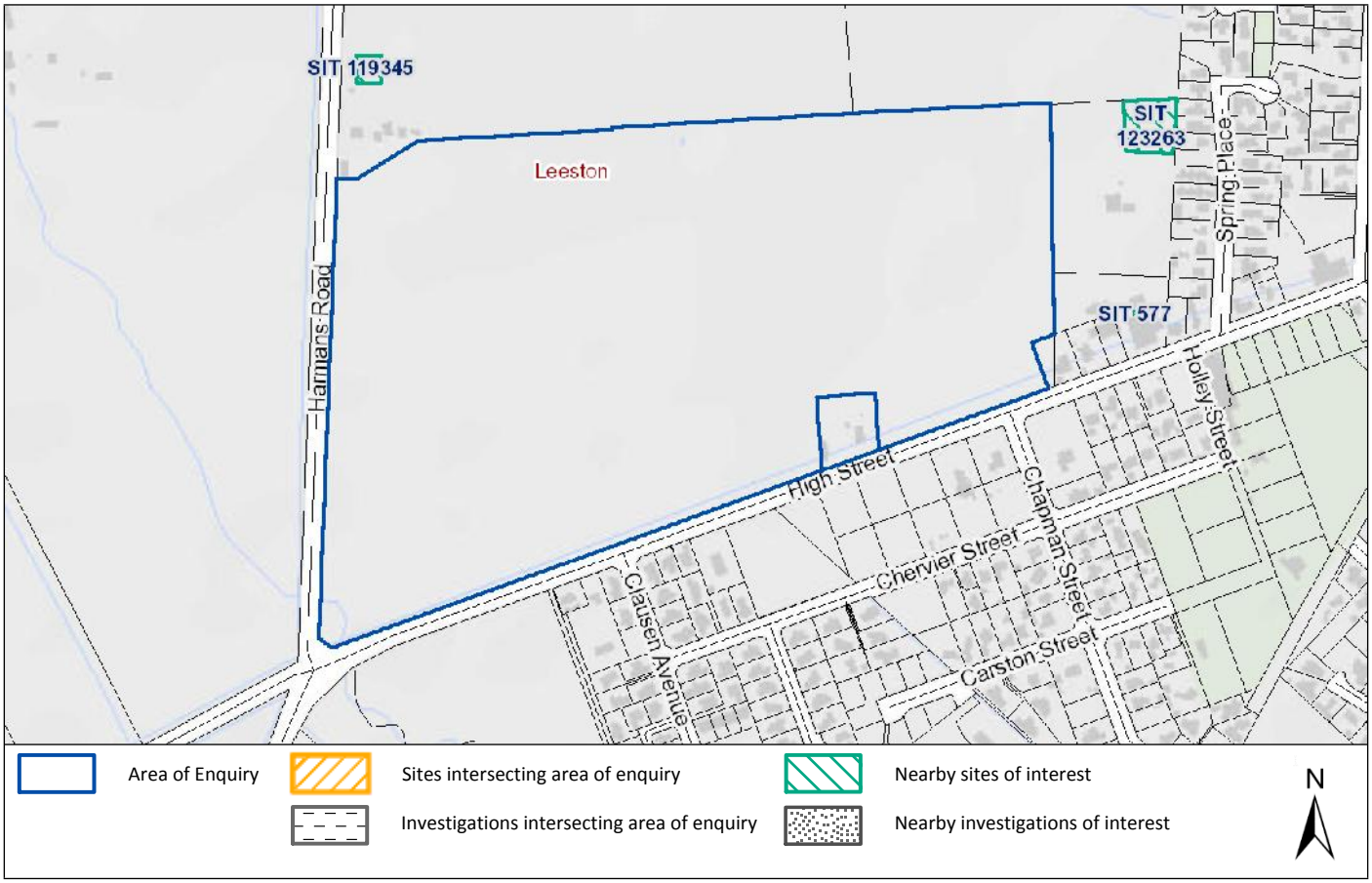
PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Date:	17 July 2017	
Land Parcels:	Part RS 5482,5483	Valuation No(s): 2416020600
	Lot 1 DP 82846	Valuation No(s): 2410011302



The information presented in this map is specific to the area within a 100m radius of property you have selected. Information on properties outside the serach radius may not be shown on this map, even if the property is visible.

Summary of sites:

Site ID	Site Name	Location	HAIL Activity(s)	Category
577	WH Cochrane and Sons Ltd	High St, Leeston	A17 - Storage tanks or drums for fuel, chemicals or liquid waste;	Not Investigated
119345	56 Harmans Road, Leeston	56 Harmans Road, Leeston	A10 - Persistent pesticide bulk storage or use;	Not Investigated
123263	Spring Place, Leeston	Spring Place, Leeston	G3 - Landfill sites;	Not Investigated

Please note that the above table represents a summary of sites and HAILs intersecting the area of enquiry within a 100m buffer.

Information held about the sites on the Listed Land Use Register

Site 577: WH Cochrane and Sons Ltd (Within 100m of enquiry area.)

Site Address:	High St, Leeston
Legal Description(s):	Lot 1 DP 319397

Site Category:	Not Investigated
Definition:	Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
1950s/60s	Current	Storage tanks or drums for fuel, chemicals or liquid waste

Notes:

25 Mar 1998 One UST in the ground, was installed after the 1950s, probably in the 1960s. It held about 4500 litres of diesel

Investigations:

There are no investigations associated with this site.

Site 119345: 56 Harmans Road, Leeston (Within 100m of enquiry area.)

Site Address:	56 Harmans Road, Leeston
Legal Description(s):	Lot 2 DP 82846

Site Category:	Not Investigated
Definition:	Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
2004	Present	Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds

Notes:

11 Nov 2015 This record was created as part of the Selwyn District Council 2015 HAIL identification project.

11 Nov 2015 Area defined from 2003 to present aerial photographs. Horticultural activities (persistent pesticides) were noted in aerial photographs reviewed.

Investigations:

There are no investigations associated with this site.

Site 123263: Spring Place, Leeston (Within 100m of enquiry area.)

Site Address:	Spring Place, Leeston
Legal Description(s):	Lot 2 DP 319397

Site Category:	Not Investigated
Definition:	Verified HAIL has not been investigated.

Land Uses (from HAIL):

Period From	Period To	HAIL land use
?	?	Landfill sites

Notes:

5 Nov 2014 This record was created as part of the Selwyn District Council 2015 HAIL identification project.

5 Nov 2014 Pit (to check)

Investigations:

There are no investigations associated with this site.

Information held about other investigations on the Listed Land Use Register

For further information from Environment Canterbury, contact Customer Services and refer to enquiry number ENQ171190.

Disclaimer: ***The enclosed information is derived from Environment Canterbury's Listed Land Use Register and is made available to you under the Local Government Official Information and Meetings Act 1987 and Environment Canterbury's Contaminated Land Information Management Strategy (ECan 2009).***

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Any person receiving and using this information is bound by the provisions of the Privacy Act 1993.

Appendix 8: Section 32 Evaluation

The following is an evaluation report to fulfil the requirements of section 32 of the Act. Section 32 states:

(1) An evaluation report required under this Act must—
- *(a) examine the extent to which the objectives of the proposal being evaluated are the most appropriate way to achieve the purpose of this Act; and*
- *(b) examine whether the provisions in the proposal are the most appropriate way to achieve the objectives by—*
  - *(i) identifying other reasonably practicable options for achieving the objectives; and*
  - *(ii) assessing the efficiency and effectiveness of the provisions in achieving the objectives; and*
  - *(iii) summarising the reasons for deciding on the provisions; and*
- *(c) contain a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the proposal.*

(2) An assessment under subsection (1)(b)(ii) must—
- *(a) Identify and assess the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the provisions, including the opportunities for—*
  - *(i) Economic growth that are anticipated to be provided or reduced; and*
  - *(ii) employment that are anticipated to be provided or reduced; and*
- *(b) if practicable, quantify the benefits and costs referred to in paragraph (a); and*
- *(c) assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions.*

(3) If the proposal (an amending proposal) will amend a standard, statement, national planning standard, regulation, plan or change that is already proposed or that already exists (an existing proposal), the examination under subsection (1)(b) must relate to—
- *(a) The provisions and objectives of the amending proposal; and*
- *(b) The objectives of the existing proposal to the extent that those objectives –*
  - *(i) Are relevant to the objectives of the amending proposal; and*
  - *(ii) Would remain if the amending proposal were to take effect.*

Objectives of the Plan Change

It is proposed to replace the existing zoning from Living 1 (deferred), Living 2 (deferred), and Outer Plains, to an area of Living 1 zone and Living 2 zone west of Leeston township, for residential purposes.

The objective of the Plan Change is to uplift the deferral of the Living 1 and Living 2 deferred zones by providing stormwater management that will enable the Leeston North Stormwater Bypass to be completed, and rezoning part of the site to Living 1 and Living 2 to provide for the future growth of Leeston.

An assessment of the objectives and policies has been undertaken and is attached as Appendix 9 and the Plan Change is considered to be not contrary to the objectives and policies of the Plan. No new objectives and policies are proposed, but rather the Plan Change seeks minor changes and additions to rules, and amendments to specified district planning maps. As the Plan Change is not contrary to the objectives and policies of the Plan, it is considered to meet Part 2 of the Act and is seen as a sustainable way to provide for future generations.

The proposed rezoning will provide for future residential development of the site in a manner which is appropriate, sustainable, integrated, promotes high amenity outcomes and social cohesion.

The site adjoins an existing residential zone to the east on Spring Place and Mountain View Place, and to the south, south of High Street. It will naturally extend the density of the adjoining residential zone and allow for a progression of allotment size towards the west. This will provide a consolidated urban development that can be serviced.

The site has been identified as being appropriate for low and high density residential living through the deferred zoning of the site for Living 1 and Living 2. The Outer Plains zoned land is identified as potential low density future development within existing Council strategies that have been through a public consultation process.

Alternative options – Efficiency and effectiveness and costs and benefits

Three alternative options have been considered and are discussed below.

Continue with the status quo (do nothing)

This option involves retaining the existing Living 1 (deferred), Living 2 (deferred) and Outer Plains zone - where land use across the deferred zoning will continue to be deferred until the stormwater issues are resolved, and the rural zoned area will continue to be used for cropping and other agricultural uses.

Carry out the Plan Change to rezone the existing Living 1 (deferred), Living 2 (deferred) and Outer Plains zones to Living 1 and Living 2

A private plan change request to lift the deferral and rezone the site to Living 1 and Living 2 zones to enable residential development of the site. In order to meet the requirements of Policy B4.3.55, the Leeston Creek and Market Street capacity issues would need to be provided for and an ODP inserted into the Plan.

Apply for a non-complying resource consent for the proposed subdivision and development

An alternative approach is to apply for a non-complying resource consent for a subdivision and residential activity to achieve the same outcome of the Plan Change. Subdivision of the site for rural residential and residential development would be assessed as a non-complying activity under the rules of the Plan. Given the non-complying status and extensive amount of information required to undertake such a resource consent, it is considered that there are both legal and practical difficulties with this option. The proposal would have to pass one of the threshold tests in Section 104(D) of the Act, and it is possible that it would fail both of these tests when considered against the underlying zone rules. Furthermore, since Operation Homer Ltd v Selwyn District Council [C100/2007], the Court and Council both accept that significantly out-of-zone development should be subject to a rezoning proposal rather than a non-complying resource consent.

Assessment of Alternative Options

Section 32(2) of the Act requires an assessment to identify benefits and costs anticipated from the above options, taking into account environmental, economic, social, cultural effects. The assessment is as follows.

Option	Benefits / Advantages	Costs / Disadvantages	Efficiency / Effectiveness
Option 1 Retain the status quo (do nothing)	• No time and money spent on the plan change process. • Rural production activities and rural land would be retained. • Rural outlook and amenity would be retained. • Limited to nil reverse sensitivity effects. • No requirement to upgrade infrastructure for servicing.	• The strip of land on Lot 2 DP 365379 would not be available for stormwater management. • Stormwater issues resulting from the Leeston Creek would not be improved and flooding would still occur in high rainfall events. • Loss of opportunity to provide an integrated development on this site. • Increase potential for future ad-hoc development from a lack of ODP guidance. • Encourage development in areas less appropriate that the site. • The sites potential to provide for future growth will be unrealised. • Unrealised economic opportunity to develop land beyond farming purposes. • The demand for mixed density is not met, this may increase the price of residential sections due to supply and demand constraints. • Would not utilise the area of land identified as appropriate for residential development.	Low This is not an effective option as the stormwater issues in Leeston would remain and flooding could occur in high rainfall events. The deferred living zones have been identified as appropriate for residential development subject to stormwater solutions and are required to accommodate the projected growth of Leeston.
Option 2 Undertake a Plan Change to uplift the deferral and rezone the site (the current proposal).	• Stormwater management will be implemented and flooding in Leeston will be reduced when the stormwater management is implemented. • Provides for additional housing supply and a variety of section sizes in Leeston township. • Provides for development opportunities in an area identified as	• Time and cost to undertake the plan change process. • There will be loss of productive rural land. • Some loss of amenity during construction phase, due to noise, increased traffic volumes. • May result in reverse sensitivity effects on the rural and business zones.	Moderate - High Meets the provisions for the growth of Leeston as set out in Policy B4.3.54 – 55. Provides and extends the outcome sought by the Plan including stormwater management.

Option	Benefits / Advantages	Costs / Disadvantages	Efficiency / Effectiveness
	appropriate for residential development and future development. • Infrastructure can be extended and provided to the site at the time of residential development. • Compatibility with the consolidated urban form of Leeston and a clearer township, particularly along High Street, where the Living 1 zone will align with the existing Living XA zone on the south side of High Street. • The landowners will be able to realise the full potential of their land providing for approximately 410 allotments across the site. • Will encourage investment to Leeston and additional community members and rate payers. • Birdlings Brook will be vested as a reserve, ensuring its protection. • Future employment opportunities will be provided at the time of residential development and the construction phase. • Leeston Creek and its margins will be vested to Council as reserve, providing a high level of amenity. • Development of the site will be guided by an Outline Development, reducing the chance of ad-hoc development.		
Option 3 Subdivide the site through a non-complying subdivision consent.	• Any proposal for residential development would be scrutinised through the resource consent process. • Can apply for resource consent to subdivide and develop the site. • Would provide additional housing	• Inappropriate method of developing the site and highly likely to be contrary to the objectives and policies of the Plan and, based on case law, could be declined and may be appealed to the Environment Court. • Subdivision consent would not be	Low Inconsistent with statutory provisions, meaning application is likely to be declined and potentially appealed to the Environment Court. The desired outcome may be achieved through the resource consent process and would therefore be somewhat effective. However, the resource consent

Option	Benefits / Advantages	Costs / Disadvantages	Efficiency / Effectiveness
	supply and sections in Leeston.	guided by an ODP and may result in a poor integration of roading, section layout, services and stormwater management. • Less control over the scope of the application including allotment size and shape or methods to mitigate reverse sensitivity. • If consent is granted, integrity of the Plan may be challenged. • Cost of preparing application and potential environment court case which adds significant cost, time and delay. • Loss of structured growth plan for township including consequential effects on ability to strategically plan for infrastructural works. • Increased risk of ad-hoc development as the site is comprised of multiple land parcels owned by separate land owners.	would only grant a specific development proposal and would restrict alternative layouts being identified which may have lesser environmental effects, this reducing the efficiency of the resource consent process.

Conclusion

The retention of the current situation is not considered to be efficient and efficient use of the site. The stormwater management issues surrounding Leeston Creek and the Market Street Culvert will not be resolved and flooding will continue to occur in high rainfall events. Therefore, the deferred Living 1 and Living 2 zones would not be developed, as anticipated by the Plan until such time as the stormwater management issues were resolved.

A non-complying subdivision would result in the integrity of the Plan being questioned and could set precedent for other non-complying subdivisions similar in nature. A non-complying subdivision would likely result in poorly integrated servicing, layout and would require land use consents to enable residential development. The stormwater management issue would also not be resolved, as there would be no requirement to do so if the deferral was not being lifted, which would have the potential to increase stormwater runoff into the Leeston Creek and cause increased stormwater issues and flooding.

Lifting the deferral and rezoning the from Living 1 (deferred), Living 2 (deferred) and Outer Plains to Living 1 and Living 2 is considered to be the most appropriate and efficient option to best achieve the purpose of the Act. The proposed stormwater management will reduce the flooding risk and stormwater

issues and will create a more sustainable and efficient stormwater system for the Leeston township. The Plan Change includes an ODP and will provide an integrated and strategic approach to any future development and stormwater guidelines and requirements to ensure flooding of Leeston Creek is mitigated.

Appendix 9: Assessment of Canterbury Regional Policy Statement Objectives and Policies

The following is an assessment of the Plan Change against the objectives and policies of the Canterbury Regional Policy Statement.

Chapter 5 – Land Use and Infrastructure

Objective 5.2.1 – Location, design and function of development (Entire Region)

Development is located and designed so that it functions in a way that:

1. *achieves consolidated, well designed and sustainable growth in and around existing urban areas as the primary focus for accommodating the region's growth; and*
2. *enables people and communities, including future generations, to provide for their social, economic and cultural well-being and health and safety; and which:*
   - *(a) maintains, and where appropriate, enhances the overall quality of the natural environment of the Canterbury region, including its coastal environment, outstanding natural features and landscapes, and natural values;*
   - *(b) provides sufficient housing choice to meet the region's housing needs;*
   - *(c) encourages sustainable economic development by enabling business activities in appropriate locations;*
   - *(d) minimises energy use and/or improves energy efficiency;*
   - *(e) enables rural activities that support the rural environment including primary production;*
   - *(f) is compatible with, and will result in the continued safe, efficient and effective use of regionally significant infrastructure;*
   - *(g) avoids adverse effects on significant natural and physical resources including regionally significant infrastructure, and where avoidance is impracticable, remedies or mitigates those effects on those resources and infrastructure;*
   - *(h) facilitates the establishment of papakāinga and marae; and*
   - *(i) avoids conflicts between incompatible activities.*

The Plan Change will provide for the long-term future growth needs for Leeston beyond 2031. The Plan Change will lift the deferral of the Living 1 and Living 2 zones by providing appropriate stormwater management guidelines as part of the ODP including land to vest to Council for the Leeston North Stormwater Bypass. The Living 1 zone will be extended to align with the existing and partially developed Living XA zone south of High Street, and the proposed Living 2 zone will provide a buffer and transition (in part) between the Living 1 zone and the (Outer Plains zone. The site is located west of the existing Living 1 zone in Leeston and will be an extension of the existing urban form of the township.

The ODP outlines the requirement for walkways, reserves and stormwater management areas, thereby providing a high level of amenity within the Plan Change neighbourhood. The Plan Change includes Living 1 and Living 2 zones, providing for a range of section sizes and lifestyle choices. Because the site adjoins an existing Living 1 zone, residential development of the site will be within close proximity to community and education facilities, reserves and the commercial centre.

Many Living 1 or Living XA zoned sites in Leeston directly adjoin the Outer Plains zone, and it is common for the Living 1 zone to create the towns boundary between the urban and rural areas. Therefore, based on the existing form of

Leeston between the urban and rural areas, the Plan Change is considered to be compatible with the rural zone and is consistent with the existing rural/urban boundaries in Leeston.

Objective 5.2.2 – Integration of land-use and regionally significant infrastructure

In relation to the integration of land use and regionally significant infrastructure:

1. *To recognise the benefits of enabling people and communities to provide for their social, economical and cultural well-being and health and safety and to provide for infrastructure that is regionally significant to the extent that it promotes sustainable management in accordance with the RMA.*
2. *To achieve patterns and sequencing of land-use with regionally significant infrastructure in the wider region so that:*
    a. *development does not result in adverse effects on the operation, use and development of regionally significant.*
    b. *adverse effects resulting from the development or operation of regionally significant infrastructure are avoided, remedied or mitigated as fully as practicable.*
    c. *there is increased sustainability, efficiency and liveability.*

The subsequent residential development arising from the implementation of the Plan Change can be serviced with connections to the Leeston wastewater network as outlined in the Servicing Report. The Transport Assessment has concluded the proposed re-zoning and subsequent development will not adversely affect the local Leeston transport network or wider Selwyn roading network. The ODP requires pedestrian and cycle links throughout the future development of the site, both to the existing township and Ellesmere College / Te Kāreti o Waihora. The naturalisation of Leeston Creek along with the pedestrian and cycle links will provide liveability and encourage walking, cycling and non-vehicular modes of transport.

Objective 5.2.3 – Transport network (Wider Region)

A safe, efficient and effective transport system to meet local regional, inter-regional and natural needs for transport, which:

1. *supports a consolidated and sustainable urban form;*
2. *avoids, remedies or mitigates the adverse effects of transport use and its provision;*
3. *provides an acceptable level of accessibility; and*
4. *is consistent with the regional roading hierarchy identified in the Regional Land Transport Strategy.*

The ODP outlines the primary and secondary roads and connections for the future development of the site. The roading network will provide for connections throughout the site as well as provide for walking and cycle networks and connections. Future roading connections are required as part of the ODP to ensure the development can connect to future development of adjoining allotments. The proposed roading network is considered to be appropriate for the development of the site.

Policy 5.3.1 – Regional growth (Wider Region)

To provide, as the primary focus for meeting the wider region's growth needs, sustainable development patterns that:

1. *ensure that any*
    (a) urban growth; and
    (b) limited rural residential development
    occurs in a form that concentrates, or is attached to, existing urban areas and promotes a coordinated pattern of development;
2. *encourage within urban areas, housing choice, recreation and community facilities, and business opportunities of a character and form that supports urban consolidation;*
3. *promote energy efficiency in urban forms, transport patterns, site location and subdivision layout;*
4. *maintain and enhance the sense of identity and character of the region's urban areas; and*

5. *encourage high quality urban design, including the maintenance and enhancement of amenity values.*

The site is located on the western edge of Leeston township and seeks to provide an area of mixed residential densities that will have clear links to the township and wider community. The use of the Living 2 zoning will create an appropriate transition between the rural zone and urban environment when travelling to and from Leeston along High Street and Leeston Dunsandel Road. Use of the Living 1 zone encourages a continuation of the existing township character. By developing this area, there will be greater choice for housing types within the township, and the development will provide for future growth of the area while promoting energy efficiency through links to transport networks and appropriate urban form.

Policy 5.3.2 – Development conditions (Wider Region)

To enable development including regionally significant infrastructure which:

1. *ensure that adverse effects are avoided, remedied or mitigated, including where these would compromise or foreclose:*
   - *(a) existing or consented regionally significant infrastructure;*
   - *(b) options for accommodating the consolidated growth and development of existing urban areas;*
   - *(c) the productivity of the region's soil resources, without regard to the need to make appropriate use of soil which is valued for existing or foreseeable future primary production, or through further fragmentation of rural land;*
   - *(d) the protection of sources of water for community supplies;*
   - *(e) significant natural and physical resources;*
2. *avoid or mitigate:*
   - *(a) natural and other hazards, or land uses that would likely result in increases in the frequency and / or severity of hazards;*
   - *(b) reverse sensitivity effects and conflicts between incompatible activities, including identified mineral extraction areas; and*
3. *integrate with:*
   - *(a) the efficient and effective provision, maintenance or upgrade of infrastructure; and*
   - *(b) transport networks, connections and modes so as to provide for the sustainable and efficient movement of people, goods and services, and a logical, permeable and safe transport system.*

The proposal adjoins the existing urban form of Leeston, thus not fragmenting rural land. It is noted that the Plan Change will result in a block of rural land zoned Outer Plains (Lot 2 DP 82846) being surrounded on the east and south boundaries by residential zoned land. However, the rural block will be adjacent to existing rural land to the north and west and the block will be 22 ha, providing adequate land area for rural activities. Therefore, the proposal is not considered to fragment rural land. The site can be connected to Council's potable water and wastewater networks, as detailed in the Servicing Report. Wastewater will be discharged to the Ellesmere Treatment Plant and will not adversely affect the potable water network. The site is located outside any identified natural hazard area, and the larger residential sections, required setbacks and existing rules for the Living 2 zone will mitigate potential reserves sensitivity effects. The proposal includes opportunities for linkages to existing infrastructure and current transport networks.

Policy 5.3.3 - Management of development (Wider Region)

To ensure that substantial developments are designed and built to be of a high-quality, and are robust and resilient:

1. *through promoting, where appropriate, a diversity of residential, employment and recreational choices, for individuals and communities associated with the substantial development; and*
2. *where amenity values, the quality of the environment, and the character of an area are maintained, or appropriately enhanced.*

If implemented, the Plan Change could accommodate over 400 allotments with varying densities on the urban edge of Leeston, attracting a range of employment opportunities both within the immediate environment and beyond. Walk and cycle linkages will ensure that recreational opportunities will contribute to the overall high-quality design of the area. The proposal maintains amenity values, the quality of the environment and the character of the area by providing for a range of allotment sizes and associated landscaping provisions that are consistent with development of the surrounding environment. Therefore, the proposal is consistent with Policy 5.3.3.

Policy 5.3.5 – Servicing development for potable water, and sewage and stormwater disposal (Wider Region)

Within the wider region, ensure development is appropriately and efficiently served for the collection, treatment, disposal or re-use of sewage and stormwater, and the provision of potable water, by:

1. *avoiding development which will not be served in a timely manner to avoid or mitigate adverse effects on the environment and human health; and*
2. *requiring these services to be designed, built, managed or upgraded to maximise their ongoing effectiveness.*

Policy 5.3.6 – Sewerage, stormwater and potable water infrastructure (Wider Region)

Within the wider region:

1. *Avoid development, which constrains the ongoing ability of the existing sewerage, stormwater and potable water supply infrastructure to be developed and used.*
2. *Enable sewerage, stormwater and potable water infrastructure to be developed and used, provided that, as a result of its location and design:*
   (a) the adverse effects on significant natural and physical resources are avoided, or where this is not practicable, mitigated; and
   (b) other adverse effects on the environment are appropriately controlled.
1. *Discourage sewerage, stormwater and potable water supply infrastructure which will promote development in locations which do not meet Policy 5.3.1*

Options for servicing future development of the site are identified and discussed in the Servicing Report. The Servicing Report concludes the site can be connected to reticulated potable water and wastewater, subject to the required upgrades. Stormwater management is required as part of the ODP to mitigate stormwater effects and reduce the risk of flooding. It is considered that the proposed plan change gives effect to Policy 5.3.5 and 5.3.6.

Policy 5.3.8 –Land use and transport integration (Wider Region)

Integrate land use and transport planning in a way:

1. *that promotes:*
   (a) the use of transport modes which have low adverse effects;
   (b) the safe, efficient and effective use of transport infrastructure, and reduces where appropriate the demand for transport;
1. *that avoids or mitigates conflicts with incompatible activities; and*
2. *where the adverse effects from the development, operation and expansion of the transport system:*
   (a) on significant natural and physical resources and cultural values are avoided, or where this is not practicable, remedied or mitigated; and
   (b) are otherwise appropriately controlled

The proposal has been designed to connect to and integrate pedestrian and cycle ways into existing transport networks. The Transport Assessment concludes the existing roading network, including intersections will be able to accommodate the development of the site without any upgrades or improvements. It is therefore considered that the proposal gives effect to Policy 5.3.8.

Policy 5.3.12 – Rural production (Wider Region)

Maintain and enhance natural and physical resources contributing to Canterbury's overall rural productive economy in areas which are valued for existing or foreseeable future primary production, by:

1. *avoiding development, and / or fragmentation which;*
   - *(a) forecloses the ability to make appropriate use of that land for primary production; and / or*
   - *(b) results in reverse sensitivity effects that limit or precludes primary production.*
2. *enabling tourism, employment and recreational development in rural areas, provided that it:*
   - *(a) is consistent and compatible with rural character, activities, and an open rural environment;*
   - *(b) has a direct relationship with or is dependent upon rural activities, rural resources or raw material inputs sourced from within the rural area;*
   - *(c) is not likely to result in proliferation of employment (including that associated with industrial activities) that is not linked to activities or raw material inputs sourced from within the rural area; and*
   - *(d) is of a scale that would not compromise the primary focus for accommodating growth in consolidated, well designed and more sustainable development patterns. and;*
3. *ensuring that rural land use intensification does not contribute to significant cumulative adverse effects on water quality and quantity.*

The re-zoning will align with the existing Living XA zone south of High Street. While one allotment zoned Outer Plains has not been included within the Plan Change area, future development of the site is not considered to preclude rural production on the rural block adjoining the site. The rural parcel will adjoin rural land north of Leeston Dunsandel Road and west of Harmans Road. It is not uncommon for Living 1 zoned land to adjoin the Outer Plains zone. Southeast of the site along the southern edge of Leeston Living 1 and Living XA land directly adjoins the Outer Plains one. Directly north of the site the Living XA zoned land adjoins the Outer Plains zone. Therefore, it is considered that the proposed Plan Change and the activities of the Outer Plains zone are compatible.

Chapter 7 – Fresh Water

Objective 7.2.1 Sustainable management of fresh water

The region's fresh water resources are sustainably managed to enable people and communities to provide for their economic and social well-being through abstracting and/or using water for irrigation, hydro-electricity generation and other economic activities, and for recreational and amenity values, and any economic and social activities associated with those values, providing:

1. *the life-supporting capacity ecosystem processes, and indigenous species and their associated freshwater ecosystems and mauri of the fresh water is safe-guarded;*
2. *the natural character values of wetlands, lakes and rivers and their margins are preserved and these areas are protected from inappropriate subdivision, use and development and where appropriate restored or enhanced; and*
3. *any actual or reasonably foreseeable requirements for community and stockwater supplies and customary uses, are provided for.*

Policy 7.3.1 Adverse effects of activities on the natural character of fresh water

To identify the natural character values of fresh water bodies and their margins in the region and to:

1. *preserve natural character values where there is a high state of natural character;*
2. *maintain natural character values where they are modified but highly valued; and*
3. *improve natural character values where they have been degraded to unacceptable levels;*

unless modification of the natural character values of a fresh water body is provided for as part of an integrated solution to water management in a catchment in accordance with Policy 7.3.9, which addresses remedying and mitigating adverse effects on the environment and its natural character values.

Policy 7.3.3 Enhancing fresh water environments and biodiversity

To promote, and where appropriate require the protection, restoration and improvement of lakes, rivers, wetlands and their riparian zones and associated Ngāi Tahu values, and to:

1. *identify and protect areas of significant indigenous vegetation and significant habitats, sites of significant cultural value, wetlands, lakes and lagoons/Hapūa, and other outstanding water bodies; and*
2. *require the maintenance and promote the enhancement of indigenous biodiversity, inland basin ecosystems and riparian zones; and*
3. *promote, facilitate or undertake pest control.*

The Leeston Creek currently runs through the site and is on private land. Public cannot access the creek and the banks are grassed and fenced. The ODP requires the Leeston Creek to be vested to Council as a reserve, proving a high level of amenity for residents.

Birdlings Brook also runs through the site in the south west corner. The banks in this area have been planted and a public walkway runs along the northern bank. The area south west of Birdlings Brook is required to be vested to Council as reserve.

The reserves required as part of the ODP are considered to provide for and enhance the well-being of residents by providing recreation areas and a high level of amenity.

Policy 7.3.5 Water quality and land uses

To avoid, remedy or mitigate adverse effects of land uses on the flow of water in surface water bodies or the recharge of groundwater by:

1. *controlling the diversion of rainfall run-off over land, and changes in land uses, site coverage or land drainage patterns that will, either singularly or cumulatively, adversely affect the quantity or rate of water flowing into surface water bodies or the rate of groundwater recharge; and*
2. *managing the planting or spread of exotic vegetation species in catchments where, either singularly or cumulatively, those species are or are likely to have significant adverse effects on flows in surface water bodies.*

The flow of Leeston Creek will be less than the pre-development flow rates as a result of implementing the Plan Change. This will be achieved through vesting a piece of land on the site to enable the Leeston North Stormwater Bypass, stormwater management areas around the Creek and in the southern quadrant of the site. The stormwater management areas will control the flow of Leeston Creek and reduce the risk of flooding from high rainfall events.

Chapter 11 – Natural Hazards

Objective 11.2.1 Avoid new subdivisions, use and development of land that increases risks associated with natural hazards

New subdivision use and development of land which increases the risk of natural hazards to people, property and infrastructure is avoided or, where avoidance is not possible, mitigate measures minimise risks.

Policy 11.3.1 Avoidance of inappropriate development in high hazard area

To avoid new subdivision, use and development (except as provided for in Policy 11.3.4) of land in high hazard areas, unless the subdivision, use or development:

1. *is not likely to result in loss of life or serious injuries in the event of a natural hazard occurrence; and*
2. *is not likely to suffer significant damage or loss in the event of a natural hazard occurrence; and*
3. *is not likely to require new or upgraded hazard mitigation works to mitigate or avoid the natural hazard; and*

4. *is not likely to exacerbate the effects of the natural hazard; or*
5. *Outside of greater Christchurch, is proposed to be located in an area zoned or identified in a district plan for urban residential, industrial or commercial use, at the date of notification of the CRPS, in which case the effects of the natural hazard must be mitigated.*

Policy 11.3.2 Avoid development in area subject to inundation

In areas not subject to Policy 11.3.1 that are subject to inundation by a 0.5% AEP flood event; any new subdivision, use and development (excluding critical infrastructure) shall be avoided unless there is no increased risk to life, and the subdivision, use or development:

1. *is of a type that is not likely to suffer material damage in an inundation event; or*
2. *is ancillary or incidental to the main development; or*
3. *meets all of the following criteria:*
   (a) new buildings have an appropriate floor level above the 0.5% AEP design flood level; and
   (b) hazardous substances will not be inundated during a 0.5% AEP flood event;
   provided that a higher standard of management of inundation hazard events may be adopted where local catchment conditions warrant (as determined by a cost/benefit assessment).

When determining areas subject to inundation, climate change projections including sea level rise are to be taken into account.

The Leeston Creek flows through the site. Due to stormwater constraints, the Leeston Creek can overflow and flood in high rainfall and flood events. The ODP requires stormwater management areas to be provided prior to any residential development of the site. The proposed stormwater management within the ODP will provide a stormwater basin in the southern portion of the site. The proposed Leeston North Stormwater Bypass will significantly lessen the prospect of water from Killinchy entering the proposal site and the township as a whole. It is considered that the flooding natural hazard can be mitigated through the stormwater diversion and stormwater management areas required by the ODP, and therefore the proposal is consistent with Objective 11.2.1.

It is difficult to determine whether the proposal site is classified as a High Hazard Area, as Environment Canterbury does not hold any data to determine the water depth (metres) and velocity (metres per second) for a 1 in 500 year event. As mentioned above the proposed Leeston North Stormwater Bypass, will establish a hydrological bypass for any overflow of water entering the Leeston Creek from the Killinchy area, thereby significantly reducing the velocity and volume of water travelling through Leeston Creek and the Market Street Culvert. It is considered that the proposal is consistent with Policy 11.3.1.

Conclusion

Overall, the proposal is considered to be consistent with the objectives and policies of the Canterbury Regional Policy Statement.

Appendix 10: Assessment of Selwyn District Plan Objectives and Policies

The following is an assessment against the objectives and policies of the Selwyn District Plan (Township Volume).

B1 - Natural Resources

Objective B1.1.1

Adverse effects on people, and their activities, ecosystems and land and soil resources from contaminated soil or unstable land, are minimised.

Objective B1.1.2

New residential or business activities do not create shortages of land or soil resources for other activities in the future.

Policy B1.1.8

Avoid rezoning land which contains versatile soils for new residential or business development if:

- *the land is appropriate for other activities; and*
- *there are other areas adjoining the township which are appropriate for new residential or business development which do not contain versatile soils.*

A PSI has been undertaken on the site and has noted a number of areas that will need to be investigated through a Detailed Site Investigation at the time of subdivision. Therefore, it is considered any adverse effects from contaminated or potentially contaminated soils can be mitigated and managed at subdivision stage.

As discussed previously, most of the land around Leeston Township is reasonably versatile by virtue of being located on the Canterbury Plains, and therefore arguably may not meet the first limb of the test in Policy B1.1.8. However, given the location of the site adjoining the existing development of the township, and given this area is not more or less versatile than other areas adjoining the township, it is considered that the proposal site is an appropriate location for the expansion of the township. Further, it is noted that a proportion of the site has been identified as appropriate for residential activity as evidenced by the deferred zoning status attributed to the land and in the Ellesmere Area Plan. It is for these reasons that the proposal is consistent with the second limb of the test in Policy B1.1.8.

While the proposal does constitute a minor loss in versatile soils, it is considered to be an appropriate area for the development of Leeston due to its location, because it represents a consolidated township form and the site is able to be serviced. Therefore, the application is considered to be generally consistent with Objective B1.1.2 and Policy B1.1.8.

Objective B1.2.1

Expansion of townships in Selwyn District maintains or enhances the quality of ground or surface water resources.

Policy B1.2.2

Ensure land rezoned to a Living or Business zone can be serviced with a water supply and effluent and stormwater disposal without adversely affecting groundwater or surface waterbodies.

Policy B1.2.4

Recognise and promote the need for protection zones around water supply bores, to reduce the risk of contamination from land uses.

Policy B1.2.5

Require any sewage treatment and disposal to be reticulated in the townships of Castle Hill, Doyleston, Lake Coleridge Village, Leeston, Lincoln, Prebbleton, Rolleston, Southbridge, Springston, Tai Tapu and West Melton.

The Servicing Report has confirmed the existing infrastructure can be extended and the site can be serviced by Council's reticulated network, including connections to Council's wastewater network, subject to upgrades. The Plan Change will require future development to appropriately manage stormwater in accordance with the ODP. The stormwater management will enhance the Leeston township as it will reduce the risk of flooding.

The proposal contains a water supply bore in a utility allotment, owned by the Council. In order to safeguard the land from potential contamination, a 100 m ground water protection zone has been noted on the ODP to ensure that incompatible uses are not undertaken in this area. This measure ensures that the proposal is consistent with Policy B1.2.4.

Policy B1.2.9

Create esplanade strips or esplanade reserves to maintain and enhance water quality, riparian vegetation, and the natural character of waterbodies, where appropriate.

Policy B1.2.11

Ensure any structure or mooring which is located on or passes over or across the surface of a waterbody is:

- *Readily moveable; or*
- *Necessary for flood protection or access across the waterbody; and*
- *Any adverse effects on wildlife, waahi tapu or mahinga kai sites; aesthetic, heritage or recreational values; or public access to the waterbody; are avoided, remedied or mitigated; or*
- *Any adverse effects on existing uses are avoided, remedied or mitigated.*

Objective B1.3.1

Areas of "significant indigenous vegetation and significant habitats of indigenous fauna" are recognised and protected as townships expand.

Objective B1.3.2

The natural character of wetlands and rivers and their margins, are recognised, protected and enhanced, where appropriate, in townships.

Policy B1.3.1

Ensure any wetland or area containing indigenous vegetation on a site is assessed to establish its ecological values, before the land is rezoned for new residential or business development.

Leeston Creek runs through the site and is currently on private land not vested to Council. The ODP will require Leeston Creek and its margins to be vested to Council as reserve. Following the completion of the Leeston North Stormwater Bypass, Leeston Creek will maintain a regular flow and will continue to provide an outlet for auxiliary stormwater, however the volume of flow will be at a significantly reduced rate due to the effect of the stormwater diversion. The ODP illustrates the area around Leeston Creek is to be vested as recreation reserve with provision for walking and cycle access. Any bridge infrastructure over Leeston Creek will be required to be designed to avoid adverse effects on the flow of the Leeston Creek.

Birdlings Brook is located in the south west corner of the site, has been planted along the banks and is publicly accessible due to the walkway 'Marshall's on Birdlings Brook'. Due to the location of Birdlings Brook through the site and the desire to retain the nature of the stream, the land between Birdlings Brook and the intersection of Harmans Road and High Street will be required to be vested to Council as reserve. Further down the stream at Leggs and Lockheads Road, Birdlings Brook has been recognized as having had high trout spawning values, however these have declined since the 1980s[7]. Stormwater currently discharges to Birdlings Brook, and any stormwater management and discharge will be required to be treated in a manner that does not adversely affect Birdlings Brook.

The remainder of the site does not contain any wetlands, lakes or other waterbodies. The proposal is therefore consistent with Objectives B1.3.1 and B1.3.2 and Policy B1.3.1.

Objective B1.4.1

The expansion of townships does not adversely affect the values of outstanding natural features and landscapes.

The site is not within any identified area of outstanding natural landscape and does not contain any identified outstanding natural features. It is considered that the proposal is consistent with Objective B1.4.1.

Objective B1.4.4

The distinction between the landscapes of the rural area and townships on the Canterbury Plains is maintained.

The Plan Change will enable the development of both medium and low density residential allotments adjoining an existing township in a consolidated urban form. The proposed Living 1 zone will align with the existing Living XA zone on the south side of High Street. The Plan Change creates a distinct rural and township boundary as people enter and exit Leeston via Leeston Dunsandel Road and High Street. Therefore, the Plan Change is consistent with Objective B1.4.4.

[7] Te Waihora Catchment Ecological Flows Report 2012

Physical Resources

Objective B2.1.1

An integrated approach to land use and transport planning to ensure the safe and efficient operation of the District's roads, pathways, railway lines and airfields is not compromised by adverse effects from activities on surrounding land or by residential growth.

Policy B2.1.12

Address the impact of new residential or business activities on both the local roads around the site and the District's road network, particularly Arterial Road links with Christchurch City.

Policy B2.1.13

Minimise the effects of increasing transport demand associated with areas identified for urban growth by promoting efficient and consolidated land use patterns that will reduce the demand for transport.

Policy B2.1.14

Encourage people to walk or cycle within and between townships by providing a choice of routes for active transport modes and ensuring there is supporting infrastructure such as parking for cycles, at destinations.

Policy B2.1.15

Require pedestrian and cycle links in new and redeveloped residential or business areas, where such links are likely to provide a safe, attractive and accessible alternative route for pedestrians and cyclists, to surrounding residential areas, business or community facilities.

The Transport Assessment concludes the existing roading network including intersections can accommodate the additional traffic flows and vehicle movements arising from the implementation of the Plan Change with no upgrades or improvements required. The roading network as outlined in the ODP provides connections to the existing urban area of Leeston as well as future roading connections to ensure future development can be connected to the site. The ODP includes non-vehicular linkages to reserves, Ellesmere College / Te Kāreti o Waihora, and throughout the site, which will encourage greater use of these modes of transport. It is considered that the proposal is consistent with Policies B2.1.14 and B2.1.15

Utilities

Objective B2.2.3

The provision of utilities where any adverse effects on the receiving environment and on people's health, safety and wellbeing is managed having regard to the scale, appearance, location and operational requirements of the facilities.

Policy B2.2.1

Require that the need to supply utilities and the feasibility of undertaking is identified at the time a plan change request is made to rezone land for residential or business development.

Policy B2.2.5

Avoid potential 'reverse sensitivity' effects of activities on the efficient development, use and maintenance of utilities.

The ODP shows a utility allotment for the purpose of drilling a well for potable water. There is a 100 m ground water protection zone to avoid any reverse sensitivity effects towards the water bore. The Servicing Report outlines and discusses options for servicing any future development of the site and it is considered servicing options can be further investigated and designed at the time of subdivision. It is considered that the proposal is consistent with Objective B2.2.3 and Policies B2.2.1 and B2.2.5.

Community Facilities (and Reserves)

Objective B2.3.1

Residents have access to adequate community facilities.

Objective B2.3.2

Community facilities do not adversely affect residential amenity values or other parts of the environment.

Policy B2.3.1

Encourage co-ordination between the provision of community facilities, and new residential and business development.

Policy B2.3.8

Ensure residents in Selwyn District have access to sufficient reserve areas to meet their needs for space for active and passive recreation

The proposal includes suitable access networks to ensure residents are able to access existing community facilities in Leeston. The proposal will retain Birdlings Brook walkway and create the surrounding area to a reserve. Reserves through the site will provide opportunities for active and passive recreation as well as a high level of amenity along waterways. Footpaths can be designed and provided, as appropriate, at the time of subdivision as a safer and more defined walkway for the 'Harmans Loop'. The Plan Change is considered to be consistent with these policies.

Waste Disposal

Objective B2.4.2

Adverse effects on the environment from the collection, treatment, storage or disposal of waste are reduced.

Policy B2.4.4

Ensure land rezoned for new residential or business development has a regular solid waste collection and disposal service available to residents.

The site adjoins Leeston, which has a regular solid waste collection and disposal service available. It is likely that future residents on these sites will be serviced by this system and therefore the Plan Change is consistent with objective B2.4.2 and policy B2.4.4.

Natural Hazards

Objective B3.1.1

Ensure activities do not lead to or intensify the effects of natural hazards.

Objective B3.1.2

Ensure potential loss of life or damage to property from natural hazards is mitigated.

Objective B3.1.3

Ensure methods to mitigate natural hazards do not create or exacerbate adverse effects on other people or the environment.

Policy B3.1.2

Avoid allowing new residential or business development in areas known to be vulnerable to a natural hazard, unless any potential risk of loss of life or damage to property is adequately mitigated.

Policy B3.1.3

Avoid locating dwellings and other principal building in the following areas:
Between any waterbodies and any stopbanks designed or used to contain floodwater from that waterbody; or
Within the bed of any lake or river.

Policy B3.1.7

Ensure any new residential or business development does not adversely affect the efficiency of the District's land drainage system or the risk of flooding from waterbodies.

The site does not contain any identified fault lines, significant areas of subsidence and is not identified as being within an area subject to natural hazards. Natural depressions occur across the site with Leeston Creek that is approximately 0.5 m deep and 5 m wide running through Lot 3 DP 82846. The Leeston North Stormwater Bypass will ensure that Leeston Creek will maintain a consistent flow volume and will not succumb to inundation or flooding from high rainfall events. It is considered that the stormwater bypass, along with stormwater management areas required by the ODP will mitigate any adverse effects from flooding on other people or the environment.

The site does not contain any stop banks to contain floodwater. Therefore, it is considered that the Plan Change is consistent with Objectives B3.1.1, B3.1.2 and B3.1.3, and Policies B3.1.2, B3.1.3, and B3.1.7.

Cultural and Historic Heritage

Objective B3.3.1

A partnership for heritage protection is fostered between landowners, Tāngata whenua, community groups and the Council.

Objective B3.3.2

Sites of Wāhi tapu and other importance to Tāngata whenua are protected.

Policy B3.3.4

Protect areas identified in the Plan as Wāhi Taonga Sites, Wāhi Taonga Management Areas and Mahinga Kai Sites, from inappropriate damage or destruction.

The waterways on the site are not identified in the Plan as being sites of Wāhi tapu or Taonga Sites. The application has been sent to MKT for comment.

Objective B3.4.1

The District's townships are pleasant places to live and work in.

Objective B3.4.2

A variety of activities are provided for in townships, while maintaining the character and amenity values of each zone.

Objective B3.4.3

"Reverse sensitivity" effects between activities are avoided.

It is considered that rezoning the site to enable development in accordance with Living 1 and Living 2 zones and residential activities on the western edge of Leeston will provide for a variety of section sizes within Leeston and enhance the Leeston township. Rezoning the site and future development will change the character of the site from rural to urban, changing the amenity and visual outlook of the site. However, if the site is rezoned residential and development is undertaken in accordance with the ODP, future development will maintain and enhance the character and amenity of the residential and urban area and create a new neighbourhood that is a pleasant place to work and live. It is considered that the proposal is consistent with Objective B3.4.1 and B3.4.2.

The south east corner of the proposal borders a Business 1 zone. Residential development is anticipated in the area above the Business 1 zone after the deferral is lifted and therefore, and reverse sensitivity effects have been considered by Council when the site was zoned Living 1(deferred). The proposal is therefore consistent with Objective B3.4.3

Objective B3.4.4

Growth of existing townships has a compact urban form and provides a variety of living environments and housing choices for residents, including medium density housing typologies located within areas identified in an Outline Development Plan.

Objective B3.4.5

Urban growth within and adjoining townships will provide a high level of connectivity both within the development and with adjoining land areas (where these have been or are likely to be developed for urban activities or public reserves) and will provide suitable access to a variety of forms of transport

Policy B3.4.3

To provide Living zones which:

- *are pleasant places to live in and provide for the health and safety of people and their communities;*
- *are less busy and more spacious than residential areas in metropolitan centres;*
- *have safe and easy access for residents to associated services and facilities;*
- *provide for a variety of living environments and housing choices for residents, including medium density areas identified in Outline Development Plans;*
- *ensure medium density residential areas identified in Outline Development Plans are located within close proximity to open spaces and/or community facilities and*
- *ensure that new medium density residential developments identified in Outline Development Plans are designed in accordance with the following design principles:*
    - *access and connections to surrounding residential areas and community facilities*
    - *and neighbourhood centres are provided for through a range of transport modes;*
    - *block proportions are small, easily navigable and convenient to encourage cycle and pedestrian movement;*
    - *streets are aligned to take advantage of views and landscape elements;*
    - *section proportions are designed to allow for private open space and sunlight admission;*
    - *a subdivision layout that minimises the number of rear lots;*
    - *layout and design of dwellings encourage high levels of interface with roads, reserves and other dwellings;*
    - *a diversity of living environments and housing types are provided to reflect different lifestyle choices and needs of the community;*
    - *a balance between built form and open spaces complements the existing character and amenity of the surrounding environment and;*
    - *any existing natural, cultural, historical and other unique features of the area are incorporated where possible to provide a sense of place, identity and community.*

The Plan Change and ODP have been designed to provide a diverse range of medium and low density residential sections across the site to provide for lifestyle choices and needs of the community. The low density land provides for spacious, open section sizes. The medium density, Living 1 zone provides a diversity of living environments in proximity to the local school and other recreational and community facilities. Key pedestrian and cycle links will ensure safe access to facilities and services within Leeston township. As the implementation of the Plan Change could accommodate larger allotments, the Living 2 zone would be quieter than metropolitan areas. The Transport Assessment concludes no upgrades or improvements to the existing roading infrastructure is required to accommodate the additional vehicle movements as a result of the Plan Change. It is considered that the proposal is consistent with Objectives B3.4.4 and B3.4.5 and Policy B3.4.3.

Policy B3.4.38

Avoid rezoning land for new residential development adjoin or near to existing activities which are likely to be incompatible with residential activities, unless any potential 'reverse sensitivity' effects will be avoided, remedied or mitigated.

The rezoned Living 1 and Living 2 zones will adjoin the existing Outer Plains zone to the west. It is not uncommon within the Leeston township for Living 1 or Living XA zones to directly adjoin the Outer Plains zone. Approximately 900 m of Living 1 and Living XA zoned land southeast of the site and south of High Street adjoin the outer Plains zone. North east of the site is the site known as the Martin block. The Martin block is zoned Living XA, where allotments can be an average of 650 m^2 and directly adjoins the Outer Plains zone for approximately 360 m. Therefore, it is considered and evident that there are cases where Outer Plains zoned land and adjoining Living 1 and Living XA zones can be compatible without mitigation for any reserve sensitivity. Therefore, the proposal is consistent with Policy B3.4.38.

Growth of Townships

Objective B4.1.1

A range of living environments is provided for in townships, while maintaining the overall 'spacious' character of Living zones, except within Medium Density areas identified in an Outline Development Plan where a high quality, medium density of development is anticipated.

Objective B4.1.2

New residential areas are pleasant places to live and add to the character and amenity values o townships.
Policy B4.1.1(a)
Provide for a variety of allotment size for erecting dwellings in Living 1 Zones, while maintaining average section size similar to that for existing residential areas in townships, except within the Living Z Zone, including any Medium Density area identified in an Outline Development Plan where a higher density of development is anticipated.

Policy B4.1.3

To allow, where appropriate, the development of low density living environments in locations in and around the edge of townships where they will achieve the following;

A compact township shape;
- *Consistent with preferred growth options for townships;*
- *Maintains the distinction between rural areas and townships;*
- *Maintains a separation between townships and Christchurch City boundary;*
- *Avoid the coalescence of townships with each other;*
- *Reduce the exposure to reverse sensitivity effects;*
- *Maintain the sustainability of the land, soil and water resource;*
- *Efficient and cost-effective operation and provision of infrastructure.*

The provision of Living 1 and Living 2 zones will provide a variety of environments within Leeston. The Living 2 zone will provide sections that will maintain the spacious character. The proposal is consistent with Objective B4.1.1.

The proposal, through the ODP seeks to provide a range of allotments sizes in the Living 1 zone, to accommodate the anticipated urban growth of the township. Combined with the layout of the internal roading network, the average allotment size will represent a residential density more spacious than high density metropolitan areas.

The proposal site is located on the western urban limit of Leeston and incorporates land which has been identified as appropriate for residential activities as indicated by the deferred zoning status. The Plan Change also includes land

further west of the deferred zoning, currently zoned Outer Plains. The servicing report has confirmed the extension of the Living 1 and 2 zones can be connected to Council's reticulated services, subject to the required upgrades. The extension of the Living 1 zone will align with the developed Living XA zone, providing a clear transition from rural to urban along High Street. The Plan Change is consistent with Objective B4.1.2 and Policy B4.1.3.

Policy B4.2.10

Ensure that new residential blocks are small in scale, easily navigable and convenient to public transport services and community infrastructure such as schools, shops, sports fields and medical facilities, particularly for pedestrians and cyclists.

Objective B4.3.1

The expansion of townships does not adversely affect:
- *Natural or physical resources;*
- *Other activities;*
- *Amenity values of the township or the rural area; or*
- *Sites with special ecological, cultural, heritage or landscape values.*

Objective B4.3.4

New areas for residential or business development support the timely, efficient and integrated provision of infrastructure, including appropriate transport and movement networks through a coordinated and phased development approach.

The site is of a scale that will be easily navigable by future residents. The ODP provides guidance for walkways and cycleways and the roading layout can be designed in a manner that could accommodate bus routes. Alternatively, the walkways and roads can be design in a manner that provides easy walking access to bus stops. The site adjoins the existing urban environment and the existing Living 1 zone and is within close proximity to local amenities and community facilities. Lifting the deferral and rezoning the site will expand the Leeston township and encourage residents and financial investment into Leeston. The Plan Change and ODP requires stormwater management areas to be developed as part of any future subdivision to reduce flooding of the Leeston Creek in high rainfall events. The Living 1 zone will align with the existing Living XA zone on the south side of High Street, creating a clear township and rural boundary. Roading links to the east and west of the site, including a direct link to Leeston township, and the ability to connect to and establish connections to existing reticulated water and wastewater services, demonstrates that the proposal is in accordance with Objective B4.3.4.

Policy B4.3.1

Ensure new residential, rural residential or business development either:
- *Complies with the Plan policies for the Rural Zone; or*
- *The land is rezoned to an appropriate Living Zone that provides for rural-residential development (as defined within the Regional Policy Statement) in accordance with an Outline Development Plan incorporated into the District Plan; or*
- *The land is rezoned to an appropriate Living or Business zone and, where within the Greater Christchurch area, is contained within the Urban Limit identified in the Regional Policy Statement and developed in accordance with an Outline Development Plan incorporated into the District Plan.*

Policy B4.3.2

> *In areas outside the Greater Christchurch area, require any land rezoned for new residential or business development to adjoin, along at least one boundary, an existing Living or Business zone in a township, except that low density living environments need not adjoin a boundary provided they are located in a manner that achieves a compact township shape.*

It is considered that given the location of this site adjoining an existing township as well as the existing deferred zoning, and that it is able to be effectively and efficiently serviced, this site is ideal to provide additional housing opportunities for the future generations. It is considered that this proposal is consistent with Policy B4.3.1. The proposal is outside of the Greater Christchurch area, and located on the western side of the existing township adjoining an existing Living 1 zone. The portion of the site north of Leeston Dunsandel Road adjoins a Living XA zone along the eastern boundary. The Outer Plains portion of the site currently adjoins a the Living 2 (deferred) Zone, and as a result of the Plan Change the site zoned Outer Plains on the corner of Harmans and Leeston Dunsandel Road will adjoin existing Outer Plains zone on the opposite side of Leeston Dunsandel Road and Harmans Road and the Living 1 and 2 zones.

Policy B4.3.3

> *Avoid zoning patterns that leave land zoned Rural surrounded on three or more boundaries with land zoned Living or Business.*

Policy B4.3.6

> *Encourage townships to expand in a compact shape were practical.*

Rezoning the site will result in neighbouring land zoned Outer Plains adjoining the Living 1 and 2 zones. If a site was to have only four boundaries, these would most likely be considered to be the north, south, east and west boundaries. Taking this into account, the Plan Change will result in the Outer Plains zoned land adjoining the Living 1 and 2 zones on the east and south boundary, with the north and west boundary adjoining land zoned Outer Plains. The intention of Policy B4.3.3 is to ensure rural zoned land is not surrounding by living zones. As the Outer Plains site will still adjoin rural land on the opposite sides of Leeston Dunsandel Road and Harmans Road, rezoning the site to Living 1 and 2 is considered to be consistent with Policy B4.3.3.

Policy B4.3.8

Each Outline Development Plan shall include

- *Principal through roads, connection and integration with the surrounding road network and strategic infrastructure;*
- *Any land to be set aside for*
  - *community facilities or schools;*
  - *parks and land required for recreation or reserves;*
  - *any land to be set aside for business activities;*
  - *the distribution of different residential densities;*
  - *land required for the integrated management of water systems, including stormwater treatment, secondary flow paths, retention and drainage paths; and*
  - *land reserved or otherwise set aside from development for any other reason, and the reasons for its protection.*
- *Demonstrate how each ODP area will achieve a minimum net density of at least 10 lots or household units per hectare*

- *Identify any cultural (including tangata whenua values), natural, and historic or heritage features and values and show how they are to be enhanced or maintained;*
- *Indicate how required infrastructure will be provided;*
- *Set out the phasing and co-ordination of subdivision and development in line with the phasing shown on the Planning Maps and Appendices;*
- *Demonstrate how effective provision is made for a range of transport options, including public transport systems, pedestrian walkways and cycle ways, both within and adjoining the ODP area;*
- *Include any other information which is relevant to an understanding of the development and its proposed zoning;*
- *Demonstrate that the design will minimise any reverse sensitivity effects.*

The information provided within the ODP and this application provides all of the information set out in this policy. It is considered that the proposal is consistent with Policy B4.3.8.

Leeston Specific Growth Policies

Policy B4.3.54

Ensure any land rezoned for new residential or business development does not cause, or exacerbate, a natural hazard by increasing the rate of stormwater runoff into the Leeston main drain.

Stormwater management will be required for any future development to be undertaken and guidelines for the stormwater management are included in the ODP. The Leeston Creek will be naturalised and the ODP will require stormwater to be managed in a way that does not exacerbate the risk to flooding, and will be managed so that the rate of the runoff into the Leeston Creek will not be increased above pre development flows, or it will be managed where the Creek is able to accommodate a greater flow without increasing flood risks.

Policy B4.3.55
Ensure that land that is zoned for residential development but is presently subject to surface flooding is not developed for its zoned purpose until provision is made for the amelioration of that constraint.

Provision has been made to improve the stormwater management of Leeston Creek. A piece of land has been identified in the ODP to be vested to Council for stormwater management and to implement the Leeston North Stormwater Bypass. The bypass with divert water from Leeston Creek at the northern most area of the site into the bypass to be crated on the Martin block. The bypass has not yet been completed but is provided for in the Long Term Annual Plan. Therefore, the proposal is consistent with Policy B4.3.55.

Appendix 11: Assessment of the Mahaanui Iwi Management Plan

The following is an assessment of the Plan Change against the Mahaanui Iwi Management Plan (IMP). The Papatūānuku and Te Waihora Chapters are considered to be the most relevant to the Plan Change request. The following is an assessment of the objectives and policies outlined in the Papatūānuku and Te Waihora Chapters of the IMP.

Papatūānuku Ngā Paetae / Objectives

(1) *The mauri of land and soil resources is protected mō tātou, ā, mō kā uri ā muri ake nei.*
(2) *The ancestral and contemporary relationship between Ngāi Tahu and the land is recognised and provided for in land use planning and decision making.*
(3) *Land use planning and management in the takiwā reflects the principle of Ki Uta Ki Tai.*
(4) *Rural and urban land use occurs in a manner that is consistent with land capability, the assimilative capacity of catchments and the limits and availability of water resources.*
(5) *Inappropriate land use practices that have a significant and unacceptable effect on water quality and quantity are discontinued.*
(6) *Ngāi Tahu has a prominent and influential role in urban planning and development.*
(7) *Subdivision and development activities implement low impact, innovative and sustainable solutions to water, stormwater, waste and energy issues.*
(8) *Ngāi Tahu cultural heritage values, including wāhi tapu and other sites of significance, are protected from damage, modification or destruction as a result of land use.*

The IMP defines the principle of Ki Uta Ki Tai as land management that recognises the relationship and connections between land, water, biodiversity and the sea. The Plan Change will promote stormwater management principles to mitigate the risk of flooding and will more appropriately management stormwater of future development through the stormwater management areas. The servicing report has confirmed future development can be serviced by Council's reticulated wastewater and potable water subject to upgrades.

Papatūānuku

Issue P1: Basic principles of land management, from a Ngāi Tahu perspective.

Ngā Kaupapa / Policy

Policy P1.1
To approach land management in the takiwā based on the following basic principles:
(a) Ki Uta Ki Tai;
(b) Mō tātou, ā, mō kā uri ā muri ake nei; and
(c) The need for land use to recognise and provide for natural resource capacity, capability, availability, and limits, the assimilative capacity of catchments.
As a means to:
(a) Protect eco-cultural systems;
(b) Promote catchment based management and a holistic approach to managing resources;
(c) Identify and resolve issues of significance to tāngata whenua, including recognising the relationship between land use and water quality and water quantity;
(d) Provide a sound cultural and ecological basis for assessments of effects of particular activities; and

(e) Recognise and provide for the relationship between healthy land, air and water and cultural well-being.

The Plan Change will implement principles of Ki Uta Ki Tai, as discussed above. Lifting the deferral from the existing Living 1 (deferred) and Living 2 (deferred) zones and rezoning the site will provide long term development and housing opportunities for future generations, while being provided with reticulated potable and wastewater services. Stormwater will be managed through the ODP requirements and guidelines and naturalising the stormwater management areas will encourage wildlife and habitats. The servicing report has confirmed capacity of the Council's reticulated potable water and wastewater networks.

Subdivision and Development

Issue P4: Subdivision and development can have significant effects on tāngata whenua values, including sense of place, cultural identity, indigenous biodiversity, mahinga kai, and wāhi tapu and wāhi taonga, but can also present opportunities to enhance those values.

Ngā Kaupapa / Policy

Policy P4.1
To work with local authorities to ensure a consistent approach to the identification and consideration of Ngāi Tahu interests in subdivision and development activities, including:

(a) Encouraging developers to engage with Papatipu Rūnanga in the early stages of development planning to identify potential cultural issues; including the preparation of Cultural Impact Assessment reports;
(b) Ensuring engagement with Papatipu Rūnanga at the Plan Change stage, where plan changes are required to enable subdivision;
(c) Requiring that resource consent applications assess actual and potential effects on tāngata whenua values and associations;
(d) Ensuring that effects on tāngata whenua values are avoided, remedied or mitigated using culturally appropriate methods;
(e) Ensuring that subdivision consents are applied for and evaluated alongside associated land use and discharge consents; and
(f) Requiring that 'add ons' to existing subdivisions are assessed against the policies in this section.

The Plan Change request has been sent to MKT for their comments and recommendations. Adverse effects on Tāngata whenua values can be identified through the consultation process and avoided, remedied or mitigated as required.

Stormwater

Issue P6: The discharge of stormwater in urban, commercial, industrial and rural environments and can have effects on water quality.

Ngā Kaupapa / Policy

Policy P6.1
To require on-site solutions to stormwater management in all new urban, commercial, industrial and rural developments (zero stormwater discharge off site) based on a multi-tiered approach to stormwater management:

(b) Reducing volume entering system - implementing measures that reduce the volume of stormwater requiring treatment (e.g. rainwater collection tanks);
(c) Reduce contaminants and sediments entering system - maximising opportunities to reduce contaminants entering stormwater e.g. oil collection pits in carparks, education of residents, treat the water, methods to improve quality; and

(d) *Discharge to land based methods, including swales, stormwater basins, retention basins, and constructed wetponds and wetlands (environmental infrastructure), using appropriate native plant species, recognising the ability of particular species to absorb water and filter waste.*

Policy P6.2
To oppose the use of existing natural waterways and wetlands, and drains, for the treatment and discharge of stormwater in both urban and rural environments.

Policy P6.3
Stormwater should not enter the wastewater reticulation system in existing urban environments.

Policy P6.5
To encourage the design of stormwater management systems in urban and semi urban environments to provide for multiple uses: for example, stormwater management infrastructure as part of an open space network that provides for recreation, habitat and customary use values.

Stormwater management can be designed and managed at the time of subdivision. The ODP has outlined the requirement for stormwater management areas to mitigate flooding in high rainfall events.. Stormwater from future development is not anticipated to enter the reticulated wastewater network, rather is anticipated to be treated in the stormwater management areas and discharged into Birdlings Brook and the existing stormwater system on Chapman Street. The Plan Change is considered to be not contrary to the stormwater policies of the IMP.

Discharge to Land

Issue P8: Discharge to land can utilise the natural abilities of Papatūānuku to cleanse and filter contaminants but must still be managed to avoid adverse effects on soil and water resources.

Ngā Kaupapa / Policy

Policy P8.1
To require that discharge to land activities in the takiwā:
(a) *Are appropriate to the soil type and slope, and the assimilative capacity of the land on which the discharge activity occurs;*
(b) *Avoid over-saturation and therefore the contamination of soil, and/or run off and leaching; and*
(c) *Are accompanied by regular testing and monitoring of one or all of the following: soil, foliage, groundwater and surface water in the area.*

The geotechnical report notes the site is above a high groundwater table. Stormwater management areas have been identified in the ODP to mitigate flooding of the Leeston Creek and to capture stormwater, so the flows of the Leeston Creek does not exceed predevelopment flow rates. The servicing report has concluded the site can be serviced by Council's reticulated potable and wastewater networks.

Earthworks

Issue P11: Earthworks associated with land use and development need to be managed to avoid damaging or destroying sites of significance, and to avoid or minimise erosion and sedimentation.

Ngā Kaupapa / Policy

Policy P11.1
To assess proposals for earthworks with particular regard to:
(a) *Potential effects on wāhi tapu and wāhi taonga, known and unknown;*

(b) *Potential effects on waterways, wetlands and waipuna;*
(c) *Potential effects on indigenous biodiversity;*
(d) *Potential effects on natural landforms and features, including ridge lines;*
(e) *Proposed erosion and sediment control measures; and*
(f) *Rehabilitation and remediation plans following earthworks*

Earthworks will be required for the future development of the site and can be appropriately managed through conditions of consent and the time of development.

Te Waihora

Ngā Paetae / Objectives

(1) *Ngāi Tahu are active co-governors of Te Waihora and its catchment.*
(2) *Land and water management in the catchment effectively provides for the Treaty partner status of Ngāi Tahu, and the taonga status of Te Waihora.*
(3) *The cultural health of Te Waihora is restored, including the restoration of mahinga kai species abundance and diversity to a level to enable customary use.*
(4) *The customary rights of Ngāi Tahu whānui associated with mahinga kai and Te Waihora are protected mō tātou, ā, mō kā uri ā muri ake nei.*
(5) *Land and water use in the catchment respects the boundaries, availability and limits of our freshwater resources and the need to protect soil and water resources for future generations.*
(6) *The relationship between land use, groundwater, surface water and Te Waihora is recognised and provided for according to the principle of Ki Uta Ki Tai.*
(7) *Lake management, including lake level management, reflects living with the lake, rather than forcing the lake to live with us.*
(8) *The cultural health of lowland waterways is restored, through the restoration of water quality and quantity and riparian margins.*
(9) *Wetlands and waipuna are recognised and protected as wāhi taonga, and there is an overall net gain of wetlands in the catchment.*
(10) *All waterways have healthy, planted riparian margins and are protected from stock access.*
(11) *The discharge of contaminants to the lake and waterways in the catchment is eliminated.*

The above objectives of the Te Waihora Chapter relate mainly to the governance of Te Waihora and the goal to restore the health of the Lake. The Plan Change will not adversely affect the governance of Te Waihora and servicing any future development of the site can be accommodated by Council's reticulated potable water and wastewater networks, as well as stormwater management areas and reserves. Naturalisation of the waterways is anticipated to assist in improving water quality in Leeston Creek and this water ends up in Te Waihora. The Plan Change is considered to be not contrary to the objectives of the Te Waihora Chapter of the IMP.

Appendix 12: Assessment of the Land and Water Regional Plan

The following is an assessment of the Plan Change against the relevant objectives and policies of the Land and Water Regional Plan ("LWRP").

Section 3 – Objectives

The following is an assessment of the Plan Change against the objectives in Section 3 of the LWRP.

Policy 3.1
Land and water are managed as integrated natural resources to recognise and enable Ngāi Tahu culture, traditions, customary uses and relationships with land and water.

Policy 3.2
Water management applies the ethic of ki uta ki tai – from the mountains to the sea – and land and water are managed as integrated natural resources recognising the connectivity between surface water and groundwater, and between fresh water, land and the coast.

Policy 3.5
Land uses continue to develop and change in response to socio-economic and community demand.

Policy 3.8
The quality and quantity of water in fresh water bodies and their catchments is managed to safeguard the life-supporting capacity of ecosystems and ecosystem processes, including ensuring sufficient flow and quality of water to support the habitat and feeding, breeding, migratory and other behavioural requirements of indigenous species, nesting birds and, where appropriate, trout and salmon.

Policy 3.8A
High quality fresh water is available to meet actual and reasonably foreseeable needs for community drinking water supplies.

Policy 3.19
Natural character values of freshwater bodies, including braided rivers and their margins, wetlands, hāpua and coastal lagoons, are protected.

Policy 3.24
All activities operate at good environmental practice or better to optimise efficient resource use and protect the region's fresh water resources from quality and quantity degradation.

The ODP includes stormwater management areas and for Leeston Creek and its margins to be vested to Council.. Stormwater management will enable the land to be used in a more sustainable and efficient manner by reducing managing the flows in the Leeston Creek and reducing the chance of flooding in high rainfall events.

The Plan Change will enable the development of potentially 410 residential allotments and will cater for future residential development and housing for future generations. The catchment of the Leeston Creek will be managed in a manner that will reduce the risk of flooding through the stormwater management. The servicing report has confirmed the site and future development can be serviced with potable water.

Section 11 – Te Waihora

The following is an assessment of the Plan Change against the policies in Section 11 – Te Waihora of the LWRP.

Policy 11.4.1
Manage water abstraction and discharges of contaminants within the entire Selwyn Te Waihora sub-region to avoid, remedy or mitigate adverse cumulative effects on the water quality of Te Waihora/Lake Ellesmere, rivers and shallow groundwater; and the flow of water in springs and tributaries flowing into Te Waihora/Lake Ellesmere and achieve, in combination with non-regulatory actions, the freshwater objectives and outcomes for the sub-region.

Policy 11.4.2
In recognition of the importance of the entire catchment to Ngāi Tahu, actively manage the Selwyn Te Waihora sub-region to enable Ngāi Tahu to exercise kaitiakitanga in the management of fresh water.

Policy 11.4.5
Recognise the value of the Te Waihora/Lake Ellesmere catchment for its recreational and amenity values.

A PSI has been undertaken on the site which has concluded there are areas on the site that have been subject to activities listed on the HAIL. A detailed site investigation will be required at the time of subdivision and any remediation as required. If the site is required to be remediated for residential development, the only contaminants that are anticipated to enter water are contaminants from stormwater runoff, which can be appropriately managed through conditions of any future subdivision consent. Selwyn District Council have purchased an area of the Plan Change site for the purpose of water abstraction. A zone of influence is noted on the ODP to ensure the water abstracted from this point is protected.

MKT have been provided with this Plan Change for their comments. The Plan Change will enable residential development in Leeston, in close proximity to Te Waihora and a short drive will enable residents to enjoy the lake.

Managing Land Use to Improve Water Quality

Policy 11.4.7
Reduce the total nitrogen load entering Te Waihora/Lake Ellesmere by restricting the losses of nitrogen from farming activities, industrial and trade processes and community sewerage systems in accordance with the target (the limit to be met over time) and limits in Tables 11(i) and 11(j).

The Plan Change will rezone land currently utilised for grazing and pasture for residential activity, reducing the agriculture practises that are currently being undertaken on the site. The servicing report has confirmed the reticulated wastewater network can accommodate future development of the site.

Overall, the Plan Change is considered to be consistent with the objectives and policies of the LWRP.