Grassroots Planning Limited

Servicing Strategy Report

Corner of Annavale and Pocock Roads, Springfield

Prepared for Mr Robert Logan (Ballymena Holdings Limited).

September 2017

Prepared by Grassroots Planning Limited

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Introduction

Mr Robert Logan ("the Applicant"), director of Ballymena Holdings Limited, is seeking a change to the Selwyn District Plan to facilitate a proposal for residential development at the corner of Annavale Road and Pocock Road, Springfield.

The land is currently zoned Outer Plains Rural under the Selwyn District Plan. It is also identified as a potential low density Residential Development Area in the Malvern 2031 Area Plan, being Springfield Area 2, SPR A2. The applicant is seeking the rezoning of the property and the adjoining Lot 1 DP 400509 to Living 2 (a low density residential zone). The proposal incorporates a requirement for all development to be in accordance with an Outline Development Plan, (ODP) that is included as part of the Plan Change application. A copy of the ODP is attached in Appendix 1.

This report assesses the infrastructure requirements and availability and makes recommendations for the proposed plan change.

Purpose of the Report

Mr Robert Logan has sought this servicing strategy prepared by Kim Logan (Grassroots Planning Limited) and peer reviewed by Victor Mthamo of (Reeftide Environmental & Projects Limited) in support of the Pocock/Annavale Roads private plan change in Springfield.

This servicing strategy report covers the following:

- Potable water supply,
- Firefighting requirements,
- Stormwater,
- Sewerage,
- Electrical supply,
- Telecommunications.

Other matters such as roading, site contamination, geotechnical assessment and landscaping are only referenced in this report. Detailed reports relating to these subjects are contained in more detailed expert reports, which will be lodged with the Plan Change application, and include;

- Roading and traffic assessment by Novo Group,
- Landscaping assessment by Jeremy Head,
- Site contamination by Martyn O'Cain,
- Geotechnical assessment by Eliot Sinclair.

Site Description and Location

The application site is located on the corner of Annavale Road and Pocock Roads and is situated immediately northwest of the Springfield residential area. The site is bound by Pocock Road to the southeast and by Annavale to the southwest. The western boundary is defined by an unnamed shingle road. The northern boundary of the site is defined by a section of the Midland Railway Line rail corridor. Annavale and Pocock Roads are both infrequently used metal roads.

Topography

The total area of the site is 30.32 hectares and is generally flat with a slight fall to the north.

The site has a vegetation cover of exotic grass and is used for grazing. A shelterbelt is located at the mid northwest part of the site. A shallow water race runs across the site and is approximately 0.5m deep by 1m wide.

Soils

The geological map of Selwyn indicates the site is underlain by an 'unweathered', brownish-grey, variation of gravels, sands, silts and clay in low river terraces. The underlying geology comprises of shallow topsoil to around 0.2-0.3m in depth, overlying silts and clays to 0.6 to 2.4m in depth, over gravels. Nearby well logs indicate these gravels extend to a considerable depth in excess of 60m. With groundwater around 2.1m to 2.7m below ground level in winter conditions.

The results of the pit and penetrometer tests undertaken as part of the geotechnical investigations carried out by Eliot Sinclair and undertaken as part of expert reports accompanying the Plan Change, provide satisfactory evidence of the nature of the ground forming materials to at least 15m depth. Therefore, it was considered that deep geotechnical investigations are not warranted at this time for this Plan Change request.

The site has been classified by CERA as a 'Green Zone', Technical Category, Not Applicable, Rural and Unmapped, that indicates that 'Properties in rural areas or beyond the extent of land damage mapping, and properties in the Port Hills and Banks Peninsula have not been given a technical category.' However, due to the presence of deep highly permeable gravels, cobbles and boulders, and the depth to groundwater, the site is not likely to be at high risk of liquefaction.

Buildings and landscaping of the site

The property is currently in pasture and used for stock grazing purposes. There are three main rural buildings on the property located within a yard located on the southeast of the property. Two of the buildings are used as storage sheds for hay and farm equipment. There is a small workshop attached to one of the sheds. The third building is a former dairy shed that is no longer used. The yard area is separated from the balance of the site by a coniferous shelterbelt.

There are several large trees located within the yard area and a second coniferous shelterbelt is located further to the northwest which subdivides the block into two large paddocks.

Figures 1 and 2 below, show the electronic planning map and a google earth image.

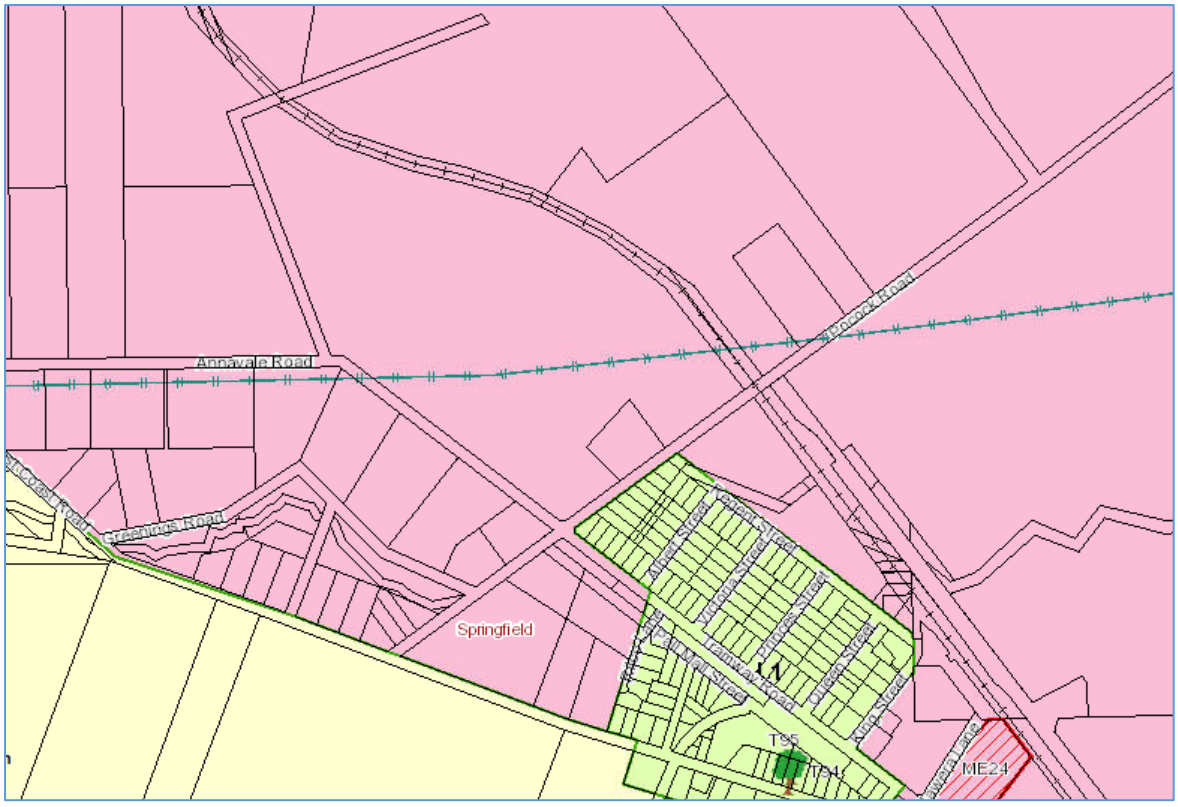

Figure 1 – E Planning Map

Figure 2 - Google earth image of subject site

Surrounds

The site is largely visually open from all sides, there being a single residential dwelling included within the overall plan change area. This is not owned by the applicant and it is understood that owner supports this plan change request. This dwelling is located within a high amenity sheltered and large garden setting. The surrounding properties are a mix of residential, rural residential and rural. Towards the north, east and west is predominantly pastoral grazing land. South and southeast of the site is Springfield Township.

The Springfield railway station and associated yards are approximately 100m southeast of the proposed development area. The Kowai River is about 500m north of the site. The Waimakariri River is about 4.2km east of the subject land.

Site History

The property was previously owned by Mr Bob Yaxley from 1955 to 2008 and originally included land on the northern side of the railway tracks. During Mr Yaxley's ownership the property was used for pastoral grazing and a small dairy operation. The milking shed is still located in the yard. The dairy operation ceased in the early 1980's.

Since the 1980's the Yaxley family introduced a mixed arable farming operation with a rotation system including wheat, barley, potatoes, peas, clover and ryegrass.

Surface Water

The nearest water body is the Kowai River. The Kowai River flows from the slopes of the peaks of the two portions of the Torlesse Range that define the Kowai Valley. The Kowai River where directly north of the subject property is approximately 1km upstream of the Council water supply intake.

A water race bisects the subject property from west to east through the centre of the site and runs under the railway line and through the adjoining property to the north. The water race is used to provide stock water to the subject property and has never been used for irrigation.

The water race is not part of the Canterbury Plains Enhancement Scheme and will therefore not require piping. The expert with regards to water races at Selwyn District Council has confirmed that the water race does not require diversion and can remain as part of the plan change area or be filled and removed with the permission of the adjoining owner who currently utilises the water race for stock water. If the water race remains, it will be up to the future owners of the lots within the plan change area to fence their properties.

The site is located outside of the flood management areas monitored by Environment Canterbury.

Groundwater Levels

The geotechnical investigations undertaken which included shallow testing involving 15 machine excavated test pits across the site revealed that groundwater was generally encountered between 2.1m and 2.7m below ground level.

Selwyn District Council's 5-Waters Strategic Focus

In August 2009, Selwyn District Council released its 'Five Waters Strategy' document which has its "*Vision for the future community water supply, wastewater, water aces, land drainage and stormwater*."

In assessing the infrastructure requirements for the proposed Plan Change, the Five Waters Strategy initiatives have been taken into account. These include:

- Governance issues on who manages the water resources infrastructure and Selwyn District Council's role,

- Using design parameters that are acceptable, design and management,
- Accounting for supply security and water quality,
- Adoption of the seven sustainability principles in assessing different options,
- Incorporation of the effects of climate change by using the rainfall data adopted by SDC for stormwater design; and,
- The Drinking Water Standards 2005/08 and the Health (Drinking Water Amendment Act 2007).

Selwyn 2031 – District Development Strategy

This development strategy was adopted by the Selwyn District Council on the 4 November 2014. It is a strategy to assist in the managing of the district not subject to Chapter 6 of the Canterbury Regional Policy Statement and the Land Use Recovery Plan. One of the strategy's key actions is the preparation of Area Plans for Malvern with Stage 1, the development of area plans completed and Stage 2, Public notification underway.

The Malvern Strategy discusses the 5 waters with regard to Springfield as follows;

- The water capacity issue has been resolved with the granting of water take permits from Environment Canterbury which is now sufficient to service the existing zoned land and some capacity for future growth.
- Mana Whanua support the development of low impact urban design and development.

The security of water quality and potential public health risks related to urban growth is referred to in Regional Plans for community supply, however any groundwater or surface water takes to provide growth will require resource consent from ECAN. The availability of potable water has been largely resolved following the approval of an additional water take to supplement the existing urban water supply scheme.

The need to address any substandard drinking water quality for people/communities has been identified as important by Mana Whenua.

There also remains the potential opportunity to access potable water from the Central Plains Water Scheme to supplement township supply.

Any additional urban growth will require an integrated approach to stormwater management including the development of stormwater management plans to coherently manage future growth.

- ECAN has indicated that higher density housing typologies cannot reasonably be serviced by on-site systems.
- The retention of average 800m^2 allotment size will make it challenging for onsite waste water discharge and does not meet the EC permitted activity requirements for new on-site waste water management.
- Water restrictions will need to be applied to low density Living 2 zone densities to sustainably manage water resource.

Springfield Area 2 – SPR A2

This area in the Malvern Area Plan corresponds with that of the subject property. It is a potential future area for low density, Living 2 development to the west of Pocock Road, north of Annavale Lane as far northwards as the Midland Line railway. This area is currently zoned Rural Outer Plains.

Advantages

This location is within the general area identified as a future growth path in the current District Plan growth of township policies and would provide a variation in section size and housing typologies to meet the community's needs.

Disadvantages

Any future development in this location would need to overcome infrastructure servicing capacity issues, including access to potable water and integration into the wider community network.

- Potentially adverse reverse sensitivity effects with the midland railway to the north would need to be assessed.
- A graduated density would be appropriate.
- The land is comprised of class III versatile soils, which are valued for their productive capacity.

1. Potable Water Supply

Availability and Plan Change Requirements

Existing Water Supply situation

The Springfield water supply was historically consented under NCY880430 to take up to 907 cubic metres of water per day at a maximum rate of 10.5 litres per second from the Kowai Riverbed. This consent expired in 2004.

New consents, CRC991058 and CRC155932 granted by Environment Canterbury have been obtained by Council, for the abstraction of 907 cubic metres of water per day at a maximum rate of 10.5 litres per second from the Kowai River, located at map reference L35:243 – 643 for the Springfield Township water supply.

CRC991058 and CRC155932 were granted on the 27 and 28 August 2015. Copies of these consents are attached in Appendix 1.

There was a long period between the expiry of NCY880430 and the issuing of CRC991058 and CRC155932. It was in this period that the client, Mr Robert Logan and the Consultant Planner, Mr John Cook, consulted with Council (including meetings and extensive emails) regarding water connections to the private plan change area. At this time, Council could not confirm the availability of water supply to the plan change area and advised that they could not resolve this until new Environment Canterbury consents had been granted.

Now that new consents have been granted, Council has advised that there is now capacity to serve the plan change area on a restricted supply basis.

A restricted water supply would provide a flow to the development of .3L/s over 24 hours to supply each property with 2,000 L/day. A restricted water supply could be achieved with pipe sizes less than PN80 in diameter.

Fire Fighting

Although the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice (SNZ PAS4509:2008) is a discretionary standard, it is generally accepted as being a *de facto* obligation. It is intended for the proposed development to meet firefighting standards.

According to the SNZ PAS4509:2008, "*all structures with a sprinkler system installed to an approved standard" will have fire water classification number FW2. Single family homes without sprinklers are classified FW2."* As the proposed plan change area will have single family homes, the fire water requirements for the development should be based on FW2 which requires reticulated water supply systems to have one hydrant no more than 135m away from a building and an additional hydrant within 270m of that same building, with both hydrants providing at least 12.5 L/s, or for non-reticulated water supplies a storage volume 45m^3 would be required. (Kim – Given the restricted water supply situation, would fire hydrants even work in Springfield?)

An alternative to the use of a common storage facility is for firefighting water to be supplied by on-site storage tanks located on each property in the case of restricted water supplies.

A common 45m^3 storage tank will be required to meet the New Zealand Fire Services Fighting Water Supplies Code of Practice. An alternative to this is for individual property owners to have on-property tanks to meet their own fire requirements. The storage can be provided by using PE tanks, timber tanks, concrete tanks or steel tanks. PE tanks are more cost effective and are recommended.

Summary

The Plan Change proposal supports both Selwyn Councils 5 Waters Strategy and Selwyn 2031 in that the applicant is in agreement with a restricted water supply per lot. There is no reason why the plan change application should not proceed based on a restricted water supply system and the provision of additional storages tanks to meet firefighting requirements.

2. Stormwater Collection, Conveyance, Treatment and Discharge

The site is a greenfield site, therefore there is no existing stormwater network. The plan change application will allow for approximately 16 large lots (including the existing Lot 1 DP 400509)

with an average area of 2 ha. The underlying sandy gravels will provide a suitable media for receiving discharges of roof and driveway stormwater runoff to ground via soak pits.

It is proposed to treat and dispose of stormwater onsite using Low Impact Design or Sustainable Urban Drainage approaches. These methods are appropriate for fewer allotments and include the use of;

- Vegetative swales, where stormwater from hardstanding areas is directed towards swales,
- Infiltration trenches, which can be used instead of swales provided the soils are well drained. Infiltration trenches can reduce peak flows as they have storage capabilities,
- Soakage chambers, these allow the discharge of stormwater into the land.

Primary stormwater

Roof stormwater may contain small amounts of sediment and some faecal coliforms from birds but the levels are generally considered to be very low. Roof stormwater is therefore considered to be "clean" requiring no treatment and will therefore be discharged directly to ground via standard soak pits. The soak pits required for any building development will be designed and constructed in accordance with the New Zealand Building Code Verification Method E1/VM1 to collect, and dispose stormwater. Flows and volumes will be finalised at the subdivision design stage when the developed hardstanding areas are known.

Driveway runoff will be directed to the grassed/landscaped areas adjacent to the driveways and be discharged to ground. The post development proportion of driveway catchments will be small given the large size of the lots proposed within the proposed plan change area. Driveway types will be optional and will include gravel driveways which reduce post development runoff. The landscaping will generally be graded towards the accessway/road to ensure that runoff from high rainfall events above the design levels are drained to the roads where it will be treated as discharged.

Accessway Stormwater Management

Accessway runoff will be directed to the accessway/road side swales and discharged to ground via soakage pits. Typically, the accessway will be designed with the carriageway sloping away to open grassed side swales which discharge stormwater to soak pits. The stormwater swales

will be designed in accordance with the Selwyn District Council Code of Practice. The groundwater at a depth over 2m below ground is sufficiently deep enough for soakage systems to be effective.

Secondary Flows

Secondary flows from the individual lots will flow towards the accessways/ roads where it will be directed towards roadside swales. i.e. away from building platforms to prevent flooding.

The design considerations for the stormwater management are preliminary at this stage, and will subject to both Environment Canterbury and SDC approval during the resource consenting process for the subdivision.

The stormwater consent applications will provide an assessment of environmental effects and one of the considerations will be ensuring setback distances are met from the wastewater system and the existing water races.

Construction Stormwater

The District Plan rules require a resource consent application for earthworks as part of the subdivision application.

Earthworks will generally involve the general clearance of vegetation and topsoil stripping, followed by general recontouring (considered to be very minor given the relatively flat nature of the subject land) to provide the basis for the layout of the lots and infrastructure. Therefore, earthworks will be dependent on the layout of the lots and accessway alignments. As these have not been finalised, earthworks volumes have not been calculated and this will be done at the subdivision stage.

Summary

The underlying sandy gravels will provide suitable ground for receiving discharges of roof and driveway stormwater runoff to ground. Accessway/road side swales will be designed based on best practice concepts. Stormwater disposal will be consistent with Selwyn District Council's requirements.

3. Wastewater Disposal

Existing situation

The township of Springfield has no reticulated wastewater system. Individual properties are required to be served by on-site wastewater treatment and discharge systems. There are no plans to implement a reticulated system for the plan change area so this discounts any option to discharge wastewater to any future Council network in the short or longer term.

Installation of individual onsite septic systems on each lot

The proposed wastewater treatment and dispersal system will consist of ***Individual on-site septic tanks on each lot.*** This will consist of the following:

Individual septic tank systems are ideally suited to the plan change area due to the low-density nature of the plan change resulting in approximately 14 additional lots with an average of 2 ha and the underlying sandy gravels.

Septic tank systems involve septic tanks with discharge trenches. These septic tanks provide sewage treatment in a twostep process:

Step 1 – Treatment in Septic Tank:

Large particles are settled out (solids removal protects the drain field); and the organic waste starts to break down in the absence of oxygen and anaerobic environment.

Step 2 – Treatment in the drain field:

Bacteria in the soil further break down the organic waste in the presence of oxygen, harmful bacteria are removed and odorous gases are removed.

A septic tank system needs a properly installed tank and a drain field in order to provide adequate treatment of the sewage. Installations that have a leaching pit or dry well instead of a drain field do not provide the second step in sewage treatment. As a result, partially treated sewage can potentially contaminate groundwater.

Summary

The Plan Change application supports both Selwyn Councils '5 Waters Strategy' and 'Selwyn 2031' as the minimum average lot size is to be 2 ha therefore seeks to create a planning framework for larger lots that are suitable for the installation of septic tanks.

The only option for wastewater disposal and the most suitable for the site is the installation of individual on-site septic tanks that will treat the raw wastewater via individual on site at source sedimentation tanks and a coarse filter system. A global consent for the discharge of treated human effluent to land should be sought from Environment Canterbury at subdivision stage, or alternatively individual lot owners can seek their own consents at building consent stage.

4. Power Supply and Telecommunications

Power Supply

A written request was sent to Orion New Zealand Limited seeking confirmation of the feasibility of providing power to the plan change area. Orion were able to confirm that they can service the plan change area. Refer to their comments as per their letter of 10 February 2017 that is attached as Appendix 1

5. Telecommunications

It is important that contemporary homes are provide with telecommunications infrastructure capable of supporting a wide range of capabilities including multiple phone lines, broadband internet, and the potential for future technologies.

Such infrastructure, has over recent years become standard installation in subdivisions, and will be the case within the Plan Change area.

A written request was sent to Chorus seeking confirmation of the feasibility of providing power to the plan change area. Chorus were able to confirm that they can service the plan change area. Refer to their comments as per their letter of 13 February 2017 that is attached as Appendix 1.

Summary

This report has assessed the engineering infrastructure requirements for the proposed Plan Change area. The assessment has demonstrated that the plan change area is serviceable for water, stormwater, wastewater, power and telecommunications.

Kim Logan (Director: Grassroots Planning Limited)

September 2017