

**BEFORE THE WAIMAKARIRI DISTRICT PLAN REVIEW HEARINGS PANEL**

**IN THE MATTER OF** the Resource Management Act 1991

**AND**

**IN THE MATTER OF** the hearing of submissions and further submissions on the Proposed Waimakariri District Plan

**AND**

hearing of submissions and further submissions on Variations 1 and 2 to the Proposed Waimakariri District Plan

**Hearing Stream 12E: Rezoning Hearings**

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**FIRST STATEMENT OF EVIDENCE OF NICOLE LAUENSTEIN  
(URBAN DESIGN)  
FOR RICHARD AND GEOFF SPARK  
(PDP SUBMITTER 183 / VARIATION 1 SUBMITTER 61)**

Dated 4 March 2024

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## Summary Statement – Urban design

- 1 The R&G Spark submissions cover approximately 60ha<sup>1</sup> of land north and south of Boys Road, in the south-eastern corner of Rangiora. The land covers multiple titles but is all in single ownership and is currently used for dairy farming. The land north of Boys Road already identified as a Future Development Area in the Canterbury Regional Policy Statement. The remaining land south of Boys Road is identified as proposed Rural Lifestyle Zone (RLZ) in the Proposed District Plan (PDP). However, the planned Rangiora Eastern Link Road (REL), construction of which I understand has been brought forward to 2029, will cut through the western side of this dairy farm making that part of the farm west of the REL unsuitable for farming<sup>2</sup>. This has triggered the design of an integrated development across the proposal site to ensure the best possible land use outcomes can be achieved in this location in such close proximity to the centre of Rangiora.
- 2 The proposed Outline Development Plan presents the proposed development area in 3 Blocks to cater to the different planning needs of the different parcels of land. Block A is the area north of Boys Rd and falls into the South East Rangiora Development Area, a FDA with its own area wide ODP. Blocks B and C are areas west of the REL and south of Boys Rd that will be isolated from the current farming activities once the REL is under construction. A small part of Block B and all of Block C sits under the odour setback of the sewage treatment plant and both have overland flow-paths to accommodate. Block B, is well connected to the existing urban fabric and Block A via Boys Road. It lends itself to residential development. Block C sits fully within the odour setback and is therefore suited to less sensitive activities such as light industrial.
- 3 The entire Site has been considered as a single proposal to provide an integrated approach to urban design. From an urban design perspective, Blocks A and B are each a part of the same urban environment, with largely the same attributes. As a result, what applies to one is mostly applicable to the other regarding land use, density, green spaces, connectivity, accessibility, stormwater management, and visual effects. Block C has some distinct features that sets it apart from the other two blocks but should be considered in conjunction with A and B to protect the integrity of the blue and green network and the consistency of the movement network.
- 4 The design strategy for the entire proposal is guided by a 'land-based' design approach, where the specifics of the underlying land become the primary drivers and create the

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<sup>1</sup> depending on the final alignment of the Rangiora Eastern Link Road

<sup>2</sup> Evidence of Stuart Ford.

overall structure for the development. This is manifest in the form of a blue and green network that is highly responsive to the natural characteristics of the Site.

- 5 The ODP provides a clear hierarchy of movement corridors and cohesively integrates with the surrounding context. It provides appropriate access and good internal distribution. The ODP prioritises cycling and walking over vehicular transport and facilitates public transport on primary roads. Open spaces for recreational purpose and SMA are distributed throughout providing access to open space and creating a high amenity landscaped environment for the denser developed areas.
- 6 The proposed ODP has also considered the wider context it has been designed for including the existing residential areas to the west and north, the rural residential properties, and the larger rural environment to the east. Mitigating edge treatment to rural residential properties boundaries has been proposed to ensure the development visually integrates and views are screened. No further mitigating measures are required to integrate the development into the wider rural landscape as it will be perceived as a natural extension of the existing urban fabric with the transition from rural to urban just shifting eastwards. The REL forms the new a boundary to the urban fabric along Block C and Block B until it transitions into a central movement corridor in Block A.
- 7 Although the proposal should be considered as a whole, Block A is not reliant on Block B or C as it has direct connectivity to adjacent urban areas to the north and west. Block A will create a well-functioning urban environment within itself and within the wider urban context. It will complement the ecological, landscape, and urban outcomes sought by the ODP for the FDA. Nevertheless, it is recommended that the rezoning include Block B as this will improve the overall urban outcome in particular with regard to achieving a compact urban form and it will provide the urbanisation of Boys Road, resulting in a cohesive urban street scape.
- 8 The REL is, from an urban design perspective, an urban road with urban functions and will link two urban areas of Rangiora, Southbrook and Belgrove. Leaving Block B and C undeveloped is counterintuitive and will isolate the REL affecting travel speeds and general safety for pedestrian and cyclists due to a lack of passive surveillance. The best urban outcome and ecological benefits, for this part of Rangiora will be achieved if all 3 blocks are considered together and approved. At a minimum Block A and B should be considered as a single urban environment. The residential nature of Block B will provide the best use for this land and complete an otherwise missing part within the new urban fabric.

## **Block A – Summary**

- 9 Block A is part of the Development Plan for the South-East Rangiora Development Area (SERDA) which originally proposed a 12hh/ha minimum density. The officers report, as part of hearing stream 10A, has now proposed to increase this to 15hh/ha, unless there are constraints. The Spark ODP for Block A is in-keeping with the SERDA in almost all aspects, being designed as a 12+hh/ha with the ability to intensify. It provides a shared trail running along the Northbrook, integration of the Northbrook Reserve, increased connectivity via the REL Road, several greenspaces and stormwater management areas that are functionally integrated into the urban layout. The only differences are the removal of a road connection over the Northbrook east of the REL Road, the re-aligning of the REL road itself to maintain a straight path to enable an important viewshaft to Mount Grey and the introduction of a small community node to serve the local community and those using the trail. These are all minor refinements and do not make any substantial changes to the nature of the SERDA.

## **Block B – Summary**

- 10 Block B can be described as a symbiotic combination of two parts, a residential focus to the north, where it connects with the urban fabric of Rangiora and Block A, and a landscaped focus to the south where it connects to the small existing rural residential area around the Middlebrook and to block C. The separation between these areas coincides with the natural constraints of the overland flowpath and the odour setback. The residential area enables intensification from 12 to 15hh/ha whilst the stormwater management areas ('SMAs) and overland flowpath provide the open space to balance out the development and a buffer to protect the amenity of the rural residential enclave.

## **Block C – Summary**

- 11 In addition to providing a small light industrial zone as anticipated by WDC District Development Strategy<sup>3</sup>, Block C's main contribution to the proposal is the ecological benefits it can offer. The protective esplanade for the Middlebrook coupled with the biodiversity area, will create natural habitats for native flora and fauna. A second contribution that is not always obvious when looking at isolated ODPs is the wider connectivity Block C creates for the blue, green, and pedestrian/cycle network in this south eastern part of Rangiora.

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<sup>3</sup> Refer to Mr Thomson's evidence



## Introduction

- 12 My full name is Nicole Lauenstein.
- 13 I have the qualifications of Dipl. Arch. and Dipl. R.U.Pl., equivalent to a Masters in Architecture and a Master in Urban Design (Spatial and Environmental Planning) from the University of Kaiserslautern, Germany. Before moving to New Zealand, I became a member of the BDA (German Institute of Architects) and the AIA (Association Internationale des Architects). I was an elected member of the Urban Design Panel for the Christchurch City Council from 2008 to 2016 and am a member of the Urban Design Forum.
- 14 I am the director of a + urban, a Christchurch based architecture and urban design company established in 1999. I have over 25 years of professional experience in architecture and urban design, particularly within the crossover area of urban development, master planning, and comprehensive spatial developments.
- 15 I practised as an Urban Designer and Architect for the first 8 years in Germany, Netherlands, England, Spain, and Australia before re-establishing my own architectural and urban design practice in New Zealand. In both practices I have undertaken many projects combining the architectural and urban disciplines. Projects have been varied in scale and complexity from urban revitalisation of city centres, development of growth strategies for smaller communities, architectural buildings in the public realm and private residential projects in sensitive environments.
- 16 Prior to my arrival in New Zealand, I worked for several European Architects and Urban Designers. I was involved in a range of urban studies and rural area assessments for the governance of the individual federal states in Germany, investigating urban sprawl of major cities such as Frankfurt, Darmstadt, Rostock, Berlin, and the effect on the urban and rural character. This work included developing mechanisms and criteria to facilitate sustainable development. Other work for private clients consisted of designing sustainable developments in sensitive areas within very stringent development guidelines.
- 17 My experience in New Zealand includes working on growth strategies for urban and peri-urban areas, including rural and urban residential developments, with a mixture of densities from low, to medium and high. I have prepared several urban analyses, development strategies and design concepts, for both urban and rural residential areas within the Canterbury region (Lincoln, Rolleston, Tai Tapu, Ohoka, Rangiora, Kaiapoi, Lake Hood, Ashburton). I have also done this for Akaroa and the wider South Island,

namely developments in Queenstown, Wanaka, Invercargill, Marlborough Region, Hurunui District, and Buller District.

18 My most recent urban design and architecture work includes:

- Urban analysis and strategic plans for Selwyn District Council, Hurunui District Council, Christchurch City Council, Queenstown and Lakes District, Nelson and Buller District, Wellington CBD and Auckland City and the greater Auckland urban area;
- Masterplans for urban development in Lincoln, Rolleston, Tai Tapu, Amberley, Rangiora, Ohoka, Ashburton, Christchurch, Westport, Wanaka, Queenstown, and Auckland;
- Kirimoko residential development in Wanaka Stages 1 - 6;
- Mixed Use development Hagley Avenue, Christchurch;
- New Tait Building and Masterplan, north-west Christchurch;
- Several commercial and residential 'rebuild' projects in Christchurch;
- Outline Development Plans and Master Plans for post-earthquake Inner-City block infill and brown field conversions in Christchurch;
- Urban design consultation on large private and public rebuild projects in the Christchurch CBD incl. Justice and Emergency Services Precinct;
- Analysis and identification of Character Areas within Christchurch as part of the District Plan Review;
- Papa Ōtākaro Avon River and East/North Frame, Christchurch Central City (urban design lead)
- Several private Plan Changes and submissions to the proposed Selwyn District Plan; and
- Several private Plan Changes and submissions to the proposed Waimakariri District Plan

## Code of Conduct

- 19 I have read the Code of Conduct for Expert Witnesses (contained in the Environment Court Practice Note 2023) and I agree to comply with it. Except where I state that I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions.
  
- 20 The key documents I have relied upon in preparing my evidence are the following:
  - 20.1 The submitter's submissions to PWDP and Variation 1
  - 20.2 Expert reports and evidence prepared for the rezoning hearings
  - 20.3 The proposed Waimakariri District Plan and Variation 1
  - 20.4 SERDA Outline Development Plan and Narrative
  - 20.5 Waimakariri District Plan Review Memo To Rezoning Submitters (Via Hearing Panel) in relation to greenspace requirements, esplanades reserves and transport requirements
  - 20.6 NPS-UD National Policy Statement – Urban Development 2020 including practice and guidance notes
  - 20.7 Waimakariri District Development Strategy (WDDS)
  - 20.8 Rural Residential Development Strategy 2019 (RRDS)
  - 20.9 Greater Christchurch Urban Development Strategy Update 2016
  - 20.10 2013 Iwi Management Plan (IMP)
  - 20.11 Canterbury Regional Policy Statement (CRPS)
  - 20.12 New Zealand Urban Design Protocol 2005
  - 20.13 People Places Spaces: A design guide for urban New Zealand, Ministry for the Environment, 2002
  - 20.14 Other non-statutory documents and guidelines related to urban design best practice

## Overview

- 21 In their submissions (183 to the PDP and 61 to Variation 1), Richard and Geoff Spark have sought the rezoning of part of the existing dairy farm to (primarily) residential to provide up to 600 dwellings on the south-eastern edge of Rangiora, north and south of Boys Road. The submission on the PDP seeks the rezoning of approximately 30ha to the west of the proposed eastern bypass from Rural Lifestyle Zone to General Residential and Medium Density, or alternatively to rezone the land GRZ, MRZ, BIZ, Format Retail/Mixed Use or a mix of GRZ, MRZ, BIZ and/or Format Retail/Mixed Use zones. It also sought the rezoning of all land north of Boys Road and within the South East Rangiora Development Area (as shown in the submission) GRZ. The submission on Variation 1 sought rezoning of all of the land north and south of Boys Road (again, outlined in red in its submission) MDRZ and, for the land south of Boys Road and west of the REL, in the alternative, to MDRZ, BIZ, Format Retail/Mixed Use or a mix of those zones.

Appendix A01 (aerial with Block A, B and C)

- 22 The submission covers a total of approximately 57ha of land, based on the location of the designation for the REL, and has been treated as a single proposal that can be broken into 3 blocks, Block A, Block B, and Block C for the ease of the planning process. That may alter if the designation shifts.

## The Proposal

- 23 A major factor that influences the proposal in all aspects is the proposed Rangiora Eastern Link Road (REL), which will run south from what is now Spark Lane to a roundabout with Boys Road. It will then continue south-westward to meet with Marsh Road and will ultimately connect to the major roading network further south creating an eastern bypass. The REL dissects the current rural land south of Boys Road into two parcels. I am advised that this makes the western portion now untenable for agriculture as it cuts off access between the two parcels. This has prompted the inclusion of Block B and C to be considered for rezoning.
- 24 This proposal would naturally extend the urban footprint of the township out to the margins of the Northbrook and fills an area between the existing urban edge and the designated REL Road proposed to be built in 2029.

Appendix A02 – (road alignment on aerial with odour, overflow, esplanade, and access)

- 25 From an urban design perspective Blocks A and B are each a part of the same urban environment, with largely the same attributes. As a result, what applies to one is mostly applicable to the other with regard to land use and density, green spaces, connectivity, accessibility, stormwater management, and visual effects. Block C has some distinct features that sets it apart from the other two blocks but should be considered in conjunction with A and B regarding the integrity of the blue and green network and the consistency of the movement network.

### **Block A**

- 26 Block A, north of Boys Road has already been identified as part of a future development area (FDA) with an overarching ODP provided by the Waimakariri District Council. Although the proposal has been designed as a single cohesive urban environment due to the existing South East Rangiora Area ODP Block A can be treated somewhat separately when assessing against the relevant urban design and planning framework.

### **Block B**

- 27 Block B is located to the south of Boys Road and connects directly to Block A to the north and the edge of Rangiora's urban footprint to the west. To the south, it shares a boundary with a pocket of rural lifestyle properties and the remaining Spark farmland. The new REL Road will, in the near future, create the eastern boundary. There are two main constraints to consider in Block B that limit the extent of the proposed residential zone, being the 500m odour setback from the wastewater treatment ponds and the overland flow path running east-west through the Site.

### **Block C**

- 28 Block C sits within the 500m odour setback line and can therefore only support non-residential functions such as light industrial. Block C will almost certainly need to accommodate a generous esplanade for the Middlebrook similar to the 20m esplanade of the Northbrook esplanade to protect the ecological values of the waterway and accommodate the overland flowpath. It also needs to manage the interface with the existing rural residential pocket to the north. In addition, it may need to provide an access route through the Site to Dunlops Road if potential railway crossings are to be reduced in the future. For this reason, the ODP has only been developed to a very preliminary stage for Block C pending input from WDC re. the wider roading network, connectivity, infrastructure, and other possible council related activities.
- 29 I understand Mr Geoff Spark will comment on the meetings which have been held with WDC. Throughout the design process of the full proposal (A, B, and C) several meetings

with WDC have taken place to discuss specific elements of the design. Particularly relevant to my area of expertise are:

- 29.1 REL Road – alignment, overall classification, preliminary design parameters, travelling speeds and implementation timeframes
- 29.2 Northbrook Esplanade and shared walking/cycle trail
- 29.3 Overall roading layout and connectivity to future adjacent areas
- 29.4 Boys Road treatment as an urban street, incl. road widening and the naturalisation of its northern drain
- 29.5 Inclusion of a small community hub (café/shops)
- 29.6 Retention of existing infrastructure
- 29.7 Connectivity across the railway line
- 29.8 Block C - possible landuse, layout and access

## **Purpose of this Evidence**

- 30 This evidence,
  - 30.1 sets out the proposal as a whole, introducing the urban design strategy and key design drivers that underpin the ODP,
  - 30.2 provides a more detailed description of each block explaining unique constraints, and design responses, and
  - 30.3 considers the wider urban context, visual assessment.
- 31 I intend to address objectives and policies as they relate to urban matters in subsequent evidence.

## **The Proposal**

- Appendix B01 - Spark Overall ODP (incl. B01-A/B/C)
- Appendix B02 - ODP Narrative
- Appendix B03 - Design Strategy

- 32 In preparation for the Outline Development Plan, several technical reports have been made available. These include, ecological assessment of the waterways by Mark Taylor,

visual and landscape assessment as part of the landscape peer review by Matt Lester, stormwater and flood management, traffic design, and odour constraints. Specific aspects of these technical reports have informed the urban design strategy and key design drivers for the Site which underpin the overall ODP for the proposal.

- 33 In summary, the overarching design strategy for the entire proposal is guided by a 'land-based design approach, where the specifics of the underlying land become the primary drivers and create the overall structure for the development in the form of a blue and green network that is highly responsive to the natural characteristics of the Site.

#### Primary land-based drivers

- 34 A land-based design approach with a focus on the integration of the site's hydrology, in particular existing waterways and key water channels, main flow paths and patterns and naturally occurring stormwater catchment areas. This is evident in the enhancement of the Northbrook and other relevant water channels to retain and improve their inherent the ecological values through naturalisation and/or protection via setbacks and esplanades. This approach creates an overarching "blue" structure for the Site.
- 35 Following this blue structure, a green network is laid across the Site building on the existing green network surrounding the Site by integrating and connecting the existing vegetated areas along the Northbrook and the reserves via green links, often along SW conveyance channels, with strategically placed, new recreational reserves and landscape SW treatment areas. This creates a green network that supports and interlinks with the blue network.
- 36 The final primary driver is the anchoring of the site to the wider landscape through direct visual connections to key local and regional landmarks and land-based features such as views along the REL directly to Mount Grey and shorter views along green links towards the tree clusters along the Northbrook and adjacent reserves, as well as open views along road corridors and green spaces and open SW areas to the rural environment to the east.

#### Secondary 'people' based drivers

- 37 Creating a community around a strong local narrative, showcasing the history of the site and area by expressing the natural history and Māori connections to the site and wider landscape, as well as the local farming history, in the design of all public spaces, including but not limited to naming of streets and places, plant selection, signage, design details, and materiality.

- 38 Provide a fine grain internal and external connectivity at a local level with the aim to create a walkable interconnected neighbourhood, using the green network to facilitate direct movement that is prioritised over vehicular movement.
- 39 Create a development that responds sympathetically to the existing patterns and structures of the surrounding area regarding density, typology, and scale of the build form, and relate building scale to spatial setting and scale of the local landscape.

## **Proposed ODP and Narrative**

- 40 The following design principles have informed the Narrative to the ODP

### **Blue network**

- 41 The blue network can be broken into four key aspects. These are the Brooks - Northbrook and Middlebrook and associated reserves/ esplanades, the main west to east overland flow paths, the stormwater management areas, and any collection and conveyance channels.

### **Northbrook and Middlebrook**

- 42 The Northbrook and Middlebrook are integral to the Site and its development. The ecological values of these waterways provide cultural and social amenity. They provide character and visual amenity value for the Site which in turn promotes further care for their ecology. The Northbrook and reserve form the northern and western boundary of Block A in the form of a 20m wide ecological space either side of the brooks edge with riparian planting and promenade walkway that allows for interaction with the space. The Northbrook meanders slowly through this space, around 4m at its widest, with significant ecological value and potential to support various waterbirds, and provide suitable spawning ground for native fish, such as upland bully, kanakana, and Kōura, a keystone species found in one of the Northbrook tributaries. The Northbrook also serves as the main overland flow path for significant flood events, something it already now does as the lowest point within the Site.
- 43 The Middlebrook has been modified in the past for much of its length within the Site, but its ecological significance remains high. It already features more extensive riparian planting than the Northbrook. This will be expanded on with the introduction of the 20m esplanade and a biodiversity area proposed in Block C with the opportunity to provide habitat for native flora and fauna. Like the Northbrook, this waterway provides a social, cultural, and amenity values for the Site and the surrounding area.



## **Overland flow-paths**

- 44 The overland flow path is the path through the Site that is taken by floodwater. In Block A the lowest point in the land is the Northbrook, which already forms the overland flowpath for the upper part of the development. The esplanade surrounding it will be designed to accommodate additional flow in significant rain events.
- 45 In Block B, the overland flow path runs across the southern portion and is designed to collect water from the Sites western boundary and channel it south of any urban development or stormwater retention. This path will be undeveloped and planted without impeding any flow rate, the overland flow path is encased in planted greenspace and stormwater treatment areas providing large areas of landscaped open space.
- 46 No detailed modelling has been undertaken for the land covered in Block C, however it can be expected that the main overland flow path is formed by the Middle Brook. The proposed 20m esplanade will function in a similar way as the Northbrook esplanade and provide additional flow capacity in larger rain events.
- 47 All overland flowpaths also function as a pedestrian/cycle corridor provide a high amenity for recreational activities and often work as a buffer between the rural and residential activities.

## **Stormwater management areas**

- 48 The main function of the SMAs is stormwater collection, retention, and treatment, particularly the filtering and deposit of sediment before discharging into the local waterways. As such, they are a critical contributor to the health of the blue network. Depending on capacity and groundwater levels, they will be bunded and/or stepped into the ground creating contoured landforms. These vertical changes of the landform will be carefully integrated at the detailed design stage. Functional planting often accompanies these SMAs to assist with breaking waterflow, stabilising the ground, and to work as biological filters. Amenity planting will also be used to provide some verticality to assist blending the basins into the wider landscape and the development.
- 49 SMAs will be ephemeral in nature but will be mostly dry for long periods. Wet or dry, they will increase the sense open space, provide opportunities for longer distance viewshafts into the rural landscape, and will be an important part of the recreational walking and cycling network. They key SMAs for the proposal are located at the far south-east corner of Block A and stretch along the southern edge of development in Block B. The exact location of the SMA in Block C is still to be determined but can be expected to sit in proximity to the REL.

## **Water conveyance and channels**

50 Some of the stormwater is conveyed via a naturalised channel along the northern edge of Boys Rd to stormwater treatment areas, one located near the intersection of Boys Rd and the REL and another in the far south east of corner of Block A. Along the western edge of Block B receiving water will be intercepted and conveyed via open naturalised channels to the southern overflow path. If required, a similar approach will be taken in Block C to ensure the natural flow patterns of the site are maintained. Throughout the entire ODP Site these conveyance channels break up the build form, modulate the ground contours and provide opportunities for ecological and amenity planting.

## **Green network**

51 The green network is intricately tied to the blue network. Green nodes and corridors surround waterways to preserve ecological values and increase amenity. The green network provides scale, is foundational to the development as a tool for placemaking and forming an identity and is key to high-amenity for off-street movement corridors. The green network and the vegetation within also acts as mitigation and buffer for many adverse effects caused by, or imposed on, any development

52 The green network has four key functions in the design:

52.1 it supports inherent ecological values and natural features through ecological linkages and riparian planting.

52.2 it provides space for vegetation to assist in creating a high-amenity, interconnected, green environment using open/public space including green linkages, road reserves, and SMA's.

52.3 it provides public spaces for recreation with a social/community function.

52.4 it provides mitigation of the impact of the built environment through visually and physically breaking up the development and/or buffering and screening it.

## **Ecological linkages and Riparian planting**

53 The following recommendation from AEL have informed the design strategy of the Site, in particular the esplanade designation and cross-sectional layout. These are consistent with the Canterbury Regional Council riparian zone guidelines (Environment Canterbury 2011).

53.1 *Riparian planting - This should provide both habitat, shade, and resource for invertebrate species. Grasses and tussocks are effective in areas without canopy cover as they break down fast. Toetoe, harakeke, and Carex spp. are effective shade plants, fast growing, and tolerant of moisture and are recommended for planting along the bank that best allows them to provide shade.*

53.2 *Riparian planting also needs to provide habitat connectivity for non-aquatic species. Harakeke, cabbage tree, and kowhai, for example, are effective habitat and provide nectar for bellbird and tauhoe (waxeye). These riparian strips promote the ecological connectivity between the waterway and the surrounding spaces.*

53.3 *Bank stability- requires aid of riparian plants. Carex spp. and other inundation tolerant species help limit erosion and the subsequent sedimentation of waterways that harms invertebrate communities. Further up the banks of the waterway harakeke, cabbage tree, lancewood, pittosporum, and kowhai are effective bank stabilizing plants.*

53.4 *Habitat creation - The waterway is a potential lamprey spawning site, and with a conservation status of “Threatened – Nationally Vulnerable”, the preservation of this waterway as a potential lamprey spawning habitat is critical. Large rocks and tree roots are an important factor in and around the waterways. They provide habitat, promote bank stability, and help to oxygenate the water. This is important for small fish species, invertebrates, and koura which have been found in one of the tributaries of the Northbrook.*

54 In response to these recommendations, a 20m esplanade has been proposed along each side of the brooks which includes a 15m ‘ecological zone’ dominated by native planting to protect the sensitive aquatic environment and to act as a bio filter and habitat zone. The remaining 5m will be used for pedestrian and cycle corridors to keep these separated from the ecological zone as much as possible.

55 In addition, to provide the best for the Brooks and the rest of the Sites ecology, further planting of greenspaces within the Site will support the dispersal of many bird and flying invertebrate species by creating an integrated network.

### **The wider interconnected green network**

56 Stormwater management areas and conveyance channels are an integral part of the green network. They provide ample opportunity for the planting of native vegetation along the margins and within detention basins. They provide open space reserves, particularly

at the southern end of Block B where the odour setback and the overland flow-path combined create restriction to development.

- 57 The design strategy identifies several key green links, primarily to ensure the pedestrian connectivity at a finer grain. These will be no less than 10m in width and will be designed at the subdivision design stage.

### **Placemaking, community and neighbourhood identity around green spaces**

- 58 Several public open spaces are included in the Design Strategy to add amenity to the neighbourhood, relief for more compact residential clusters, and provide residents with the opportunity for recreation. The location of these recreational reserves has been determined based on the number of reserves established in the wider area, and to ensure people living within the development have access to open space/reserve within a 400m walking radius of their homes. These local parks will provide passive recreation opportunities which is essential for the level of residential density proposed.
- 59 The reserves in the centre of the Block A and Block B form key community spaces, with two primary roads as boundaries. A third larger greenspace is located adjacent to the Northbrook in Block A to accommodate the retention of existing specimen trees and provide a reserve that directly associates with the waterway and allows for public access. All three neighbourhood parks function as the green heart of the development and offer a 'spatial break' and 'meeting place' for the medium density development. They promote social interaction between a diverse range of residents and create a hub for the local community.
- 60 Cycle and walkways will be routed through these green spaces bringing the wider community into the heart of this new neighbourhood and allow further opportunities for engagement.
- 61 Whilst the exact location and final size of the reserves will be determined at the time of subdivision, it is anticipated that the central green space in Block B will be larger, between 5000m<sup>2</sup> and 6000m<sup>2</sup>, and the central green space in Block A will be smaller around 3000m<sup>2</sup>. Both will be able to accommodate a variety of active and passive recreational opportunities along with landscaping. The new reserve adjacent to the Northbrook in Block A is approx. 7000m<sup>2</sup> and will be an extension of the esplanade environment with a strong focus on tree planting and natural landscaping creating a more tranquil and contemplative space.

## **Green interfaces - managing and mitigating interaction between activities**

### Residential to rural interface - Block B southern Boundary with Rural Lifestyle

- 62 A residential - rural interface treatment, consisting of fencing and planting requirements, is proposed only along the boundary with the existing rural lifestyle properties to the south of Block B. This is to ensure visual screening of the roof scape and residential buildings towards this rural environment will be provided through layers of tree planting along this boundary. When combined with the landscape treatment to the overland flow-path and the SMAs and the actual distance to the new dwellings, the effects of the new development will be appropriately mitigated. If new fencing is required along this boundary, this will be open style, rural fencing.

### Residential to rural interface - Block B western Boundary with Rural Lifestyle

- 63 Along the western boundary, to the small pocket of rural lifestyle, the 10m landscaped channel will provide some distance and visual mitigation. This area is likely to develop and the intention of this rural to residential interface treatment is not to fully visually screen the proposed development but to provide some intermittent screening, in particular of the roof lines, through selected tree canopies. Trees within this boundary treatment are to be chosen for their appropriate mature height to prevent unnecessary shading.

### Residential to rural interface - Block B and C eastern boundary with REL road

- 64 This particular landscape treatment has been chosen as it is suitable for both rural and residential environments. This layered landscape treatment will be of a residential scale and feature several breaks for access to private properties and public surveillance of the street. The intention of this landscape treatment is to provide an urban streetscape and urban edge to the development with some rural characteristics reflective of the nature of the surrounding environment and the rural context of the wider district.

### Residential to rural interface - Block C Northern Boundary with Rural Lifestyle (Dunlops Road) and western boundary (rail) and eastern Boundary (rural)

- 65 A 6m landscaped boundary shall be establishes around the light industrial area Within Block C to mitigate the potential visual effects of light industrial development which tends to be larger in bulk/height and with less space dedicated to amenity planting on the individual sites.

### Residential to open space and road reserve interface

- 66 To provide easy access and adequate passive surveillance, all recreational reserves have at a minimum two active public frontages of which one is a road.
- 67 The edge treatment of private property boundaries (fencing and planting) towards open space reserves, green links, and utility reserves shall be considered during subdivision design to ensure maximum passive surveillance over all public spaces (incl. roads, reserves) is achieved. This can/will be enforced through district plan rules, consent notice, and/or developer covenants.

## **Movement Network**

### **Hierarchy of movement corridors**

- 68 The ODP provides a clear hierarchy of movement corridors and cohesively integrates with the surrounding context. It provides appropriate access and good internal distribution. The ODP prioritises cycling and walking over vehicular transport and facilitates public transport on primary roads.
- 69 A clear hierarchy of movement corridors assists with legibility in an area, this is particularly important in a flat terrain such as Rangiora where there are limited topographic or natural features to aid wayfinding.
- 70 All internal roads and non-vehicular links provide a safe environment and a high amenity to encourage the walking and cycling for most trips, both within the neighbourhood and further afield.
- 71 The proposed arrangement of movement corridors will ensure the proposal:
- cohesively integrates with the surrounding context,
  - anticipates future connection as required,
  - provides appropriate access to, and external and internal connectivity for the proposal area, and
  - prioritizes walking and cycling over vehicular movement.

## **Accessibility**

- 72 The distance to the town centre is between 2-2.5km for pedestrians using the Northbrook trail and the main road network making it an approx. 30minute walk to access all the

facilities Rangiora has to offer. For the day-to-day convenience the shops and supermarket in the south of Rangiora/Southbrook are only 1-1.5km along the REL which features a shared cycle/walkway. In addition, for the northern part of the development, the small commercial hub will provide some services and the proposed local/neighbourhood centre on REL/Northbrook Road will most likely provide facilities to cater for the everyday needs within a 400m walking distance.

- 73 Rangiora Highschool is approx. 2 to 2.5km north of the site and traveling by bike would take approx. 8-10 minutes using safe local roads. Local primary schools are in very close proximity just west of the railway line. The proposal highlights the need for a new safe pedestrian/cycle crossing of the railway corridor to ensure a direct link from the development to the schools can be provided via Hegan Reserve.
- 74 Access to recreational areas is excellent, with plenty of local reserves and open space within the development itself and adjacent. there are varied options from open SW areas, wetlands, neighbourhood parks, and the Northbrook esplanade all interlinked and within less than a 400m distance. The development is well located and very well connected to promote pedestrian and cycle movements over the use of the car for all activities with daily needs, key shopping areas, schools and other community facilities, and recreational areas all within either easy walking or cycling distance.
- 75 In addition, Boys Road and Northbrook Road are wide enough to accommodate a bus route and the REL is likely to facilitate a bus route that connects to the Southbrook area and facilitates the extension of the 'blue line' as a bus loop through Rangiora that connects back to Kaiapoi and the wider CHCH metro area.

## **Access**

- 76 Boys Rd and the REL are key primary roads providing access. They will be designed as urban avenues to emphasise their hierarchy. This will require widening southwards and road frontage upgrades to Boys Rd.
- 77 Along Boys Road, several vehicular access points into the Site are proposed and evenly distributed. The layout has considered that further access points may be required to the east of Block B in the future. Wherever possible they are responding to opportunities for direct connections across Boys Road and where this cannot be achieved, they are appropriately off set to avoid intersections conflicting with each other.
- 78 The most important access point for Block A is the REL Road leading into, and through, the northern part of the site. The REL also creates a connection, and as such, an access to Block A from the north. The main access/exit points for Block B are the southern

access off Boys Road and the access points off the REL road, depending on location and trip destination. In addition to these vehicular access points, there are several pedestrian and cycle connections leading into the ODP for Block A and B.

- 79 Block C is accessed via the REL with a single dedicated entry and exit point to the light industrial area, a second access road can be provided, if required, to create a connection to Dunlops Road and service the rural residential enclave should the Dunlops railway crossing be closed in the future.
- 80 The exact locations of access points along the REL servicing the southern part of the Site (Blocks B and C) need to be confirmed at subdivision stage to ensure they align directly with opposite road or are offset to form T intersections, allowing for future access to adjacent development to the east and for the possible re. alignment of Marsh Road.

### **Connectivity – External**

- 81 Although Rangiora is a fully established township, with a fast-growing population, and supported by established commercial/business, industrial, areas and associated workplaces, there is still a significant portion of Rangiora residents who commute to Christchurch on a daily basis.
- 82 This makes the REL an important north-south connection interlinking the eastern areas of Rangiora including this development with Southbrook. This provides an alternative route to the southern entry/exit of Rangiora leaving via SH71 and SH1 to CHCH. There is a possibility to create Park and Ride facilities adjacent to the REL on Block C with bus connections to Kaiapoi and CHCH that could also support a future commuter rail connection.
- 83 There is a potential for the Marsh Road railway crossing to be closed and the remainder of the road to be realigned to create T intersections with the REL Road changing the way roads interconnect in this part of the site. The key aspect here is to ensure that pedestrian and cycling movement can safely and directly navigate on a separate shared pathway alongside the REL to access the Middlebrook esplanade, the SMA area of Block B, and the eastern end of Dunlops Road to retain a high level of connectivity in this area.
- 84 At the northern end, the development proposes to adjust the alignment of the REL road from its original designation as per WDC to a more straightened alignment in Block A. This will allow for an important viewshaft towards Mount Grey to be retained along its road corridor. This shifts the road corridor and the roundabout on Boys Road slightly eastwards. The realignment also allows the REL road to have development on both sides



giving it a stronger residential character, which is critical for Block A to avoid it breaking into two separate areas.

- 85 The WDC ODP for the South-East Rangiora Area shows a second primary route crossing the Northbrook entering Block A from the east. Given the realignment of the REL and its shift eastwards, the proposal has deliberately not provided this particular external vehicular connection. The main reasons for this are the protection of the ecological and amenity values of the Northbrook, which is a meandering waterway, and to avoid unnecessary through traffic in this area of Block A. In discussions with the traffic engineers and WDC, I understand it was agreed to provide two pedestrian/cycle crossings over the Northbrook instead and to allow for one wider green link connecting to the esplanade that could be retrofitted with a vehicular crossing if that was required in the future.
- 86 Boys Road and Northbrook Road provide the key east-west external connections. Boys Road dissects the development between Block A and B and provides the main connection between the development and the existing urban areas in Rangiora. Together with Northbrook Road it will form the most direct link to most destinations for vehicular traffic and public transport. Both roads cross the railway corridor and connect in the west to either Percival Street or Ivory Street leading directly to the town centre. To the east both roads provide connections to the recent and future development areas in the south-east of Rangiora which is a major growth direction for the town.

### **Connectivity – Internal**

- 87 Within the site there are several natural movement desire lines, one follows the Northbrook esplanade in Block A, a second follows the overland flow-path in Block B and a third connects all the Blocks in a north south direction. These desire-lines will be the primary pedestrian and cycle routes through the site and key contributors to the wider pedestrian/cycle network connecting the site with the wider neighbourhood.
- 88 Further internal connectivity within the Site is provided through the main east-west and north-south primary and secondary roads. Additional local roads and pedestrian/cycle links will provide the finer grain network and create shorter internal connections and a balanced distribution to access all properties. To avoid the REL in Block A becoming a separating element due to either size, width, and/or traveling speed, the proposal creates a tree lined avenue style residential streetscape to provide a sense of scale and places higher density lots adjacent to encourage activity.

## **Prioritizing walking and cycling**

89 All internal roads and non-vehicular links provide a safe environment and a high amenity to encourage walking and cycling for most trips both, within the neighbourhood and further afield. The benefits of high amenity cycle and walking infrastructure are well documented and benefit physical and mental health, reduce emissions and energy use, and improve community and social integration.

90 The following design principles have informed the pedestrian and cycling strategy for the proposal:

- Create direct routes along desire lines to key destinations, to existing and future adjacent neighbourhoods and use local 'shortcuts' for pedestrian and cycle movement.
- Create safe pedestrian and cycle routes, especially for school children and elderly, with passive surveillance over public pathways from adjacent activities - 'eyes on the street'.
- Avoid conflict between transport modes by catering for different users and creating slow traffic environments where cycle routes are sharing the road.
- Create visually interesting streetscapes to encourage walking and cycling.
- Use the amenity provided by the green and blue network to create dedicated walking and cycling connections to create an added incentive, making the journey more enjoyable.

## **Key pedestrian/cycle routes and connections**

91 To provide a well-connected proposal the following key pedestrian/cycle routes and connections are most important to be established and have been included on the ODP:

- Northbrook Esplanade with a connection across Boys Road to the Northbrook / Cam River Trail (Rangiora to Kaiapoi)
- Connections across the Northbrook to the east and north
- N-S corridor via the paper road and the internal green link
- N-S corridor via REL

- E-W corridor via Boys Road, with safe pedestrian crossings
- E-W corridor via the overland flowpath in block B

- 92 All these above-mentioned routes are designed as shared walk/cycle ways with a min. 3m wide formed path using green links, utility and recreational reserves, or wide road reserves to separate them from the road carriage way.
- 93 In addition, the ODP identifies several smaller green links primarily to ensure the pedestrian connectivity at a finer grain. These will be no less than 10m in width and will be designed to minimise their length and maximise views through to ensure adequate passive surveillance from local roads.
- 94 To ensure that utility reserves and recreational reserves are easily accessible, active, and safe spaces, these shared pathways are routed through them and the reserves are bounded on two sides by roads.

### **Streetscene**

- 95 The proposal features a variety of residential street typologies from small lanes, secluded cul-de-sacs, and short neighbourhood streets to standard scaled streets and larger collector roads. Depending on hierarchy and traffic volumes road reserve and carriageway widths vary. All streets will have street tree planting to provide a sense of scale and shade in summer. The key collector roads will have avenue style tree planting to emphasise their importance. On smaller streets, on-street parking will be informal and this assists with the reduction of travel speeds as it narrows the road. On larger streets, parking will be designed as dedicated space. Boys Road, the REL as it travels through Block A, and the crescent shaped main road in Block B are the key roads that will set the character of the development.

### **Boys Road**

- 96 Moving west from the Northbrook along Boys Road towards the towncentre the road environment will gradually transform from a rural to an urban road with direct access to some residential driveways. Frontages alongside the development area will be upgraded to an urban standard in line with the required roading standards. Several dwellings will address the street with front doors, habitable room windows etc. ensuring active frontages promote passive surveillance of the street space.
- 97 To enable the retention and naturalisation of the northern water channel on Boys Road, the design strategy proposes a reduction of crossing points using shared, bundled

access point to 3-4 properties at a time. This will safeguard the cohesion/flow of the water channel and associated vegetation but still create a residential street character.

- 98 There will be a roundabout at the intersection of Boys Road and the REL with priority pedestrian crossing point. Boys Road will be widened southwards and have road frontage upgrades along the length of Block B frontage changing the road to a fully urban streetscape.
- 99 However, Boys Road will remain a key traffic route and slightly larger lots may be required along this boundary in close proximity to intersections and roundabouts to allow for a reasonable setback for dwellings. The MDRZ, MRZ and GRZ allow for a range of lot sizes and this flexibility can be used placing slightly larger lots along this boundary where required. This better accommodates on-site vehicle manoeuvring and reduces the need for vehicles to back out onto the road creating potential traffic safety issues. In close proximity to the roundabout, properties may require internal servicing.

### **REL Road**

- 100 The REL is proposed to be realigned to form a straight viewshaft to Mount Grey from the intersection with Boys Road. Driveways will come directly off the REL Road within Block A and dwellings need to address the street with front doors, habitable room windows etc. ensuring active frontage promote passive surveillance of the street space. This will give the REL Road a strong residential character north of Boys Road. The separate pedestrian /cycle way is proposed run parallel to the REL via a green link using the existing paper road next to the elevated Northbrook Reserve.
- 101 South of Boys Road the REL Road forms the boundary to the development. The intention is to locate slightly larger properties along this edge to allow for larger dwellings setbacks and provide space for the contouring of the land towards the carriageway. It is expected that the REL Road will carry a reasonable traffic load and potentially speeds around 60-70km /hr so all properties will be serviced internally. The REL road reserve is of sufficient width to include a separate shared walk/cycle path and a SW conveyance channel. It is proposed to position these along the western side of the Road to enable easy access into the development and for the adjacent dwellings and garden areas to provide passive surveillance.
- 102 Both the REL and Boys Road are avenue style streets with tree planting to both sides of the carriageway, being part of the green network. This ensures that these primary roads whilst being wider and facilitating more traffic flow still also present with a high amenity and transition to human scale.

## **Landuse**

### **Lifestyle choice and density**

- 103 The proposal originally aimed at achieving a density of 12+hh/ha, but can potentially be intensified to 15hh/ha, as recommended for Block A by the S42A report (Stream 10A), subject to the extent of development constraints that reduce density. The proposal will include a range of section sizes and housing typologies to provide future residents with choice and variety to create a mixed community reflective of the varied NZ population with a varied demographic spread. This approach creates a stronger socio and economic diversity, along with a range of price points for future residents, from high-end to affordable options.
- 104 The proposal is based on a MDR zoning for the residential part of the site as this zone provides the appropriate density coupled with bulk and location rules to achieve the desired density. This is the most appropriate zoning to best integrate the new development into the surrounding environment and the existing and future residential areas. However, integration with the gated community, an enclave of larger lots to the west of Block A, is slightly more challenging given the nature of its layout, tall boundary treatment, and its inward focus.
- 105 The final density for the full proposal will most likely settle around 13-14hh/ha. A 15hh/ha for Block A is appropriate in principle with the proviso that it might not be able to be fully met due to some constraints in site geometry, the paper-road and setback requirements. In Block B a slightly lower density is recommended to take into account constraints like odour setback, conveyance channels, overflow paths, boundary setbacks but also to respond to the transition to a rural environment beyond the site, allowing for more open space. Here a minimum 12 hh/ha is more appropriate with the possibility to increase this smaller pocket to 15hh/ha.

### **Cohesive built environment**

- 106 The key elements that organise the Site are the blue and green network, movement corridors, open spaces, and the connections to the landscape which create a natural structure for the placement of lots. The result is a layout with a diversity of lot sizes, including larger comprehensively developed sites. These will vary in orientation and location and thus offer a wide range of options. The result of this will be diverse architectural design responses throughout the development. In a new development of this size, it is important to provide opportunities for such variety to encourage social, economic, and cultural diversity that is reflective of the wider community.

- 107 All road-facing sites have enough width to allow for breaks between built form and space for landscaping in front and side yards. This is to soften the visual impact of the built environment, especially fences. This will contribute to the residential street character and the amenity within the public realm. In addition, the proposed road design itself, and the proposed District Plan provisions in relation to buildings incl. landscaping and road-side fencing, will create a welcoming residential streetscape.
- 108 In preparation for the ODP, the proposed suite of rules guiding subdivision design and dwelling design, bulk and location etc. have been considered with as much care as possible at this conceptual stage. Overall, the MDRZ and GRZ zoning rules as proposed by the PDP will guide the development in achieving the desired residential character. I intend to provide a more comprehensive assessment against the objectives and policies including MDRZ/ GRZ rules in my final evidence in response to the S42A report.

### **Areas of residential intensification**

- 109 The requirement to achieve a minimum net density of 15hh/ha requires the inclusion of a generous proportion of medium density housing typologies that will not fit into the typical standalone single storey dwelling on a single property. It will enable two storey semi-detached dwellings and attached townhouse typologies which should be distributed throughout the ODP in several smaller clusters where they can naturally be integrated into attractive local street with taller street trees or adjacent to reserves with vegetation to match the buildings in scale.
- 110 It is best practice to co-locate increased density with open green spaces to balance density around amenity for the following reasons.
- The open space provides those residents with additional opportunity for outlook.
  - The public open space compensates for smaller sections and reduced recreation opportunity within the private environs.
  - Higher numbers of dwellings around public open space increases levels of active and passive surveillance.
  - A more built-up environment improves the spatial definition of the open space, better defining its edges.
  - Neighbourhood parks provide additional opportunity for on-street parking to support adjacent medium density housing.

### Density distribution in response to amenity and landscape structure

- 111 Whilst “density around amenity” is a key rationale for the location of medium density residential typologies, it is not the only suitable location. The Design Strategy identifies the most suitable locations for medium density housing around the central green spaces, the green corridors, and the main primary and secondary roads. This avoids the more sensitive areas adjacent to the Northbrook Esplanade.
- 112 It might seem counter intuitive to avoid locating these intensified residential clusters adjacent to natural waterways as they provide high amenity open space. However, the gentle meandering Northbrook is a relatively small waterway in scale and this building typology would visually dominate and enclose the waterway. In addition, the ground stability adjacent to waterways is often less stable.
- 113 The design strategy does identify several suitable areas for intensified residential density, however it is best practice to assess the suitability and effect of each location through a focused design process at the subdivision stage when more accurate and detailed information is available. Some flexibility as to the exact location of all medium density areas should therefore be retained.
- 114 In general, medium density should **not** be located next to adjoining existing residential or rural parcels, or along major roads with very high traffic volumes. Care has to be taken to respond to the inward-looking gated community to the west of Block A given the lack of opportunities for connectivity due to the nature of its layout and boundary treatment. The elevated Northbrook Reserve, with its bunds and dense vegetation, also requires careful integration. Both areas can produce excessive shading in winter months but at the same time provide a good sense of scale and height for denser development.
- 115 Both Blocks A and B have minor constraints in relation to geometry and hydrology, and possibly geotechnical condition constraints in proximity to waterways and waterbodies. As a result, some qualifying matters may need to be taken into consideration that warrant a slight reduction in density across the Site, this should be confirmed through the detailed design process.

### **Small community hub**

- 116 A small community/commercial area has been included in the proposal to support the recreational and community activities around the Northbrook reserve, the Northbrook trail, and the local community hub at the Museum. This small node of commercial activity will create the central hub for the community and could include a local dairy, a small

boutique shop or food outlet, or a café to make good use of the relationship with the Northbrook trail and reserve.

- 117 It would form a more public gateway with opportunities for pedestrian priority crossing over the REL and a local bus stop. Good passive surveillance over the footpaths, the wider intersection area and the adjacent open space would also be achieved. The hub would include a small carpark for the facilities and Northbrook reserve users with pathways leading into the adjacent reserves and the Northbrook trail.

### **Community and Educational Facilities**

- 118 Considering the proximity of the local schools to the north and west, the proposal does not include provisions for new educational facilities. These could be provided within the Site however, albeit subject to a needs assessment.
- 119 The existing museum and community facilities will be retained as part of the hub and have been integrated with appropriate access, carparking, and pedestrian linkages to allow the continuation of their use. The design strategy also identified possible extensions of the museum and associated grounds.

### **Block layout**

- 120 The design strategy adopts north-south blocks where practical. The north-south orientation is best urban design practice to maximize solar access for dwellings and minimize the number sections serviced via the north where private outdoor space and property access are in conflict. This principle, however, has to be balanced with other requirements and restrictions such as the natural flow drainage patterns of the Site, lot geometry, minimizing road intersections on collector roads, keeping blocks to an appropriate walkable size, and making efficient use of the available land itself.

### **Vertical integration of development**

- 121 There is a requirement to elevate the development area in parts to ensure it sits above specific flood levels and avoid unnecessary interception of groundwater levels and flow. This will result in post development levels that will range from 0.0 to 2.0m above the existing ground level dependant an location. The elevation will increase from west to east as the natural ground slopes towards the Northbrook. Undeveloped areas will remain largely at the current ground level with subtle contouring to assist the natural flow pattern of the Site and convey surface water towards the SMA's. The build-up of the land will be gradual with the most pronounced at the interface with the Northbrook, where levels increase by 1m and towards the south-east corner of Block A the maximum build-up will



be reached of approx. 2m. To mitigate the effects of this elevation the ODP proposes a combination of measures.

- Contouring of slopes
- Esplanade width
- Strategic planting
- Integration of the shared cycle and walkway
- SMA's as a transition
- REL

122 Contouring of the slope to the Northbrook will be done in a natural way following the pattern and movement of the waterway itself. This contouring occurs within the 20m esplanade zone with most of it 'leaning' towards the development side. Planting will play an important role to provide visual transitions between the levels and ensure bank/ slope stability. The shared pathway will be positioned outside of the 15m ecological zone and located at the highest level with surface runoff draining away from the waterway and into the development stormwater collection system. Access into the ecological zone will be primarily via elevated timber boardwalk to minimise the impact on flow patterns and/or slope stability. The large stormwater areas throughout the site will assist in transitioning the high point of the development into the surrounding ground levels in particular in the south east corner of Block A and the southern edge of the developed areas in Block B. In addition the REL will most likely be built up above a certain flood level to keep it operational during larger rain events. This build-up although likely less than the final developed areas will also assist with the vertical integration of the development.

123 Care has been taken to integrate the proposed pedestrian network smoothly with the existing pedestrian network of the higher Northbrook reserve, the lower Northbrook SMA, and the varying levels around the museum grounds and level changes across Boys Road. Ground levels will be matched along the interfaces and gradually elevated or lowered within the Site to ensure pathways remain accessible for all users.

## **Consultation**

### **Mahaanui Kurataiao Ltd**

124 Mahaanui Kurataiao Limited (MKL) has been approached to provide a cultural impact assessment for the entire proposal. To gain a better understanding of the full proposal,

MKL have requested the key technical reports and the evidence prepared for the Stream 12 of the PDP hearing be made available. As these are not yet all available, the discussion has so far only been generic and procedural.

125 The preservation of ecological values associated with the brooks is key to this project, it underpins the land based design approach. The Northbrook and Middlebrook are significant for the local area for both socio-cultural and ecological reasons and these elements are perpetually intertwined, each nurturing the other. Riparian planting, the ecological zone surrounding the brooks, and the new biodiversity area serve to promote both the amenity and ecology within the area. A healthy stream environment increases amenity for the community providing something of value for the local population. This then ensures the ongoing preservation of the waterways ecology, and this circular system fosters a connection between the community and their environment.

126 These are key matters the design team would like to bring to these discussions with MKL to find common ground in the interpretation and treatment of the hydrology of the site, protection and enhancement of the ecological values of the waterways, stormwater management, and treatment approaches, in particular the avoidance of sedimentation of the existing brooks. In addition, we would like to gain further insight in the overall and detailed landscape treatment such as riparian planting, and importance of local plant species, in particular the role of native plants in providing a sense of place and identity. The following matters have also been identified as important discussion points where the design team would like to gain further insight:

- Silent files / wahi tapu (if relevant and appropriate)
- Connections to the wider landscape and stories embedded within
- Plants species and mahinga kai of importance
- Species present /past – kakahi, tuna, galaxiid
- Naming of places, spaces, street
- Integration of local history into the development in particular along esplanade and reserves
- Representation through design language in the public realm

127 This consultation is still ongoing. The design team, together with the owner Mr Spark, has asked for a meeting with the local runanga to be able to present the proposal, to discuss and exchange ideas and opinions, so that the input from MKL and the local

runanga can inform the detailed design process and suggestions can be taken on board. We hope to have a further update on this process in our reply to the officers S42A report in May.

### **Northbrook / Cam River trail**

128 The Spark family has agreed to set land aside to facilitate this trail connection across their farmland south of Boys Road. Some very initial conversations took place with the Northbrook Trail Trust to assist with the development of the Cycle Trail from Rangiora along the Northbrook and Cam River to Kaiapoi. This is intended to be a shared path following the alignment of the waterway on the true right and would connect to the esplanade in Block A. There are many synergies between the projects and several details were discussed to better understand how the development north of Block A can facilitate this pathway (see notes below from meeting)

- Trail running along western bank (true right) of the Northbrook.
- This southern portion of the trail is likely to be build first and will inform the design of the Boys Road crossing point. Its alignment with Block A needs to be carefully considered.
- Importance to consider levels of the trail to avoid the path becoming a small 'dam'.
- Minimum width of the path and minimum distance from the waterway edge needs to be further explored, suggested that the path allows enough space for planting between the waterway and the path, as well as along the fence line to the rural activities.
- Consider some strategic stopping points, seating, shade from trees etc.
- Trail surfacing is important, washing out into the waterway.
- Integration of local history, signage, naming, etc.

129 The integration of this trail into the esplanade of Block A provides a great opportunity for interaction between the development and the wider community and local area. Further consultation with the trust will take place to ensure a workable and safe connection to the proposed River Trail across Boys Road can be formed. In addition, discussion with WDC will be undertaken to develop the level of service required for this trail/shared pathway as part of the Northbrook esplanade in Block A.

## **Development north of Boys Road (Block A)**

130 In preparation for the PDP Hearing Stream 10A an assessment was undertaken to confirm that the proposed ODP for the area identified as Block A meets the requirements of the Proposed Waimakariri District Plan and is in general accordance with the ODP for the Southeast Rangiora Area. The summary of this assessment identifies the synergies between the ODPs and provides a rationale for any differences between both ODPs. (refer to Appendix C0)

## **Development south of Boys Road (Block B and C)**

### **Urban form**

131 The eastern link road is a first step to the extension of the township and a definite direction towards urbanisation of this area as it links two existing urban areas and will leave a parcel of rural land cut off and unusable for farming. The road, in itself, modifies the landuse to some extent and alters the way this left over parcel is perceived. The nature of the road is not a rural road but a collector road which is an urban function, and so, from every angle the introduction of the REL is a change that brings change from rural to urbanisation/development with it. Extending the development in the south-eastern corner of Rangiora is a natural consequence.

132 The road designation came first, and the road construction will most likely occur prior to any development. With the introduction of the REL the plan change/development is a natural progression of this ongoing change and a direct response to the road. The land in question will be surrounded by residential development, LLR, and urban infrastructure on three sides, the FDA to the north, the edge of the Rangiora township to the west and the Sewage treatment plant to the south. The REL now just confirms the extent of the land parcel as it dissects the rural land into farmable land and “left over” land. The question is not whether this area should be developed, but what is the best suited type development for this land.

133 The design strategy and resulting ODP has clearly identified MDRZ for Block B and light industrial and ‘ecological regeneration’ for Block C as the best use for each area. The proposal however goes further than merely proposing a rezoning. It ensures a left-over gap in the urban fabric is filled with urban activity that provides:

- ecological protection and benefits
- community benefits

- amenity benefits
- connectivity benefits
- accessibility benefits
- opportunities for cultural interpretations embedded in the landscape through design
- additional residential capacity in close proximity to a Key Activity Centre
- variety and choice of living environments
- open and recreational space for the wider community
- a responsible strategy to manage constraints
- good urban integration with minimal requirements for mitigation measures

134 A more in-depth analysis of Block B and C against the relevant objectives and policies and associated zoning rules of the PDP, where they relate to urban design matters, will be undertaken and provided in further evidence following a review of the S42A report for Hearing Stream 12E.

### **Further development and engagement**

135 At that time, I also intend to provide an update on any progress made as part of the consultation with Mahaanui Kurataiao Limited (MKL) and the local Runanga, Tuahuriri. to include improvement and changes that have resulted from this consultation.

### **Conclusion**

136 Through the unique land-based design approach the proposal offers a very site specific and responsive solution for this South-east corner of the Rangiora township. This will result in a well-functioning urban environment within the Site and within each individual Block. But more importantly it contributes strongly to a more cohesive and interconnected south eastern edge of Rangiora as it goes hand in glove with the new REL road and ensures that, land that would otherwise become an isolated parcel, can now contribute to a well function urban environment for Rangiora as a whole.

137 Although the proposal should be considered in its entirety and Block A and B are two parts of the same single urban environment Block A is not reliant on Block B or C to succeed. Block A has direct connectivity to adjacent urban areas to the north and west and in itself can achieve all of the above listed outcomes and benefits. As such Block A

will create a well-functioning urban environment within itself and compliment the ecological, landscape, and urban outcomes thought by the ODP for the FDA.

138 Nevertheless, it is recommended to include at a minimum Block B, as this will amplify the urban outcomes Block A achieves. A developed Block B brings with it the urbanisation of Boys Road on both sides, resulting in a cohesive urban street scape. The key benefit of approving all 3 blocks together is the urban connectivity this will provide and the clarity and cohesion it brings to the urban form.

**Nicole Lauenstein**

4 March 2024

## **APPENDICES**

Appendix A01 - Aerial with Block A, B and C

Appendix A02 - Aerial with road alignment, odour, constraints, overland flow, esplanade reserve

Appendix B01 - Spark Overall ODP

Appendix B02 - ODP Narrative

Appendix B03 - Design Strategy

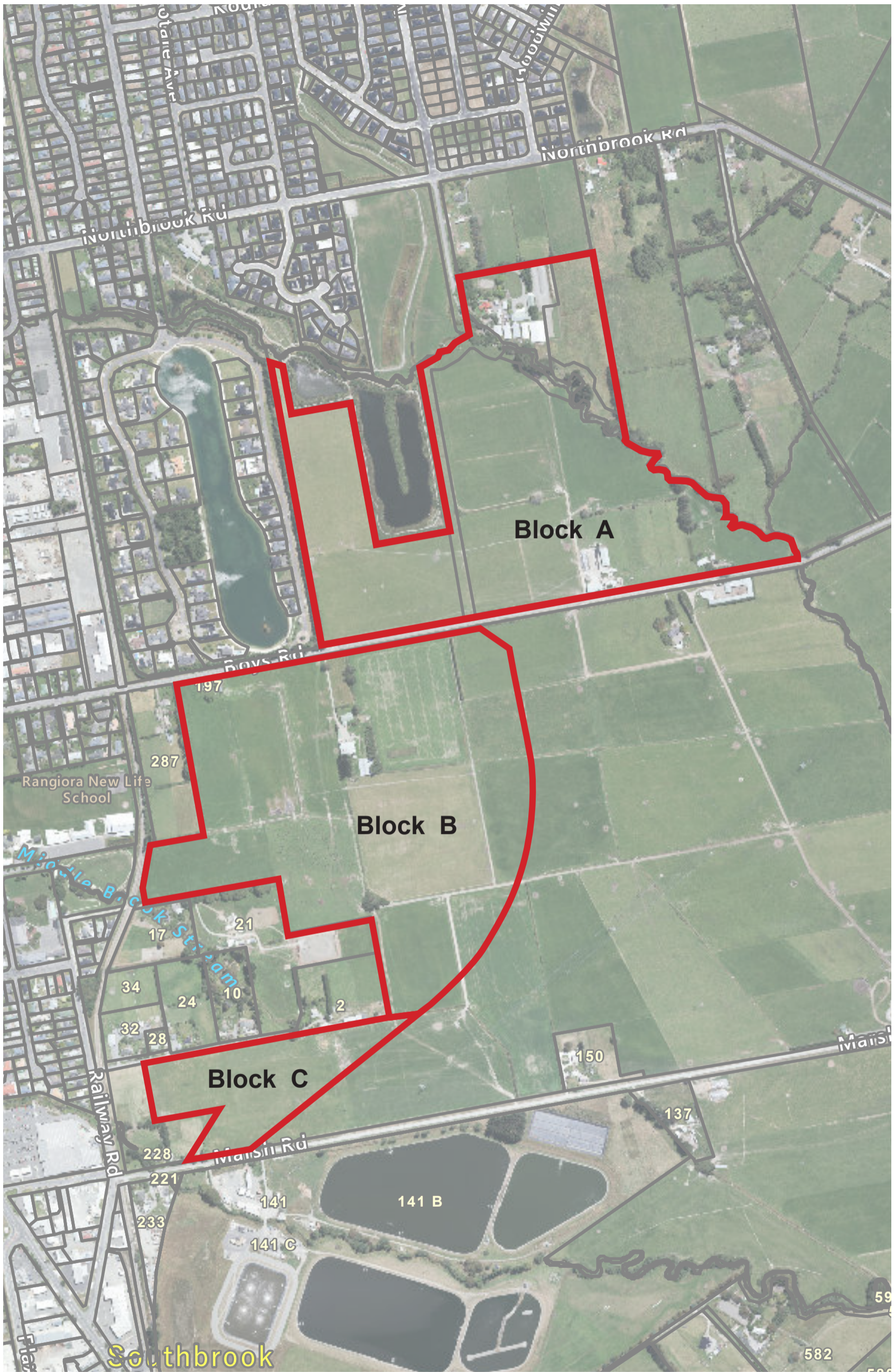
Appendix C0 – Summary Assessment of ODP Block A against the Rangiora South East Area ODP

Appendix C01 - WDC South East Area

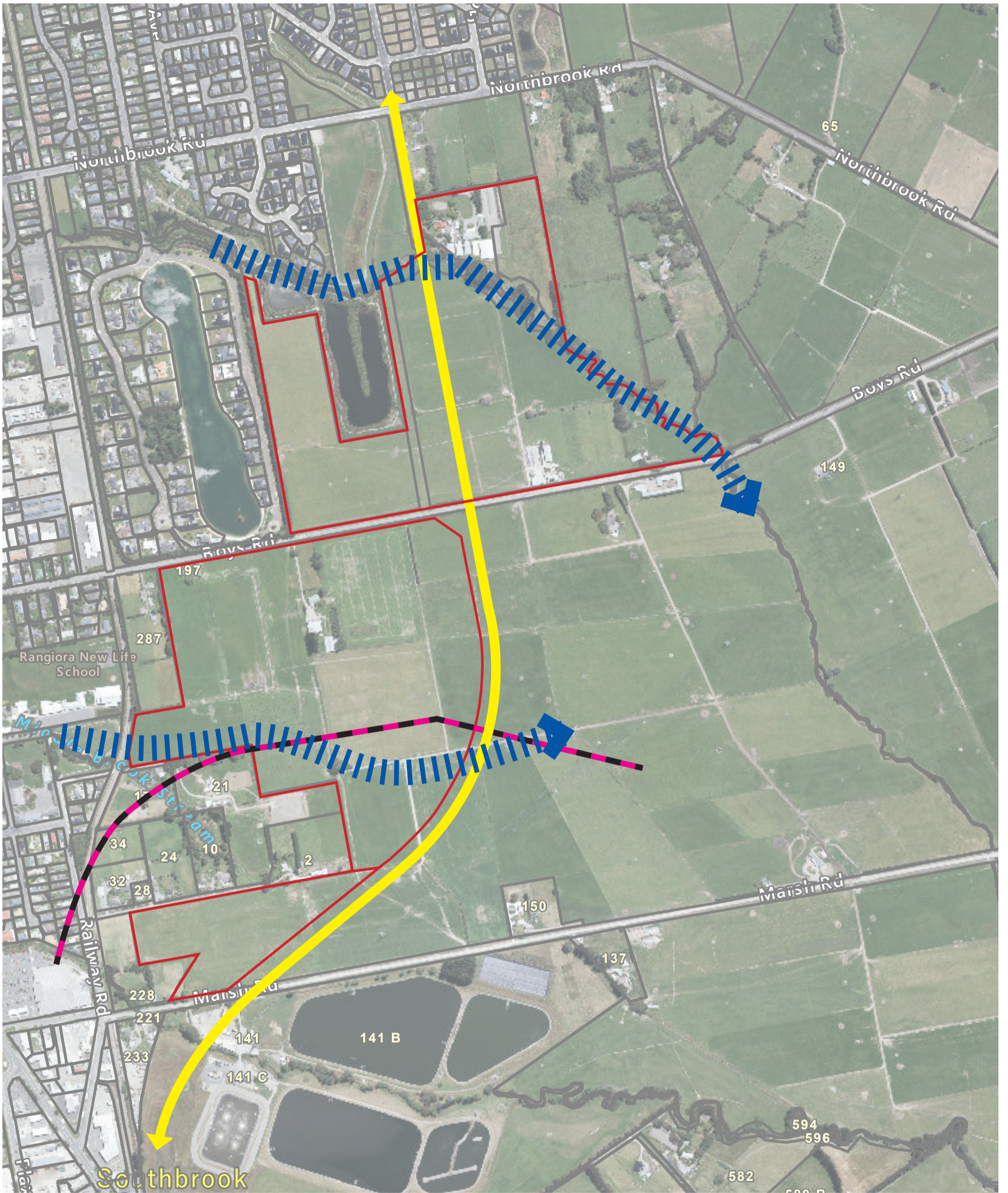
Appendix C02 - WDC South East Area ODP Narrative (as per S42A report recommendations)

Appendix D - side by side of both ODP's







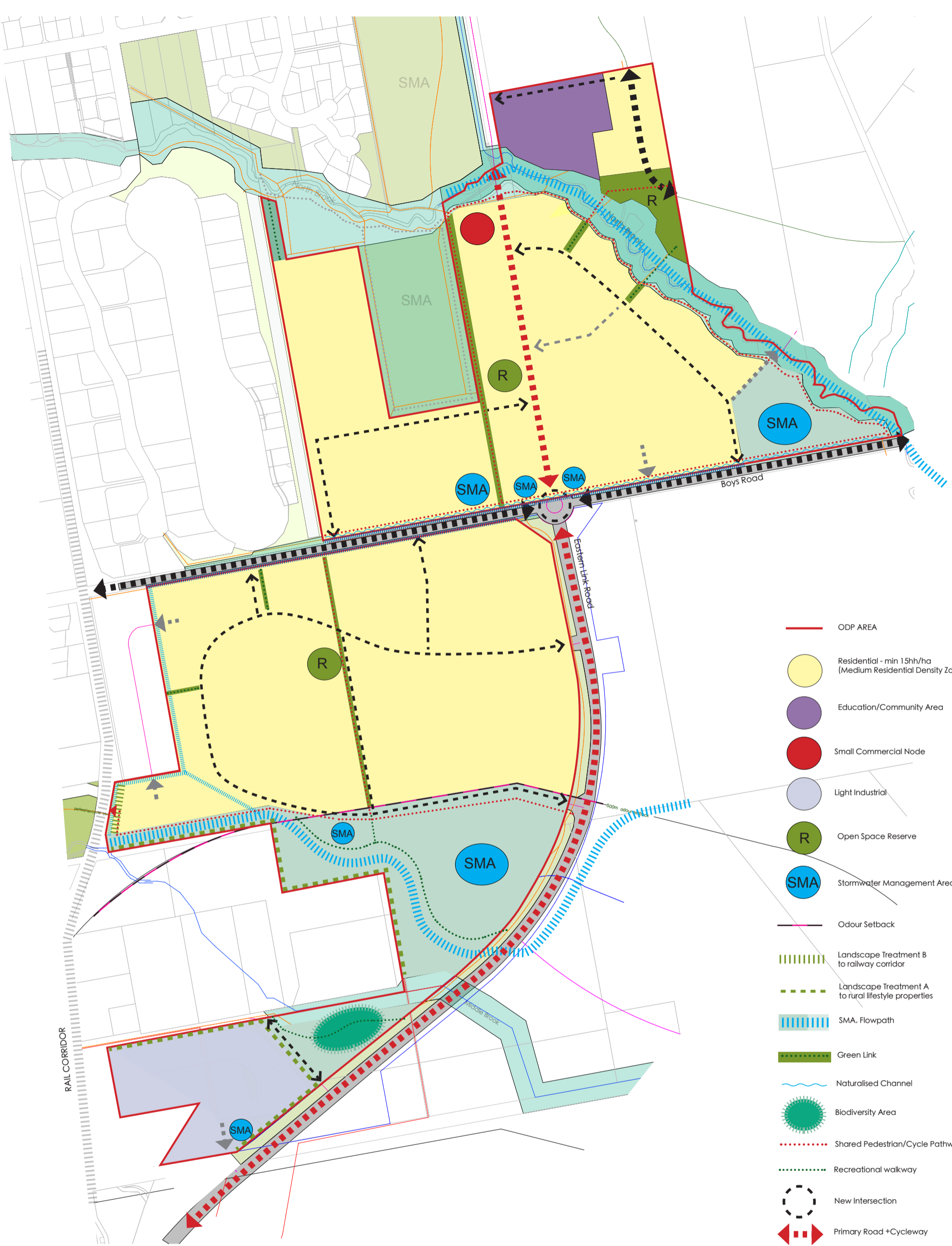


Odour Setback

Overland Flowpath

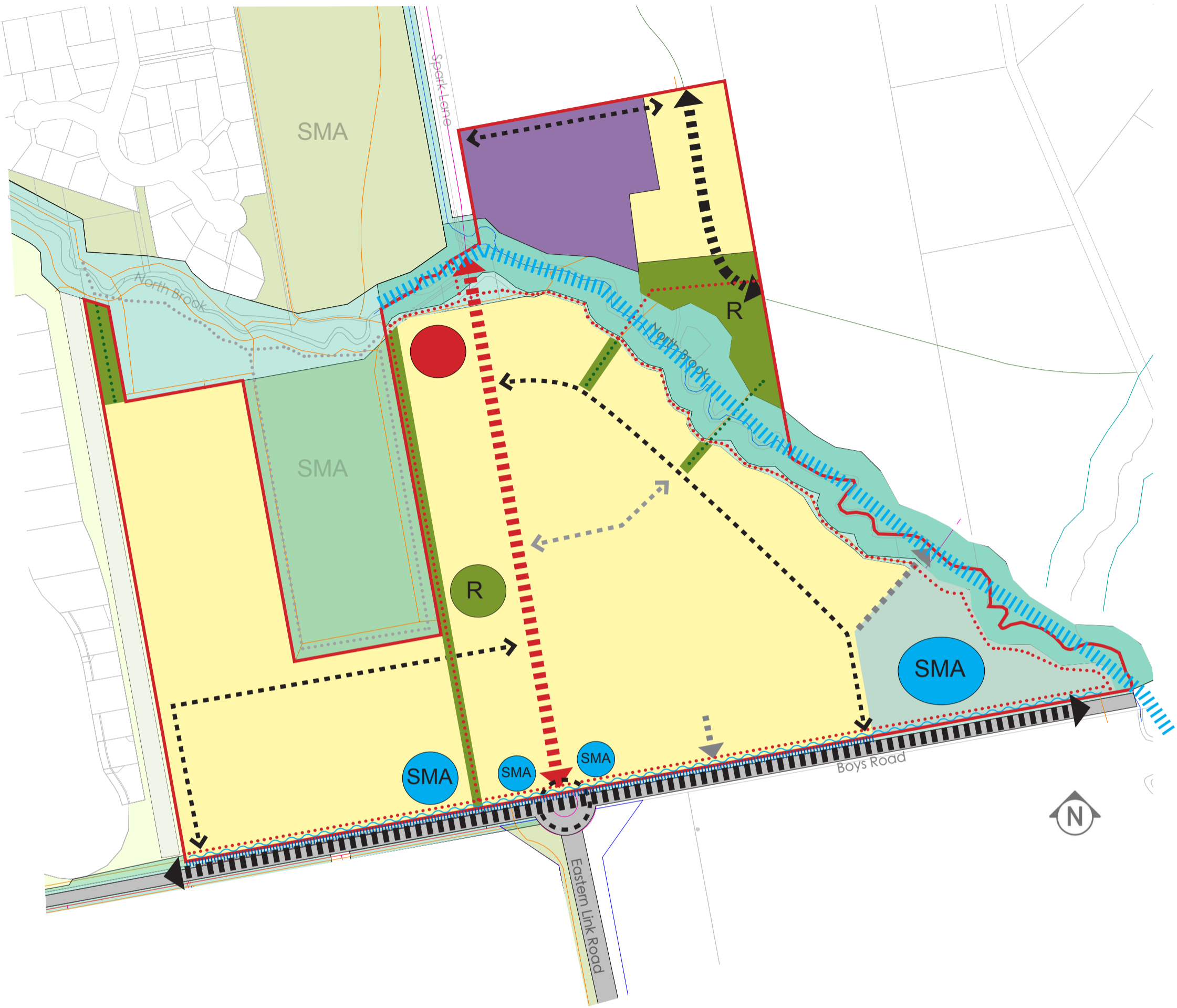
Rangiora Eastern Link Road





- ODP AREA
- Residential - min 15hh/ha (Medium Residential Density Zone)
- Education/Community Area
- Small Commercial Node
- Light Industrial
- R Open Space Reserve
- SMA Stormwater Management Area
- Odour Setback
- Landscape Treatment B to railway corridor
- Landscape Treatment A to rural lifestyle properties
- SMA, Flowpath
- Green Link
- Naturalised Channel
- Biodiversity Area
- Shared Pedestrian/Cycleway
- Recreational walkway
- New Intersection
- Primary Road + Cycleway
- Primary Road
- Secondary Road
- Key Local Road
- Future Connection
- Road Frontage Upgrade





— ODP AREA BLOCK A

○ Residential - min 15hh/ha  
(Medium Residential Density Zone)

○ Education/Community Area

○ Small Commercial Hub

○ R Open Space Reserve

○ SMA Stormwater Management Area

||||| SMA, Flowpath and Esplanade

..... Green Link

~ Naturalised Channel

..... Shared Pedestrian/Cycle Pathway

..... Recreational Walkway



New Intersection



Primary Road + Cycleway



Primary Road



Secondary Road



Key Local Road



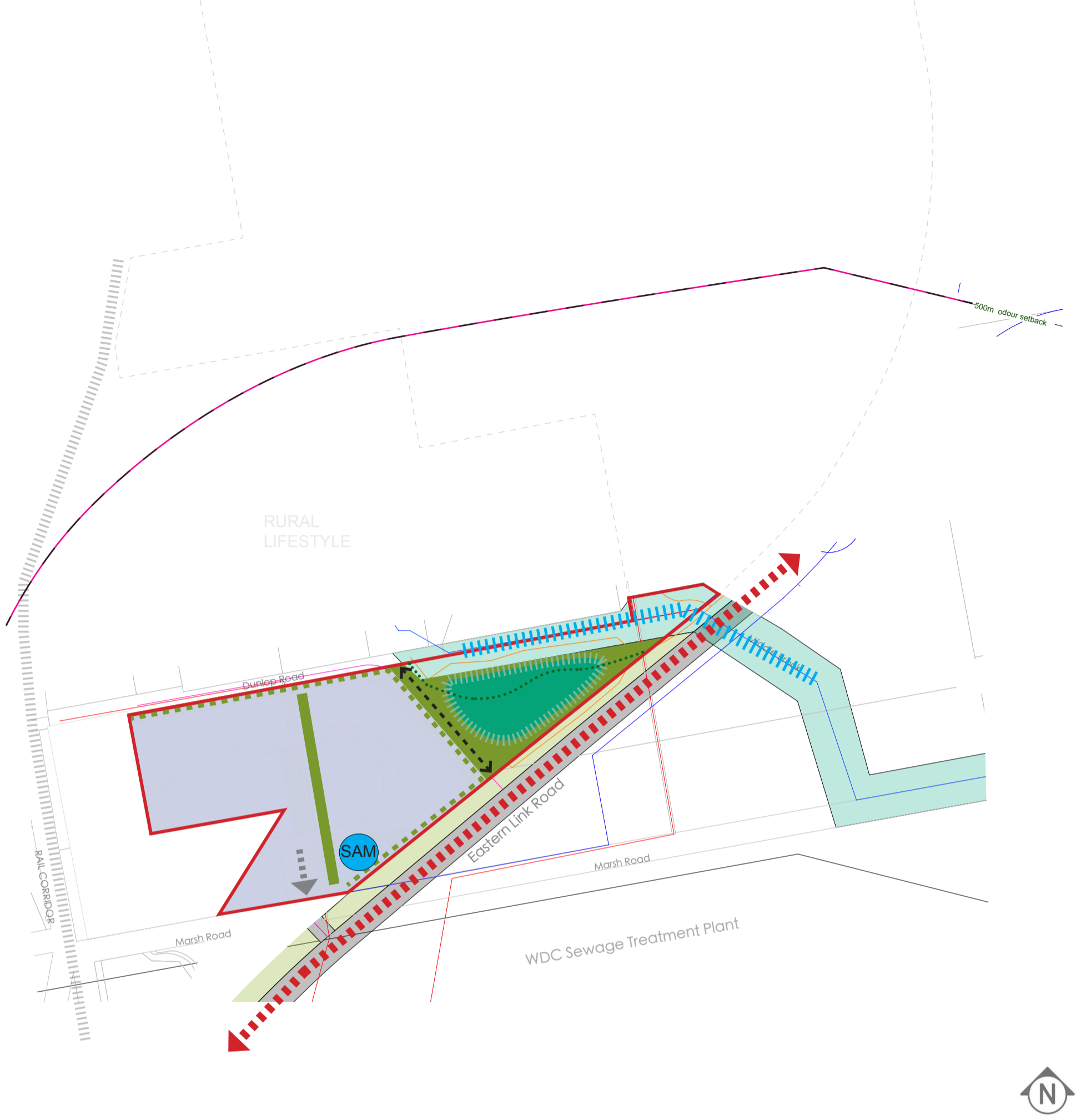
Possible Future Connection













Road Frontage Upgrade










- |  |   |  |  |  |                            |
|--|---|--|--|--|----------------------------|
|  | ODP AREA BLOCK B  |  | Odour Setback  |  | New Intersection           |
|  | Residential - min 12hh/ha<br>(General and Medium Residential Density) |  | Landscape Treatment B<br>to railway corridor           |  | Primary Road + Cycleway    |
|  | Education/Community Space   |  | Landscape Treatment A<br>to rural lifestyle properties |  | Primary Road               |
|  | Small Commercial Node   |  | SMA. Flowpath  |  | Secondary Road             |
|  | Open Space Reserve  |  | Green Link   |  | Key Local Road             |
|  | Stormwater Management Area  |  | Naturalised Channel                                    |  | Possible Future Connection |
|  |   |  | Shared Pedestrian/Cycle Pathway                        |  | Road Frontage Upgrade      |
|  |   |  | Recreational Walkway                                   |  |                            |



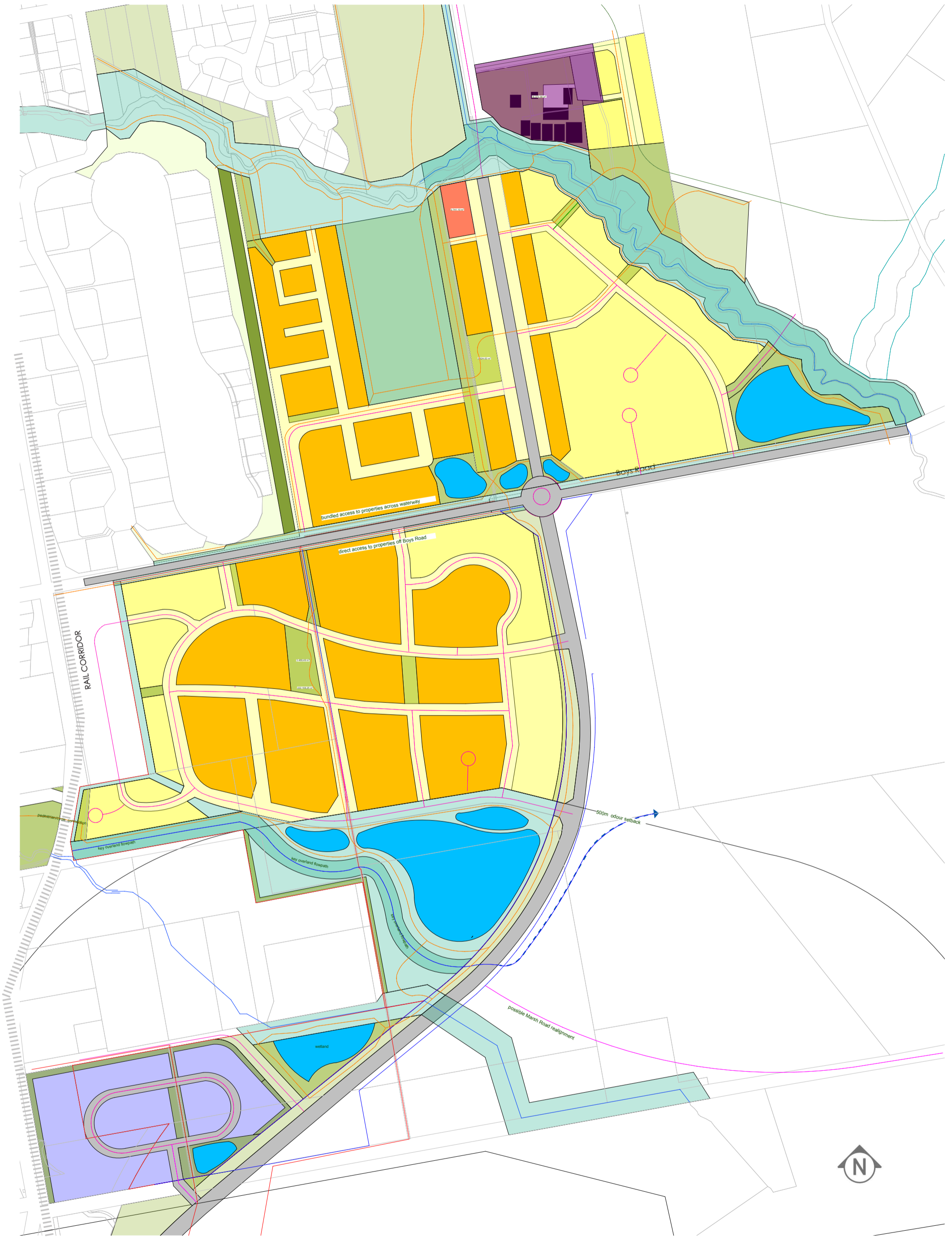
-  ODP AREA BLOCK C
-  Light Industrial
-  Open Space Reserve
-  Biodiversity Area
-  Stormwater Management Area
-  SMA. Flowpath and Esplanade

-  Odour Setback
-  Green Link
-  Recreational Walkway
-  Landscape Treatment A to rural lifestyle properties and REL

-  New Intersection
-  Primary Road + Cycleway
-  Primary Road
-  Secondary Road
-  Key Local Road
-  Possible Future Connection
-  Road Frontage Upgrade

TO AVOID DUBLICATION AND ENSURE THE MOST UP TO DATE NARRATIVE IS CONSIDERED PLEASE REFER to ODP NARRATIVE ATTACHED TO THE EVIDENCE OF MR. IVAN THOMSON ( PLANNER FOR THE SUBMITTER)





## APPENDIX C0

### Development north of Boys Road (Block A)

1. The following paragraphs are a summary of the assessment of the proposal for Block A against the Rangiora South East Area ODP for the FUDA. This assessment was undertaken in preparation for the PDP Hearing Stream 10A to confirm that the proposed ODP for the area identified as Block A meets the requirements of the Proposed Waimakariri District Plan and is in general accordance with the ODP for the Southeast Rangiora Area. The assessment provides a summary of the Rangiora South East Area ODP, an summary of the proposed ODP for Block A, identifies the synergies between the ODPs and provides a rationale for any differences between both ODPs.

### Summary of the WDC Southeast Rangiora Development Area

Appendix C1 and C2 WDC South East Area ODP and narrative (as per S42A report recommendations)

2. The Waimakariri District Council's (WDC) Outline Development Plan for the Southeast Rangiora Area (SRDA ODP) is an area wide ODP that gives guidance to the urban growth in the southeast of Rangiora and identifies the wider structure for open space and stormwater reserves, movement networks, water and wastewater, and land use and densities. This WDC's ODP affects only a part of the Sparks Development north of Boys Road (Block A).
3. Following paragraphs cover elements of the Southeast Rangiora Development Area that apply to Block A.
  - **Land use**
    - Originally 12hh/ha, now 15hh/ha minimum density with pockets of intensification located in proximity to open space. These are shown mostly adjacent to the Northbrook.
    - Education and community use due to the incorporation of the existing Northbrook Museum incl. possible extension.
  - **Movement network**
    - The introduction of the Rangiora Eastern Link Road, a primary road running north/south through Block A from Spark Lane to Boys Road then curving south-westward to meet Marsh Road.

- A second primary road running north/south crossing the Northbrook.
- Two east/west secondary roads.
- A green link and shared trail from Northbrook Reserve following the Northbrook waterway to Boys Road and to be located within the Northbrook Esplanade.
- Several green links extending the pedestrian network into and through the Site.
- **Recreational Reserves, open space, and utility reserves for stormwater treatment**
  - Two open space reserves, one central to Block A and one adjacent to the Northbrook around established specimen trees.
  - General overland flow path north-west to south-east to aligning with the Northbrook creating an esplanade.
  - Stormwater discharge quantity into waterways needs to be maintained for ecological reasons.
  - Two stormwater catchments are necessitated, divided at the Eastern Link Road.
  - A high water table may necessitate the building up of land for stormwater basins in the east and south.
  - Integration of the existing elevated utility reserve and included tall vegetation into the development.
- **Water and Wastewater**
  - Existing sewer easements need to be accounted for (paper road)
  - Establishment of a new sewer main either within paper road easement or the new REL Road reserve conveying development wastewater to the wastewater treatment plant (or alternate shared sewer main with the Bellgrove development).
  - Establishment of new water mains and extension of existing water mains.
  - Incorporate existing wastewater surface features (manhole lids, etc) into new ground and road surface levels.



4. The above list is only reflective of that land within the WDC ODP that is subject to the new proposal (Block A). However, Block A forms part of a wider interconnected network, particularly with regards to infrastructure and water management, greenspaces, and road network. Beyond these specific requirements, the proposed ODP for Block A has also considered the wider context it has been designed for including the areas south of Boys Road, Block B of the proposal, the existing residential areas to the west and north and the larger rural environment to the east.

#### **Additional parameters related to the Southeast Rangiora Area ODP and Narrative**

5. It is assumed that as part of the preparation of the Southeast Rangiora Area ODP, ecological analyses have been undertaken and the protection of existing waterways will be achieved. In a similar vein, it is assumed that a cultural impact assessments and consultation with local iwi have informed the process prior to the identification of the area as FDA by the Waimakariri District Council.
6. In addition, the design team has also considered several detailed technical aspects that were discussed with WDC in meetings throughout 2023. These were mainly related to infrastructure and traffic which will be covered by other experts. However, some matters discussed at these meetings have influenced the urban layout of Block A.
  - The alignment / straightening of the REL Road
  - The Northbrook esplanade and related pedestrian cycle network
  - The overall roading layout and connectivity to adjacent urban areas
  - The widening of Boys Road and treatment as an urban street
  - The inclusion of a small community/commercial hub (café)
  - The role of the paper road

#### **Synergies between the two ODP's**

Appendix D (side by side of both ODP's)

7. To show how the Proposed ODP complies with the WDC ODP for the South East Rangiora Area we have compared them and identified synergies and differences. From an urban design perspective, the ODP for Block A is in general accordance with the WDC ODP in almost all aspects.

8. Key to both ODP's is their integration into the existing Northbrook Reserve and its associated pedestrian network. This facilitates the ecological preservation of Northbrook and surrounding space, furthering community integration with the Northbrook, associated greenspaces, and the Northbrook Reserve. Both ODP's integrate the development with the existing Northbrook Museum and identify the importance of the historic nature of the site and area.
9. Urban density is increased around open spaces within both ODP's, and both ODP's share a target minimum of originally 12hh/ha. Noting that the Sparks Development ODP can further increase to 15hh/ha by intensifying the density in specific areas. However qualifying matters may apply due to existing constraints of waterways and geometry.
10. The general road layout, road hierarchy, and internal and external connectivity is the same. Key green links and pedestrian connection do also overlap and both ODP's show a well-connected pedestrian/ cycle network.
11. Both ODP's work with two SW catchment areas with two stormwater basins along Boys Road. The major of the two locates the stormwater collection, sedimentation, and filtration at the southeast corner of Block A. A smaller basin is located at the western corner of the Boys Road and Eastern Link Road roundabout, with a conveyance channel to the Northbrook.
12. Both ODP's identify two recreational reserves one on the east bank to the Northbrook around a larger copse of trees and one in a central location within block A. Key green links and pedestrian connection do also overlap and both ODP's show a well-connected pedestrian/cycle network.
13. There is an overarching narrative for the WDC ODP, but this is more of a broad-brush approach and does not necessarily provide specific requirements or guidelines to a scale relevant for the land covered by Block A. The proposal provides a more specific narrative for the entire development Site, Blocks A, B, and C, which does contain more specific details relevant for Block A. There are no areas where the proposed narrative would contradict or deviate from the narrative for the wider area ODP.

### **Differences between the ODP's and the rationale for these changes**

#### **Movement**

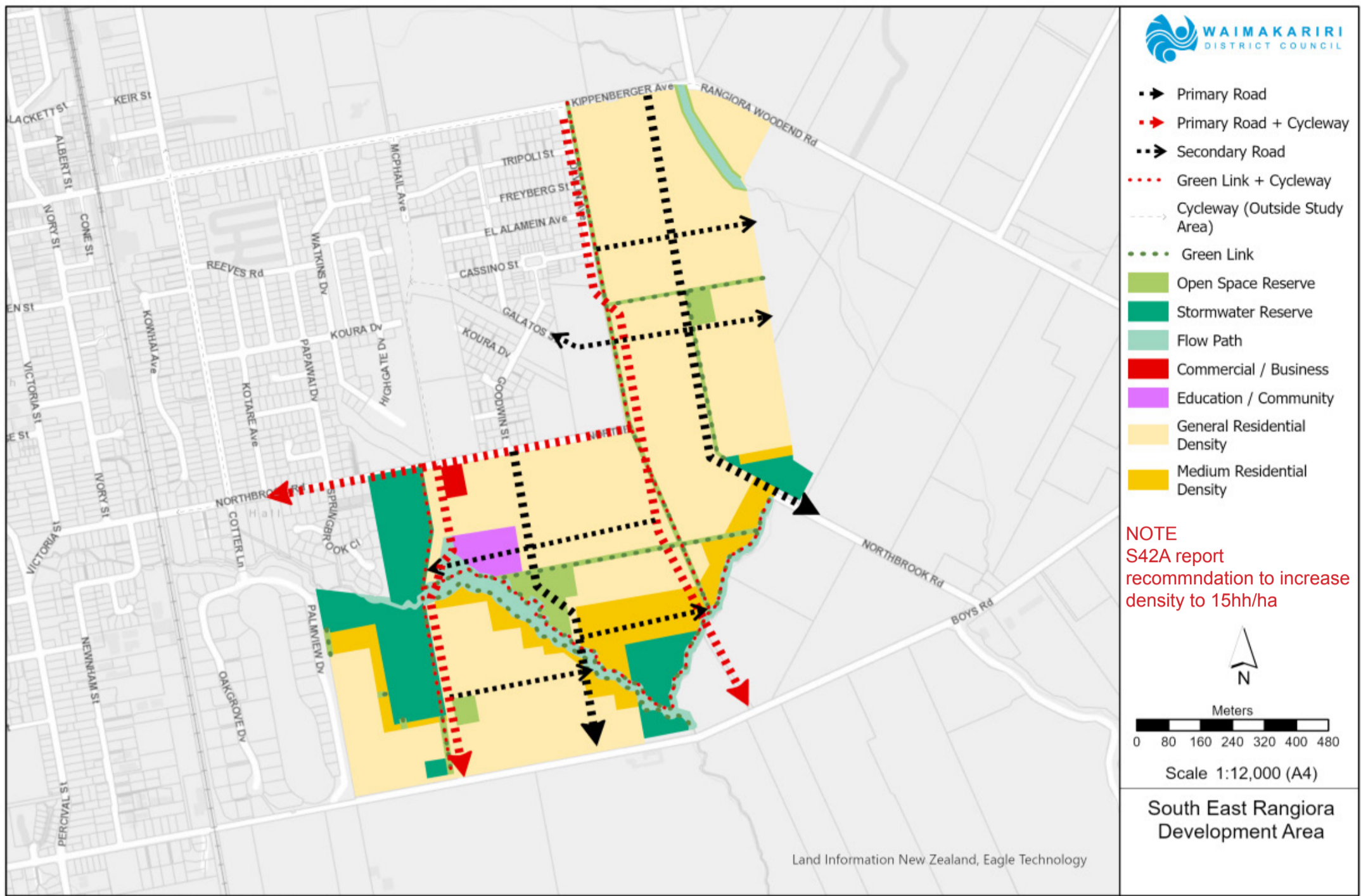
14. The Eastern Link Road has a minor alignment change in the Sparks Development ODP. The road now runs straight, leaving space between the road corridor and the Northbrook Reserve. This straightening provides a significant viewshaft to Mt Grey, an important part

of the history of the area and of significance to Māori. This straightening of the Eastern Link Road also allows for a singular alignment and easier crossing of the Northbrook, lessening the impact of the roadway on the local ecology and any sensitive species.

15. There is the removal of a second road connection across the Northbrook, east of the Eastern Link Road. A pedestrian connection will remain across the Northbrook allowing for connectivity to be retained, and potential for this connection to be expanded in the future, though a road connection is undesirable for social and ecological reasons. The shifting of the Eastern Link Road eastwards also makes this additional primary road link somewhat superfluous for the internal distribution within Block A and would likely default to an unnecessary through route.
16. There is the introduction of a small commercial node at the north of Block A. This will be restricted to commercial activities that service the local community, especially those using the Northbrook Trail, and focus on a café.

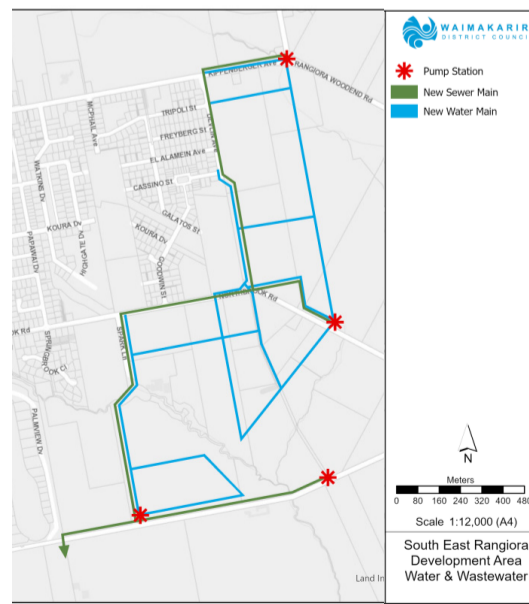
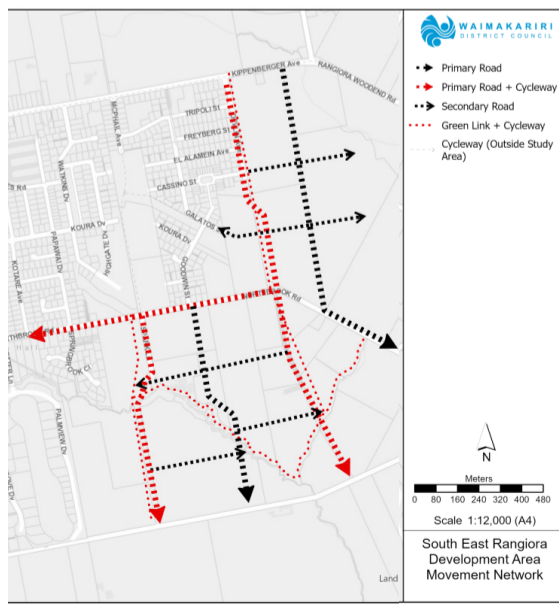
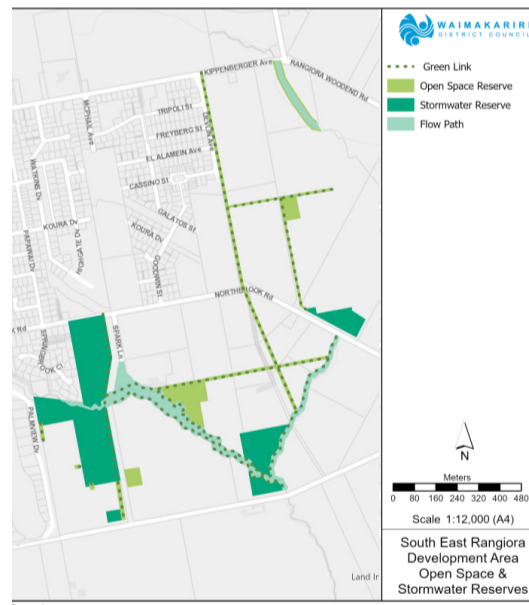
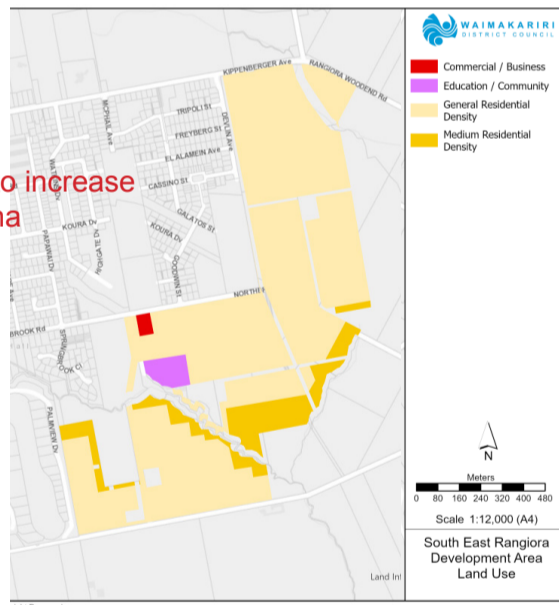
#### **Landuse and density**

17. The ODP introduces a small commercial hub. Due to its size and purpose this hub will not compete with the proposed neighbourhood centre on Northbrook Road but be an additional service for the community with primarily hospitality functions and possibly a small 'daytime' shop, dairy, café etc to support recreational activities.
18. The ODP enables a density of 15hh/ha, as now recommended by the S42A report. However, the design strategy that underpins the ODP shows a slightly different density distribution throughout the site. This is to reduce impact of the higher density on the sensitive ecological environments of the Northbrook. The areas of intensification have been placed around the REL and the elevated Northbrook Reserve with established vegetation providing protection for the reserve and a sense of scale for the community. As proposed in the WDC narrative for the South East Area ODP qualifying matters may apply in Block A due to the existing constraints.



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**NOTE**  
S42A report recommendation to increase density to 15hh/ha





**NOTE**

**Land Use Plan S42A report recommendation to increase density to 15hh/ha**

The Outline Development Plan for the South East Rangiora Development Area enables the option for some variety of site sizes. Some medium density residential activity could be developed at key locations adjacent to natural flow paths or stormwater reserves, in order to take advantage of opportunities to overlook such high amenity facilities and offsetting limited private outdoor space feasible in higher density residential development. However this component of the Outline Development Plan is flexible and optional and will likely be dictated by development feasibility and market demand in these locations. The Medium Density Residential Zone enables a minimum lot size of 200m<sup>2</sup> while the General Residential Zone enables a minimum lot size of 500m<sup>2</sup>. Overall, the South East Rangiora Development Area shall achieve a minimum residential density of 12 households per ha.

A small optional neighbourhood/local centre, shown in the Outline Development Plan as commercial/business, is located at the juncture of Northbrook Road and Spark Lane. The latter will form part of the future north/south primary road connection that extends northward through the South East Rangiora Development Area and southward to connect to Lineside Road. Locating the neighbourhood/local centre at this strategic location offers a high degree of visibility which has positive flow-on effects on neighbourhood businesses' sustainability.

The land in the South East Rangiora Development Area north of an extension of Cassino Street is likely more suitable for urban development than the land south of it, due to the presence of artesian water south of this location, together with modelled effects of a 200 year localised flooding event. Groundwater south of a Cassino Street extension is artesian and close to the surface, which will likely result in more challenging construction of infrastructure.

Rangiora New Life School and Southbrook School are located south of Boys Road. It is subject to Ministry of Education consideration whether an additional primary school is required in the South East Rangiora Development Area in the future to service its catchment. It could be feasible that preschool(s) are established in the Development Area. The South East Rangiora Development Area also contains the Northbrook Museum and Rosburn Receptions, a community asset, at Spark Lane.

Development within the Rangiora South East Development Area is to be contiguous; the Outline Development Plan does not anticipate physically separated or ad-hoc development.

**Movement Network**

The Outline Development Plan for the South East Rangiora Development Area provides access to this growth area through a network of primary and secondary roads that ensure development integration, efficient traffic management and public transport corridors. Only these more significant roads are identified in the movement network plan. The layout of additional tertiary roads to service the residential areas will respond to detailed subdivision design of those areas. The specific roading classification of all roads will be ultimately determined at the time of development, to provide flexibility and match the eventual roading classification system made operative through the District Plan. Primary and secondary roads for the South East Rangiora Development Area are located to ensure that all existing parcels of land, when developed, can be served by the roading network.

A key movement network feature for the South East Rangiora Development Area is an extension of Devlin Avenue at the western boundary of the area connecting to Boys Road, with a green link incorporating a cycling path adjoining the length of it. A new north/south primary road connection off Kippenberger Avenue curves to connect to the existing Northbrook Road portion that runs in a south-eastern direction. This is coupled with also extending the existing Northbrook Road at the south of the existing developed and zoned land and intersecting it through the Devlin Avenue extension to meet the new north/south connection. Feedback provided by local property owners is that the existing bend at Northbrook Road causes dangerous driving conditions, and it is proposed that a small section of Northbrook Road at this location is stopped to allow the new road alignment. A cycleway will also be provided along Northbrook Road, which links into the wider cycling network within and outside of the Development Area.

The Outline Development Plan for the South East Rangiora Development Area also identifies the existing MacPhail Avenue and its extension along Spark Lane and to Boys Road as the main north/south primary road which forms part of a wider future key Rangiora eastern north/south road connection that will ultimately extend to meet Lineside Road in the south and meets Coldstream Road in the north through the South East Rangiora Development Area. This primary road will be adjoined by a green link with a cycleway and be suitable for public transport. Its design will promote reduced vehicle speeds and increased safety to other street users. The installation of appropriate intersections with Northbrook Road and Boys Road will be required.

East/west movement patterns through a number of secondary roads provide subdivision structure and connectivity, and are integrated with existing roading linkages west of the Development Area. Secondary roads generally assume a form which is of a more residential nature and cater less to through vehicle traffic.

As well as cycleways at key roading corridors, the network of cycling infrastructure for the South East Rangiora Development Area includes cycleways along the two key southern flow paths and references the wider cycling network beyond the Development Area.

Pedestrian footpaths will be provided on at least one side of each road. The movement network plan should be read in conjunction with the green network plan which also provides key informal cycling and walking corridors, such as along green links. The principle of walkability is incorporated through the use of a connected roading pattern, additional pedestrian links and the location of open spaces.

**Open Space and Stormwater Reserves**

The Outline Development Plan for the South East Rangiora Development Area shows three open space reserve locations together with a network of stormwater management areas and green corridors throughout the site.

The open space reserves are located strategically in places that are highly prominent, easily accessed and have the ability to add to the character and identity of the development, as well as being within a 500m radius of all residential households in the Development Area. One open space reserve is located east of the new north/south primary road connection off Kippenberger Avenue, and north of a Galatos Street extension, and is connected by green links. Flexibility of the exact location of the reserve is possible, as long as it is accessible within a 500m radius to the north-eastern residential areas in the South East Rangiora Development Area. A second open space reserve is located in the south of the site, east of the Northbrook Stream flow path, and the same philosophy of flexibility in exact location applies. A third optional smaller open space reserve is located further south, east of the Northbrook Waters, adjacent to the extended Spark Lane which will form part of the main north/south primary road. This reserve is proposed in this location to maximise access to, and enjoyment of, the Northbrook Waters reserve which provides community amenity through attractive landscaping and walking/cycling paths. To maximise functionality, accessibility and visibility, open space reserves must be bordered by at least one local road, and a second either local road or public accessway such as a green link.

Any required open space reserve should be prioritised in the early stages of a new residential development, and subsequently when further expansion extends beyond the margins of radius and/or resident population guidelines.

A network of green links is anticipated throughout the Development Area, including alongside flow paths and connecting key amenity features such as open space and stormwater reserves. Green links provide safe and attractive active mode corridors and play opportunities, can have a role in stormwater management, and offer visual relief from otherwise built up residential areas. Green links must be bordered by at least one road frontage (except in cases where they serve as a short connection strip) to provide appropriate access, visibility, amenity and safety for users. Where green links border both sides of a flow path, one road frontage between both sides is the minimum requirement.

There are three flow paths in the South East Rangiora Development Area. Streams, springs and waterways are protected and included in the stormwater reserves where present. Appropriate waterbody setbacks apply where required by the Natural Character of Freshwater Bodies Chapter of the District Plan. Waterbodies must be protected intact, or improved, as part of any development and any potential adverse impacts on the local and receiving waterbody ecology must be mitigated. Where possible, amenity planting will be encouraged together with enhancement of habitat heterogeneity and in-stream conditions to improve stream health, facilitate migrations and promote recruitment. Efforts must be made to ensure any adverse impacts on kēkēwai (waikoura-freshwater crayfish), which are present in the culturally significant mahinga kai area of the Northbrook Stream (the flow path linking Northbrook Road and Boys Road in the Rangiora South East Development Area), are avoided.

A network of stormwater reserves are identified for the South East Rangiora Development Area to respond to five stormwater catchments: just north of Northbrook Road at the eastern edge of the Development Area, north of Boys Road at the south-eastern point of the Development Area, and a small stormwater reserve north of Boys Road south Northbrook Waters, with proposed attenuation basins. The ground in this area is known to have relatively high groundwater and therefore it is assumed that these would all be wet basins.

Stormwater reserves provide attractive open space and visual relief in a built up residential environment, and the location of them provide opportunities for adjacent higher density residential areas to look out onto them and benefit from their amenity. Stormwater will be managed by an appropriately designed stormwater treatment system with high amenity values. The South East Rangiora Development Area's stormwater catchment discharges to the North Brook. All stormwater ponds are subject to design detailing. The Outline Development Plan for the South East Rangiora Development Area provides an indicative size and location based on likely catchments around the key infrastructure.

**Water and Wastewater Network**

The provision of reticulated water supply assumes a skeleton network for the South East Rangiora Development Area, where only water pipes 100mm in diameter and greater are specified. The exact location of the reticulation may change when road layouts are confirmed, noting that some identified road locations as specified under 'Movement Network' are fixed and others are flexible.

Reticulation upgrades proposed for Rangiora are both within Development Areas (East, North East and West) and within the existing network. Due to their location, all of the existing network upgrades can be attributed to the Development Areas. Source and headworks upgrades are not Development Area specific, rather they apply to the whole scheme.

A number of water network upgrades and constructions are required to service the South East Rangiora Development Area's four catchments. Reticulation requirements include upgrades to the existing network and extra over upgrades to development reticulation. These upgrades are required to maintain the existing levels of service to current and future customers. Requirements include new mains related to South Belt Booster Main and Boys Road Booster Main.

Development in the Rangiora West, North East and South East Development Areas also contribute to the requirement to upgrade a number of wider Rangiora sources and headworks, such as additional wells and associated pipework at Rangiora Source, new Surface Pumps and Generator at Ayers Street Headworks, new reservoirs at Ayers Street and South Belt, and a new Surface Pump at South Belt Headworks.

Four catchments make up the South East Rangiora Development Area for wastewater servicing requirements. Each catchment has an independent solution for wastewater infrastructure and only the key trunk infrastructure and pumpstations/rising mains are shown. The lay of the land is generally towards the south east, and developments reticulation would be installed with the lay of the land. Mains will follow general alignment with the roading network.

The catchment directly east of Devlin Avenue and north of Northbrook Road requires a new pumpstation at the eastern point of the South East Rangiora Development Area at Northbrook Road and pumping into a new rising main to join onto a shared rising main for the north-eastern catchment (in the Rangiora North East Development Area) to the Rangiora Wastewater Treatment Plant. A second catchment south of Northbrook Road, east of the North Brook Stream discharges into a new proposed booster pumpstation at eastern Boys Road, which discharges into a fourth pumpstation at Boys Road/Spark Lane extension via a new rising main. Finally, two smaller catchments west of the North Brook Stream discharge directly into the fourth proposed pumpstation.

It should be noted that artesian water is located roughly south of an extension of Cassino Street in the remainder of the South East Rangiora Development Area, east of Devlin Avenue, and groundwater is close to the surface. This likely makes construction of infrastructure challenging and will likely carry higher than typical costs, particularly when developing large catchment areas. A pressure system may need to be considered for the South East Rangiora Development Area's catchments if gravity reticulation cannot be kept shallow enough. Such considerations will inform development feasibility.

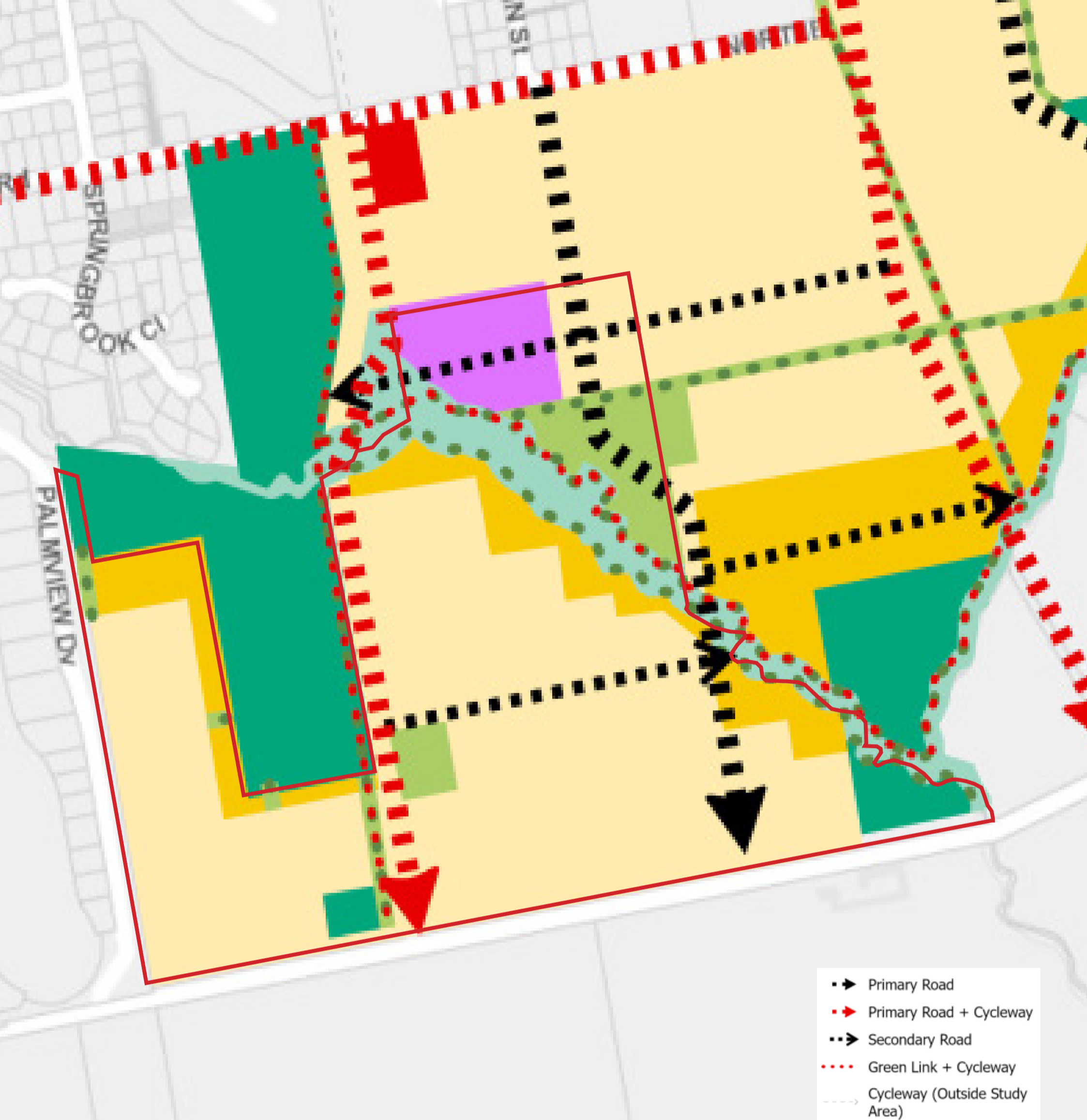
**Fixed Outline Development Plan Features for the South East Rangiora Development Area:**

- Extension of Devlin Avenue with an adjoining green link containing a cycleway
- Extension of Spark Lane to connect to Boys Road with adjoining green link containing a cycleway
- Location of new north/south road connecting Kippenberger Avenue with Northbrook Road
- Realignment of Northbrook Road to cross Devlin Avenue extension and connect to the new north/south road east of Devlin Avenue
- Cycleways at Northbrook Road, Devlin Avenue, and Spark Lane
- Location of flow paths and adjoining green links, cycleways, and required water body setbacks
- Rangiora South East Outline Development Plan - Overall

\* text extracted from the Proposed District Plan on 30 January 2023



- ODP AREA BLOCK A
- Residential - min 15hh/ha (Medium Residential Density Zone)
- Education/Community Area
- Small Commercial Hub
- R Open Space Reserve
- SMA Stormwater Management Area
- SMA, Flowpath and Esplanade
- Green Link
- Naturalised Channel
- Shared Pedestrian/Cycle Pathway
- Recreational Walkway
- New Intersection
- Primary Road +Cycleway
- Primary Road
- Secondary Road
- Key Local Road
- Possible Future Connection
- Road Frontage Upgrade



- ➔ Primary Road
- ➔ Primary Road + Cycleway
- ➔ Secondary Road
- Green Link + Cycleway
- ➔ Cycleway (Outside Study Area)
- Green Link
- Open Space Reserve
- Stormwater Reserve
- Flow Path
- Commercial / Business
- Education / Community
- General Residential Density
- Medium Residential Density