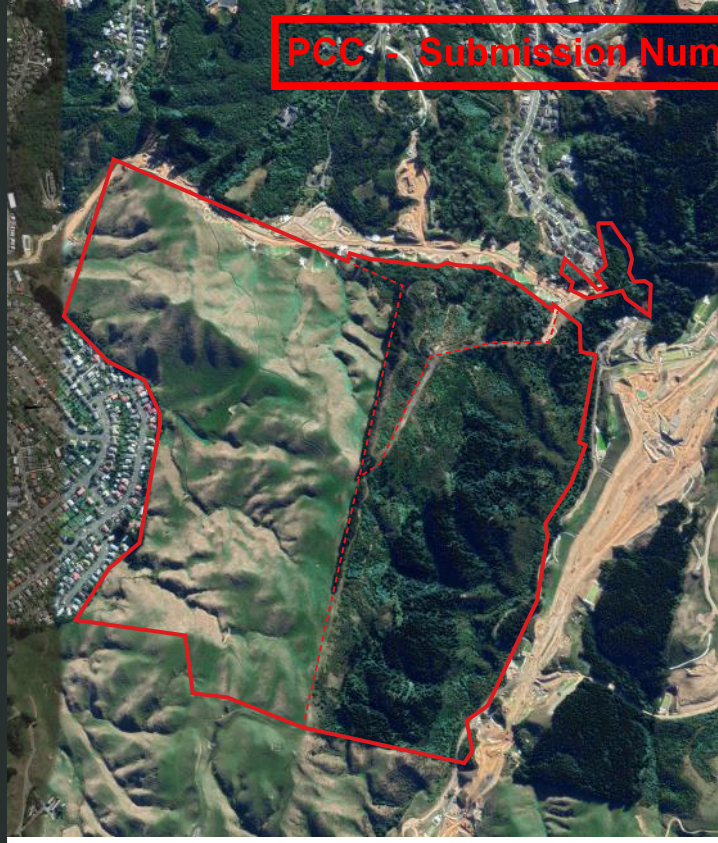


APPENDIX THREE

URBAN DESIGN ASSESSMENT



WHITBY SOUTH

PORIRUA

URBAN DESIGN ASSESSMENT

SEPTEMBER, 2020

For: Silverwood Land 2015 Limited Partnership



SILVERWOOD
CORPORATION™

Prepared by: Urban Acumen Ltd



CLIENT	Silverwood Land 2015 Limited Partnership
PROJECT	Whitby South Rezoning
UA PROJECT NO.	20-014
DOCUMENT	Urban Design Site Assessment
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**DOCUMENT
CONTROL RECORD**



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1.0 INTRODUCTION

“A thorough appreciation of the overall context is the starting point for designing a distinctive place”

Urban Design Compendium 1 (2007), English Partnerships

This urban design assessment forms part of a suite of technical documents prepared to inform the development of a preliminary structure plan for the Silverwood and Landcorp properties. By illustrating the possible form and layout of potential development, this in turn supports the proposed rezoning of the land from Rural Zone to Future Urban Zone, as part of Porirua City Council's District Plan Review.

The purpose of this urban design assessment is to understand the contextual issues relating to the potential development of the site and make recommendations to inform the future decision-making process. In this way, it will identify opportunities and constraints in response to the site's unique location and environment and outline design intentions to guide an appropriate development response.

By nature, urban design is a multidisciplinary process and relies upon, and is enriched by, collaboration with all built and natural environment professionals. As part of the planning and design process, the opportunities and constraints relating to these technical inputs have been incorporated into the draft development response/structure plan.

The Wellington Regional Policy Statement (2013) defines (as Appendix 2) the region's urban design principles (adapted from the NZ UD Protocol). The Urban Design Protocol identifies seven essential design qualities that create quality urban design: the seven Cs.

The seven C's:

- Context
- Character
- Choice
- Connections
- Creativity
- Custodianship
- Collaboration

The purpose of the seven Cs is to:

- provide a checklist of qualities that contribute to quality urban design
- are based on sound urban design principles recognised and demonstrated throughout the world
- explain these qualities in simple language, providing a common basis for discussing urban issues and objectives
- provide core concepts to use in urban design projects and policies
- can be adapted for use in towns and cities throughout New Zealand.

The urban design principles of the WRPS (and the NZ UD Protocol) that are particularly relevant to the analysis and development of this site include:

- taking a long-term view
- recognising and buildings on landscape context and character
- results in buildings and places that are adapted to local climatic conditions
- providing for public transport, roading, cycling and walking networks that are integrated with each other and the land uses they serve
- examining each project in relation to its setting and ensures that each development fits in with and enhances its surroundings
- understanding the social, cultural and economic context as well as physical elements and relationships
- considering the impact on the health of the population who live and work there
- celebrating cultural identity and recognises the heritage values of a place
- ensuring incremental development contributes to an agreed and

coherent overall result.

- protecting and enhancing distinctive landforms, water bodies and indigenous plants and animals
- allowing people to choose different sustainable lifestyle options, locations, modes of transport, types of buildings and forms of tenure
- encouraging a diversity of activities within mixed use developments and neighbourhoods
- creating safe, attractive and secure pathways and links between centres and landmarks and neighbourhoods
- placing a high priority on walking, cycling and public transport
- protecting landscapes, ecological systems and cultural heritage values
- managing the use of the land resource wisely
- using a collaborative approach to design that acknowledges the contributions of many different disciplines and perspectives
- involving communities in meaningful decision-making processes

The methodology for this assessment includes the following tasks:

- understanding the location of the site and existing and future context
- describing and illustrating the site itself with respect to physical characteristics, natural features, and interfaces etc.
- analysing the site and identifying constraints and opportunities
- making recommendations and identifying issues to be addressed during the development of the draft structure plan
- contributing to the definition of a vision for the site

2.0 SITE LOCATION

The site is comprised of four cadastral parcels, namely:

- Sec 9 SO 475749/Lot 6 (north) which lies north of the Waitangirua Link Road (Silverwood Land 2015 Limited Partnership) and measures 1.5ha;
 - Sec 7 SO 475749/Lot 1, adjoining the Waitangirua Link Road ((Silverwood Land 2015 Limited Partnership) and measures 8.3ha;
 - Sec 10 SO 475749/Lot 6 (south) which adjoins the Transmission Gully Motorway on its eastern boundary (Silverwood Land 2015 Limited Partnership) and measures 42.3ha;
- and
- Lot 2 DP 389024, Landcorp landholding at 61.2ha (tied to Lot 34 DP 29428 (90 Arahura Crescent, Waitangirua, already zoned residential)

It is noted that portions of Lot 6(N) and Lot 1 are already partly zoned for residential use. The submission does not seek the rezoning of the residential portion of the site to Future Urban Zone.

The site consists of two primary parcel areas, the larger contiguous Silverwood Lot 6S and Landcorp property and the remaining parcel of Lot 1 as well as Lot 6N, located to the north of the Waitangirua Link Road. These land parcels are essentially the primary remaining areas of undeveloped land east of Transmission Gully, north of Belmont Regional Park, and south of Silverwood where development has been consented up to the Waitangirua Link Road.

The site is located approximately 6km by road from Porirua City Centre. Its western most boundary is approximately 0.6km from the local centre of Waitangirua and 3km from the Whitby local shopping centre (via the future Whitby Link Road). Waitangirua forms part of the Porirua East Regeneration project. The maps on the adjacent and following page illustrate the proximity of these neighbourhoods and their shopping areas and social infrastructure, including schools and recreation facilities.

Located west of and adjacent to the Transmission Gully motorway (TG), the land is essentially contiguous with the existing residential urban area of Waitangirua, albeit partially in a different visual catchment. Whilst the Landcorp property face predominantly west and north, the Silverwood site faces generally east and visible from the rural area to the east of Transmission Gully.

It has road frontage to the Waitangirua Link Road along the northern boundary and easy access to the wider Wellington Region via Transmission Gully Motorway. It is understood that the Waitangirua Link Road and Whitby Link Road will carry a "mega" bus route, linking the site to the wider suburban area (please refer to the Porirua Growth Strategy 2048).

The southern boundary of the site adjoins the Belmont Regional Park which has walking, biking and tramping trails, camp sites and events.



FIG 1 site location - wider context
 basemap source: Google

- Future Mega Bus Route
- Future Mega Bus Stop
 (Porirua Growth Strategy 2048)
- ↔ Duck Creek

Silverwood

Landcorp

Transmission Gully Motorway

Waitangirua



Looking from Waitangirua Link Road



Looking south east from high point of Lot 6



Looking south over Lot 6 from north side of Link

The site's location and proximity to high order transport infrastructure (Transmission Gully Motorway and associated Link Roads) is an asset and presents an opportunity to utilise the highly accessible land resource in an efficient and responsible way.

In some respects, the Transmission Gully Motorway defines the potential edge of the urban area of Porirua. That said, it is noted that the Judgeford Hills area is identified by the PCC Proposed District Plan as Future Urban Zone. Recognising this future zoning, the site is the last remaining parcel of rural land, surrounded by development north, west and east and bordering Belmont Regional Park to the south.

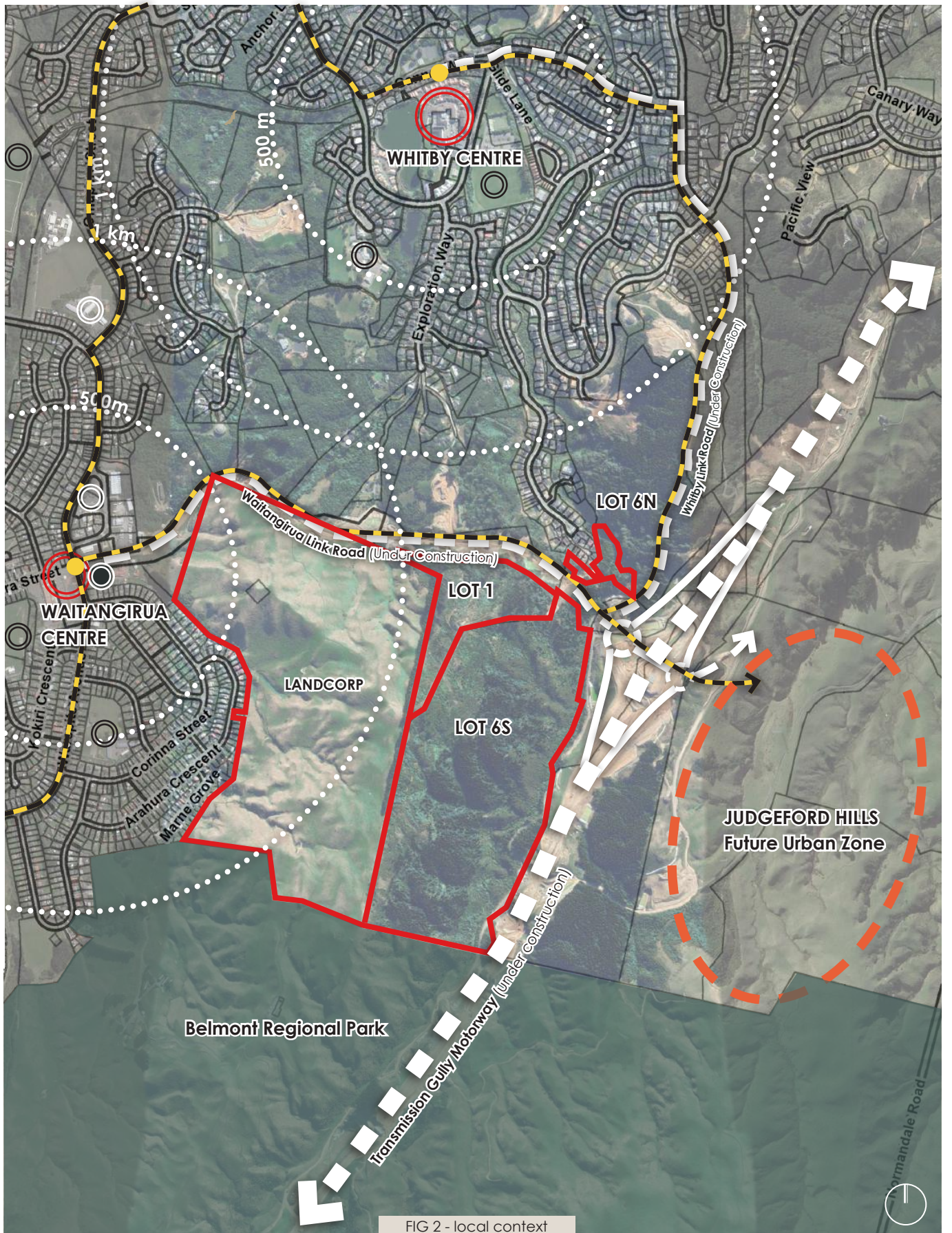






FIG 2 - local context
basemap source: Google

-  Future Mega Bus Route
-  Future Mega Bus Stop
-  community infrastructure (e.g. school, kindy, park, recreation)
-  marae

3.0 SITE DESCRIPTION

The site is very large (nearly 113ha) and represents a significant potential extension to the existing urban areas of Silverwood and Porirua East.

It consists of varied topography, with ridges, spurs and gullies, and faces predominantly north, west and east. The site is undeveloped and either grazed or used for forestry. It is a mix of grazed pasture on the hills, shelterbelts, forest plantations, and with bush-filled gullies.

The highest point of the site is approximately 200m above sea level, providing good views north towards the Porirua Harbour as well as east and west.

There are a number of existing farm and walking tracks through the site, generally located below the ridgelines and following the natural contour, which connect the site to Belmont Regional Park and the Waitangirua Link Road.

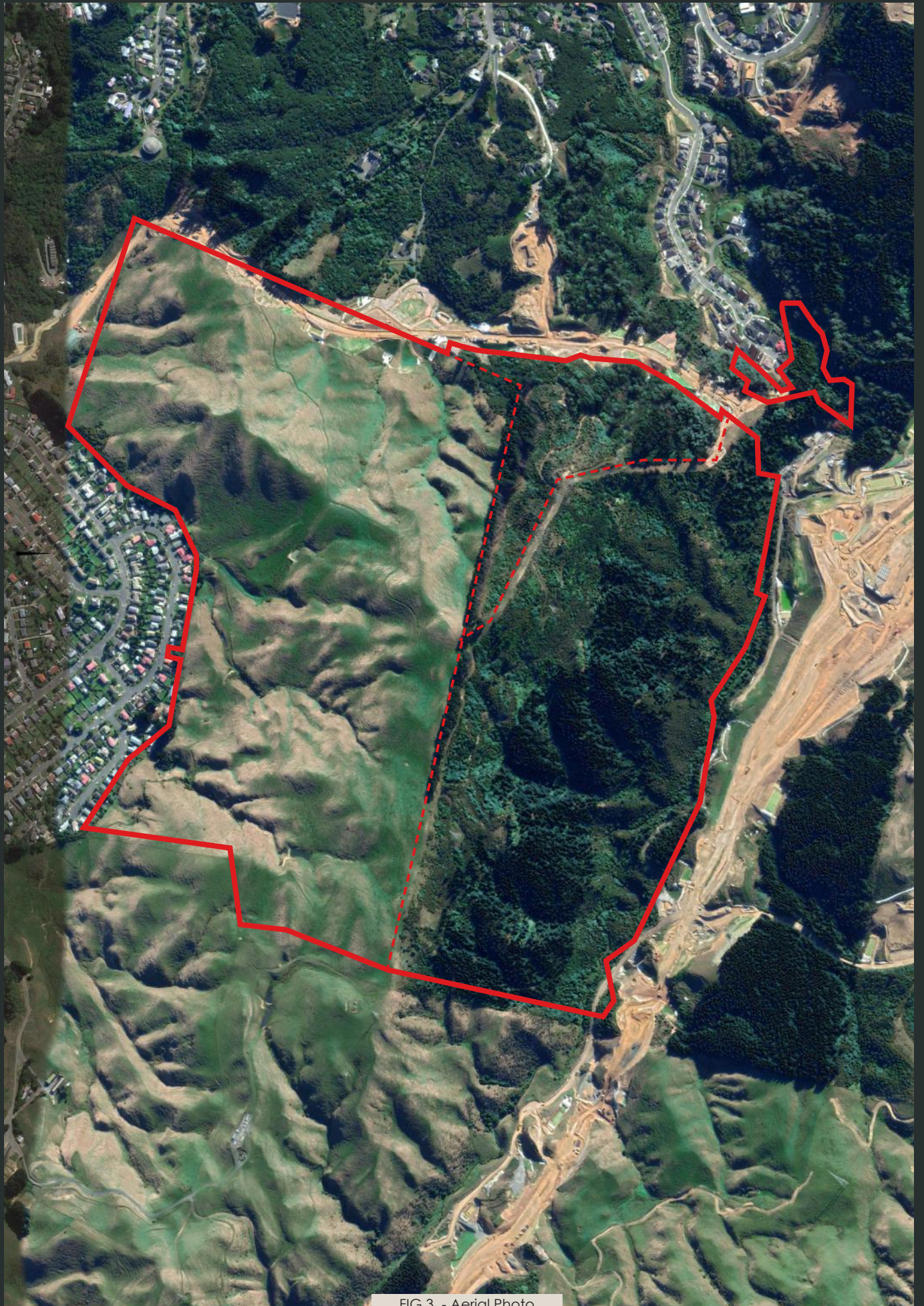
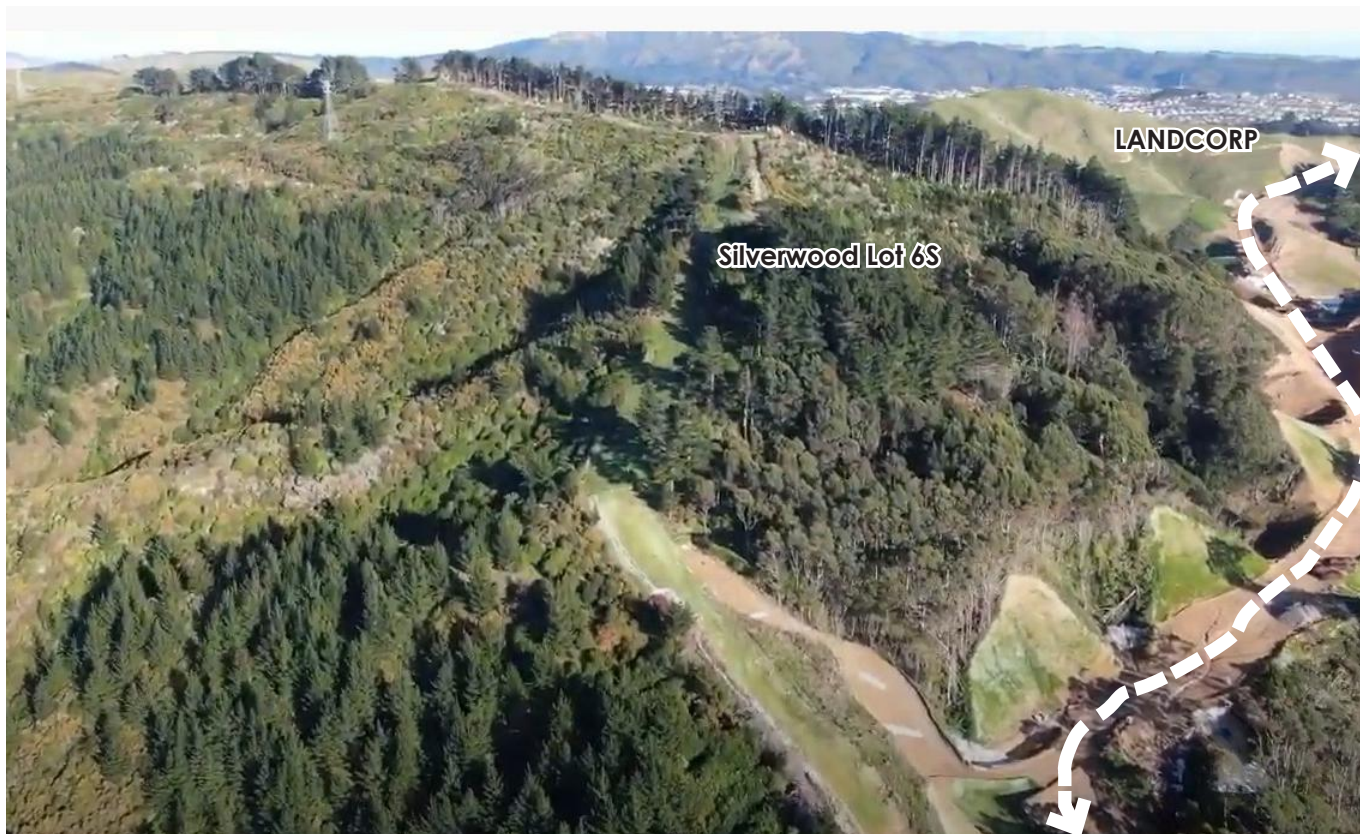


FIG 3 - Aerial Photo
source: Google





Looking south across Lot 6S and towards Landcorp site

Source: <https://www.youtube.com/watch?v=VZlxIGwV9cA>



Looking east along Waitangirua Link Road

Source: <https://www.youtube.com/watch?v=VZlxIGwV9cA>

Waitangirua Link Road

4.0 SITE ANALYSIS

This section explores site characteristics and qualities as they pertain to the potential future development of the site and identifies issues to be addressed for future structure planning.

Site conditions, issues, constraints and opportunities discussed include:

- Existing context & adjacent communities
- access and connectivity
- landform and topography
- other natural features
- infrastructure
- interfaces (Transmission Gully noise/visual, Link road, Belmont Regional park, Cannons Creek - visual not physical)

Each issue is discussed in the following section which concludes with identifying the issues and opportunities to be considered during any future structure planning process.

4.1 EXISTING CONTEXT & ADJACENT COMMUNITIES

The contextual environment is characterised by residential development in Waitangirua and Silverwood/Whitby. These areas are generally low density and low lying. Residential sections in Waitangirua are typically 600m² in size, but many accommodate duplexes. Dwellings are a mix of double and single storey.

The adjoining sites in Waitangirua “back on” to the Landcorp site which rises from their rear boundaries. Existing residential development north of the Waitangirua Link Road (along Banks Boulevard) is also located at a level lower than the site. As such, the site is elevated from its adjacent residential communities.

Existing and emerging residential development to the north responds to its varied topography, with meandering road alignments and cul-de-sacs.

The Maraeroa Marae and associated health clinic is located immediately to the north east of the Landcorp site. The site provides the visual backdrop to the marae.


The Porirua East area, including Waitangirua and Cannons Creek, is earmarked for significant regeneration. The Government will be committing up to \$1.5 billion to work with the community on revitalising eastern Porirua, while also partnering with Ngāti Toa to improve public housing in western Porirua.

This commitment is expected to result in 2000 public houses renewed to be warmer, drier and safer, and also at least 2000 new affordable and market homes, including Kiwibuild homes. It will also include an additional 150 public houses.

In eastern Porirua the plan is to:

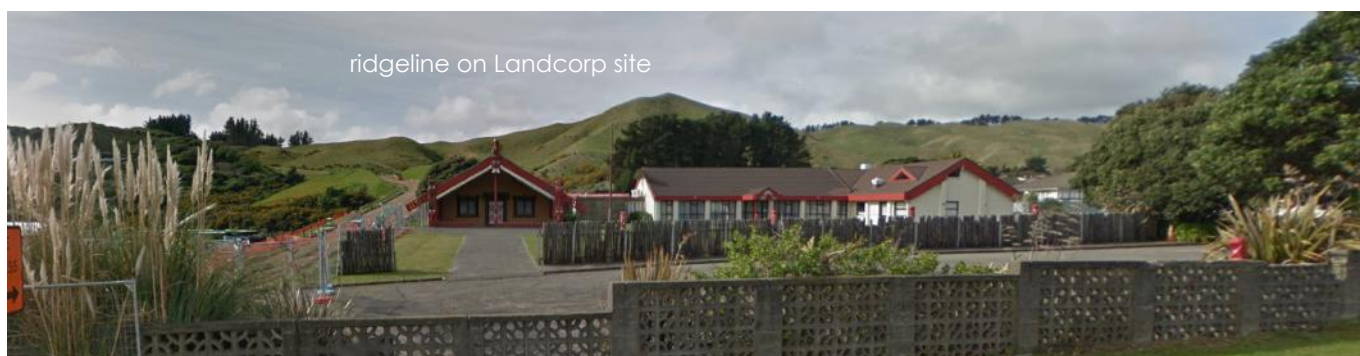
- replace older state homes that are past their best with warm, dry modern homes that are better suited to tenants' needs
- create opportunities for home ownership by building affordable homes and housing for sale on the open market
- design better neighbourhoods, including improving parks and streets, to make them safer, easier to get around and do business in.



 Marae and community facilities

Looking west at the corner of the Landcorp property and towards Waitangirua

Source: <https://www.youtube.com/watch?v=VZlxlGwV9cA>



Maraeroa Marae

Issues for site planning:

- potential impacts of development on adjacent residential neighbourhoods (positive and negative)
- access to, and capacity of, existing adjacent neighbourhood centres and social infrastructure
- relationship to and comparison with existing typical low residential density
- opportunity to support existing and proposed public transport infrastructure
- visual and physical impacts on marae
- opportunities for public engagement and focus on building stronger communities
- opportunity to collaborate with Porirua City Council/Porirua Development/iwi to ensure mutual benefit and integrated development as the regeneration of eastern Porirua progresses



Arahura Crescent, looking north towards Landcorp site



Looking north west across residential development on Banks Boulevard

Source: <https://www.youtube.com/watch?v=VZlxGwV9cA>

Waitangirua Link Road



Waitangirua Centre

4.2 ACCESS AND CONNECTIVITY

Current access to the site is limited and restricted by the construction of the Waitangirua Link Road and Transmission Gully motorway. There are currently a few farm tracks, mostly along or just below the ridgeline.

Potential points of vehicular access from the Waitangirua Link Road are limited due to the topography of the site, most of which rises steeply from the road providing challenging gradients for roading. At the same time, the protection of the Significant Natural Area along a portion of the north boundary needs to be considered. The Landcorp site has road frontage to Arahura Cescent (through 90 Arahura Crescent).

The provision of an internal road network is also constrained by the topography of the site, which limits choice with respect to the location and gradients of public roads. A variety of road typologies, including some private roads and accessways will reduce potential effects on site character.

Pedestrian and cycle access is less constrained and the site offers a significant opportunity for pedestrian and cycle trails through a future open space system which also provides connection to Belmont Regional Park. Potential pedestrian and cycle connections from Waitangirua Centre to the site could be formed.

With respect to public transportation, the site is on the planned route of the potential West-East Public Transport (the Mega Bus Route), which links with the major train line to other regions.

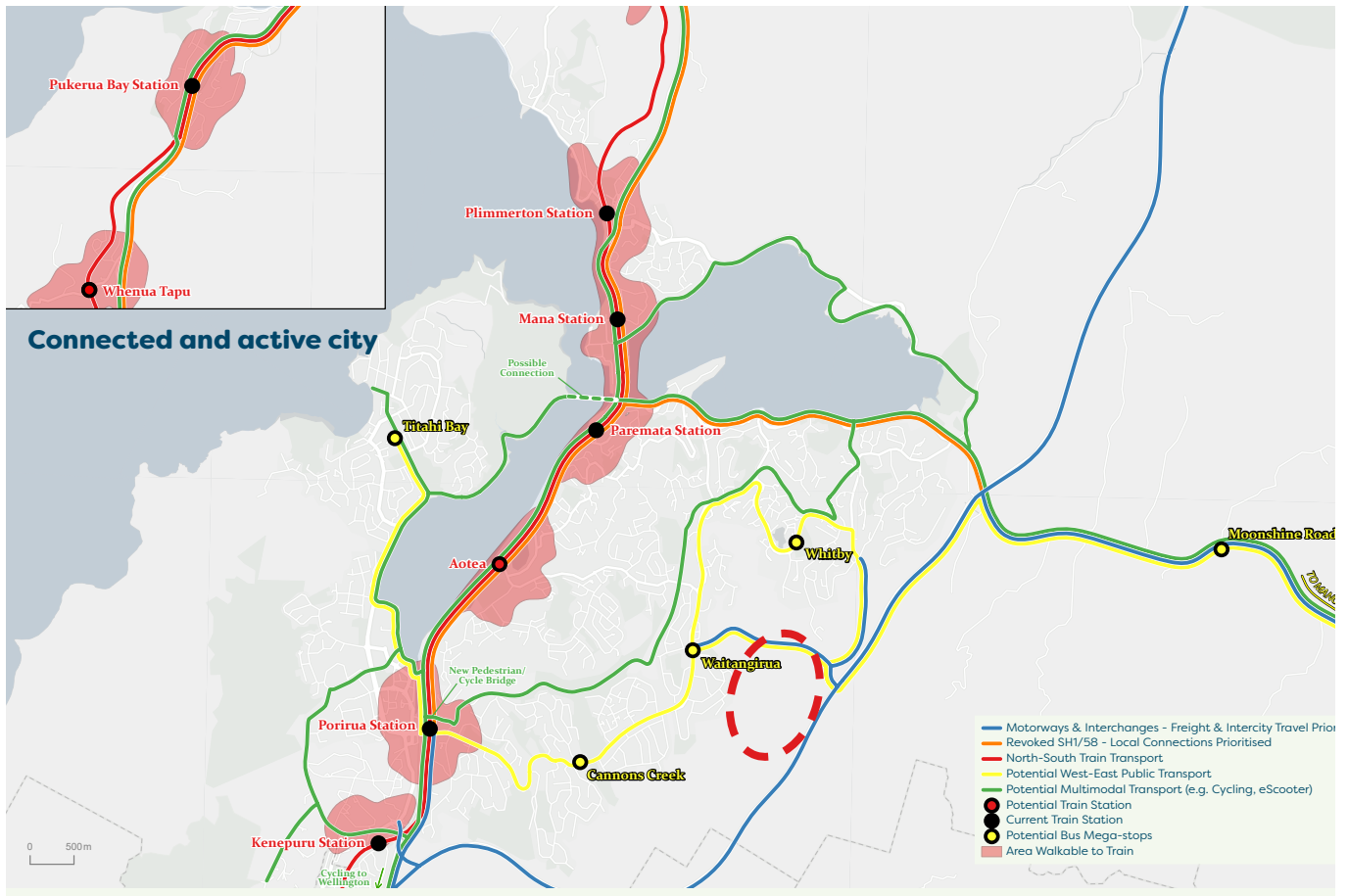
Connectivity is a key urban design outcome that needs to be achieved. However, levels of connectivity will need to be balanced with impacts on the site's natural topography and ecology.

Issues for site planning:

- potential level of connectivity/ integration with surrounding residential neighbourhoods that can be achieved - vehicle, cycle and pedestrian
- opportunity for access from Link Road to all three land parcels (Lot 6 north and south and Landcorp) - commitment from PCC to provide this
- opportunity for pedestrian and cycle access to Lot 6(N) from Banks Boulevard and link through site to Waitangirua Link Road, creating connectivity at a higher level
- opportunity for access to Arahura Crescent
- steep land form challenges the provision of a connected multi-modal movement system
- future public transport network - supporting wider network viability and route
- recreational pedestrian and cycle connectivity - internal and external routes
- potential for Duck Creek to accommodate adjacent recreational path - linking Belmont Regional Park with Duck Creek and Porirua Harbour
- resilience and the need for multiple access points between the sites and to the Waitangirua Link road
- staging of development - short term constraints of limited access and long term effects of construction



Potential pedestrian/cycle link from Waitaigirua Centre to site



Porirua Growth Strategy 2048 - Connected and Active City

4.3 LANDFORM, TOPOGRAPHY AND VISIBILITY

The site is relatively steep and undulating and contains a number of ridges/spurs along with vegetated drainage channels which dissect the land.

The landform generally faces north, west and east. The Landcorp site faces predominantly north and west, with views over Porirua. Silverwood Lot 6S faces generally north and east, with more rural outlook. Lot 6N is located on lower lying land adjacent to Duck Creek. The aspect of the land generally provides good opportunity to capture sun and views.

Whilst the site is generally elevated, and forms part of the rural backdrop to adjacent neighbourhoods of Waitangirua, Cannons Creek and Aotea and provides a sense of enclosure. This value is recognised through the identification of all of the Landcorp site and more elevated portion of the Lot 6S site as a Significant Amenity Landscape.

Issues for site planning:

- steep slopes - challenge for access to Waitangirua Link Road
- steep slopes - challenge for compliant public road gradients
- steep slopes - requirement for earthworks
- steep slopes - visual effects of earthworks on elevated slopes
- visual sensitivity of the landform and potential visual impact of future development, particularly from key public viewpoints
- opportunity to capture sun and views
- opportunity to cluster development/platforms
- potential ways to manage steep slopes - land ownership structures, covenants etc.

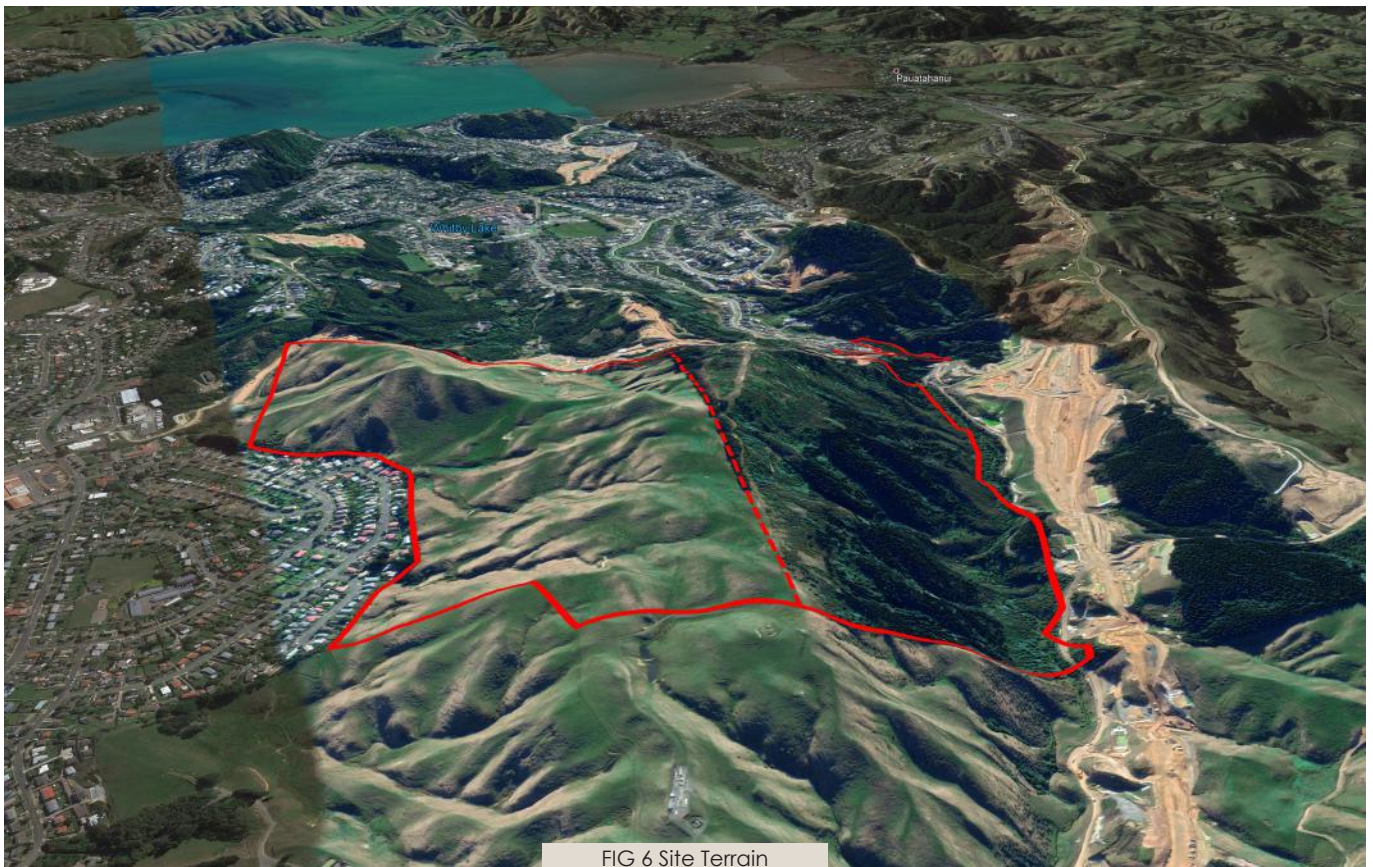


FIG 6 Site Terrain
basemap source: Google

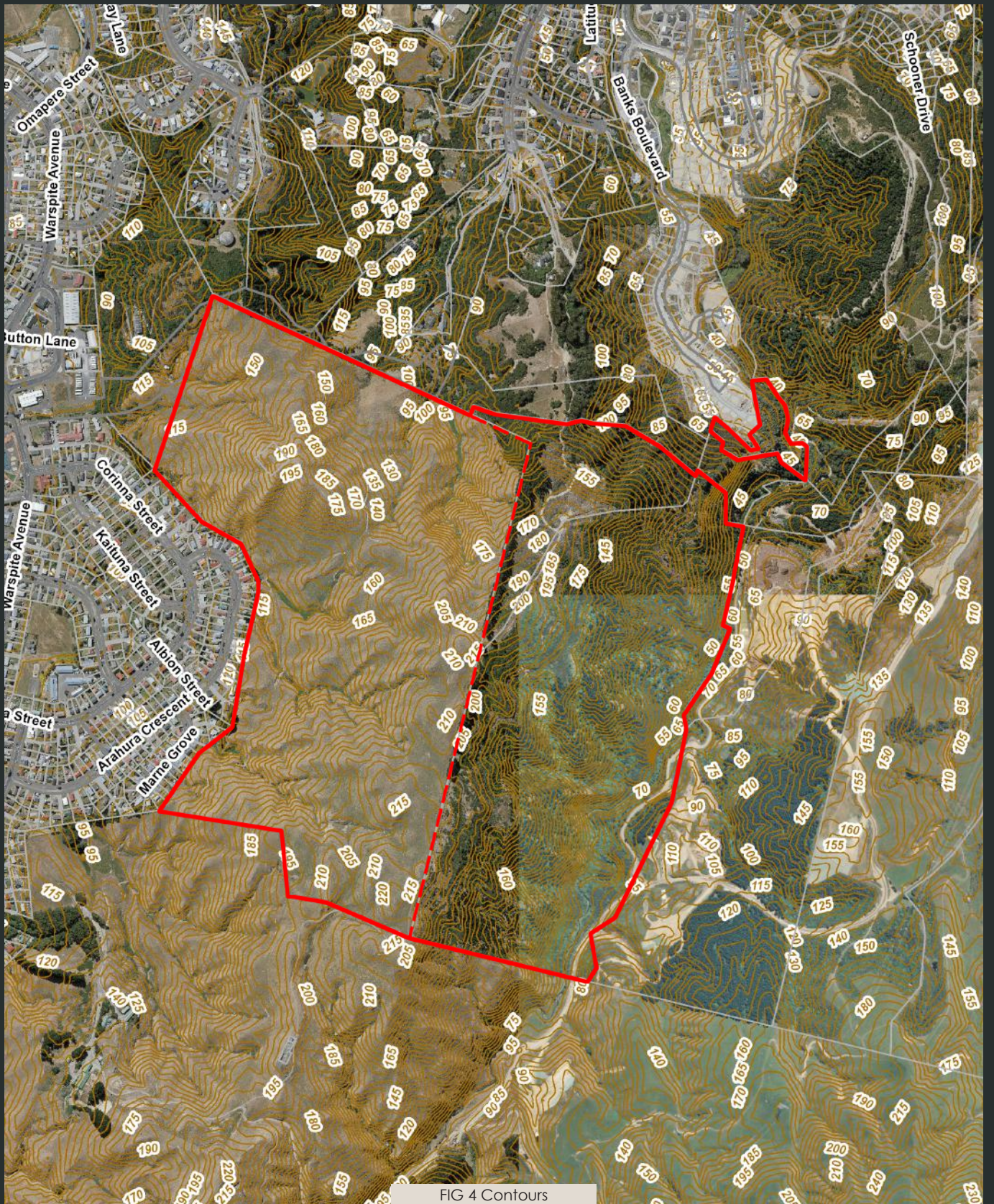
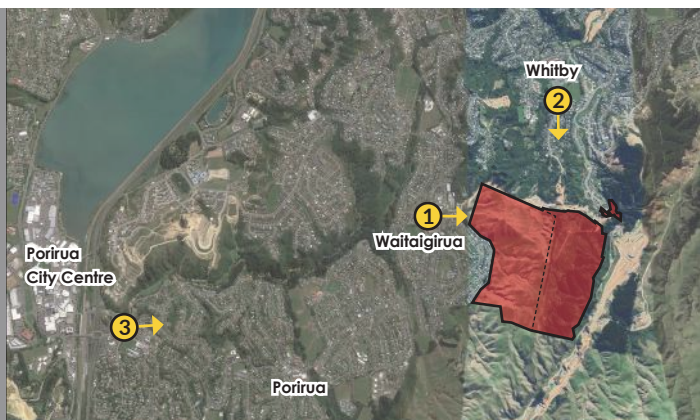


FIG 4 Contours
source: PCC GIS



SITE VISIBILITY FROM PUBLIC VIEW POINTS IN SURROUNDING NEIGHBOURHOODS

*preliminary views taken from Google Streetview and Google Earth



1, view from Waitangirua Village Centre (Outside of Maraeroa Marae Assn)



2, view from intersection of Discovery Dr and Exploration Way (Whitby)



3, view from intersection of Mungavin Ave and Champion St (Porirua)

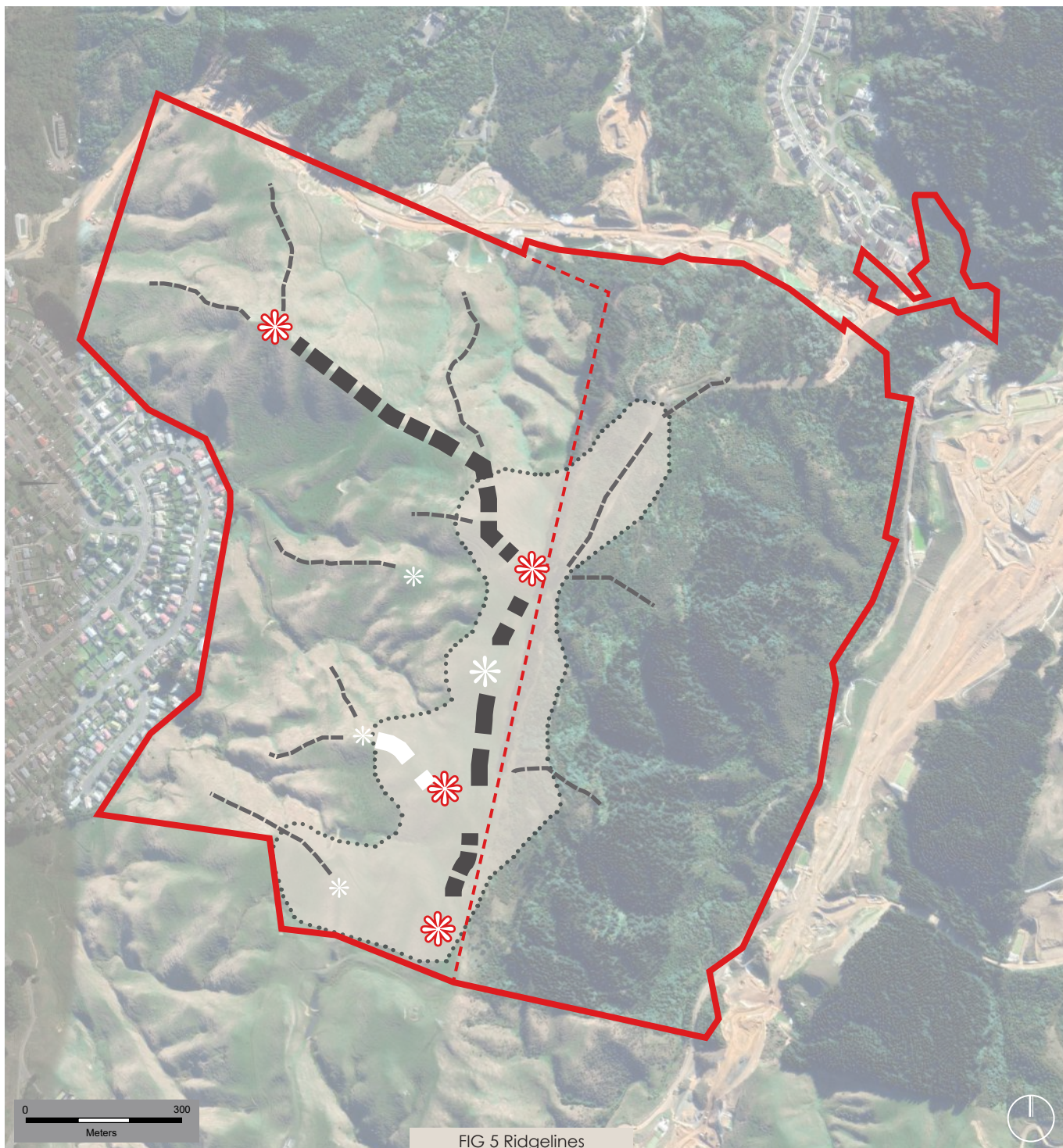






FIG 5 Ridgelines
source: Google

-  primary high point
-  secondary high point
-  ridgeline
-  flatter, elevated land

The elevation, visibility and landform of the site presents a challenge to development as well as an opportunity to recognise the unique landform and maximise sun and views.

Issues for site planning:

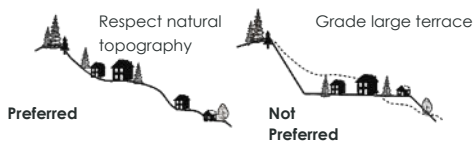
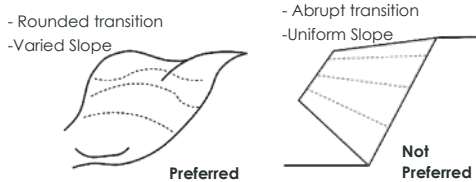
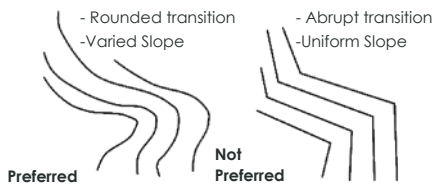
- visual sensitivity of elevated landform and visual change as a result of breaking the skyline
- opportunity to retain ridgeline as a planted backdrop for development on lower slopes
- opportunity to maintain landscape character while accommodating development
- opportunity to manage earthworks to limit visual change
- using vegetation to aid visual integration of development
- apply guidelines for future development to control building form, materials, reflectivity etc.
- appropriate density distribution relative to elevation and gradient, potentially through identification of different development areas and/ or the location of individual building platforms
- the location, design and scale of any buildings or structures
- extent of landform modification which in turn restricts earthworks, platform size and associated floorplates
- visibility, reflectivity and colour of buildings and structures
- appropriate road typologies which limit earthworks/land modification
- planting strategies around dwellings and along roads that assist with visually integrating buildings and infrastructure with the landscape
- heights, gradients and planting of batter slopes
- promoting housing typologies which work with the contour

The opportunity presents itself to apply site specific development controls to ensure the landscape values and rural backdrop are respected as the site develops. These could include provisions or design criteria which address:

DEVELOPMENT STRATEGIES FOR RESPECTING HILLSIDES AND STEEP SLOPES

Preserving the Local Ecology System

- use grading techniques to preserve natural topography

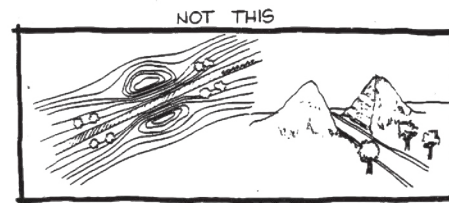
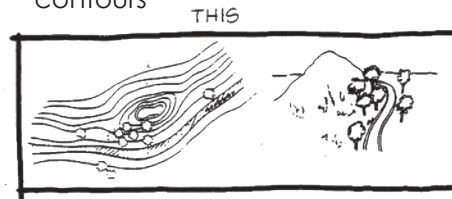


Lehigh Valley Planning

- plenty of allowance for growth of trees between buildings
- retain existing trees and vegetation as feasible

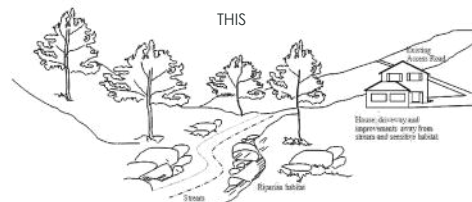


- roading should follow natural contours, and be parallel to contours



City of Glendale, CA

- natural drainage patterns to be respected to the extent feasible
- development should be sited to avoid encroachment into ecologically sensitive areas



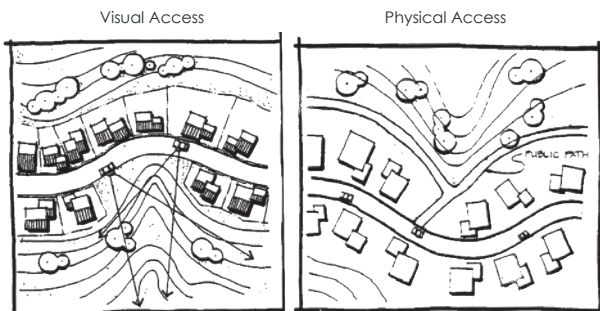
County of Santa Clara

Clustering Development and Infrastructure

- minimises earthworks
- maximises natural opening spaces
- protects significant natural areas

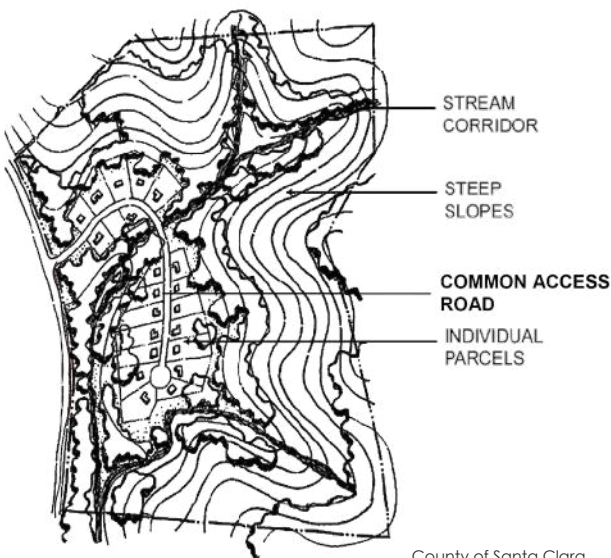


- allow visual and physical access into the natural open spaces



City of Glendale, CA

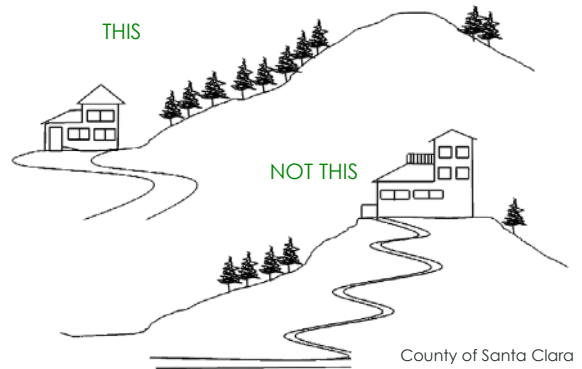
- common driveways and cul-de-sacs to access multiple dwellings to minimize the need for grading for multiple driveways



County of Santa Clara

Siting of buildings

- houses located and orientated to maximize passive solar heating gains and minimize exposure to prevailing winds
- locate proposed development in areas with level lands or gentler slopes, minimizing the need for grading

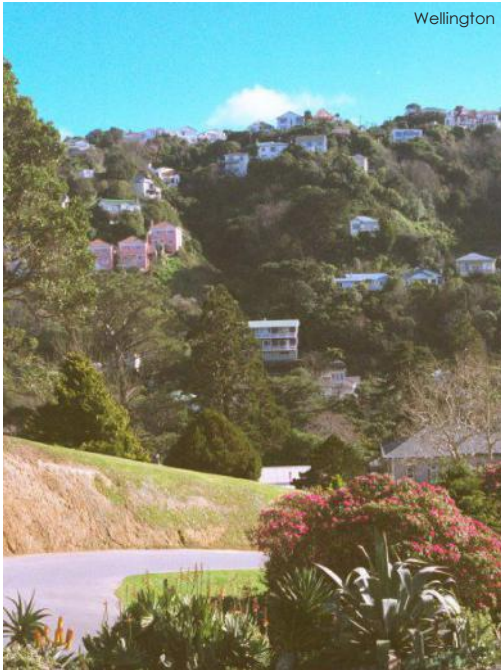


- flexibility and allowances for irregular size and shape of lots in order to maximize the amount of steep hillsides to be preserved
- houses located below ridge-lines, profiled to follow existing landform
- as feasible structures built on a steep hillside should not project higher than the closest ridgeline above the structure to minimise the visual impacts



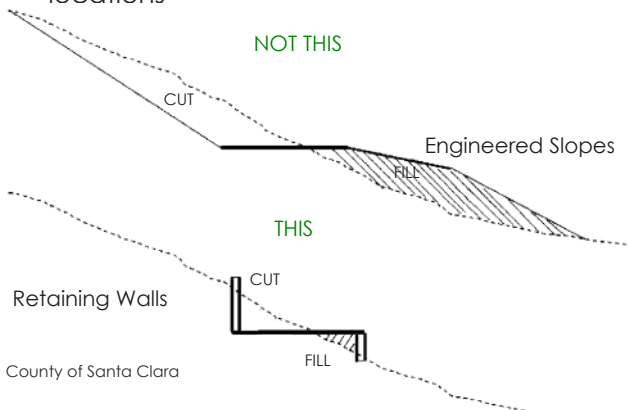
Architectural Design

- houses and other structures built near the top of a hillside should be low in profile and stepped back from the steep hillside area
- houses located below ridge-lines, profiled to follow existing landform



- houses near ridge-line should have darker, sympathetic colours
- parking could be located under the structures on up sloping lots to reduce the need for grading
- steps in building foundation

- retaining walls could be utilized to reduce the total amount of grading provided and they are only used in non-prominent locations



- houses located to respect the privacy of neighbours and minimize obstruction of views
- varied roof heights and planes
- varied platform treatments, i.e. buildings supported on stilts

4.4 OTHER NATURAL FEATURES

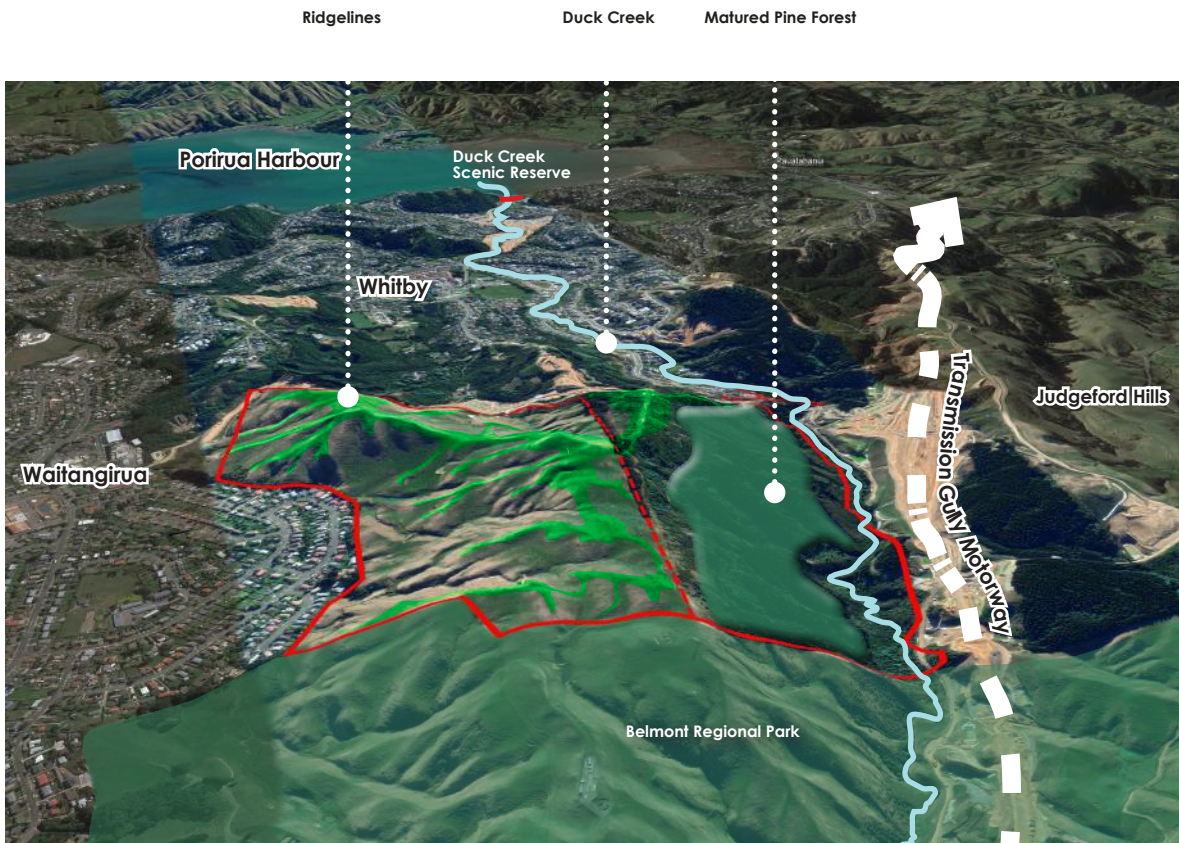
The Silverwood Lot 6 site is vegetated by mature pine forest. Part of the is identified along the Waitangirua Link Road is identified as a Significant Natural Area which represents a challenge to achieving access.

Other major natural features of the site include:

- existing matured pine forest, mainly covering the lower side of Silverwood Lot 6 next to Transmission Gully corridor;
- Duck Creek connecting Porirua Harbour and Belmont Regional Park, forming a low lying, heavily vegetated drainage corridor.

Issues for site planning:

- access to Silverwood land
- potential development within Special Amenity Landscape
- potential retention of some pine forest to mitigate visual effect of future development
- pine forest as ongoing carbon sink
- potential to revegate drainage corridors with native bush
- promote regeneration of native bush in undevelopable areas
- effects of development on ecological value of Duck Creek
- potential riparian or esplanade corridor for Duck Creek



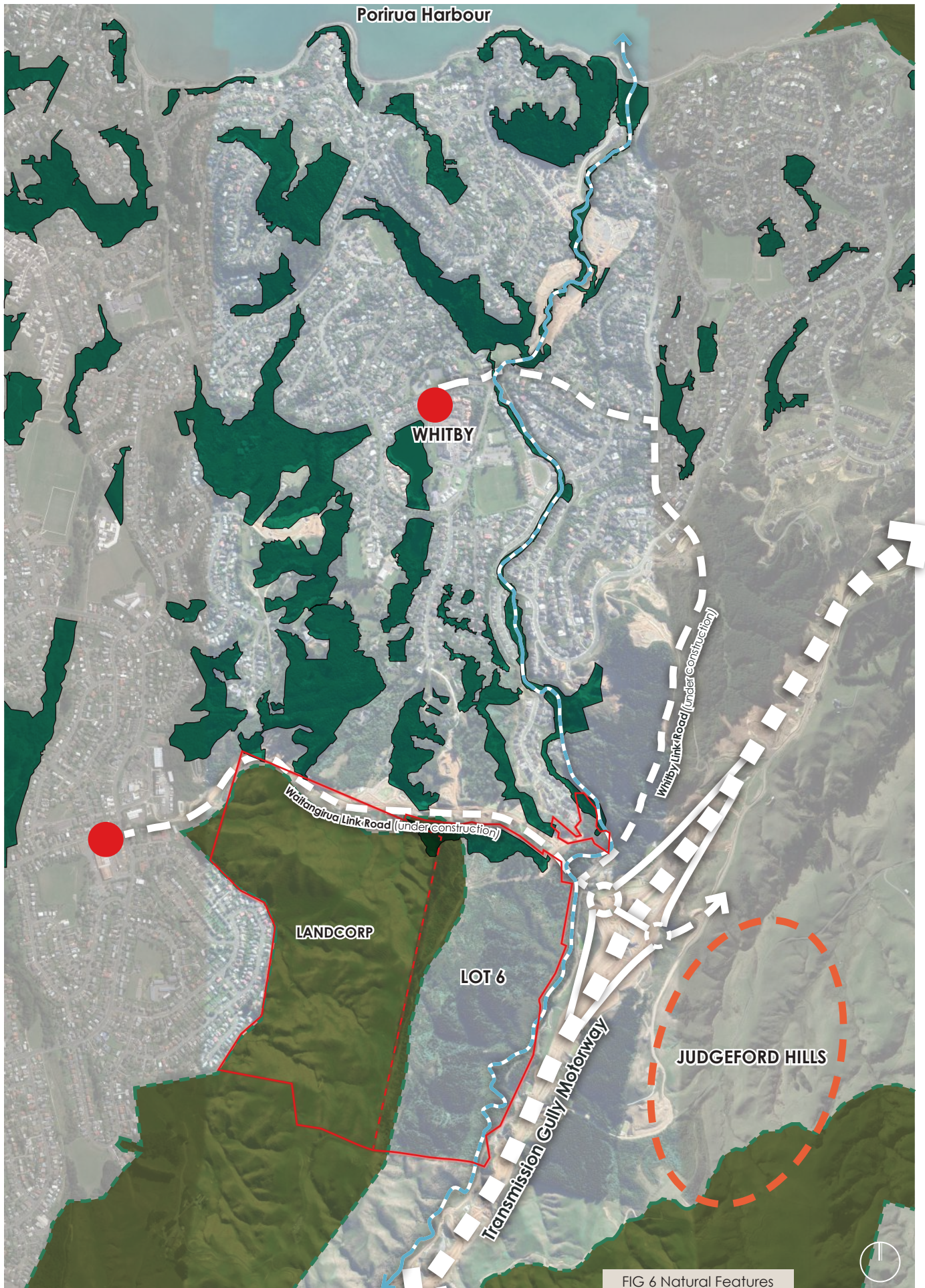


FIG 6 Natural Features
source: Google

- Significant Natural Areas
- Special Amenity Landscapes
- Duck Creek

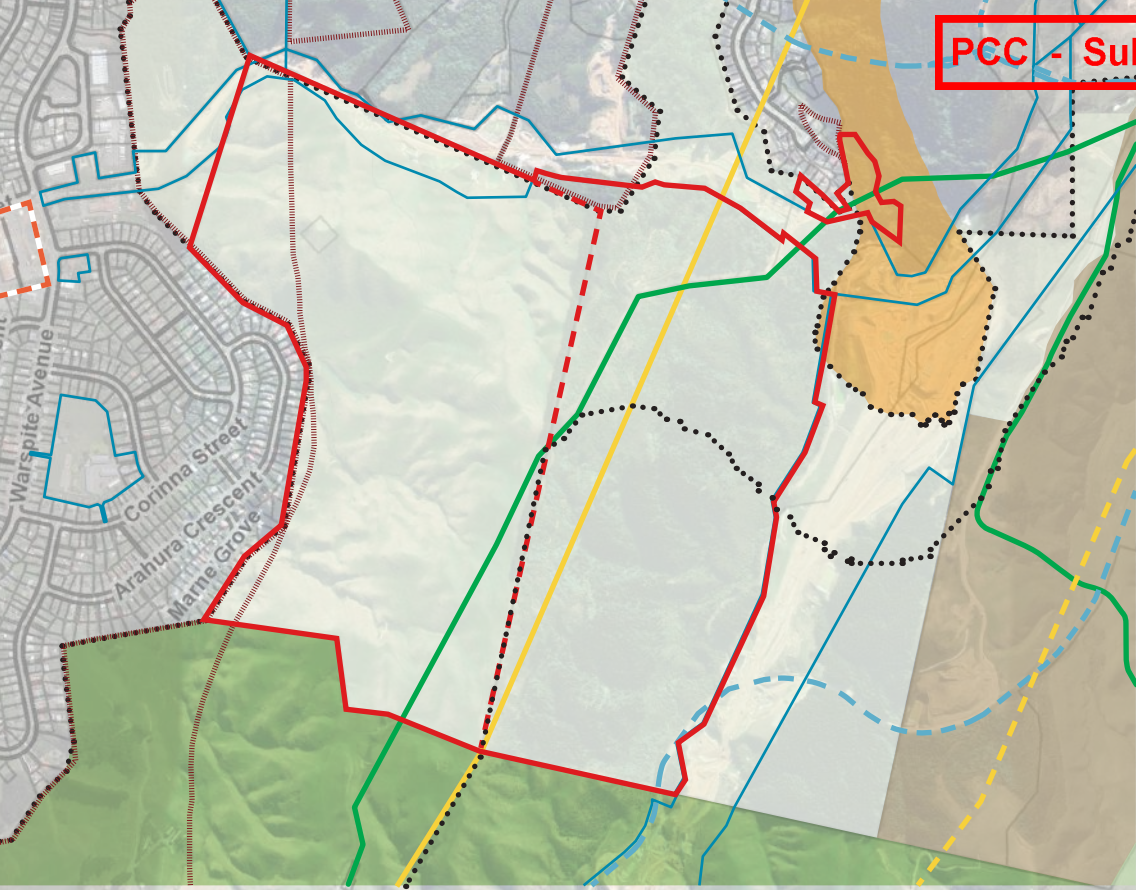


FIG 7 - Planning and Infrastructure

4.5 PLANNING AND INFRASTRUCTURE

The site is traversed by two major infrastructure corridors, namely:

- high voltage overhead transmission lines
- gas pipeline

Issues for site planning:

- no development within overhead transmission corridor (25m wide)
- ways to reduce visual impact of overhead power lines and loss of amenity
- no development over gas line
- maintenance requirements, particularly access - and implications for ownership of land under power lines and over gas line

Current Zoning

- Open Spaces Zone
- Judgeford Hills Zone
- Rural Zone

Planning Controls

- Whitby Land Protection Zone
- Designation - Rooding
- Suburban Shopping Centre Policy Area
- Landscape Protection

Hazards

- Seismic Hazard

Network Utilities

- 110kv Electricity Lines (National Grid)
- 220kv Electricity Lines (National Grid)
- Greater Wellington Mains
- Gas Pipeline Corridor

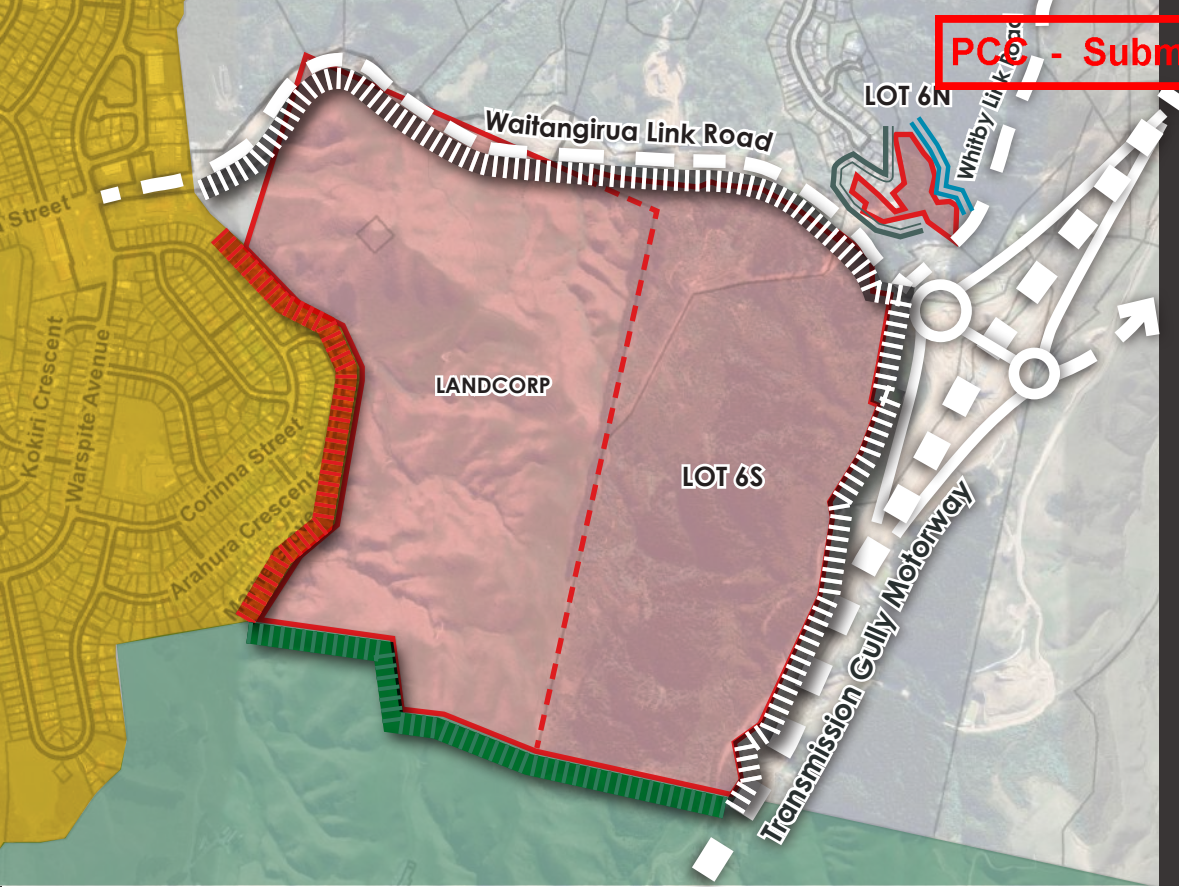


FIG 8 - Interfaces

4.6 INTERFACES

The primary site has four distinct and different interfaces, namely an existing residential community to the west, a regional park to the south, a motorway to the east and the Waitangirua Link Road to the north.

Lot 6N has interfaces with existing residential development, Duck Creek and (partially) the two Link Roads.

Issues for site planning:

- potential access (all modes) to Belmont Regional Park and nature of interface to development, if any
- potential access (pedestrians and cyclists) to Waitangirua local community, shops and other facilities
- potential elevation from Waitangirua Link Road and potential vegetated buffer
- mitigation of noise and visual effects of high traffic levels on Transmission Gully
- interface with Duck Creek (Lot 6N), required riparian corridor and potential impact on ecological value

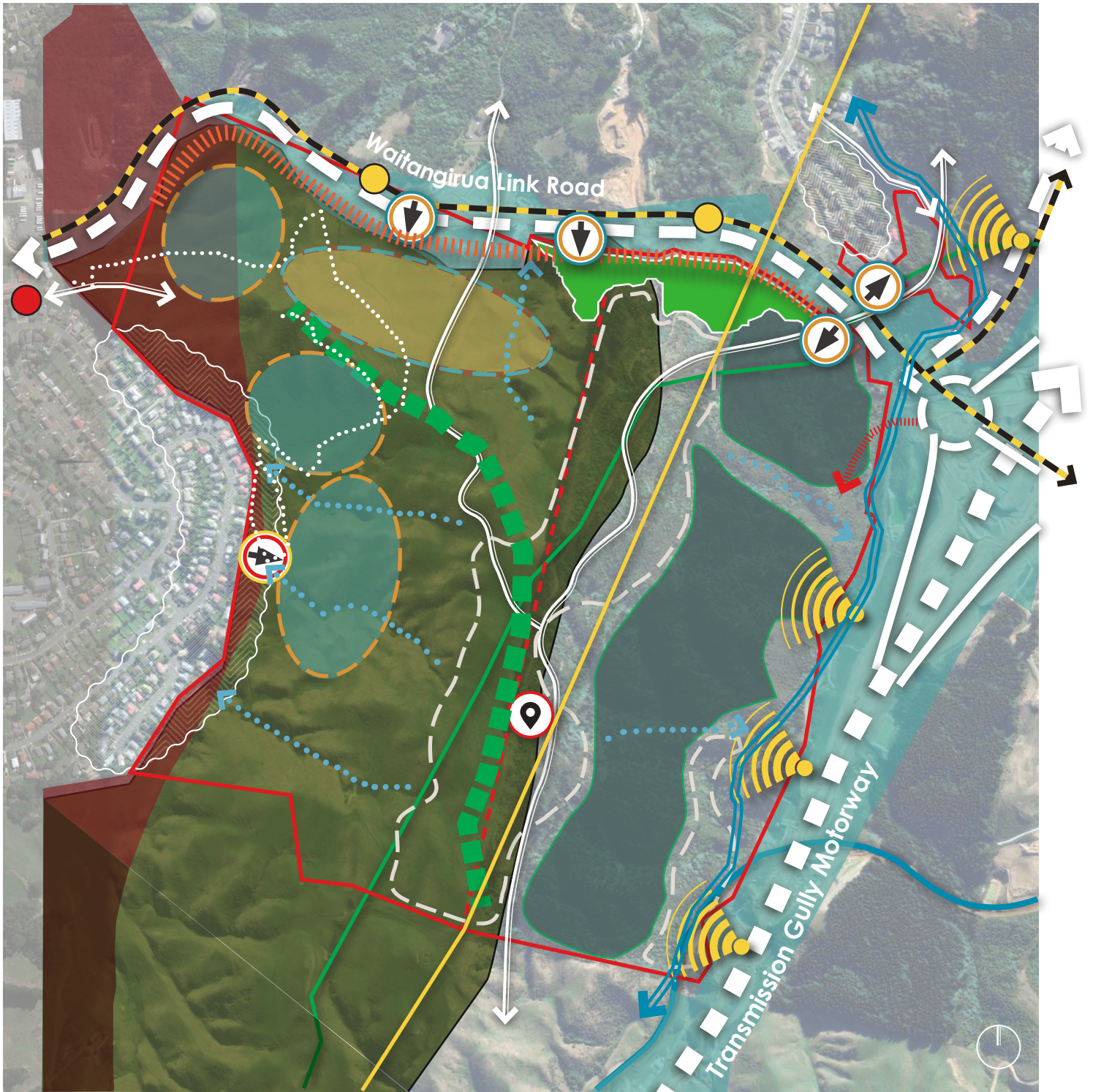











Figure 9 - Summary of Opportunities and Constraints

- | | |
|--|---|
|  Significant Natural Areas |  Greater Wellington Mains |
|  Special Amenity Landscapes |  Gas Pipeline Corridor |
|  Seismic Hazard Area |  110kv Electricity Lines (National Grid) - 25m no build corridor |
|  Designation - Roding |  Future Mega Bus Route |
| |  marae |

4.7 OPPORTUNITIES AND CONSTRAINTS

	Constraints
	aural and visual effects of Transmission Gully Motorway
	potential effects on and links to adjacent existing residential neighbourhood
	Special Amenity Landscape - restrictions for development
	access from Waitangirua Link Road restricted due to likely traffic speed/volume and topography of site which rises steeply from the road edge
	Significant Natural Areas - restrictions for development
	Gas Pipeline Corridor - ideally contained in public owned land, ie. public road
	Electricity Lines - restricts housing below
	drainage gullies

	Opportunities
	potential bus stop on future Mega Bus Route
	potential access - where the site levels with Waitangirua Link Road
	potential access to Arahura Cresceent and Waitangirua centre
	major ridgeline - design response to ensure protection as back drop
	mature pine forest - part of the natural landscape, potentially to be visual/nature buffer from the Transmission Gully Motorway
	urban development on more gentle slopes (with relatively minor earthworking)
	potential neighbourhood centre for new residential development?
	premium site with coastal views and north/west facing aspect
	potential residential activity on lower slopes adjacent to existing neighbourhoods
	Potential cycle and pedestrian link - through site linking Belmont Regional Park and Whitby and /or Waitangirua
	Potential recreational route along Duck Creek between Belmont Regional Park and Pauatahanui Inlet
	potential access from traffic circle to lower parts of the site
	existing farm tracks

5.0 RECOMMENDATIONS

This section collates the issues identified through the site analysis, focusses on recommendations to guide the future development of the site and contributes to an overall vision.

It is recommended that the following **high level urban design principles** be adopted to inform site/structure planning:

- integrating with, and building on, the existing surrounding communities of Whitby and Waitangirua
- recognising and maximising the locational advantage, proximity to infrastructure and potential for high amenity living
- balancing the landscape and ecological values of the site with the potential to accommodate growth and maximise the land resource
- promoting a new residential neighbourhood that has a unique character and strong identity linked to its natural landscape

Existing context and adjacent communities.....

Issues for site planning:

- potential impacts of development on adjacent residential neighbourhoods (positive and negative)
- access to, and capacity of, existing adjacent neighbourhood centres and social infrastructure
- relationship to and comparison with existing typical low residential density
- opportunity to support existing and proposed public transport infrastructure through the wider community

Recommendations:

- a sensitive response to the interfaces with existing residential activity on the western boundary, namely properties along Arahura Crescent, Corinna Street and Marne Grove. This includes consideration of how land is owned and managed along these rear boundaries as well as ensuring the development achieves hydraulic neutrality
- consider potential impacts of development in Lot 6N on existing residential development on Banks Boulevard and on Duck Creek
- ensure easy access to existing social and cultural infrastructure in adjacent communities and consider/assess the capacity thereof
- provide a range of lifestyle options on the site (including variety in lot size and tenure) to provide choice for the local market and a mixed demographic in the wider community
- maximise opportunities for physical integration across the wider area, including linkages to and between Belmont Regional Park, Whitby and Waitangirua
- consider opportunities to provide social, cultural and/or recreational infrastructure on the site which can attract and service existing communities
- recognise and respect the location of the Maraeroa marae and include local iwi in decision-making
- collaborate with Porirua City Council/ Kainga Ora/Ngati Toa during the regeneration of Porirua East to ensure mutual benefit and a connected community

Access and connectivity.....

Issues for site planning:

- level of connectivity/integration with surrounding residential neighbourhoods that can be achieved - vehicle, cycle and pedestrian
- opportunity for access from Link Road to all three land parcels (Lot 6 north and south and Landcorp)
- opportunity for access to Lot 6(N) from Banks Boulevard and potential pedestrian and cycle link through site to Waitangirua Link Road
- land form challenge to the provision of a connected multi-modal movement system
- public transport network - supporting wider network viability and route
- pedestrian and cycle connectivity - internal and external, particularly linked to Belmont Regional Park network and along Duck Creek
- resilience and the need for multiple access points between the sites and to the Waitangirua Link road
- staging of development and long term effects of construction

Recommendations:

- maximise opportunity for physical connections to adjacent local communities and wider areas
- prioritise active travel modes of walking, scootering and cycling to reduce dependence on private cars
- provide at least two intersections with the Waitangirua Link Road to provide resilience and a connected movement network through the site - this needs careful consideration of levels between the Link Road and adjacent land
- support potential public transport services, along Waitangirua Link Road, and potentially looping through the site by providing walking and cycling links to bus stops
- consider providing non-residential land uses which meet the daily convenience needs of the local community
- provide for connections into Belmont Regional Park
- consider a suite and hierarchy of road typologies that recognise the site conditions of land form and gradient
- balance the desire for a connected, grid movement system with the objective of respecting land form, retaining natural drainage corridors etc. Use pedestrian and cycling links to "close the grid" where vehicle routes are impractical
- consider pedestrian/cycle and ecological connections along Duck Creek to Pauatahanui Inlet
- consider recreation needs - active and passive - for the new community

Land form, topography and visibility.....

Issues for site planning:

- steep slopes - challenge for access to Waitangirua Link Road
- steep slopes - challenge for compliant public road gradients
- steep slopes - requirement for costly earthworks and challenge to achieving cut to fill balance
- steep slopes - visual effects of earthworks on elevated slopes
- visual sensitivity of the landform and potential visual impact of future development, particularly from key public viewpoints
- opportunity to capture sun and views
- opportunity to cluster development/ platforms
- potential ways to manage steep slopes - land ownership structures, covenants etc.
- visual sensitivity of elevated landform and visual change as a result of breaking the skyline
- opportunity to retain landscape character while accommodating development
- using vegetation to aid visual integration of development
- constraint for stormwater detention and treatment

Recommendations:

- explore ways to limit potential visual effect of development on the site, including:
 - identifying flatter areas of land that require less earth modification
 - identifying areas of the site which are less/not visible
 - retaining the primary/higher ridgeline as vegetated open space and locate any buildings and structures below the level of the ridge to retain a natural skyline
 - clustering development on flatter and/or less visible areas of the site to minimise earth modification
 - adopting guidelines for future development to control building form, materials, reflectivity etc.
- utilising and maximising potential of lower, less visually sensitive areas for development
- manage earthworks and ensure revegetation of batter slopes
- implement a vegetative framework which mitigates impact of development on visually sensitive areas
- consider ongoing land ownership and management mechanisms to ensure revegetation and maintenance of open spaces
- consider careful location of housing platforms to ensure capture of views and sun
- retention and revegetation of drainage corridors, along with other

Other natural features.....

Issues for site planning:

- location of Significant Natural Area along road frontage
- potential development within Special Amenity Landscape
- potential retention of some pine forest to mitigate visual effect of future development
- pine forest as ongoing carbon sink
- revegate drainage corridors with native bush
- promote regeneration of native bush in undevelopable areas
- effects of development on ecological value of Duck Creek
- potential riparian or esplanade corridor for Duck Creek

Recommendations:

- improve the ecological value of Duck Creek through riparian planting and adopting water sensitive design
- utilise existing vegetation to soften visual effects of development
- retain and revegetate drainage gullies
- apply low impact and water sensitive design measures for stormwater management
- consider utilising prominent knolls or hilltops as recreation space and “look outs”
- consider allowing regeneration of native bush on undevelopable areas
- consider land ownership and management mechanisms to ensure consistent land use (and vegetation)

Planning, Infrastructure and Interfaces.....

Issues for site planning:

- recognising landscape protection measures
- no development within overhead transmission corridor (25m wide)
- ways to reduce visual impact of overhead power lines and loss of amenity
- no development over gas line
- maintenance requirements, particularly access - and implications for ownership of land under power lines and over gas line
- potential access (all modes) to Belmont Regional Park and nature of interface to development, if any
- potential access (pedestrians and cyclists) to Waitangirua local community, shops and other facilities
- potential elevation from Waitangirua Link Road and appropriate interface, for both land use on the site and the experience along the road
- mitigation of noise and visual effects of high traffic levels on Transmission Gully
- interface with Duck Creek (Lot 6N), required riparian corridor and potential impact on ecological value

Recommendations:

- balance landscape character while utilising the land resource
- using innovative, site specific design and planning mechanisms to achieve this balance, partly through adopting bespoke development controls;
- accommodate land below powerlines within private yards (as opposed to road corridors) as a first preference
- aim to retain gas pipeline within public space (namely road corridors) as a first preference
- provide buffer planting along Transmission Gully Motorway for residential activity (if any)
- consider landscape interface/ transition between any development and Belmont Regional Park
- provide a landscaped buffer along Waitangirua Link Road to protect adjacent residential activity (if any)
- establish riparian corridor along Duck Creek to protect ecological value
- provide passive surveillance over recreational pathway along Duck Creek

6.0 CONCLUSION

This urban design assessment has been undertaken to inform the development of a draft structure plan by the wider multi-disciplinary team. This, in turn, is intended to support a submission for rezoning as part of the Porirua District Plan Review.

Informed by a clear understanding of the site's unique opportunities and constraints, an appropriate development framework can be developed which :

- provides for the efficient and sustainable use of the land while retaining its landscape value for the wider community
- contributes to accommodating growth within Porirua and on land that is well located, accessible and within a logical urban area
- enables the city to capture value from existing infrastructure and reduces growth pressure on adjacent rural areas

For: Silverwood Land 2015 Limited Partnership



Prepared by: Urban Acumen Ltd



APPENDIX FOUR

INFRASTRUCTURE REPORT



ENVELOPE ENGINEERING

LAND
STRUCTURE
MANAGE

Infrastructure Report

Silverwood Rezoning

November 2020

DOCUMENT CONTROL RECORD

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APPENDICES

Appendix 1	Concept Engineering Drawings
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1.0 INTRODUCTION

1.1 GENERAL

Silverwood Corporation Limited have engaged Envelope Engineering to prepare a report describing the pertinent engineering and land development issues associated with the development of the Silverwood and Landcorp land in the vicinity of the Waitangirua Link Road (WLR). The WLR is under construction and, we understand, when opened it will be a local road with a 50kph speed limit. WLR will provide legal road access to the site at several access points. The 'site' is shown in Figure 1 below and includes the Landcorp site, along with the three Silverwood Lots. The intent is that this report can demonstrate that, from an engineering perspective, the site is suitable for development and therefore the parts of the site currently zoned rural should be zoned as a Future Urban Zone (FUZ).

1.2 SITE DESCRIPTION

The Silverwood land comprises Lot 6 North (Sec 9 SO475749, 1.5Ha), Lot 6 South (Sec 10 SO475749, 42.3Ha), and Lot 1 South (Sec 7 SO475749, 8.3Ha). Overall, these properties are currently mostly zoned rural, with Lot 1 South and Lot 6 South having small portions zoned residential, and Lot 6 North being approximately 2/3rds zoned residential.

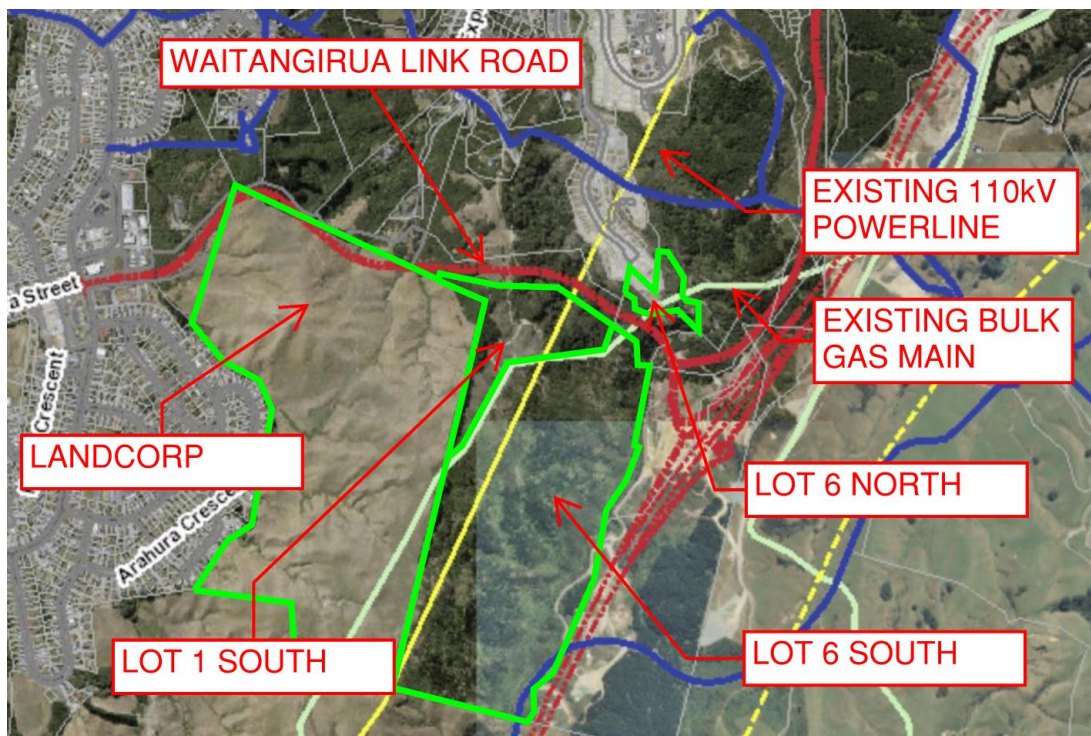


Figure 1. Site Plan

The Silverwood land originally formed part of a larger contiguous block of forestry land owned by the Silverwood Corporation. This larger block was subdivided into 6 lots (this being parts of Lots 1 and 6). Significant parts of these 6 lots have since been taken for roading purposes to enable the construction of the Transmission Gully Motorway (TGM) and the associated link roads and intersections.

The Silverwood land is currently covered predominately in exotic regrowth as a result of its former use as a plantation pinus radiata forest. The plantation trees were harvested in the early 2000's and the land has been unmaintained since that time. The regrowth has not been planted or pruned and no weed control has been carried out within the gullies or elsewhere on the property.

Currently the Landcorp land (Lot 2 DP 389024, 62.1Ha) accommodates pastoral purposes. Farm tracks have been formed across the site to access the various paddocks. The Landcorp land is all currently zoned rural.

All the land parcels adjoin the new Waitangirua Link Road.



1.3 PROPOSED REZONING AND SUBSEQUENT DEVELOPMENT

The purpose of this report is to assess the engineering issues associated with rezoning the site for residential uses. There are sections of Lot 1, Lot 6 (north), and Lot 6 (south) that are already zoned residential, and this will remain so. The intention is that this information is used in support of the remainder of the site being re-zoned to a Future Urban Zone (FUZ) during the ongoing District Plan update process.

For the above development to occur, land development works will be required on site including bulk earthworks to create stable development areas and roadways, installation of infrastructure services, and the creation of stormwater management areas. This report provides a concept level discussion of these engineering matters.

The design work carried out has assisted in determining and testing the feasibility of development earthworks, concept access road, and to identify the feasibility of bulk infrastructure provision (i.e. water reservoirs, stormwater requirements, and utility services connection points).

No detailed layouts for infrastructure have been prepared as this will be undertaken when development proposals are designed.

1.4 SITE CONSIDERATIONS

Generally, the site consists of moderately to steeply sloping land between Waitangirua and TGM. The Landcorp land varies in height between RL 100 close to Waitangirua up to RL 220 at the highest point. The Silverwood land varies in height from RL 38 at Duck Creek up to RL 210 near the boundary with the Landcorp land. Duck Creek generally follows the eastern edge of the Silverwood land.

Given its size, elevation, and topography, parts of the site are highly visible. Accordingly, modification works, if not appropriately designed and controlled, could generate significant visual effects. Additionally, over the site there are several Significant Natural Areas (SNA's) that were identified as part of Council's District Plan Review. These constraints have been considered in the preparation of this report.

On the site there is a transmission gas main running North to South. The gas main is owned and operated by First Gas. Based on previous discussions with First Gas relocation of parts of the main are possible if required and have been undertaken during the WLR construction.

There is also an overhead 110kV transmission power line running North to South across the site. As with previous developments across Whitby, due to the size and cost involved with undergrounding this, any development is likely to be designed around this power line and that is the assumption we have based our concept work on.

2.0 EARTHWORKS

2.1 GENERAL EARTHWORKS

Engeo have carried out Geotechnical investigations and have reported that the site is generally suitable for residential development. Similar to other developments in Whitby, due to the sloping nature of the site some bulk earthworks are likely to be required to develop the site. Earthworks and land modification are necessary for the following reasons:

- Land topography. The varying steepness of the site, sharply incised gullies, and the need to avoid parts of the site with high ecological values.
- To provide flat building sites that do not require extensive secondary earthworks.
- Road standards – provision of adequate roads to access the developed area.

An earthworks design has not been carried out at this stage. But the topography of the site has been studied to determine the suitability of the site for development. We can confirm that, subject to detailed design, the extent of earthworks required to develop the site is feasible and similar in extent to typical developments in the area. Detailed earthworks design will require the consideration of Ecological, Geotechnical, Civil, Landscape, Urban Design, and Traffic Engineering inputs.



2.2 EROSION AND SEDIMENT CONTROL

2.2.1 General

Future development involves carrying out significant quantities of earthworks on moderately steep land adjacent to a number of streams. Accordingly, developing robust erosion and sediment controls is important. This will need to be considered from the outset and the preliminary design of earthworks must include consideration of how to reduce these risks through design as well as construction controls.

2.2.2 Construction Controls - ECMP

To control the construction risks we propose development of a comprehensive Earthworks and Construction Management Plan (ECMP) which will detail all risks along with appropriate control measures, and monitoring programmes which will be in place throughout the construction period until all parts of the site have been stabilised. This will be a collaborative document prepared by the engineering consultants and with input from Council and detailed information and programme planning provided by the Contractor.

It is likely that adherence to this plan would be required via consent conditions of future Porirua City Council and Greater Wellington Regional Council resource consents.

2.2.3 Flocculation - FMP

High quality efficient sediment control devices are proposed for the site. These will more than likely involve Sediment Retention Ponds. It is likely that control of sediment on this site will additionally require the use of a flocculant within sediment ponds and bunds and the use of this would be controlled by a Flocculation Management Plan (FMP).

3.0 ROADING

We, working with Stantec, have identified 4 likely access points to the site from the WLR. We envisage that these could be constructed independently from each other to enable the various parts of the site to be developed at different stages or independently from each other.

Access 1

This is the access point to Lot 1 South; at this stage we envisage this road would just provide access to this block with the WLR being utilised to connect this part to the wider development. The proposed location was identified on the WLR plans.

Access 2

This is the access point to Lot 6 South; it could provide access to this Lot only or could also be linked to the Landcorp land via internal roads. As with access 1 this location was identified on the WLR plans.

Access 3

This is the main access to the Landcorp land and would be able to connect to internal development roads to access most of the site, other access points may also be desirable subject to detailed design.

Access 4

This provides access to the Lot 6 North block of land and would provide access to this block only. It would be a cul-de-sac but could provide a pedestrian link to Banks Boulevard by connecting with the existing formed walkway.

Our Plan No: 1515-01-950 P1, shows the four proposed access locations.

4.0 WASTEWATER

4.1 EXISTING WASTEWATER

There is currently no existing **public** wastewater drainage on the site.



There is blanked off wastewater connection located at the point where Lot 6 North adjoins Banks Boulevard. This is a 150mm diameter pipe at the property boundary and along Banks Boulevard. This is the lowest point of the development site and would be a suitable connection point for some of the development.

The 150mm pipe has some spare capacity and would be able to service some of the developed site. Peak wet-weather flow attenuation is likely to be required as we understand the downstream network throughout Whitby has limited spare capacity.

Additionally, there is an existing wastewater manhole adjacent to the WLR at Warspite Avenue. We believe this would provide another suitable connection point for part of the development. As with the Banks Boulevard connection this is likely to initially require attenuation of peak wet weather flows. As a part of the Porirua East regeneration project there are planned upgrades to the wastewater network on this side of the city. These upgrades may reduce the requirement for peak flow attenuation. Subject to detailed design and discussions with Wellington Water, it may be possible for this connection to service the entire site.

To summarise, our current understanding is that:

- Planned upgrades to the Porirua Wastewater Treatment Plant mean that the WWTP has sufficient capacity to cater for development of the Whitby South site.
- The existing public wastewater reticulation located downstream of the site (either through Whitby or Waitangirua), leading to the WWTP, has some capacity to service the site. This capacity is constrained during wet weather, and attenuation is likely to be required to enable the fully developed site to be serviced.
- Upgrades to the Porirua East wastewater network may mean that this is the preferred connection point for a larger proportion of the site.

Wastewater discharge from the fully developed site could not connect to the existing public downstream reticulation without the current capacity issues being addressed. Wastewater disposal options for the site are discussed below.

4.2 PROPOSED WASTEWATER

4.2.1 Development Reticulation

Due to the sloping nature of the site and based on our concept design we believe most of the development could be serviced with a gravity-based wastewater reticulation network. This would mean that each new house site would have access to a gravity connection for wastewater. Generally, this pipework would be relatively shallow (1-2m depth).

There may be parts of the site that will be difficult to get a gravity connection to. In these locations a small wastewater pump station will be required to get the flows into the gravity network.

The assumption of a gravity based system is based on 2 connection points, with the Silverwood land connected to Banks Boulevard and the Landcorp land connected to Warspite Avenue. If only one connection point is utilised, then a pump station will be required to pump wastewater up to the ridgeline (or high point of the WLR).

4.2.2 Flow Mitigation Options

As noted above, the current off-site reticulation system has existing capacity constraints, which are believed to be caused by a combination of pump station constraints, pipe sizing and, and infiltration problems. Depending on the timing of development, relative to network maintenance and upgrades some peak flow attenuation is likely to be required.

The two main options for this attenuation are:

- Centralised Network Control of Peak Flows** - Controlling peak flows from the site could be done by providing detention storage with discharge to existing reticulation at off-peak periods. Storage would be via a series of tanks which do not all need to be in one place. Storage equipment could be installed progressively to suit the development. Part of the control of peak flows could include sustainable options such as the re-cycling of greywater for toilet flushing,



which would reduce overall water demand and also reduce the overall volume of wastewater generated by the development and directed to the WWTP.

- ii) **Private Peak Flow Control** - This option involves the use of a comprehensive low-pressure wastewater system. This involves individual pumps with an on-site small storage chamber to be located on each individual residential lot. From the pump chamber a pressurised reticulation network is directed towards the downstream public council wastewater network. Peak flows are controlled on each site within the small storage tank.

Either option for peak flow control which would allow the proposed development to connect to downstream reticulation network without affecting capacity issues. There would be no requirement for Council to undertake immediate wholesale upgrades to the downstream reticulation system

5.0 STORMWATER

5.1 EXISTING STORMWATER FLOWS

There are two main existing stormwater catchment areas on the site. The parts of the site to the West of the ridgeline fall towards Waitangirua with the Eastern part of the site falling towards Duck Creek. The Waitangirua catchment is currently captured and controlled by several stormwater inlets along the base of the Landcorp land. The stormwater is piped from there through Waitangirua before eventually discharging into Kenepuru Stream.

The Duck Creek catchment flows overland down towards Duck Creek which is within the Eastern part of the Lot 6 South land.

Both catchments have downstream capacity constraints and development of the site is likely to require some peak flow attenuation to avoid increasing downstream flood risk.

Due to the sloping nature of the site there is no significant natural flood storage/ponding within the site. There are some small man-made ponds within the Landcorp land for stock use.

5.2 PROPOSED STORMWATER FLOWS

The main points we have considered at this concept stage are:

- Stormwater attenuation so that post development peak runoff from the site is no more than pre-development peak runoff is likely to be required.
- Where possible, multiple discharge points will be used to match the existing gully systems and maintain a similar downstream hydrology.
- Stormwater discharge from the proposed development should be managed to ensure quantity is controlled and stormwater quality is managed to avoid adverse environmental effects.

Possible options to achieve the above requirements are outlined and discussed in Section 5.3 and 5.4 below:

5.3 STORMWATER ATTENUATION

Development of this site will result in increased stormwater run-off rates, particularly during lower intensity rain events. This is due to the higher proportion of impervious surfaces (roads, driveways, and roofs) present on the developed site.

Based on our understanding of the soil types present on this site and our experience with developments in the area we do not believe the ground conditions will be suitable for a soakage-based stormwater discharge system. Typically, the greywacke soils and colluvium present on site provide very low soakage rates.

We therefore believe that stormwater storage is the most effective and feasible option to mitigate the increased run-off rates. This storage could be in the form of tanks associated with each new house, or as attenuation ponds designed for each catchment. Either approach, or a combination of both is feasible and can achieve the mitigation requirements. There is ample space within the site to locate attenuation ponds if these are the preferred option.



5.4 STORMWATER TREATMENT

Any proposed development on the site is likely to need to meet the stormwater treatment requirements outlined in the 'Treatment Device Guideline' issued by Wellington Water. This document provides a detailed guide to assist with the design of several different stormwater treatment devices including wetlands, bioretention devices, and vegetated swales. Based on our study of the site, a variety of measures could be used to provide the required treatment. Bioretention is likely to be more effective on the steeper parts of the site, whereas swales or wetlands may be effective on the flatter parts. There is ample space available on the site to construct adequate stormwater treatment devices for the development of the site.

6.0 WATER SUPPLY

6.1 EXISTING WATER SUPPLY

There is no existing potable water supply on the site. Similar to the wastewater, there is a 150mm diameter public water main in Banks Boulevard. Using this to service the site would require an approximately 75m length of water pipe to be installed under the public walkway (Recreation Reserve) between Banks Boulevard and Lot 6 North.

There is an existing Reservoir at the end of Stemhead Lane just to the North of WLR. This provides an access point to the public bulk water main network which could be extended along the WLR and onto the site.

6.2 PROPOSED WATER SUPPLY

We understand that bulk water supply (volume of water able to be supplied) is available in this area to cater for the development of the site. However, network extension and extra local storage would be required. This would take the form of a new reservoirs with a total storage dependent on the number of houses developed on the site.

The total site elevation ranges between RL 38 to RL 220. Based on our concept work to date, we believe most development is likely to occur between RL 100 and RL 200.

Our Plan No: 1515-01-951 P1, titled Bulk Water shows a possible location for the water reservoir within the site. This would be excavated into the hillside and planted/landscaped around to minimise their visibility. This is at an approximate height of 210m RL, so would be able to service most of the site. If development was to occur on lower parts of the site, a pressure reducing valve may be required to reduce water pressures to an acceptable level for those areas.

The reservoir would be fed by connection from the existing public bulk water reticulation at Stemhead Lane. The reservoir will then feed new proposed public watermains which will be laid along every proposed new roadway to provide water connections to each new lot. Generally, a watermain/ firemain will be provided on one side of the road and a ridermain will be laid along the other side. The firemain will be fitted with in-ground hydrants to provide for firefighting supply.

An alternative option would be building another reservoir adjacent to the existing reservoir at Stemhead Lane. There is sufficient land to enable this, however the existing reservoir has a bottom water level of (BWL) of RL 146, so would only be able to service the lower parts of the site.

7.0 POWER SUPPLY

There is an existing 110 KV overhead power transmission line passing through Silverwood Lot 6. This is owned and operated by Transpower. We have had preliminary discussions with Transpower regarding the possible undergrounding of these lines through the development site. Transpower carried out a high-level assessment with the conclusion being that the undergrounding work is technically feasible but would be at an indicative cost that is likely to be prohibitive. We are therefore assuming that existing overhead lines will remain in place and that any development will be planned around these.

Other than the 110kV overhead line, there is no existing electricity infrastructure on the site. We have had preliminary discussions with Wellington Electricity regarding servicing a possible development on this site.



They have advised that, subject to the usual network extensions and provision of localised transformers, they expect this to be feasible. Based on this, we believe the development can be serviced with electricity.

8.0 GAS SUPPLY

The utility provider (owner of the gas main) is First Gas. First Gas do not operate a reticulation network for retail use in the Wellington Region. Powerco operate the retail reticulated gas network in Wellington. We have discussed the development with Powerco and they have advised that, subject to detailed design, they would be able to service the development with a reticulated gas supply.

9.0 TELECOMMUNICATIONS

An existing fibre network is available within Waitangirua (at the base of the WLR), and within recent Whitby developments to the north of the WLR. Based on this, we believe it will be feasible to connect this site to the Chorus network. We have had preliminary discussions with Chorus who have been able to confirm that they have anticipated further development in this part of the city and therefore have sufficient spare capacity to service this development. Based on this we believe the development can be serviced with telecommunications.

10.0 CONCLUSIONS

Based on our assessment of the existing infrastructure, our investigations on-site, we are satisfied that the site is suitable for residential development and can be adequately serviced in terms of roading, stormwater, wastewater, potable water, electricity, telecommunications, and, if required, gas.

11.0 LIMITATIONS

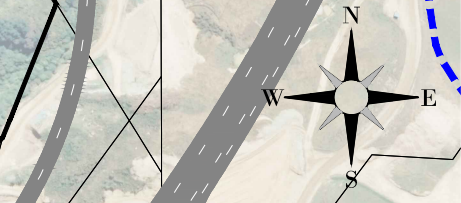
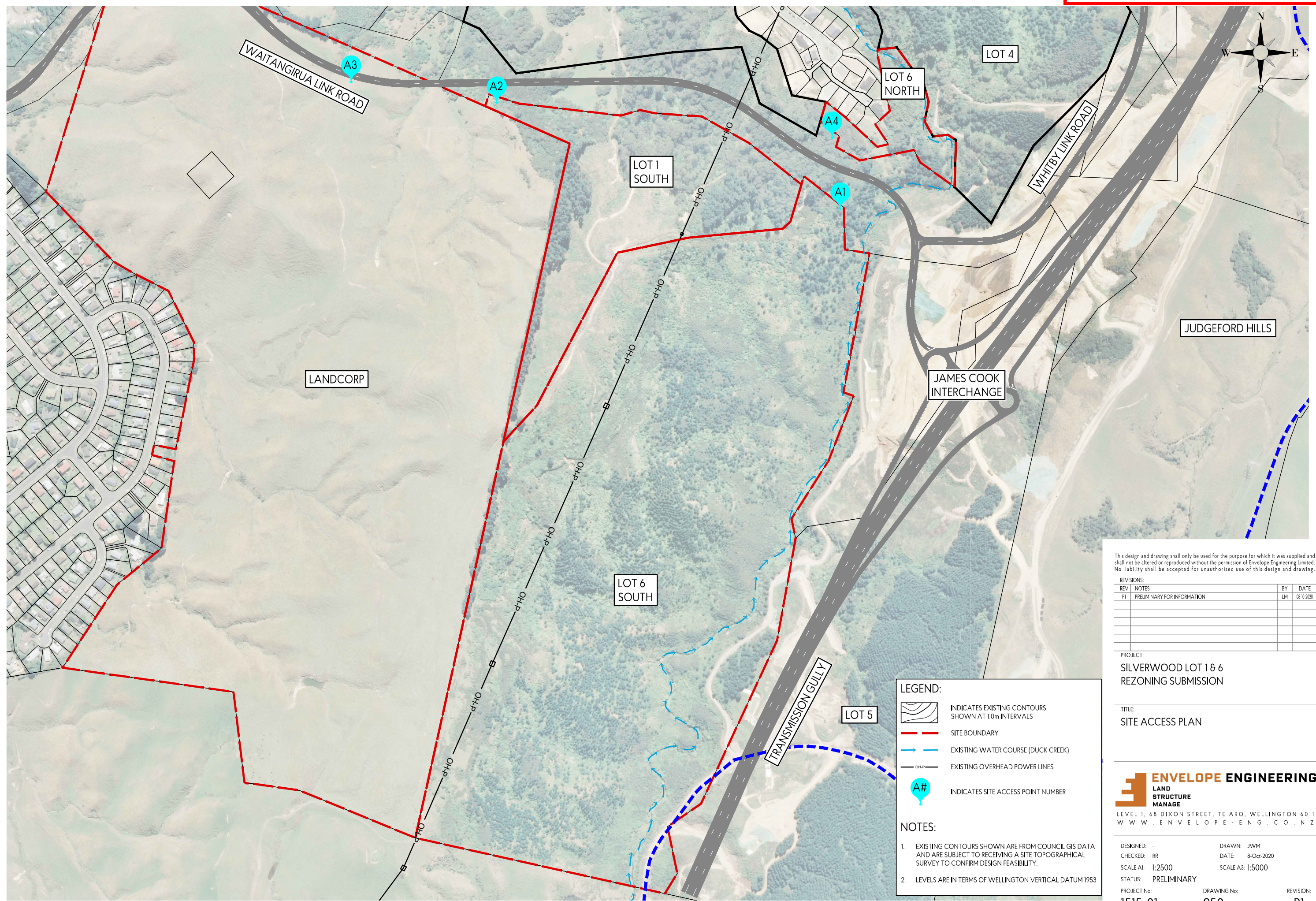
This report is for the use by Silverwood Corporation Limited only and should not be used or relied upon by any other person or entity or for any other project.

This report has been prepared for the project described to us and its extent is limited to the scope of work agreed between the client and Envelope Engineering Limited. No responsibility is accepted by Envelope Engineering Limited or its directors, servants, agents, staff or employees for the accuracy of information provided by third parties and/or the use of any part of this report in any other context or for any other purposes.



APPENDICES

APPENDIX 1
CONCEPT ENGINEERING DRAWINGS



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REVISIONS:

REV	NOTES	BY	DATE
P1	PRELIMINARY FOR INFORMATION	LM	08-10-2020

PROJECT:
SILVERWOOD LOT 1 & 6
REZONING SUBMISSION

TITLE:
SITE ACCESS PLAN

LEGEND:

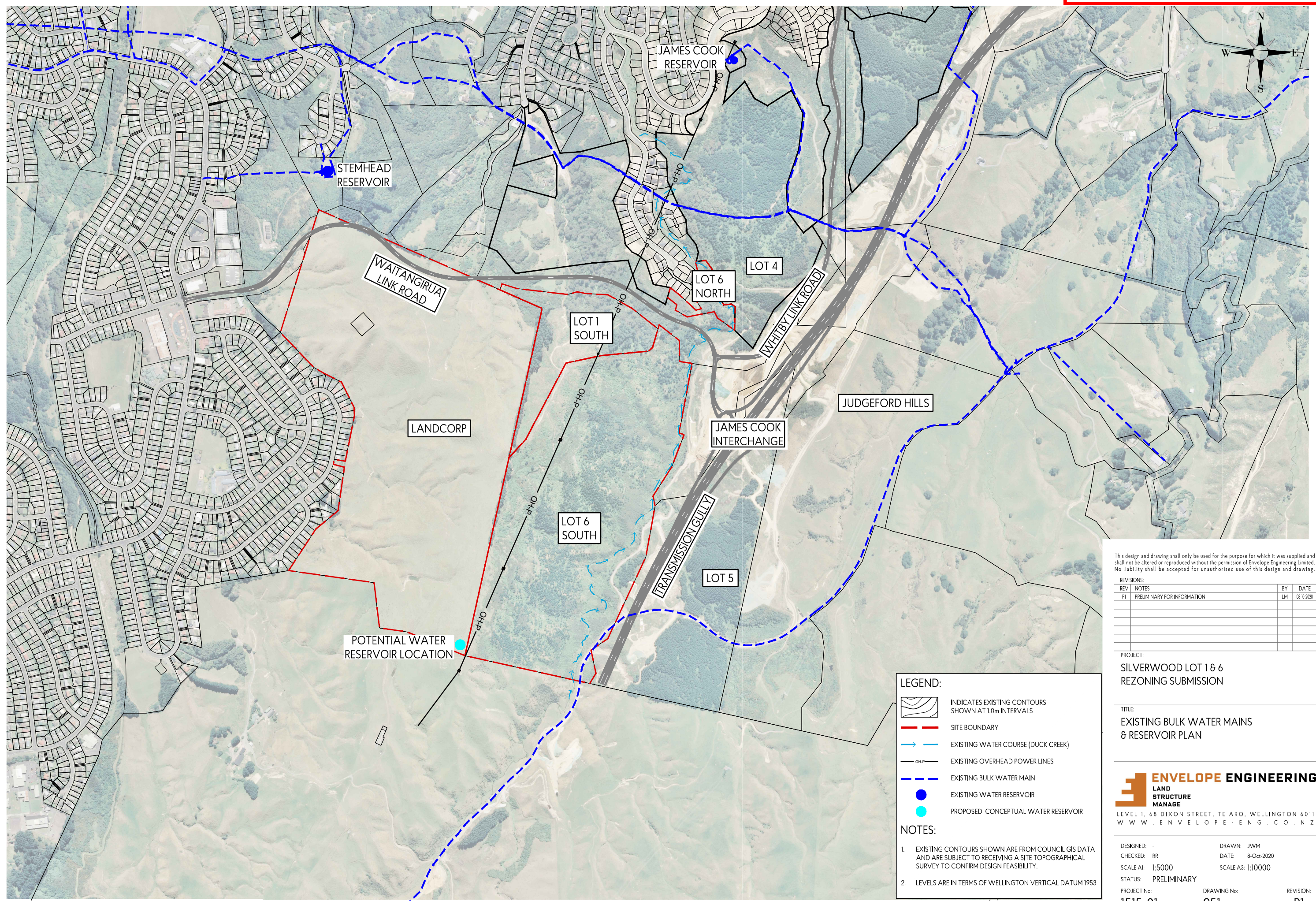
- INDICATES EXISTING CONTOURS SHOWN AT 1.0m INTERVALS
- SITE BOUNDARY
- EXISTING WATER COURSE (DUCK CREEK)
- EXISTING OVERHEAD POWER LINES
- INDICATES SITE ACCESS POINT NUMBER

- NOTES:**
- EXISTING CONTOURS SHOWN ARE FROM COUNCIL GIS DATA AND ARE SUBJECT TO RECEIVING A SITE TOPOGRAPHICAL SURVEY TO CONFIRM DESIGN FEASIBILITY.
 - LEVELS ARE IN TERMS OF WELLINGTON VERTICAL DATUM 1953

ENVELOPE ENGINEERING
LAND
STRUCTURE
MANAGE

LEVEL 1, 68 DIXON STREET, TE ARO, WELLINGTON 6011
WWW.ENVELOPE-ENG.CO.NZ

DESIGNED: -	DRAWN: JWM
CHECKED: RR	DATE: 8-Oct-2020
SCALE A1: 1:2500	SCALE A3: 1:5000
STATUS: PRELIMINARY	
PROJECT No: 1515-01	DRAWING No: 950
	REVISION: P1



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REVISIONS:

REV	NOTES	BY	DATE
P1	PRELIMINARY FOR INFORMATION	LM	08-10-2020

PROJECT:
SILVERWOOD LOT 1 & 6
REZONING SUBMISSION

TITLE:
EXISTING BULK WATER MAINS
& RESERVOIR PLAN

ENVELOPE ENGINEERING
LAND
STRUCTURE
MANAGE
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- LEGEND:**
- INDICATES EXISTING CONTOURS SHOWN AT 1.0m INTERVALS
 - SITE BOUNDARY
 - EXISTING WATER COURSE (DUCK CREEK)
 - EXISTING OVERHEAD POWER LINES
 - EXISTING BULK WATER MAIN
 - EXISTING WATER RESERVOIR
 - PROPOSED CONCEPTUAL WATER RESERVOIR

- NOTES:**
1. EXISTING CONTOURS SHOWN ARE FROM COUNCIL GIS DATA AND ARE SUBJECT TO RECEIVING A SITE TOPOGRAPHICAL SURVEY TO CONFIRM DESIGN FEASIBILITY.
 2. LEVELS ARE IN TERMS OF WELLINGTON VERTICAL DATUM 1953

DESIGNED: -	DRAWN: JWM
CHECKED: RR	DATE: 8-Oct-2020
SCALE A1: 1:5000	SCALE A3: 1:10000
STATUS: PRELIMINARY	
PROJECT No: 1515-01	DRAWING No: 951
	REVISION: P1

APPENDIX FIVE

ECOLOGICAL ASSESSMENT

SILVERWOOD, WHITBY

ECOLOGICAL ASSESSMENT FOR REZONING

Report prepared for

Silverwood Corporation Limited

Prepared by

RMA Ecology Limited

Report number and date

Report number: 2045

October 2020

BETTER ECOLOGICAL OUTCOMES

PREPARED FOR:

Silverwood Corporation Ltd

c/- Egmont Dixon Ltd

Level 4, 40 Taranaki Street

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Prepared by:	Tony Payne Senior Ecologist
Reviewed and Authorised by:	Graham Ussher Principal Ecologist

Project No. 2045

Version date: 27 October 2020

Version status: Rev1

Citation:

RMA Ecology Ltd. 27 October 2020. Silverwood, Whitby: Ecological Assessment for Plan Change. Report prepared for Silverwood Corporation Limited. 12 pages + Appendices.



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1.0 Introduction

Silverwood Corporation Limited are lodging a submission on the Porirua Proposed District Plan that seeks to rezone the ca. 114 ha site legally described as Sections 7, 9 and 10 SO 475749, and Lot 2 DP 389024 (Figures 1 to 3) to 'Future Urban Zone' ('FUZ'). If the site is rezoned FUZ, it is understood a future structure planning process / plan change will need to be progressed.

RMA Ecology Limited was commissioned by Silverwood Corporation Limited to provide ecological advice with respect to the rezoning of the Silverwood site. This report provides an assessment of ecological values, and possible impacts and effects management prepared in regard to the ecological provisions of the Porirua City Council's Proposed District Plan (PPDP), Greater Wellington Regional Council Proposed Natural Resources Plan (PNRP), Wellington Regional Policy Statement (RPS), and National Policy Statement for Freshwater Management 2020 (NPSFM).

Our brief included:

- A literature and database review to assess likely biodiversity values;
- A site walkover to identify and assess the extent (mapping) and general condition (values assessment) of ecological features, in particular vegetation, watercourses, wetlands, and habitat of indigenous wildlife;
- Input into a project team workshop, and review of draft rezoning options and draft Structure Plan concepts.
- Preparation of an ecological site assessment summary report (this report).¹

A site walkover assessment was undertaken on 15 and 16 September 2020 for ca. 52 ha of the site (Sections 7, 9 and 10 SO 475749). Site access to the ca. 63 ha 90 Arahura Crescent, Waitangirua, (Lot 2 DP 389024) 'Landcorp' portion of the site was restricted; this part of the site was assessed using desktop analysis of aerial images (recent and historical), together with our local experience of how landform and land use result in the expression of streams and wetlands, and similar sites.

Streams were classified according to the PNRP. Wetlands were classified according to the NPSFM ('natural inland wetland') as well as the PNRP. For the Landcorp portion of the site, plot data was not able to be obtained to assess status against the NPSFM and PNRP definitions, however the landuse and landform makes it likely that most, if not all, wetlands mapped on that site may qualify as PNRP wetlands and possibly 'natural inland wetland' under the NPSFM.

Indigenous vegetation was assessed against the PCCDP and RPS vegetation significance criteria to determine SNA-qualifying status.

¹ This work has been undertaken in accordance with our agreement to provide ecological advice to Silverwood Corporation Limited, dated 26 August 2020.

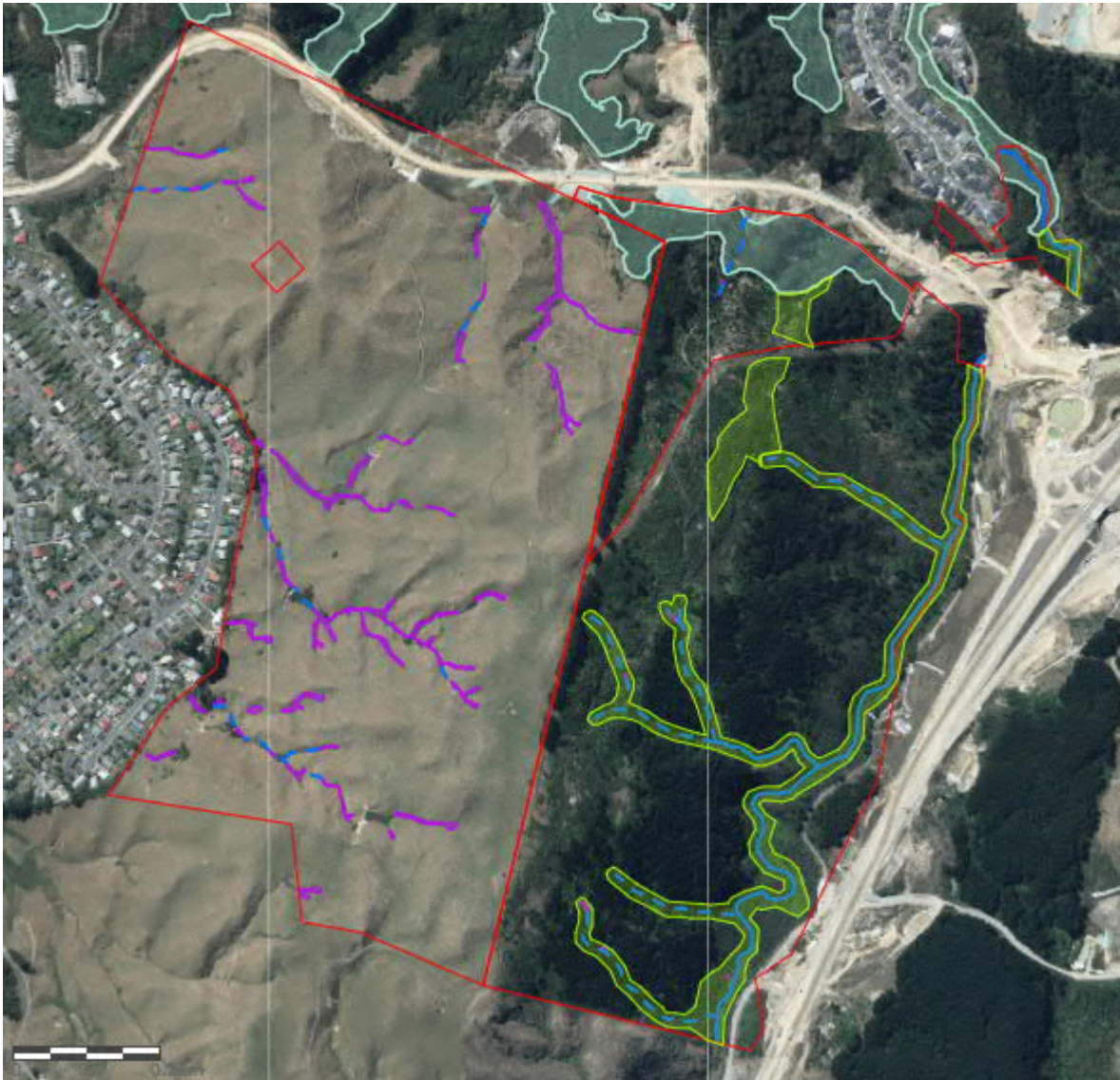


Figure 1. Ecological features at the Silverwood site. Permanent stream (solid blue line), intermittent stream (dashed blue line), PNRP/ NPSFM wetland (purple area), PCCDP SNA (teal area), qualifying SNA (light green area), site boundary (red line).



Figure 2. Ecological features at the northern extent of the Silverwood site. Permanent stream (solid blue line), intermittent stream (dashed blue line), PNRP/ NPSFM wetland (purple area), PCCDP SNA (teal area), qualifying SNA (light green area), site boundary (red line).

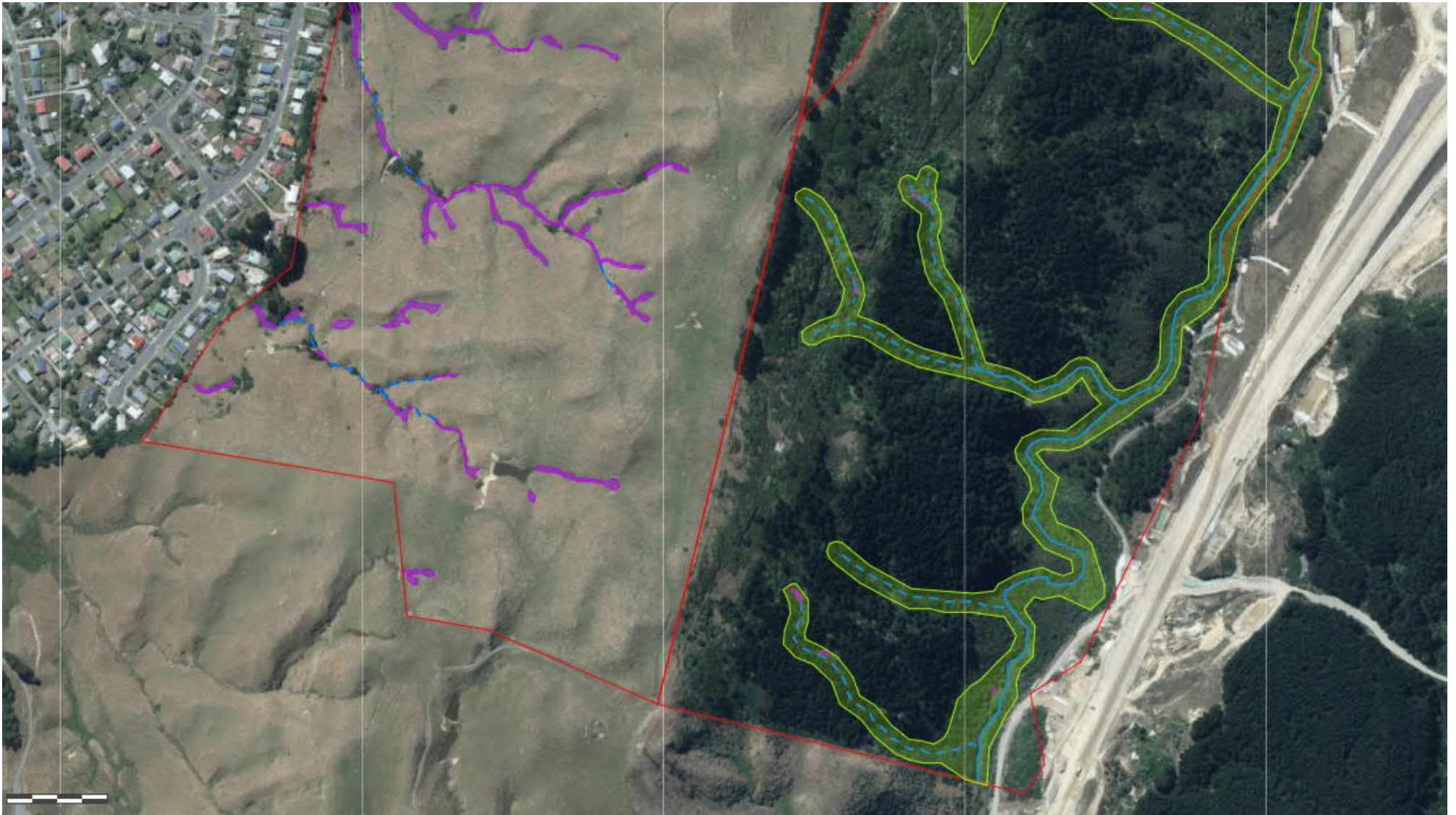


Figure 3. Ecological features at the southern extent of the Silverwood site. Permanent stream (solid blue line), intermittent stream (dashed blue line), PNRP/ NPSFM wetland (purple area), PCCDP SNA (teal area), qualifying SNA (light green area), site boundary (red line).

2.0 Overview of current environment

2.1 Terrestrial environment

The subject site occupies ca. 114 ha of hill land situated between Belmont Regional Park to the south, the residential suburb of Waitangirua to the west, Transmission Gully the east, and Whitby residential suburbs to the north.

The western 63 ha Landcorp portion of the site has been cleared of native forest and has been farmed for many decades. Vegetation communities are almost entirely dominated by pastoral grassland on the upper ridges, with discrete patches of low scrub (most likely gorse) within the lower gully systems.

The adjoining eastern 50 ha portion of the site (Sections 7 and 10 SO 475749) has also been cleared of the original forest, and was converted to pine forest in the late 1980s. Subsequent to this, pine forest has been harvested in areas, and now this portion of the site consists of mixed vegetation communities, including mature pine forest, early successional gorse/mahoe (*Melicytus ramiflorus*) scrub where pine forest has recently been cleared, isolated patches of regenerating mahoe scrub and tree ferns in areas surrounding Duck Creek and its tributaries, and seral kanuka forest (*Kunzea robusta*) beneath the transmission lines where pine forest wasn't originally established. This seral kanuka forest is also present on the northern boundary of the site beneath emergent mature eucalyptus trees and this area is classified as a Significant Natural Area (SNA084) in the PCCDP.

The isolated northern parcel of the site (Section 9 SO 475749) consists of mature exotic trees, and native seral riparian forest lining Duck Creek which is classified as a SNA (SNA083).

There are two areas on site listed as SNAs in the PCCDP, details are provided in Table 1 below.

Table 1. Significant Natural Areas identified on the Silverwood site (wording as per PCCDP).

Site ID	Area on site	Site name	Site summary
SNA083	9,087 m ²	Duck Creek & Saltmarsh	Rare natural stream and estuarine network with high habitat values for fish and forest, wetland and shore-birds. This site includes kānuka (presumably <i>Kunzea robusta</i> ; Threatened-Nationally Vulnerable), and indigenous vegetation on Acutely Threatened land environments.
SNA084	27,725 m ²	Exploration Drive Kānuka Forest	An area of advanced regenerating kānuka-mānuka-māhoe-mamaku forest, on lowland hills, with a good diversity of podocarp seedlings in the understorey including tōtara. This large site significantly enhances connectivity between eastern Porirua and Whitby.

In addition to the SNAs identified in the PPDP there are two other areas that meet the criteria in Policy 23 of the RPS for determining significant indigenous biodiversity values. These areas include the seral kanuka forest beneath the transmission lines, which meets criterion (c) and the riparian margins surrounding Duck Creek which meets criterion (d)(i). The Policy 23 criteria for identifying ecosystems and habitats with significant indigenous biodiversity values is provided in Appendix A. The two areas that we have assessed as qualifying as SNAs are shown on Figures 1-3 as light green shaded polygons.

2.2 Freshwater environment

The site is divided into two catchments. The western Landcorp portion of the site is part the wider Porirua Stream catchment, and the eastern 52 ha of the site is part of the Duck Creek catchment, both of which ultimately feed into the Porirua Harbour. Both catchments are listed in the RPS as a 'river with significant indigenous ecosystems', and are identified as having inanga spawning habitat at the reach of tidal influence, and the streams and their tributaries as having habitat for threatened indigenous fish species, and habitat for six or more migratory indigenous fish species.

The Landcorp portion of the site consists of the upper catchments of ten (10) small unnamed watercourses. From a review of aerial images and recent experience surveying similar environments in the region, the gullies consist of a degraded mosaic of mostly small intermittent streams, and novel (induced) wetlands. As with many other sites in the district, historic agricultural activities over a long period of time will have resulted in significant modification of the catchments, such that many of the small forested streams have been converted to induced grassland wetlands. This arises through increased sedimentation into watercourses during land clearance and subsequent farming, over time. While these wetlands have almost certainly appeared as a result of farming and stock activity, they are likely to meet the criteria in the NPSFM 2020 definition of a "natural inland wetland", which are defined primarily on the basis of their vegetation composition and hydrology. The NPSFM sets requirements for regional councils to map inland natural wetlands and we understand GWRC are soon to be commencing this process.

The eastern portion of the site is bounded by the main stem of Duck Creek, and four small, predominantly intermittent tributaries flow from west to east down the steep slope. The streams are of relatively high ecological value, with hard-bottomed stream beds, diverse morphological features, and high shading from dense riparian scrub and pine forest.

2.3 Native Fauna

It is expected that a wide range of local native birds that occur in the surrounding rural and residential area would frequent the site – almost all of which would be common cosmopolitan species. Species of birds listed as 'Threatened' or 'At Risk' that may utilise the site for nesting are most likely limited to the 'At Risk' New Zealand falcon (*Falco novaeseelandiae*), which may use the scrub/ forestry slash areas on the upper ridge of the Silverwood site as nesting sites, and the 'At Risk' New Zealand pipit (*Anthus novaeseelandiae*) which nests in rough pasture and dense groundcover vegetation. As part of any resource consent process a detailed survey for these species should be undertaken.

The areas of scrub and rank grass throughout the site provide suitable habitat for the 'At Risk' listed glossy brown skink (*Oligosoma zelandicum*), northern grass skink (*Oligosoma polychroma*) and copper skink (*Oligosoma aeneum*). The kanuka forest also provides suitable habitat for the 'At Risk' barking gecko (*Naultinus punctatus*) and 'At Risk' Ngahere gecko (*Mokopirirakau* 'Southern North Island'). Again, as part of any resource consent process a detailed survey for these species should be undertaken.

Long-tailed bats/ pekapeka (*Chalinolobus tuberculatus*, currently classified 'nationally vulnerable' - O'Donnell et. al., 2011), require large trees (including standing dead trees) with cavities (e.g. deep knot

holes), epiphytes or loose bark for roosting; and typically use linear landscape features such as bush edges, gullies, water courses and roadways to transit between roosting and feeding sites.

The closest survey records are ca. 3.5 km west of the site, undertaken in six locations in 2019 as part of the SH58 project. No bats were recorded as part of that survey. In addition, a number of surveys have been undertaken within a 20 km radius of the site with no records of bats detected at any of those surveys.

While the site supports some characteristics preferred by bats, (e.g. mature native trees along a watercourse), due to the lack of any confirmed records and null results from surrounding surveys, it is unlikely that a resident long-tailed bat population would occur onsite, or even transit through the site on occasion based on these results.

3.0 Summary of ecological values

In our view, the most important ecological values on site include:

1. The main stem of Duck Creek and its tributaries;
2. The existing listed indigenous forest areas SNA083 and SNA084;
3. The riparian margins surrounding the Duck Creek catchment;
4. The kanuka forest beneath the transmission lines; and
5. The mosaic of streams and wetlands within the gullies on the Landcorp portion of the site.

4.0 Potential for incorporation of ecological values into concept design

The results from our assessment, together with our input into the draft structure plan confirms that residential development on the site can be compatible with protection and enhancement of ecological values of the subject site. This is possible for several reasons:

1. The topography of the property creates areas that would be difficult to develop and should be included as part of areas set aside for ecological enhancement and possible offsetting;
2. The relatively large size of the site compared to the size of the SNAs, enables flexibility in development and protection options;
3. The proposed development areas identified on the draft Structure Plan predominantly avoid watercourses, including streams and wetlands on site, and include appropriate buffers that will protect ecological values.

Historic land use of the subject site for pastoral farming and production forest has altered and degraded ecological values, for example through the removal of riparian vegetation, cumulative erosion and sedimentation from pasture and forest harvesting, and proliferation of weeds and pest animals in areas of regenerating scrub. A change of land use offers the opportunity to undertake ecological enhancement of degraded ecosystems that may otherwise not be undertaken should pastoral use continue.

If adopted as part of an ecologically-sensitive design, development of the site could provide a clear net-benefit over the existing land use.

4.1 Ecological values to be addressed during development

There are some important ecology-related values that will need to be addressed during further development of the structure plan and future development generally on site, including:

1. The protection for SNAs listed in the PPDP on the site;
2. The protection of additional sites that meet SNA criteria on the site. If the full protection of these areas should not be possible, offsetting should be enabled via the effects management hierarchy outlined in the PPDP;
3. The main stem stream of Duck Creek which may meet the requirement for a 20 m wide esplanade reserve under the Resource Management Act, whereby a 20 m wide esplanade reserve is required to be set aside if land is subdivided to allotments of less than 4 hectares and is adjacent to a stream of 3 m or greater in width. Restoring this riparian margin as native plantings would have great ecological benefits;
4. Policy protection of all streams on the property from reclamation, included those outside of SNAs, by way of Policy P102 in the PNRP which states that the reclamation or drainage of the beds of lakes and rivers and of wetland shall be avoided (with the exemption of ephemeral flow paths among other things) unless there are no other practicable alternative methods of providing for the activity;
5. For wetlands that meet the definition under the NPSFM of a 'natural inland wetland', the NESFW requires these are avoided from reclamation, and that a 10 m setback surrounding these are also included. Furthermore, within 100 m of the natural inland wetlands there are likely to be other development constraints, where retaining the maintenance of hydrological conditions may need to be considered as part of any future site development, in particular when considering an increase in impervious surfaces. For wetlands that are not natural inland wetlands under the NPSFM, the PNRP may place restrictions on modification. Wetlands on this site encompass streams and riparian values, hence protection of wetlands will also preserve and restore associated ecological values; and; and
6. The generally steep contour of the site, potentially requiring relatively large volumes of earthworks for development, and the need for best practice methods of site development and of erosion and sediment control.

4.2 Potential ecological impacts of development

The ecological values and constraints applying to the site mean that significant adverse ecological effects of development will need to be avoided, remedied or mitigated. This can be achieved by managing activities including:

- a. Controlling sediment generated from earthworks;
- b. Undertaking fauna salvage (lizards) and surveys (birds) as part of vegetation clearance;
- c. Minimising loss of SNA area;
- d. Minimising loss of fauna habitat on former farm and regenerating scrubland; and
- e. Preventing the introduction of animal pests and weeds by adopting biosecurity protocols.

The draft Structure Plan layout for the site will not result in significant loss of streams, or wetland areas; both are planned to be avoided where practicable, with potential impacts limited to proposed vehicle crossings. Some loss of regenerating indigenous vegetation may occur, however the areas potentially affected are small, will not affect the integrity of the remaining vegetation, and there are considerable adjoining areas over which active revegetation can be undertaken to provide for appropriate mitigation or offset.

4.3 Avoidance, remediation, mitigation and offset of adverse effects

Many of the constraints and potential adverse ecological effects identified above can be avoided, mitigated (minimised) or remedied, with any significant adverse residual effects remaining being offset through onsite restoration activities. General elements that should be considered in the further development of the structure plan to manage potential effects on ecological values include:

1. Permanent protection of SNAs and other ecologically important habitats by way of vesting in public agencies, joint private ownership through some type of body corporate or other communal ownership structure, or covenant registered against the titles of individual Lots;
2. Pest and weed control measures;
3. Planting using native species to establish shrubland and forest on priority areas, including watercourses and buffers surrounding SNAs; and
4. Best practice stormwater design including incorporation of water sensitive design measures.

5.0 Conclusions

From our involvement in the preparation of the draft Structure Plan, and from our knowledge of the site and its ecological values, we are of the view that the development of the subject site can be undertaken at an appropriate level and layout that protects important ecological values.

The development of the site offers the opportunity to significantly enhance degraded ecological values, that may not occur under the current land use. Overall, there a range of accepted management tools, and available opportunities on the site to appropriately address, and where necessary offset, the potential adverse ecological effects associated with the proposed concept rezoning and Masterplan development designs.

Report prepared by:

Reviewed by:



.....

.....

Tony Payne

Graham Ussher

Senior Ecologist

Principal Ecologist

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Appendix A: RPS Policy 23

Policy 23: Identifying indigenous ecosystems and habitats with significant indigenous biodiversity values – district and regional plans

District and regional plans shall identify and evaluate indigenous ecosystems and habitats with significant indigenous biodiversity values; these ecosystems and habitats will be considered significant if they meet one or more of the following criteria:

- (a) Representativeness: the ecosystems or habitats that are typical and characteristic examples of the full range of the original or current natural diversity of ecosystem and habitat types in a district or in the region, and:
 - (i) are no longer commonplace (less than about 30% remaining); or
 - (ii) are poorly represented in existing protected areas (less than about 20% legally protected).
- (b) Rarity: the ecosystem or habitat has biological or physical features that are scarce or threatened in a local, regional or national context. This can include individual species, rare and distinctive biological communities and physical features that are unusual or rare.
- (c) Diversity: the ecosystem or habitat has a natural diversity of ecological units, ecosystems, species and physical features within an area.
- (d) Ecological context of an area: the ecosystem or habitat:
 - (i) enhances connectivity or otherwise buffers representative, rare or diverse indigenous ecosystems and habitats; or
 - (ii) provides seasonal or core habitat for protected or threatened indigenous species.
- (e) Tangata whenua values: the ecosystem or habitat contains characteristics of special spiritual, historical or cultural significance to tangata whenua, identified in accordance with tikanga Māori.

APPENDIX SIX

LANDSCAPE EVALUATION

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**PORIRUA CITY COUNCIL
PROPOSED DISTRICT PLAN SUBMISSION
LANDSCAPE EVALUATION**

SILVERWOOD CORPORATION

November 2020

Prepared by

**Hudson Associates
Landscape Architects**

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BACKGROUND

1. Hudson Associates Landscape Architects were engaged to provide landscape architectural input into the proposed rezoning of three lots (“**the Site**”), in the south of Whitby, Porirua.
2. In the Proposed District Plan they are predominantly ‘General Rural Zone’, yet Silverwood Corporation (“**the Client**”) requests that these lots are rezoned to ‘Future Urban Zone’, given the land is suitable for urban development. For a site to be zoned future urban, the rezoning must meet the criteria of proposed Policy FUZ-P1 that includes a requirement that future urban development areas:
 1. *Are consistent with the Porirua Urban Growth Strategy 2048 (2019) ; and*
 - a) *Avoid significant adverse effects and avoid, remedy, or mitigate any other adverse effects on the identified characteristics and values of any areas identified in SCHED9 - Outstanding Natural Features and Landscapes, SCHED7 - Significant Natural Areas, SCHED11 - Coastal High Natural Character Areas and SCHED10 - Special Amenity Landscapes; and*
 - b) *Will not result in an increase in risk to people’s lives and properties within any area located in a Natural Hazard Overlay or a Coastal Hazard Overlay; or*
 2. *Are of a size, scale and location which could accommodate comprehensive and integrated future development that:*
 - a) *Is serviced by infrastructure or planned to be serviced by infrastructure in the Council’s Long Term Plan;*
 - b) *Is connected to or planned to be connected to the transport network;*
 - c) *Avoids significant adverse effects and avoids, remedies or mitigates any other adverse effects on the identified characteristics and values of any areas identified in SCHED9 - Outstanding Natural Features and Landscapes, SCHED7 - Significant Natural Areas, SCHED11 - Coastal High Natural Character Areas and SCHED10 - Special Amenity Landscapes; and*
 - d) *Will not result in an increase in risk to people’s lives and properties within any area located in a Natural Hazard Overlay or a Coastal Hazard Overlay.*
3. A Draft Structure Plan was developed by the multi-disciplinary team which outlines the intentions and guidelines for the development if the rezoning were to be accepted as part the Porirua City Council’s District Plan Review. While sufficient technical evaluation has been undertaken by the team in developing the draft structure plan it is acknowledged that, after the site is rezoned to Future Urban a subsequent plan change must be applied for that requires a structure plan and supporting technical information.
4. The potential development is referred to as Silverwood Rezoning (“**the Project**”).

SCOPE

5. This report is a Landscape Evaluation of the Draft Structure Plan, in accordance with relevant planning frameworks.
6. It has been prepared as one of the specialist reports within 'Silverwood Rezoning Evaluation Report', alongside the Draft Structure Plan. This formulates the Proposed District Plan submission, to Porirua City Council, by Silverwood Corporation ("**the Client**").
7. The report estimates the capacity of the landscape to absorb change, and the extent of potential development which may be achieved, while maintaining the identified landscape and amenity values. Furthermore, it identifies opportunities to further enrich the ecological, amenity, recreational and cultural values, particularly in the steep gullies and prominent ridgelines which are unsuitable for development.
8. Recommendations have been provided to ensure the intentions and outcomes of the Draft Structure Plan align with the values, constraints, opportunities, and landscape values of the site.
9. The evaluation work done so far is intended to inform the rezoning of the site and provide a framework for future work to develop a final structure plan prepared via a future plan change process.

LOCATION

10. The site is comprised of four lots, located within 1.2km south of Whitby Town Centre.



KEY

-  Site - Whitby South
-  5m Contour
-  Buildings
-  Transmission Gully
-  Reserves

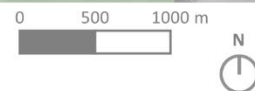


Figure 1: Location Plan - 1: 50000 @A4

SILVERWOOD REZONING SITE

11. The southern cluster of lots (**Landcorp Lot, Lot 6 South, and Lot 1 South**) are bounded by: Waitangirua suburb to the west; Belmont Regional Park to the south; Transmission Gully highway to the east; and Waitangirua Link Road to the north. These lots are currently zoned ‘General Rural Zone’, with a small portion of Lot 1 South ‘General Residential Zone’.



Figure 2: Site Plan – 1: 10000 @A4

12. On the northern side of the link road is **Lot 6 north**, located directly adjacent to a new suburban development along Banks Boulevard. Silverwood's Lot 6 north is already partially zoned 'General Residential Zone'. Therefore, it is not included in the rezoning submission, but it has been shown for development context.
13. The three sites for rezoning have a combined area of: 112.755 ha.
- **Landcorp Lot** / Waitangirua Farm - (Lot 2 DP 389024): 62.1284 ha
 - **Lot 6 South** (section 10 SO 475749): 42.3461 ha
 - **Lot 1 South** (section 7 SO 475749): 8.2805 ha

ACCESS

14. The sites currently have accessibility issues due to the construction of Transmission Gully's Waitangirua Link Road. Suitable access will need to be provided for future development to be feasible.
- **Landcorp Lot** interfaces Arahura Crescent in Waitangirua. However, this road access is not currently being utilised and is blocked by a retaining wall and shelterbelt planting. There is potential for additional access from Waitangirua Link Road.
 - **Lot 6 South** has historically been accessible from Navigation Drive –which is now extended by development along Banks Boulevard. Either way, Lot 6 South is now disconnected by Transmission Gully's Waitangirua Link Road, and suitable site access is yet to be provided.
 - **Lot 1 South** is adjacent to Lot 6 South and has similar access issues. Existing forestry tracks which meet the link road, could be improved for providing the required access.
15. Adjacent to Landcorp Farm, and Lot 6 South is Belmont Regional Park. There is a potential to connect Whitby Town Centre with Belmont Regional Park via Banks Boulevard and Duck Creek, through Lot 6 South and Lot 6 North.
16. In addition, linkage with Bothamley Park walkway via a small section of Waitangirua Link Road and Niagara Street may be possible. This would provide access to Porirua City, alongside Kenepuru Stream through large exotic trees and regenerating bush.

VISIBILITY



Figure 3: Viewpoint location map

17. The site is located on the northern prow of the prominent, low-lying ridge known as Cannons Creek Ridge. This is the local rural backdrop for the residential areas of Waitangirua, Cannon’s Creek and Aotea.

18. The rolling landform is highly visible throughout the wider Porirua area, and is experienced within the backdrop of the distant Belmont Hills.



Figure 4: View 1 - of Landcorp Lot from Waiho Terrace, Elsdon. The site is visible as the backdrop to Cannons Creek and Waitangirua suburbs



Figure 5: View 2 - of Landcorp Lot from Baxters Knob, Aotea. The site is visible to the left as the backdrop to Waitangirua suburb.



Figure 6: View 3 - of Landcorp Lot from Te Puja Drive, Aotea. The site is visible to the left as the backdrop to Waitangirua suburb.



Figure 7: View 4 - of Landcorp Lot from Warspite Ave, Cannons Creek. The site is visible as the backdrop to Waitangirua suburb.



Figure 8: View 5 - of Landcorp Lot from Waitangirua Link Road and Warspite Ave junction. The site is visible behind Waitangirua Link Road and Maraeroa Marae.



Figure 9: View 6 - of Landcorp Lot from Maraeroa Marae entrance. The site is visible behind Maraeroa Marae.



Figure 10: View 7 - of Landcorp Lot from Arahura Crescent. The site is visible behind houses and playground on Arahura Crescent.



Figure 11: View 8 - of Lot 6 South, Lot 1 South, and Landcorp Lot from Grays Road, Pauatahanui.



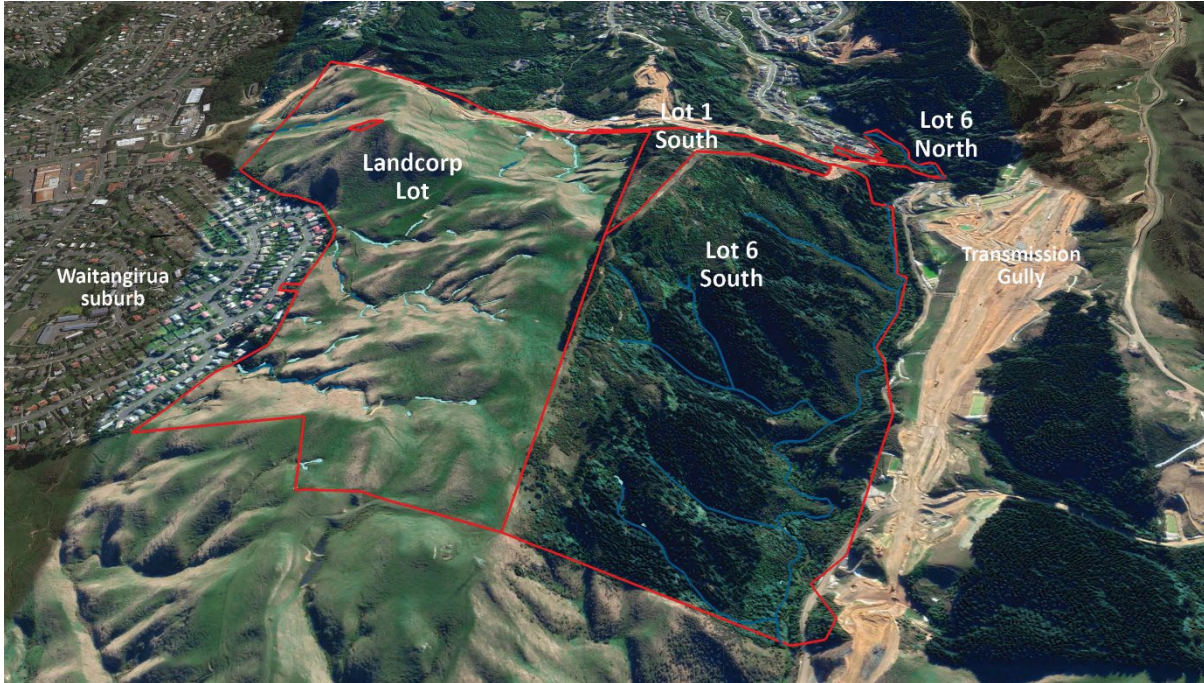
Figure 12: View 9 - of Lot 6 South, Lot 1 South, and Landcorp Lot from Samwell Drive, Whitby.



Figure 13: View 10 - of Lot 6 South, Lot 1 South, and Landcorp Lot from Navigation Drive, Whitby. The site is visible behind houses along Navigation Drive.

CHARACTERISATION

19. The site has a rural character. It is distinguished by exotic scrub and pasture-covered, rolling to steeply sloping, ridgelines and basins. These are contrasted by the dissecting, steep and narrow gullies running back up into the hillsides.



KEY

-  Site
-  Streams
-  Wetlands

Figure 14: Site Overview – Google Earth Terrain



Figure 15: View of Landcorp Lot – rolling hills and steep gullies. Photo taken looking north, at the junction of: Landcorp Lot, Lot 1 South, and Lot 6 South.

20. The site is also characterised as a key part of the wider Porirua basin. The prominent hillside creates a sense of enclosure to the surrounding suburbs of Waitangirua, Cannons Creek and Aotea.
21. From further away the ridgeline is set within the dramatic hills of Belmont Regional Park to the south-west. Combined with Eastern Porirua ridge, it acts as a containment for Porirua City.
22. Due to its significance, this area has been identified as a Special Amenity Landscape (“SAL”). These are district-wide overlays which identify landscapes with characteristics, identity, and amenity unique to Porirua City, which are valued by the community. **Landcorp Lot, Lot 6 South, and Lot 1 South**, are within the boundary of a Special Amenity Landscape SAL004 - Cannons Creek Ridge.

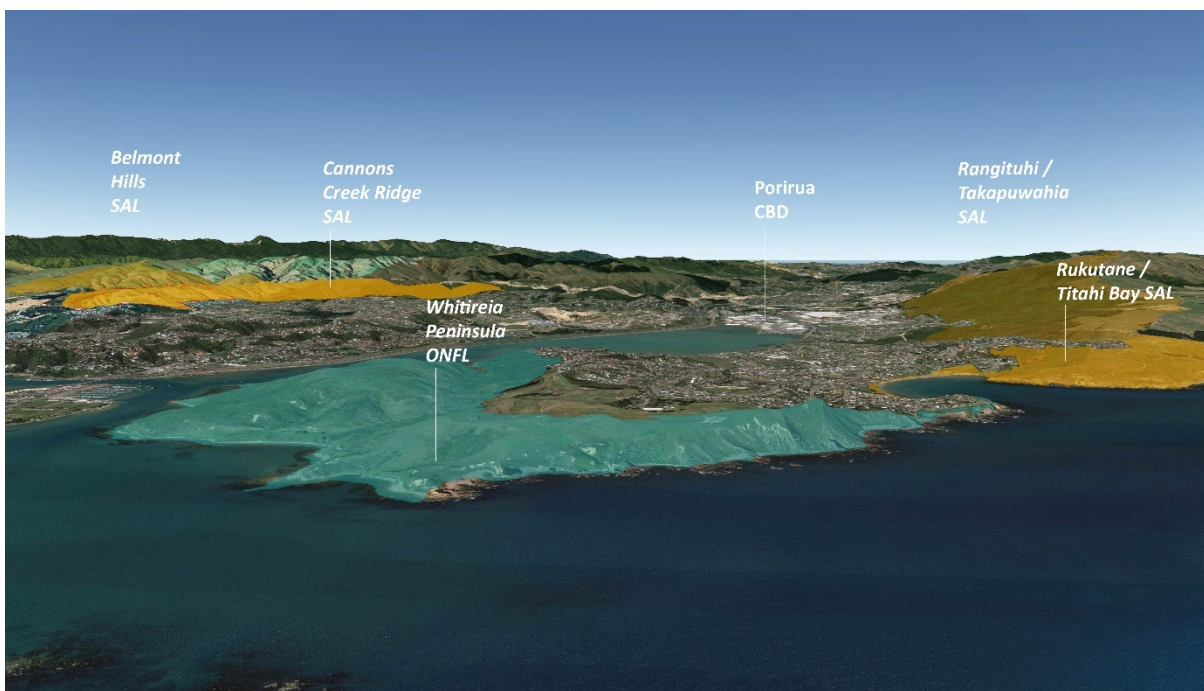


Figure 16: Google Earth view looking south towards Tawa and Wellington City - Sense of enclosure from Porirua's ONFLs and SALs



KEY

-  Special Amenity Landscape
-  Outstanding Natural Features and Landscapes
-  Site - Whitby South
-  5m Contour
-  Buildings
-  Transmission Gully
-  Reserves

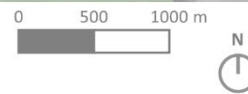


Figure 17: SAL004 - Cannons Creek Ridge

ECOLOGY AND TERRAIN

23. The land is predominantly comprised of modified landcover (pasture and retired exotic forestry) with some indigenous vegetation.
24. The Landcorp Lot is moderately and steeply sloping hills with deep gullies. At present, this is predominantly unvegetated pasture with some wetlands on the lower slopes within valleys.



Figure 18: Landcorp Lot rolling hills and steep gullies

25. Lot 6 South was previously forested pine. Now retired, this land is overrun with gorse-dominated scrub, and young wilding pines. Some areas of significant native vegetation have been identified, by ecologist Tony Payne from RMA Ecology, as mahoe-dominated scrub and forest. These are typically located on the eastern and northern aspect of the ridge.
26. Lot 1 South was retired from forestry at the same time as Lot 6 South and is in a similar condition. However, the northern portion of the lot contains significant regenerating Kānuka forest and is identified as a Significant Natural Area (“SNA”). This SNA is classified as: SNA084 - Exploration Drive Kānuka Forest.



Figure 19: Lot 6 South gorse-dominated scrub and young wilding pines with the remaining pine shelterbelt in the background.



Figure 20: Lot 1 South SNA084 - Exploration Drive Kānuka Forest, with Transmission Gully Link Road earthworks in the foreground.

PLANNING FRAMEWORK

27. The Resource Management Act 1991 (“**RMA**”), Wellington Regional Policy Statement (“**RPS**”), Porirua District Plan (“**District Plan**” or “**DP**”), Porirua Proposed District Plan (“**Proposed District Plan**” or “**PDP**”) provide the statutory context for this report.
28. The Porirua Landscape Management Strategy for Rural and Open Space Areas (2013) (“**Landscape Management Strategy**”), Draft Porirua Landscape Evaluation 2018 (Boffa Miskell) (“**Porirua Landscape Evaluation 2018**”), Porirua City Council Final Landscape Evaluation 2020 (“**Porirua Landscape Evaluation 2020**”), and Porirua Growth Strategy 2048 (“**Growth Strategy**”), provides the non-statutory context.

Porirua Growth Strategy 2048 (2019)

29. Porirua is primarily low-density housing with sprawling suburbs overtaking rural areas as demand for development grows.
30. The Porirua Growth Strategy 2048 aims to address this issue by delivering density within existing urban areas and concentrating growth around public transport nodes.
31. The Porirua Growth Strategy 2048 seeks to limit urban expansion to Transmission Gully Motorway (except for Judgeford Hills).
32. Our site is within this boundary and is identified as a ‘Potential Residential Area – Medium Term’. Therefore, the site is being considered for rezoning as part of the District Plan review.
33. The site is adjacent to Waitangirua Link road, which has been identified as a future public transport route: ‘Potential West-East Public Transport’.

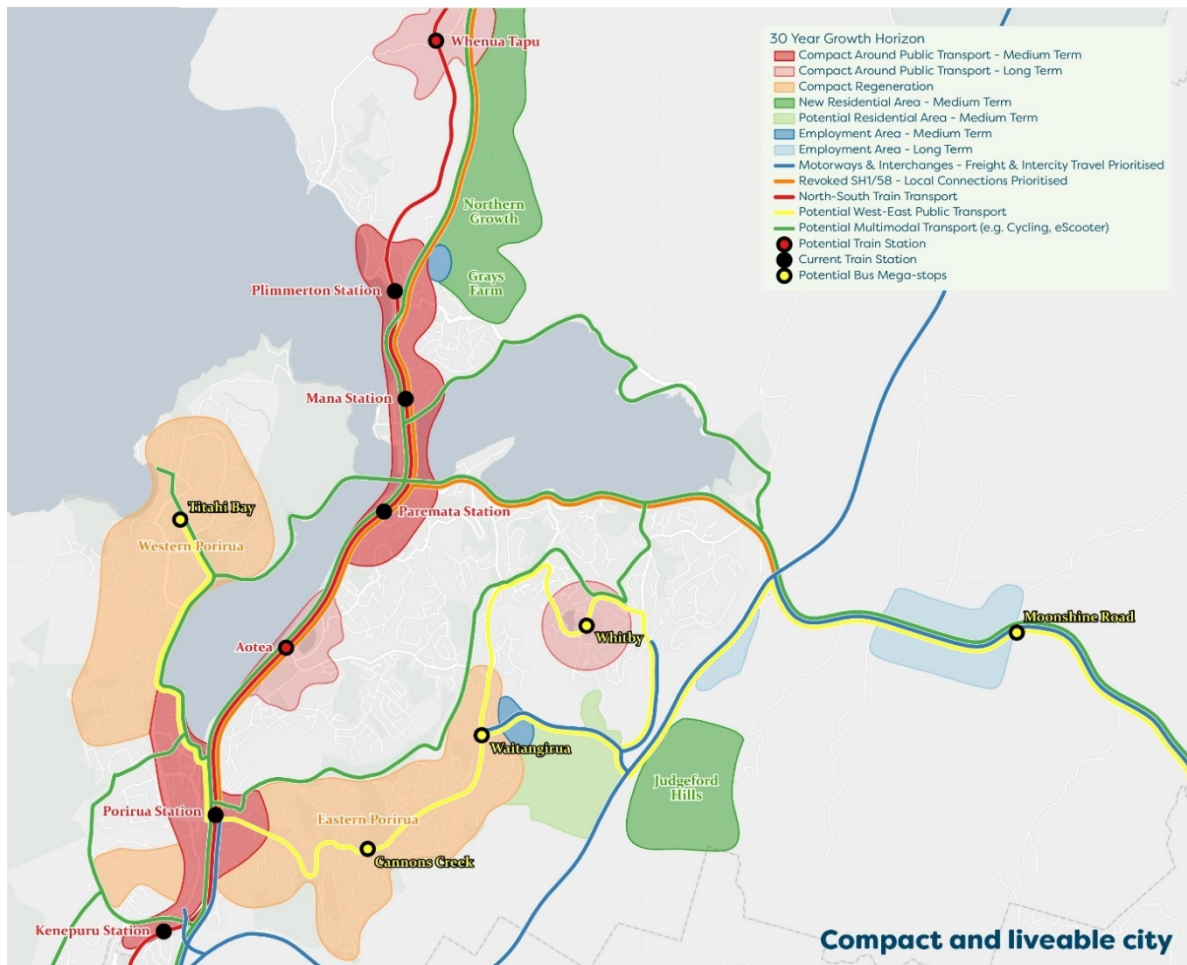


Figure 21: Porirua growth Strategy - 30 Year Growth Horizon

Resource Management Act 1991

34. Part 2, Section 6 of the RMA sets out “matters of national importance”, while Section 7 sets out “other matters”.
35. Section 6(b) requires the protection of outstanding natural features and landscapes. This section does not apply to this evaluation as there are no Outstanding Natural Feature Landscapes near the site.
36. Section 6(c) of the RMA outlines that “areas of significant indigenous vegetation and significant habitats of indigenous fauna”, shall be recognised and protected as a matter of national importance. This is applicable to significant natural areas within the site (SNA084 - Exploration Drive Kānuka Forest and SNA083 - Duck Creek & Saltmarsh).
37. Special Amenity Landscapes fall under Section 7(c) which requires the maintenance and enhancement of amenity values and Section 7(f) which requires the maintenance and enhancement of quality of the environment. This is addressed through the assessment of landscape and natural character.

Wellington Regional Policy Statement

38. The RPS defines Special Amenity Landscapes as “distinctive, widely recognised and highly valued by the community for their contribution to the amenity of the district, city or region”.
39. Furthermore, SALs are landscapes which are not considered both “natural” and “outstanding” yet are highly valued for the contribution they provide to the amenity and quality of the rural environment. SALs are areas where natural components dominate or are outstanding areas that have been modified with human activity, such as pastoral farming. They have more capacity to absorb change than ONFLs.
40. In accordance with Objective 18 of the RPS, identified landscape values of SALs that contribute to amenity and the quality of the environment must be maintained or enhanced.
41. Policy 27 requires the identification of Special Amenity Landscapes in district and regional plans.
42. Policy 28 outlines the requirement for regional and district council to include policies and/or methods for managing these landscapes to maintain or enhance their landscape values. This is not intended to prevent land use change, but rather to ensure that change is carefully considered and is appropriate in relation to the landscapes that may be identified.

Porirua Landscape Management Strategy for Rural and Open Space

43. The Porirua Landscape Management Strategy for Rural and Open Space Areas was published in 2013. It identified, mapped, described, and characterised landscape types and landscape identity areas in the Porirua region.
44. The landscape identity areas were discerned at a catchment scale with consideration to biophysical and cultural components that add to the landscape character.
45. The document established Special Amenity Landscape “candidate” sites, one of which, was Cannons Creek Ridgeline. The SAL was later reviewed, extended, and refined by Boffa Miskell (2018-2019), and Isthmus Group (2020).



Figure 22: Landscape Character Types within the Cannons Creek SAL, adapted from the Porirua Landscape Management Strategy for Rural and Open Space to include 2020 SAL boundary and site boundary.

46. Topography-centred landscape character was identified as significant for the Cannon's Creek SAL.
47. The steeper upper slopes which are highly visible “form a backdrop to the City, they are more sensitive to change and therefore there is limited capacity for change” [1, p. 86]. In addition, “the ridgelines are very prominent and therefore sensitive and vulnerable to change [1, p. 86]. The document outlined that any development on the open pastoral character should be “managed to respect the coherence of the ridgeline and contribution to the wider skyline and backdrop to the City” change [1, p. 86].

Porirua Landscape Evaluations 2018-2020

48. Porirua City Council commissioned Boffa Miskell Ltd to prepare a Draft Porirua Landscape Evaluation, with the review ongoing from early 2018 to late 2019. Part of this work involved refining the SALs to be provided to the community for consultation.
49. As set out in the RPS, three factors were assessed (natural science, sensory and shared/recognised values), using the NZILA recommended 7-point scale with reference to the NZILA Best Practice Note: Landscape Assessment and Sustainable Management 10.1

50. The assessment of values are based on expert judgement and considers physical modifications and subsequent effects on the biophysical environment, as well as effects on the existing character of the site's locality, the site's resilience and capacity, and its sensitivity and vulnerability to the proposed change. The following definitions define the terms landscape resilience, capacity, sensitivity and vulnerability, and are derived from the NZILA Best Practice Note: Landscape Assessment and Sustainable Management 10.1 [2]:

- **Landscape resilience** is the ability of the landscape to adapt to change whilst retaining its particular character and values.
- **Landscape capacity** is the amount of change that a landscape can accommodate without substantially altering or compromising its existing character or values.
- **Landscape sensitivity** is the degree to which the character and values of a particular landscape are susceptible to the scale of external change.
- **Landscape vulnerability** is the extent to which landscape character and values are at risk from a particular type of change.

51. Isthmus Group were then commissioned for review, to deliver the Porirua City Council Final Landscape Evaluation 2020. This refined the ONFLs and SALs for inclusion in the Proposed District Plan.

52. As is outlined in the Porirua Proposed District Plan, the values of the Cannons SAL range from moderate to high value:

- **Natural Sciences – Moderate value**
 - Large areas of modified landcover (pasture, exotic shelterbelts and exotic forestry);
 - Predominantly unmodified landform;
 - Pasture with some deep gullies supporting vegetated waterways is relatively typical of this area of Porirua's rural environment.
- **Sensory – High value**
 - Striking open rural backdrop with rolling landform, provides strong sense of enclosure to eastern Porirua, visible from residential areas of Waitangirua, Cannons Creek and Aotea;
 - Predominantly natural backdrop to the city to the east;
 - The mix of grazed pasture on the hills, shelterbelts and exotic forest plantations, with bush-filled gullies, has created distinctive patterns of open spaces with few prominent or incongruous structures;
 - Changes in light and shadow add a dramatic context to this open pastoral backdrop;
 - Highly visible from Transmission Gully route.

- **Shared and Recognised – High value**
 - Contained inland forested areas with important resources and links to other areas for Māori;
 - Northern end forms backdrop to Maraeroa Marae in Waitangirua;
 - Part of Belmont Regional Park which forms local backdrop for Aotea/Cannons Creek and wider area;
 - Includes walkway entrance to Belmont Regional Park from Porirua through Waitangirua Farm and Cannons Creek Lakeside Reserve;
 - Landcorp farm - historic values associated with Belmont Regional Park including Old Coach Road - the original route between Normandale and Pauatahanui and crosses Waitangirua Farm.

53. We are in agreeance with the scope and values associated with the Cannons Creek SAL outlined in the PDP.

Porirua City Council District Plan

54. The Proposed District Plan was notified on 28 August 2020, with submissions, closing on 20 November 2020. This report provides feedback on the PDP to inform how the site should be zoned in the next operative District Plan.

55. The site is currently 'GRUZ – General Rural Zone' in the operative District Plan, and the Proposed District Plan. The General Rural Zone consists of areas used predominantly for primary production activities. This zoning is suitable for its current land use.

56. As described in the PDP, the General Rural Zone is "characterised by open landscapes interspersed with buildings or structures. Typical land cover includes pasture, crops, forestry, and native vegetation. Character and amenity values of the zone include spaciousness, low-density of built form, vegetation cover, and the presence of a productive farming environment. Where numerous or larger-scale buildings or structures are proposed, their location, height, and scale need to be managed to ensure development does not dominate the landscape or compromise the open space qualities of the rural setting". The character of this zone closely aligns with the values associated with the Cannon's Creek SAL, which have been articulated in association with current land use.

57. However, according to the Porirua Growth Strategy, there is a need for additional land for housing over the next thirty-years. As the surrounding land becomes more urbanised, rural land use may no longer be appropriate.

58. The Draft Structure Plan identifies some areas of the site which are more suitable for development. For this reason, the Future Urban Zone may be appropriate, if the values of the SAL would be maintained though other control measures.
59. The Future Urban Zone will “support appropriate rural use and development and maintain the character and amenity values of the General Rural Zone until such time as it is rezoned for urban purposes”.
60. When this time comes, subdivision, use, and development should only be allowed if the SAL values are able to be maintained. Judicious planning will be imperative for avoiding significant adverse effects and avoiding, remedying, or mitigating other adverse effects on the identified characteristics and values.

LANDSCAPE EVALUATION

Landscape Capacity for Change

61. Outside the SAL boundary, the landscape character and values are much less vulnerable to change, and there is a greater landscape capacity for development.
62. The Cannon's Creek SAL is by and large highly visible, and highly valued. Thus, development within these areas should be carefully considered. Yet, there are some areas within the SAL which are less vulnerable and may be considered for housing. For example, the northern basin, and areas east of the ridgeline which are mostly screened by existing landform.
63. One of the Cannons Creek SAL values is the '*striking open rural backdrop*' it provides. This is a distinctive feature of Porirua's suburban boundary. However, due to construction of Transmission Gully, the surrounding context is changing, and an entirely rural character may not be appropriate at the northern end of the SAL. According to the Porirua Growth Strategy, the extent of the proposed rural area is being pushed beyond Transmission Gully towards Belmont Hills. If this eventuates it weakens the rationale for preserving rural character across the entirety of the site, or for retaining the hard boundary against Waitangirua Link Road and suburb. Instead, peri-urban living along this interface could ensure Judgeford Hills development is visually integrated with Porirua's existing suburbs.
64. However, this would only be appropriate if the '*distinctive patterns of open spaces*' of more prominent areas were maintained and enhanced. This includes Cannons Creek ridgeline and areas of high elevation on the west aspect, which are highly visible and form the '*predominantly natural backdrop to the city*'. We determine that ensuring continuity across Cannons Creek ridgeline, is fundamental to maintaining the SAL values.
65. The pasture landcover is deemed to contribute to this amenity by revealing '*changes in light and shadow*'. It is our interpretation, that this emphasises the contribution of natural landform, rather than the significance of pasture grass or low ecological value it provides.



KEY

-  Special Amenity Landscape (SAL)
-  SAL004 - Primary Ridgeline (to be maintained)
-  SAL004 - Secondary Ridges
-  SAL004 - Deep Gullies (to be enhanced)
-  SAL004 - Areas with more capacity for development*
-  Significant Natural Area (SNA)
-  Property Title
-  5m Contour

0 250 500 m



**potential for development to have less effect on SAL values, due to elevation / aspect / slope gradient. The exact effect of development on the SAL would require a Landscape and Visual Assessment.*

Figure 23: Analysis of Cannons Creek SAL

Visibility

TITAHI BAY

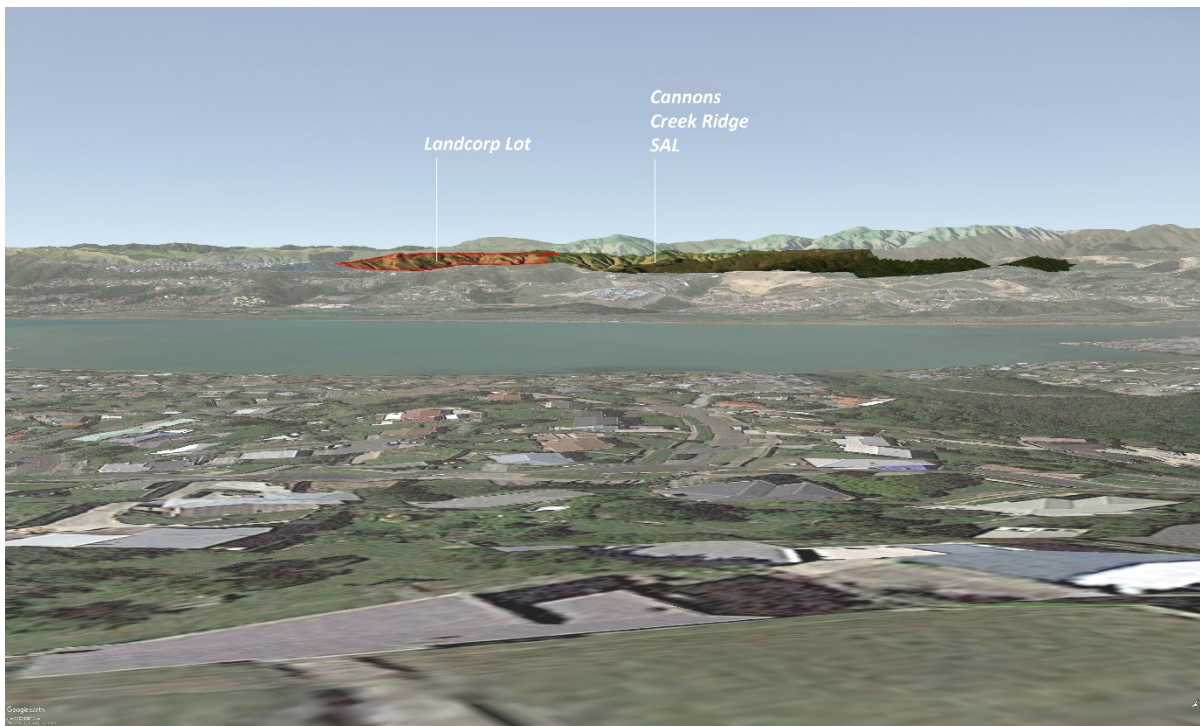


Figure 24: View of Site from Hiwi Crescent, Porirua

PORIRUA CBD

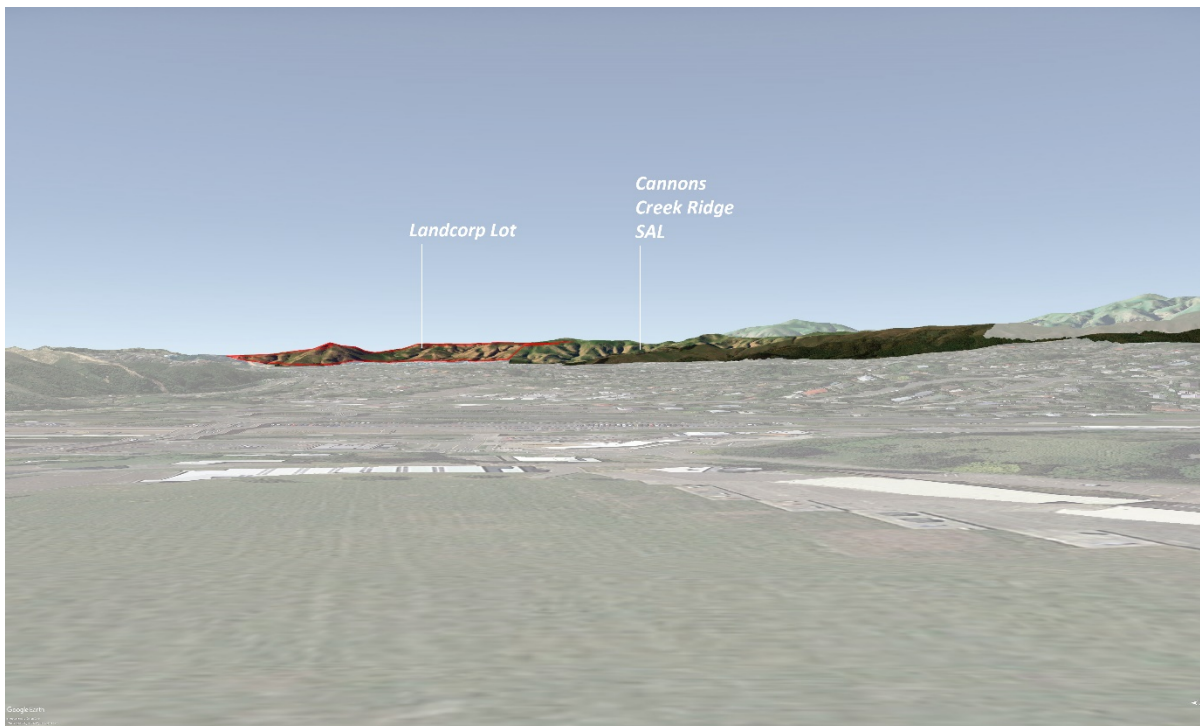


Figure 25: View of Site from Lot 20 Kenepuru Drive, Porirua

AOTEA

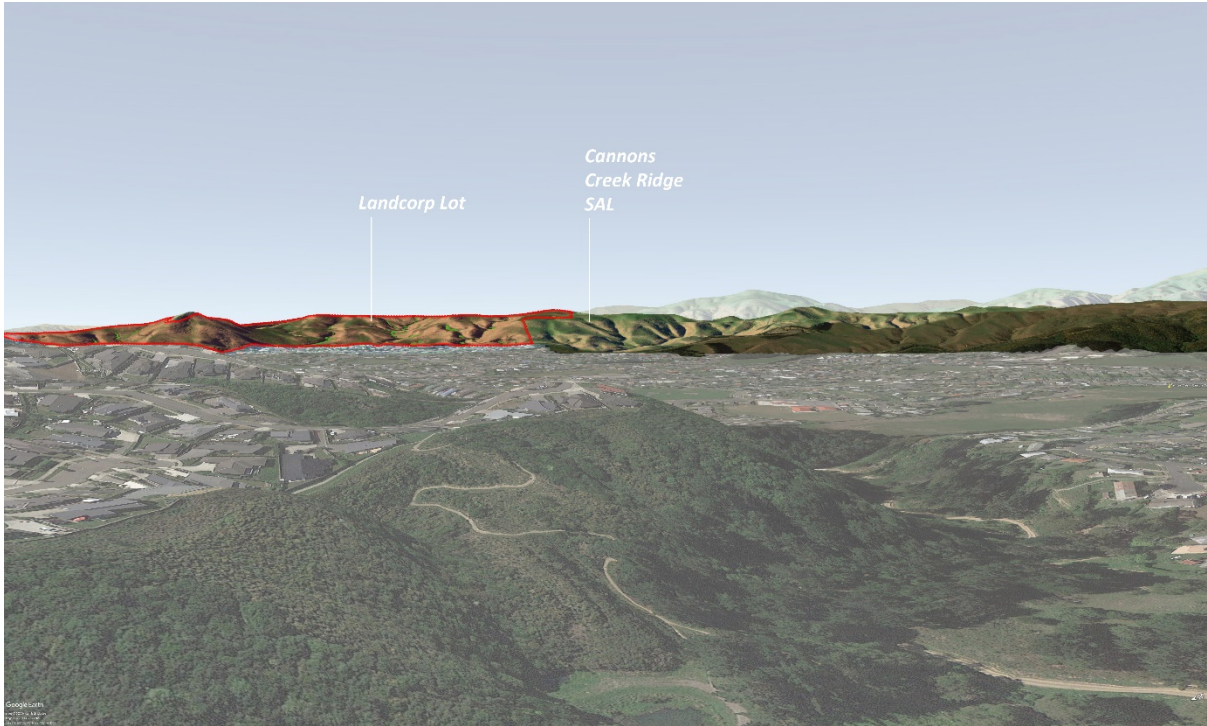


Figure 26: View of Site from Opara Way, Aotea

ASCOT PARK

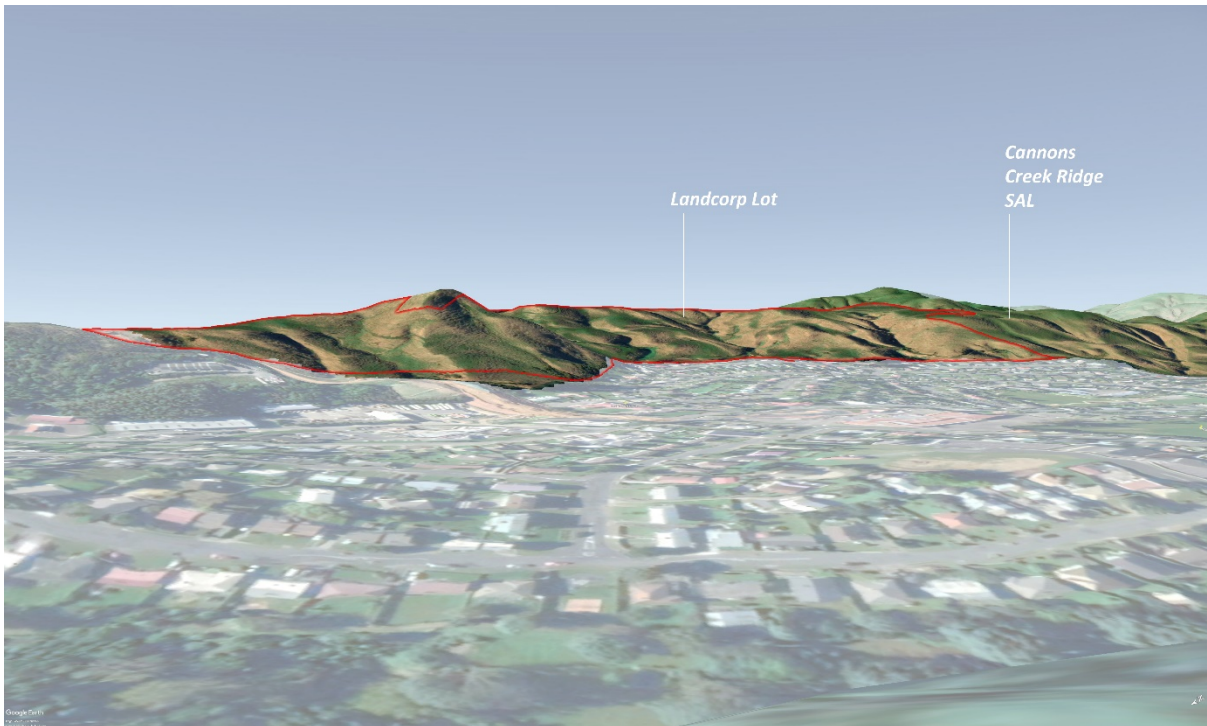


Figure 27: View of Site from Sasanof, Ascot Park

CANNONS CREEK

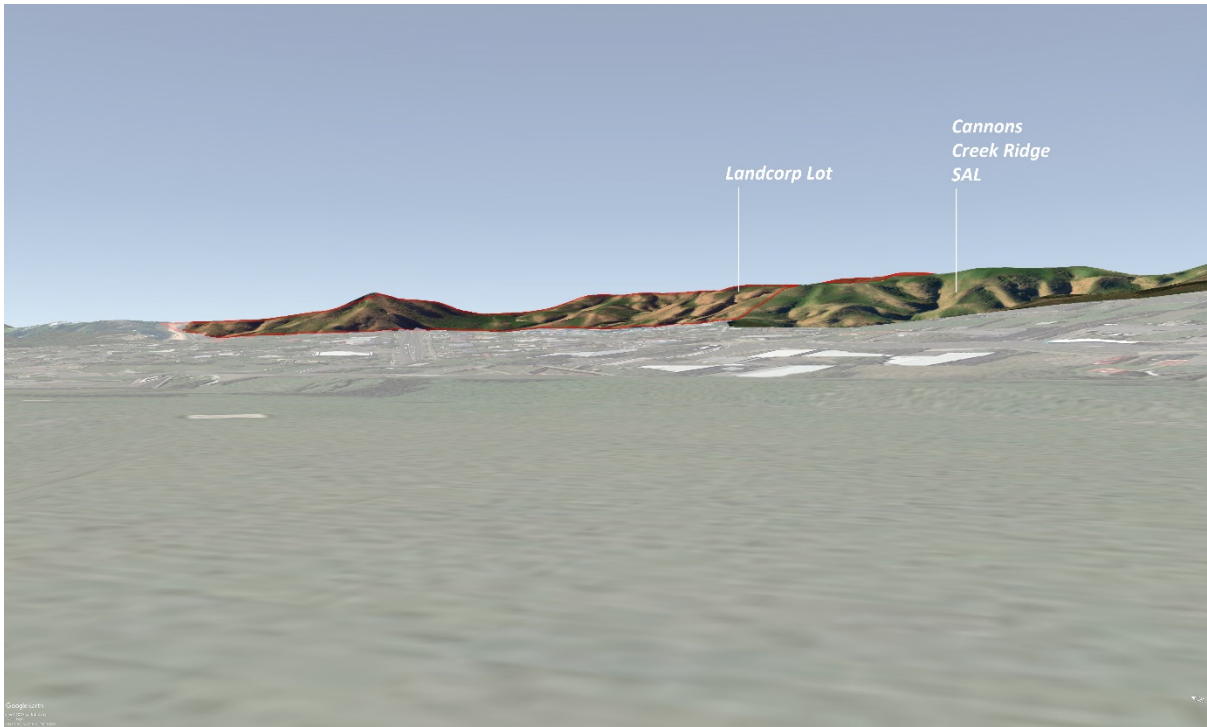


Figure 28: View of Site from Cannons Creek Park, Cannons Creek

WAITANGIRUA

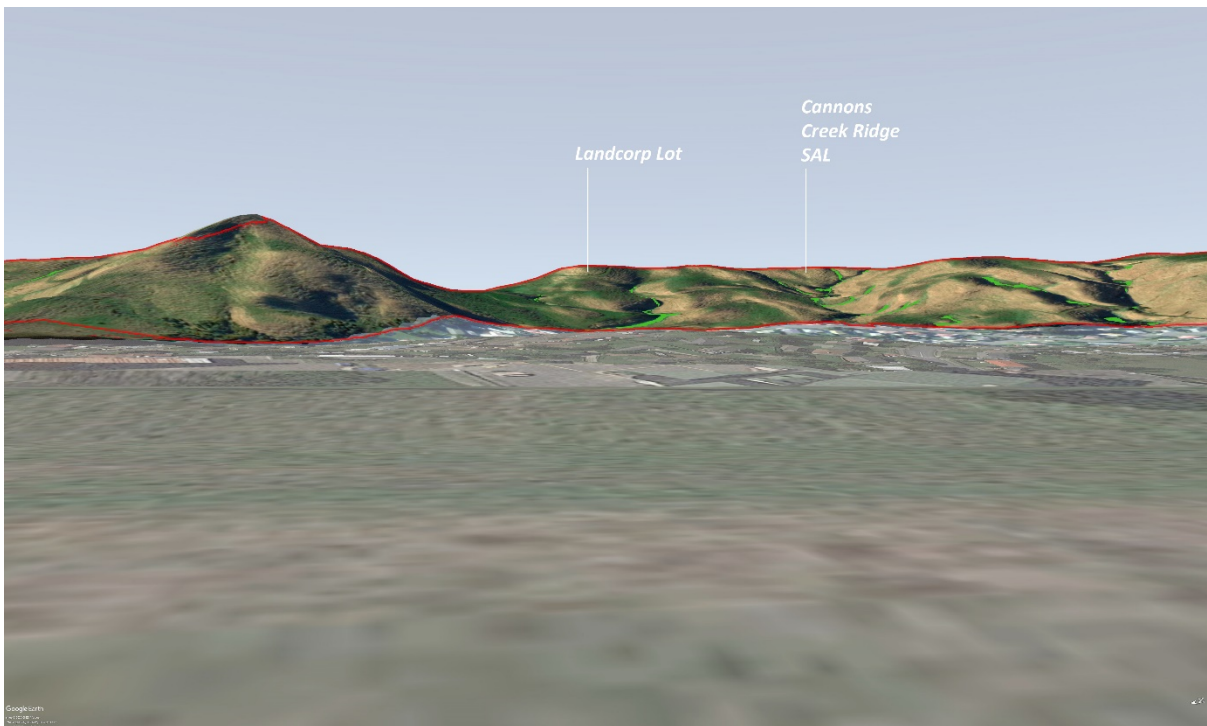


Figure 29: View of Site from Natone Park, Waitangirua

TRANSMISSION GULLY

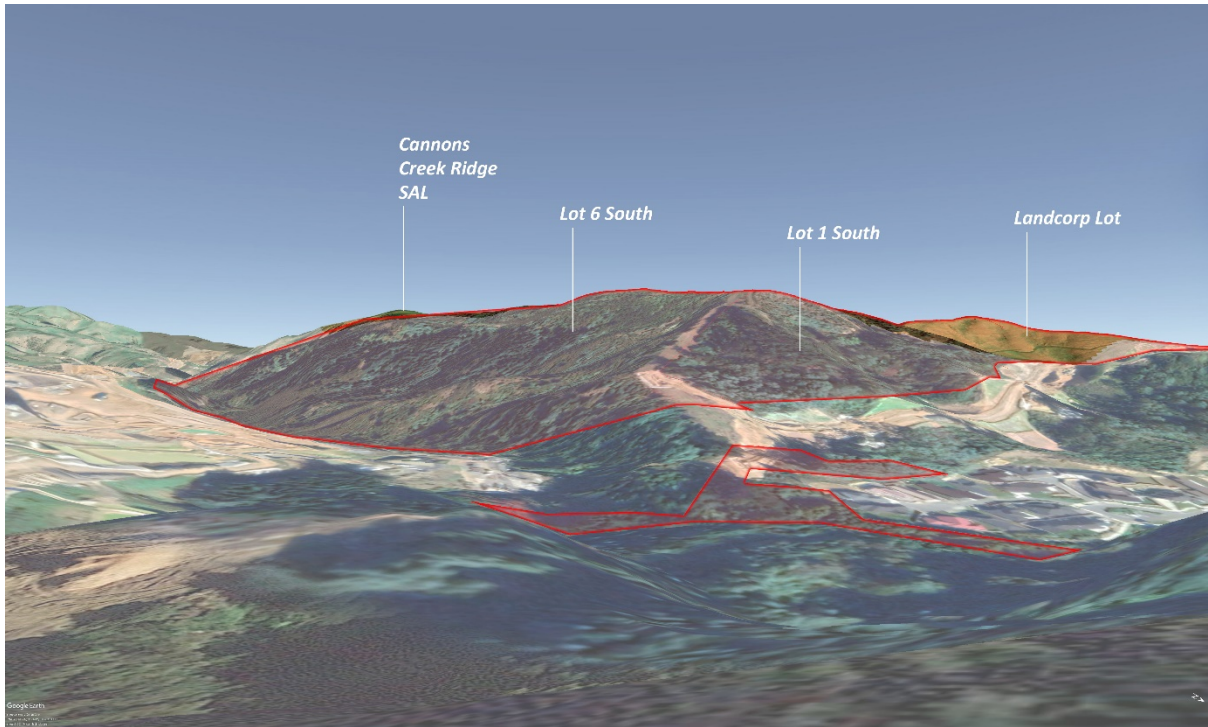


Figure 30: View of Site from Transmission Gully

PAUATAHANUI

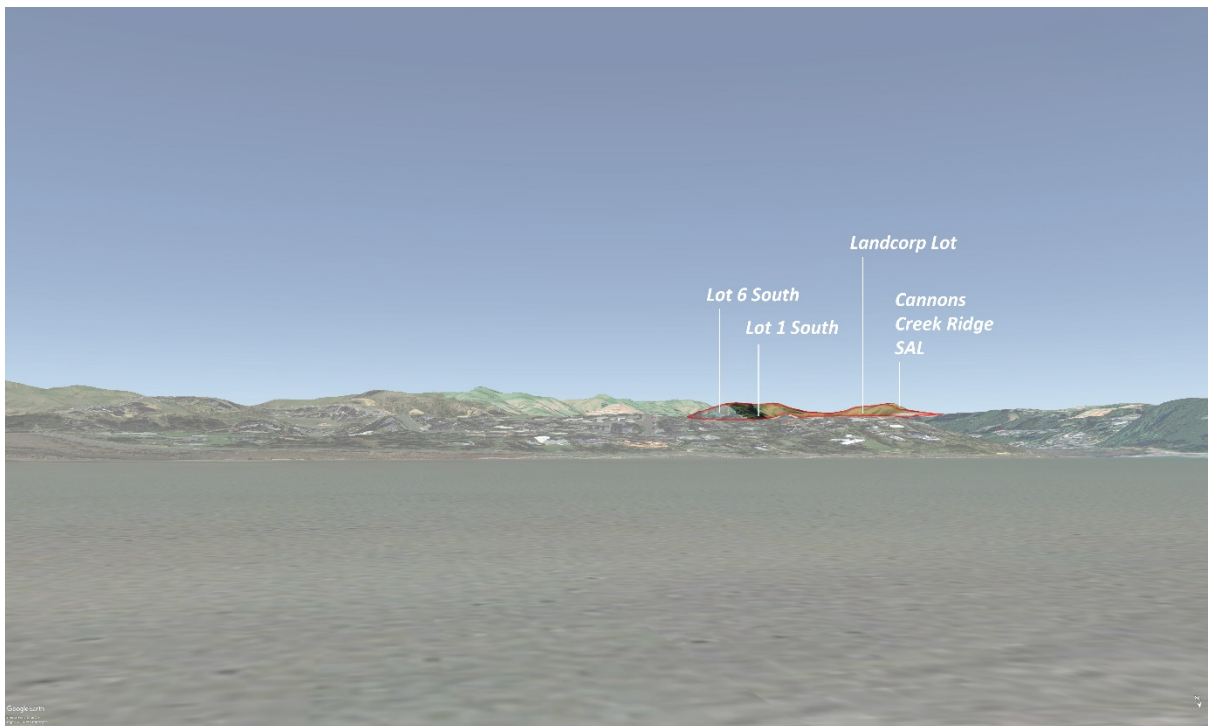


Figure 31: View of Site from Grays Road, Pauatahanui Inlet

Viewshed Analysis

66. Viewshed analysis was completed, for numerous points, to gain a refined understanding of the visual sensitivity. The points labelled in the plan below were set to 5m above ground level – i.e. a single storey building. The corresponding viewsheds indicate areas across the city where this would point would be visible.

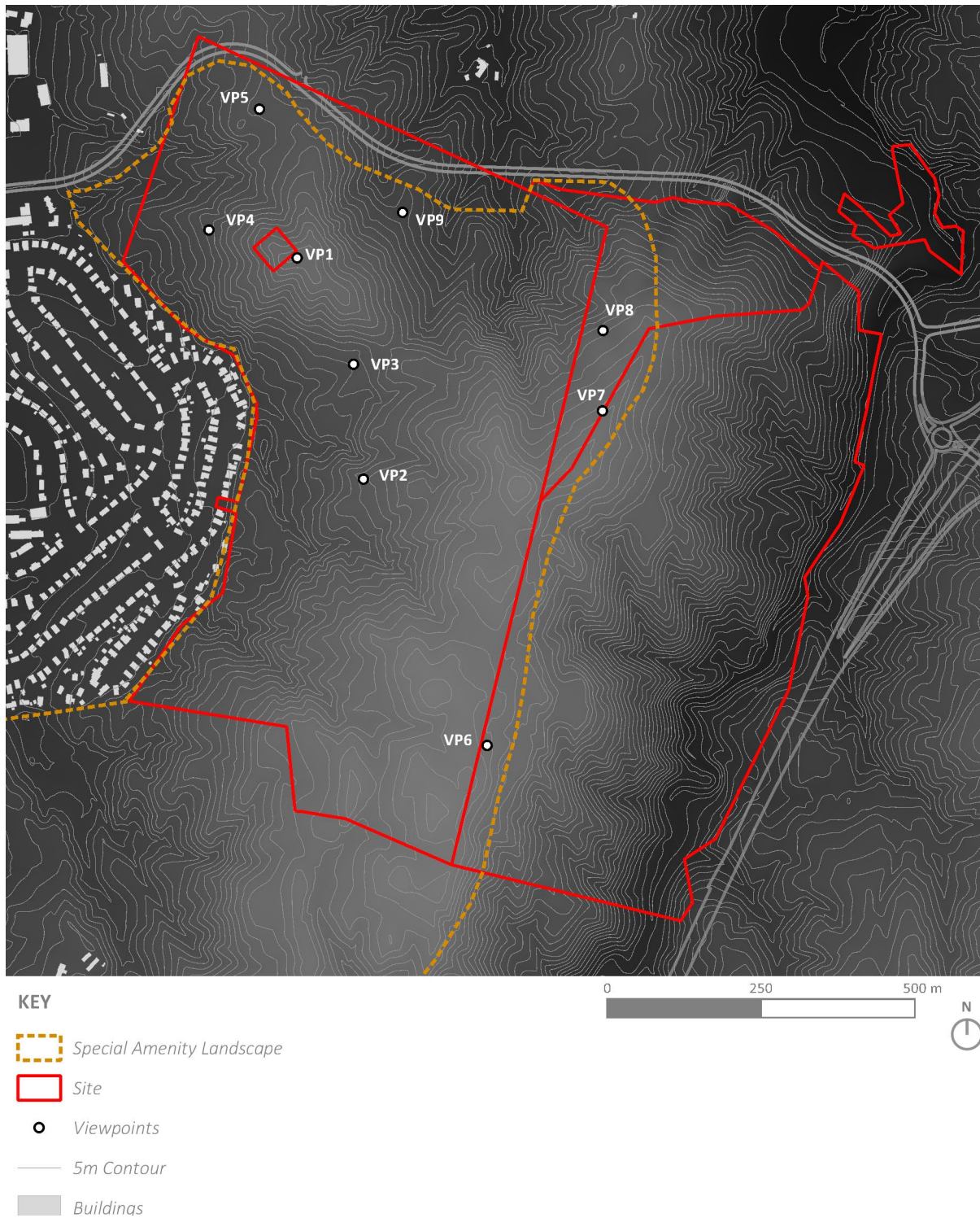
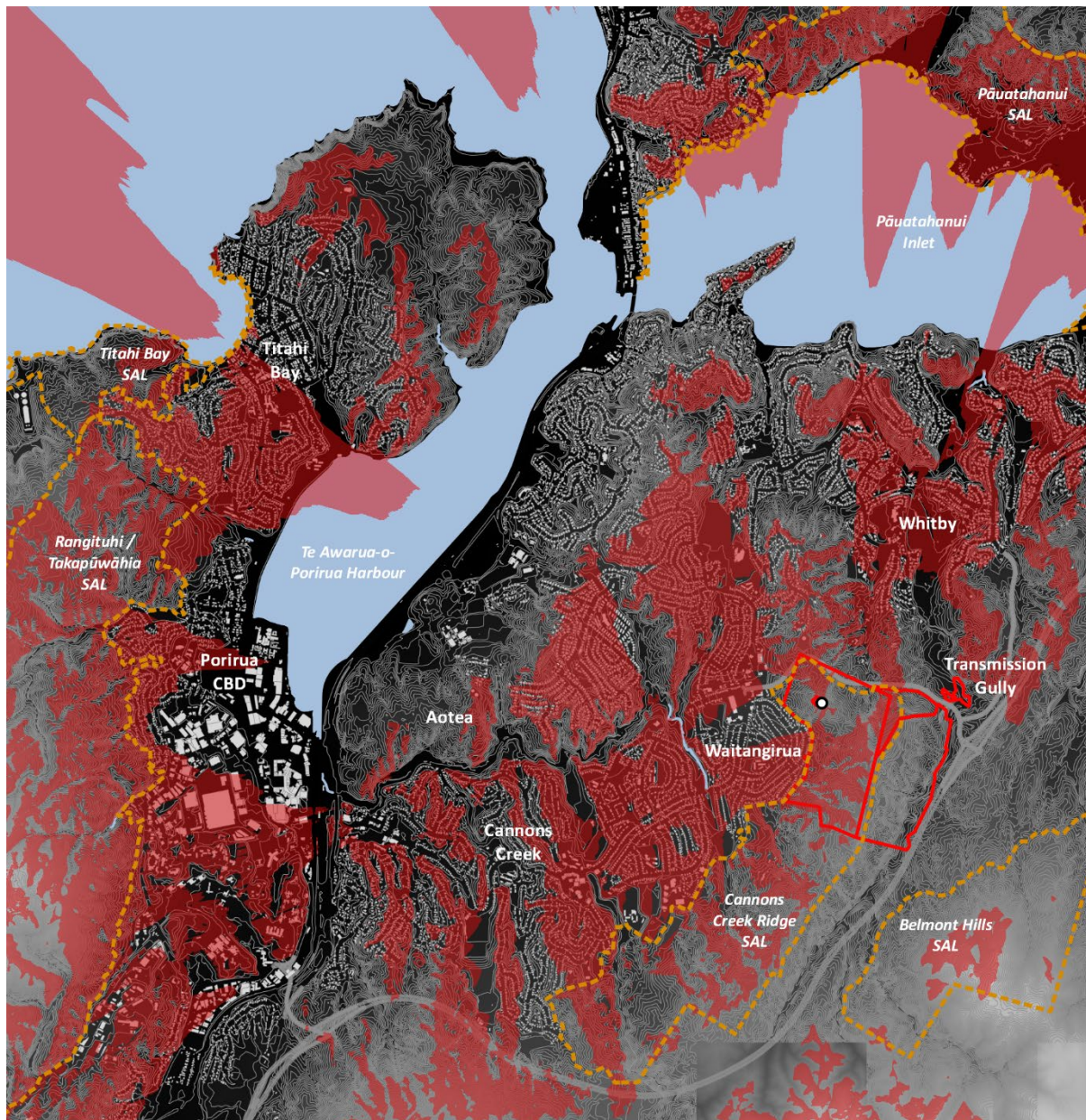


Figure 32: Viewshed analysis – Viewpoints



KEY

Special Amenity Landscape

Site

5m Contour

Buildings

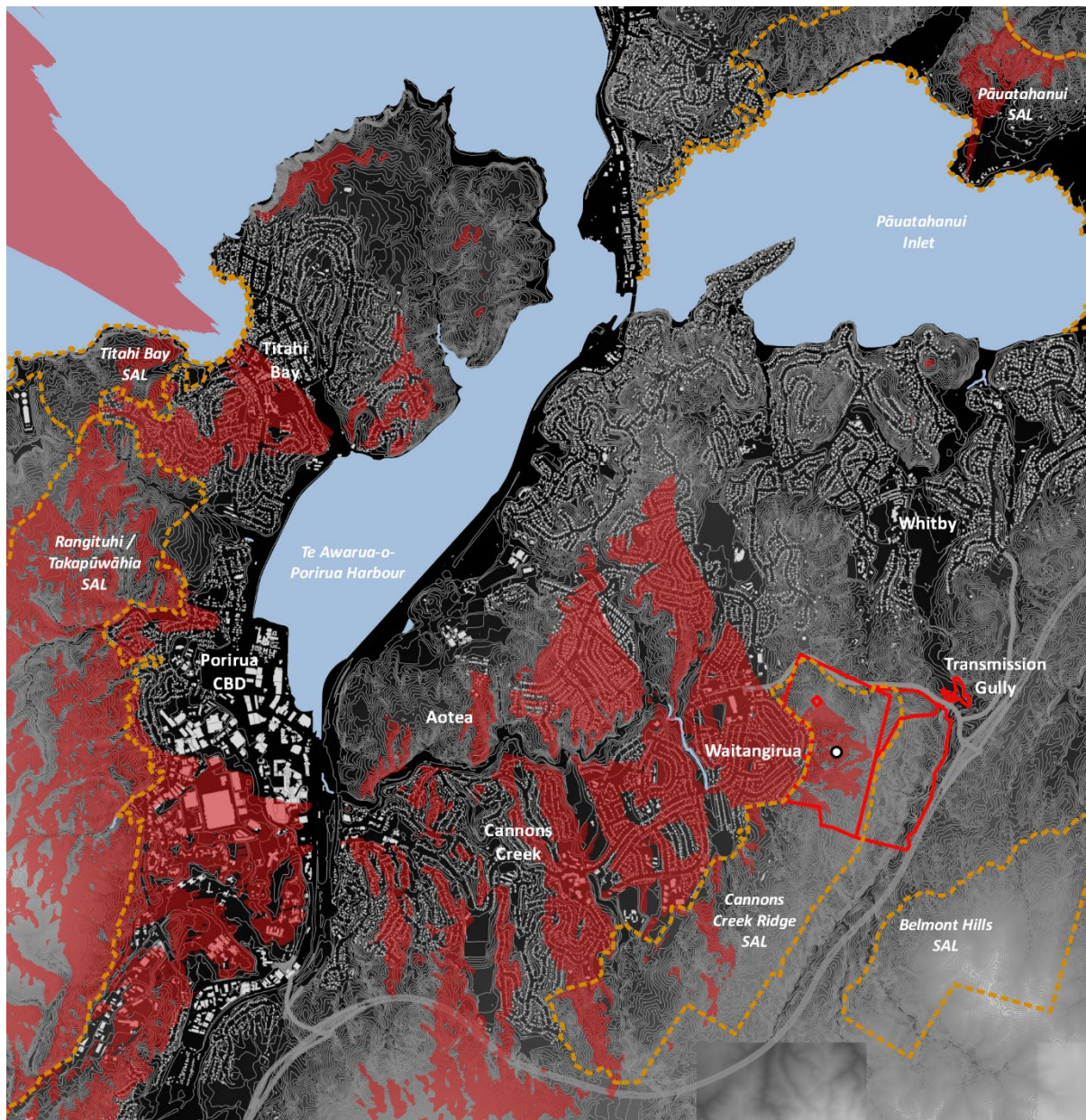
Transmission Gully

Viewshed Analysis

Views from Height of 1.8m Person

Viewpoint: 1.8m Height Person

Figure 33: Viewshed Analysis - Viewpoint 1 (Widely visible)



KEY

Special Amenity Landscape

Site

5m Contour

Buildings

Transmission Gully

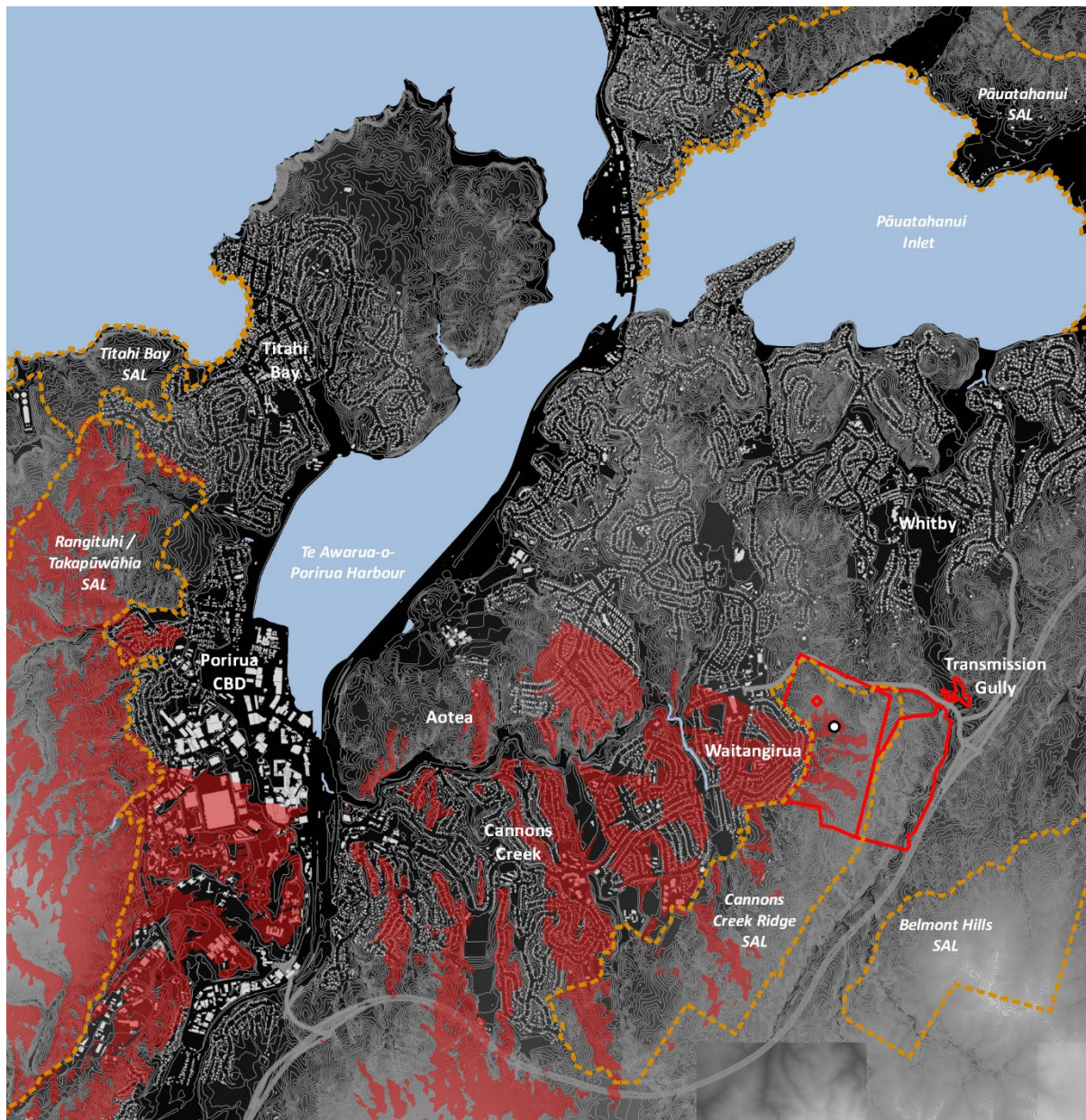
Viewshed Analysis

5m Structure is Visible

Viewpoint: Structure of 5m



Figure 34: Viewshed Analysis - Viewpoint 2 (Visible from many locations)



KEY

Special Amenity Landscape

Site

5m Contour

Buildings

Transmission Gully

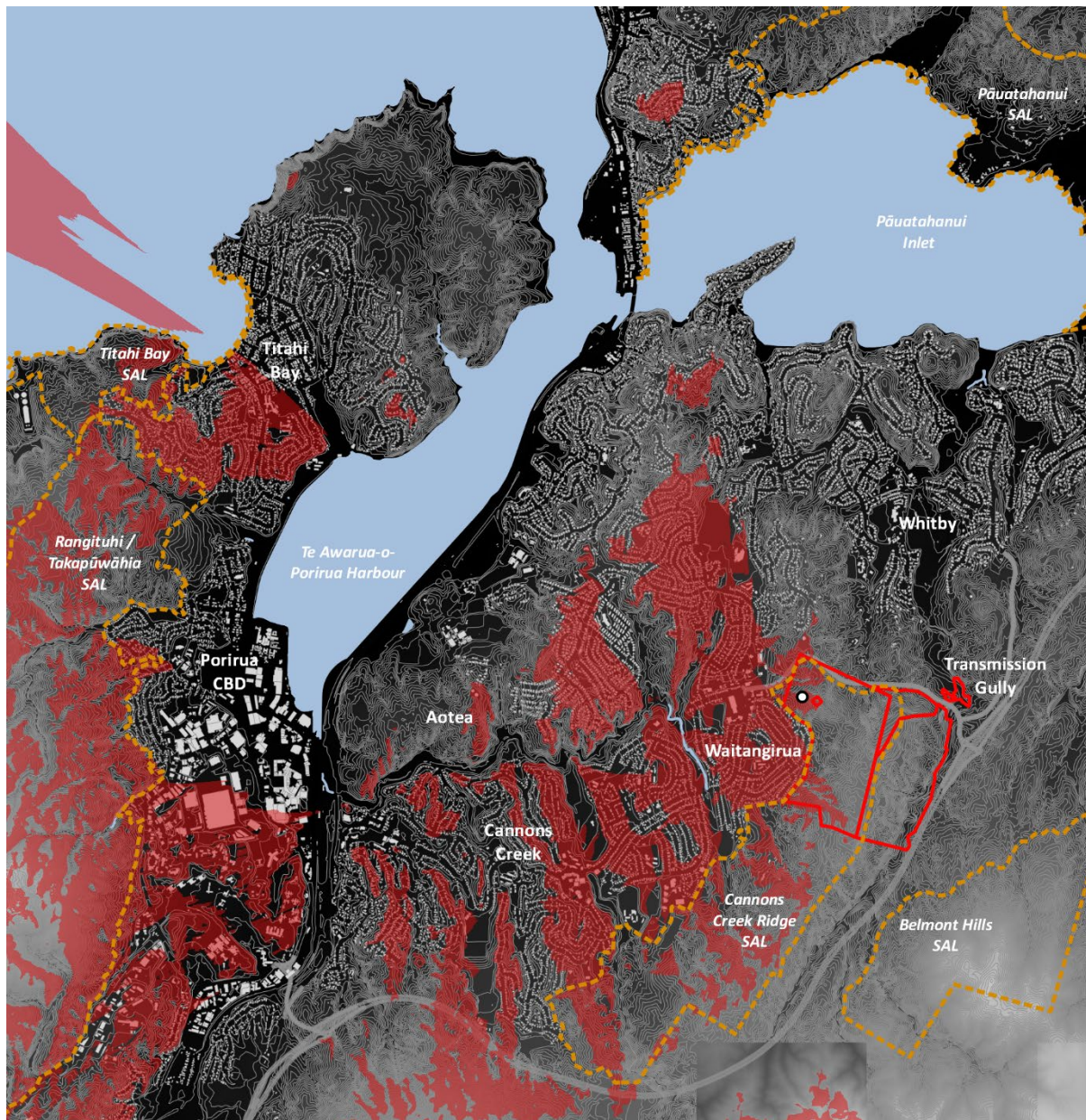
Viewshed Analysis

Visibility of Structure (5m Height)

Viewpoint: Structure of 5m



Figure 35: Viewshed Analysis - Viewpoint 3 (Visible from many locations)



KEY

Special Amenity Landscape

Site

5m Contour

Buildings

Transmission Gully

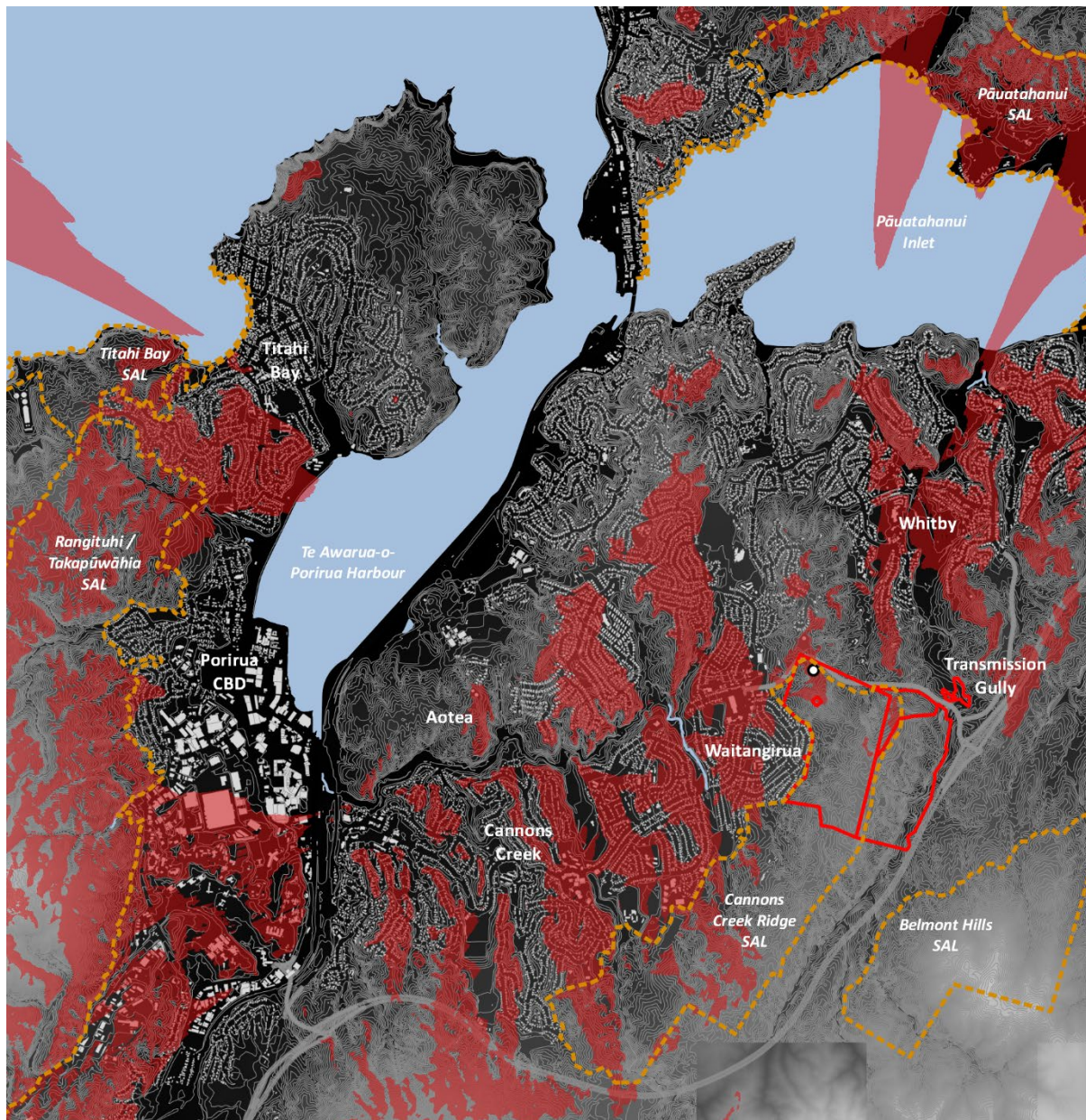
Viewshed Analysis

Visibility of Structure (5m Height)

Viewpoint: Structure of 5m



Figure 36: Viewshed Analysis - Viewpoint 4 (Visible from many locations)



KEY

Special Amenity Landscape

Site

5m Contour

Buildings

Transmission Gully

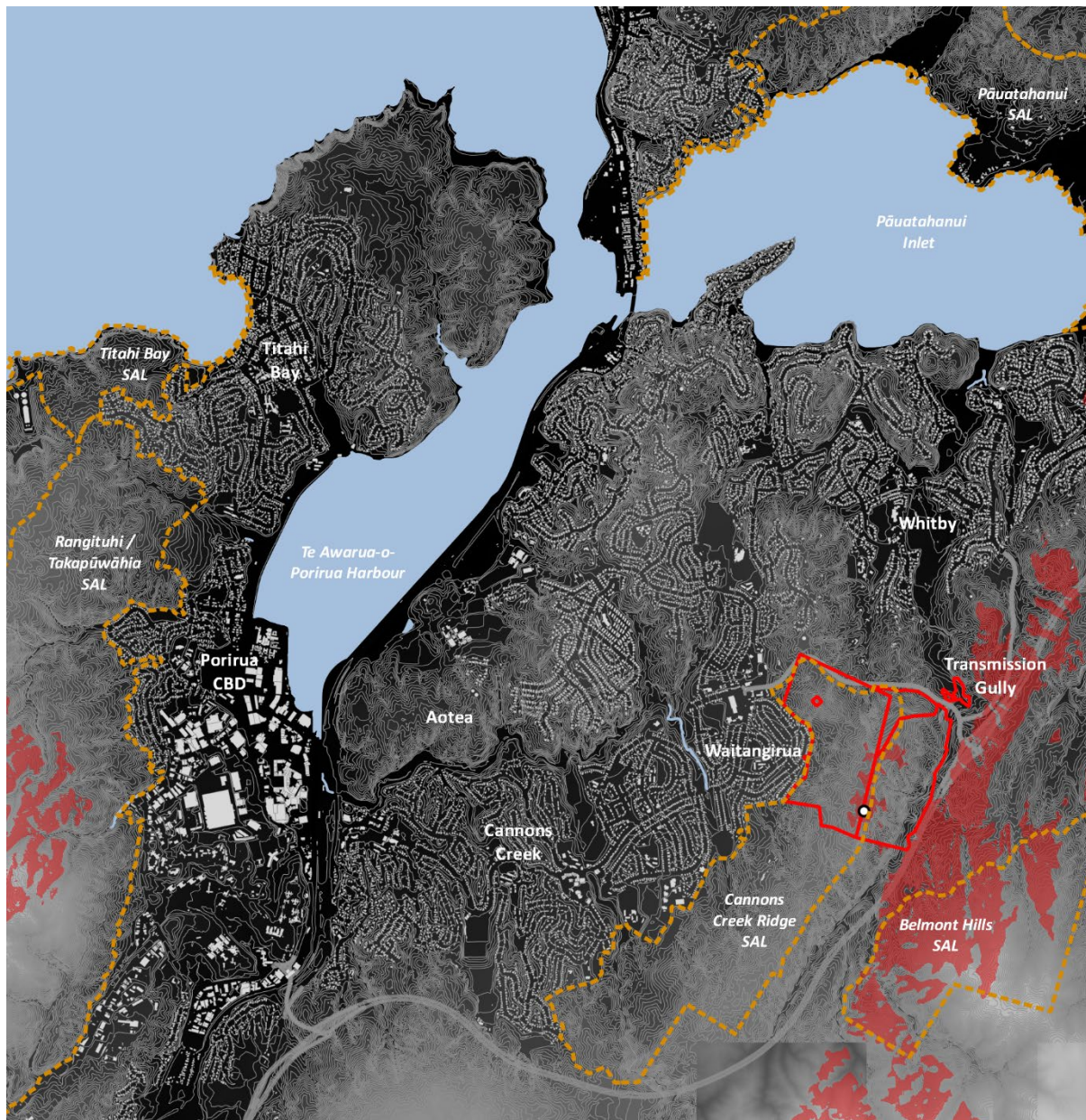
Viewshed Analysis

Visibility of Structure (5m Height)

Viewpoint: Structure of 5m



Figure 37: Viewshed Analysis - Viewpoint 5 (Visible from many locations)



KEY

Special Amenity Landscape

Site

5m Contour

Buildings

Transmission Gully

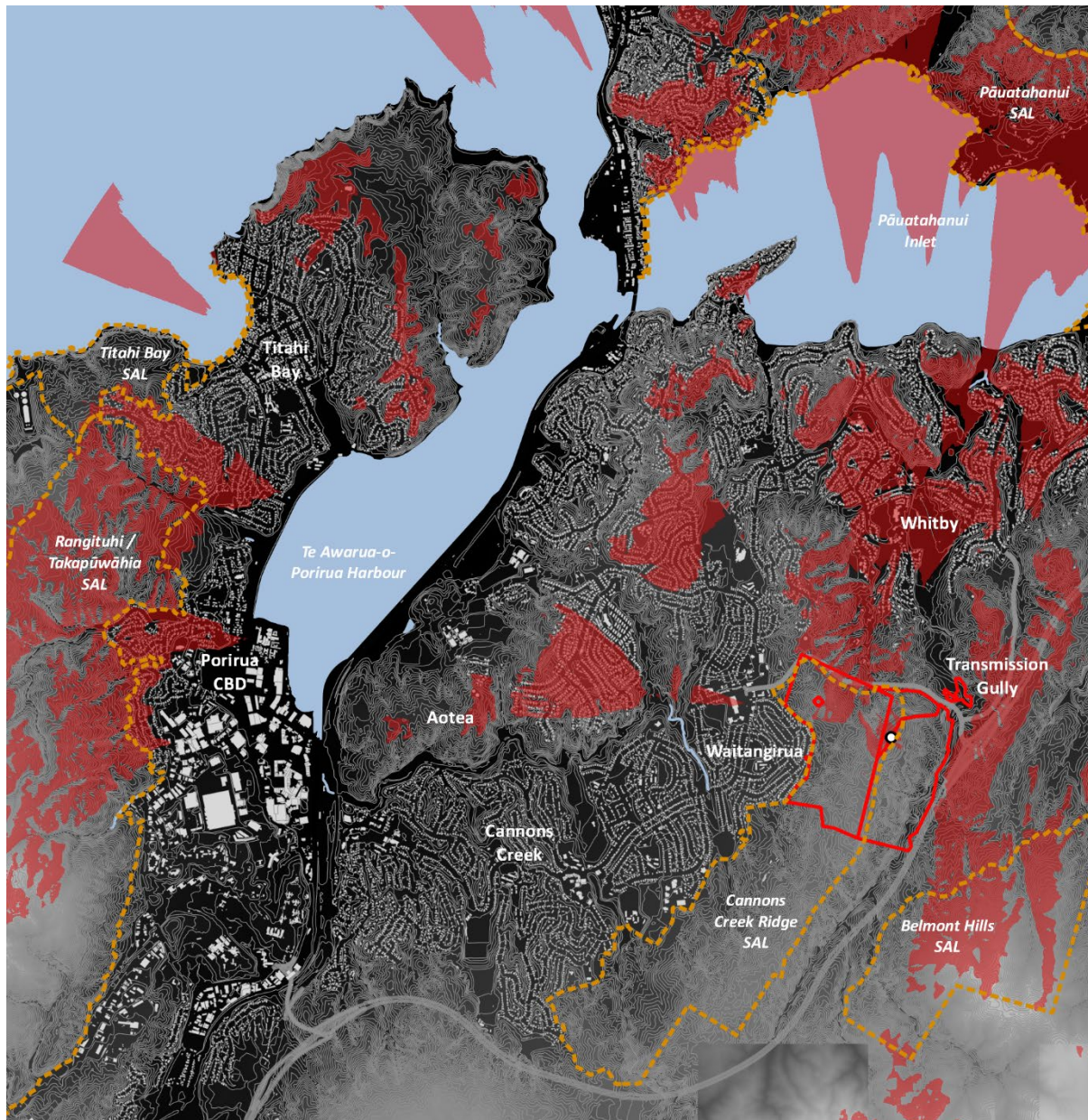
Viewshed Analysis

Visibility of Structure (5m Height)

Viewpoint: Structure of 5m



Figure 38: Viewshed Analysis - Viewpoint 6 (Visible from few locations)



KEY

Special Amenity Landscape

Site

5m Contour

Buildings

Transmission Gully

Viewshed Analysis

Visibility of Structure (5m Height)

Viewpoint: Structure of 5m

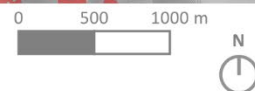
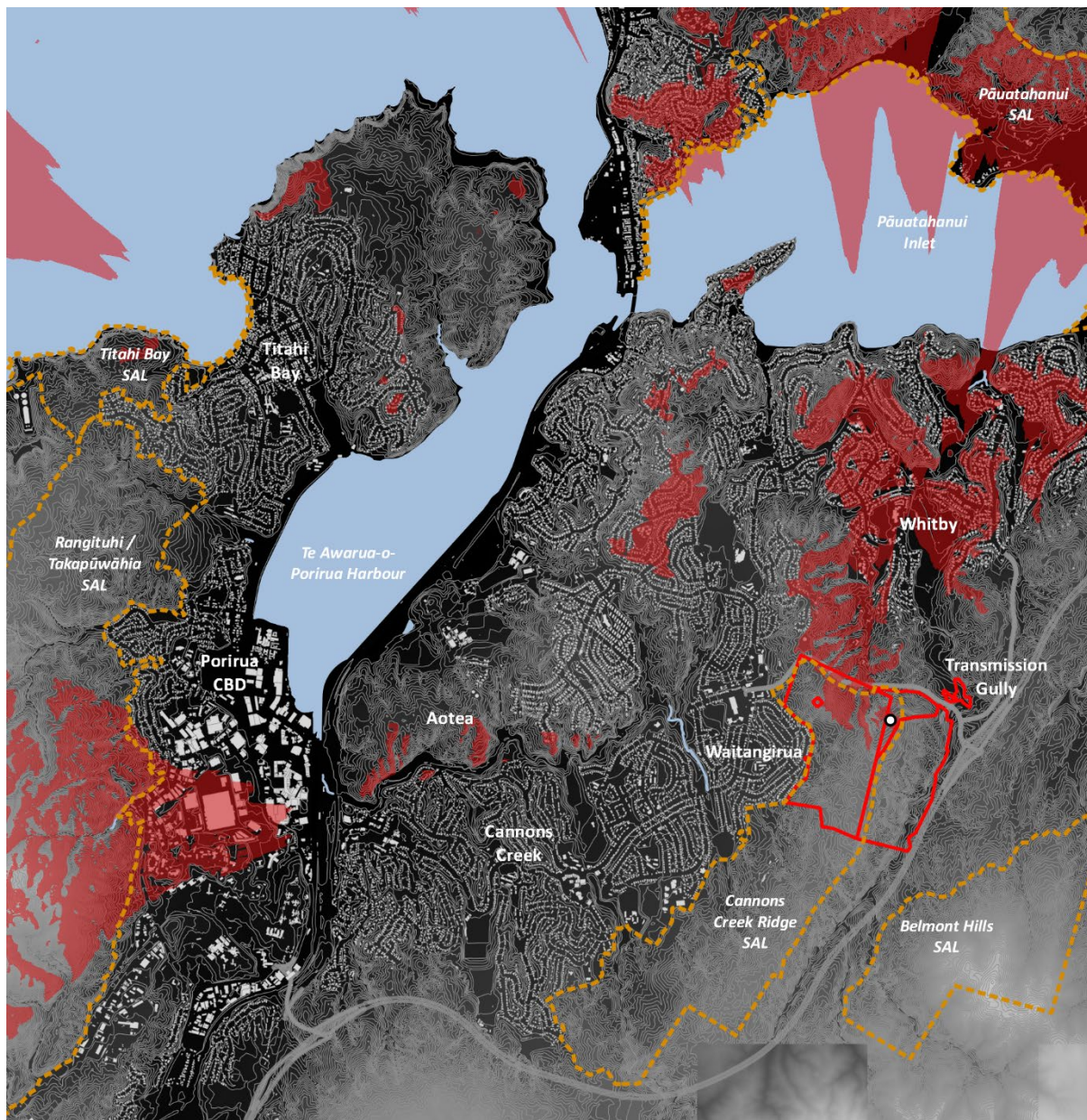


Figure 39: Viewshed Analysis - Viewpoint 7 ((Visible from some locations)



KEY

Special Amenity Landscape

Site

5m Contour

Buildings

Transmission Gully

Viewshed Analysis

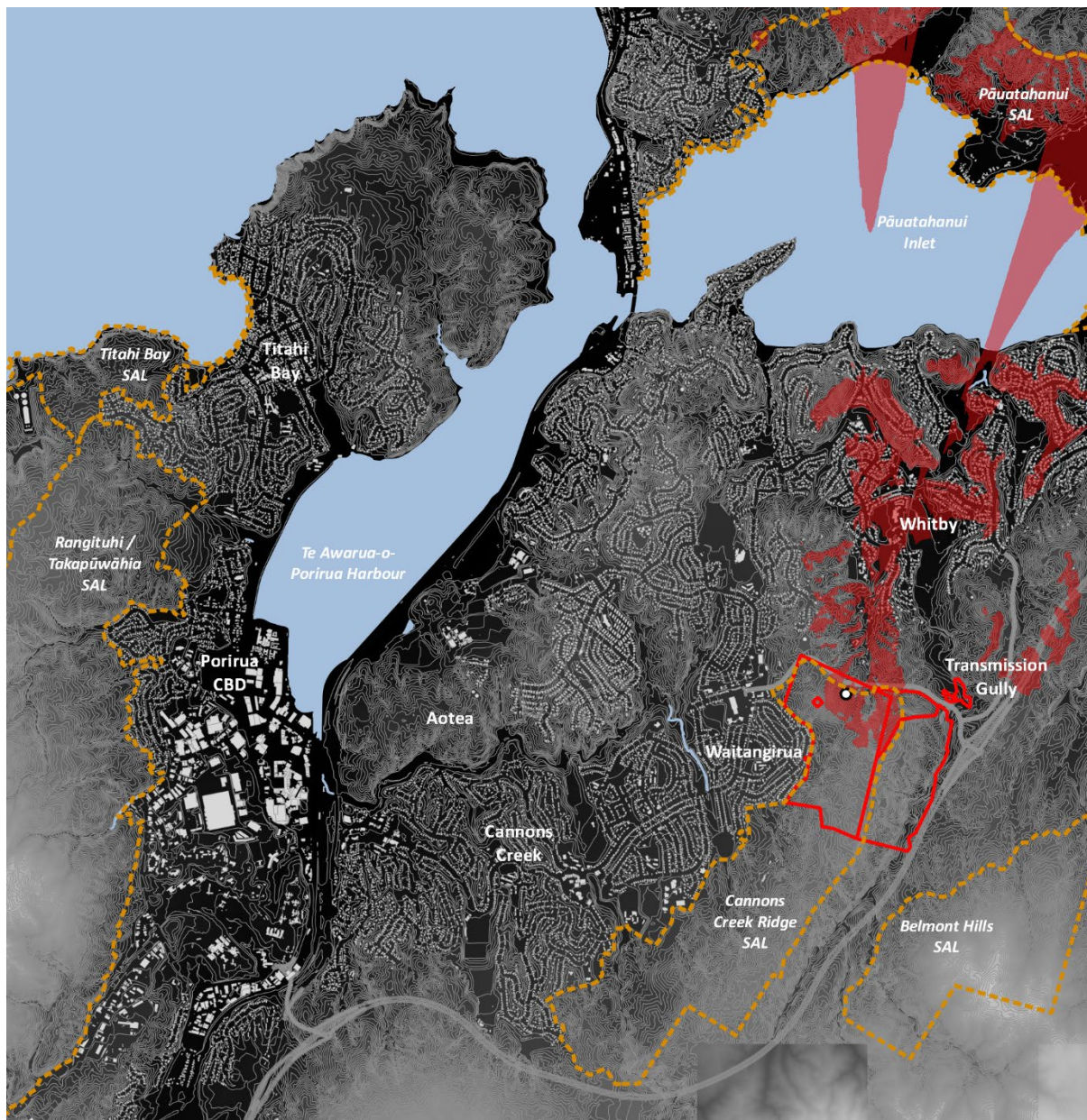
Visibility of Structure (5m Height)

Viewpoint: Structure of 5m

0 500 1000 m



Figure 40: Viewshed Analysis - Viewpoint 8 (Visible from some locations)



KEY

Special Amenity Landscape

Site

5m Contour

Buildings

Transmission Gully

Viewshed Analysis

Visibility of Structure (5m Height)

Viewpoint: Structure of 5m

0 500 1000 m



Figure 41: Viewshed Analysis - Viewpoint 9 (Visible from few locations)

Slope

67. Slope is a significant site constraint, limiting the area available for residential development. Furthermore, the values of the SAL restrict terrain modification, as the landform of significant ridgelines and gullies must be maintained.

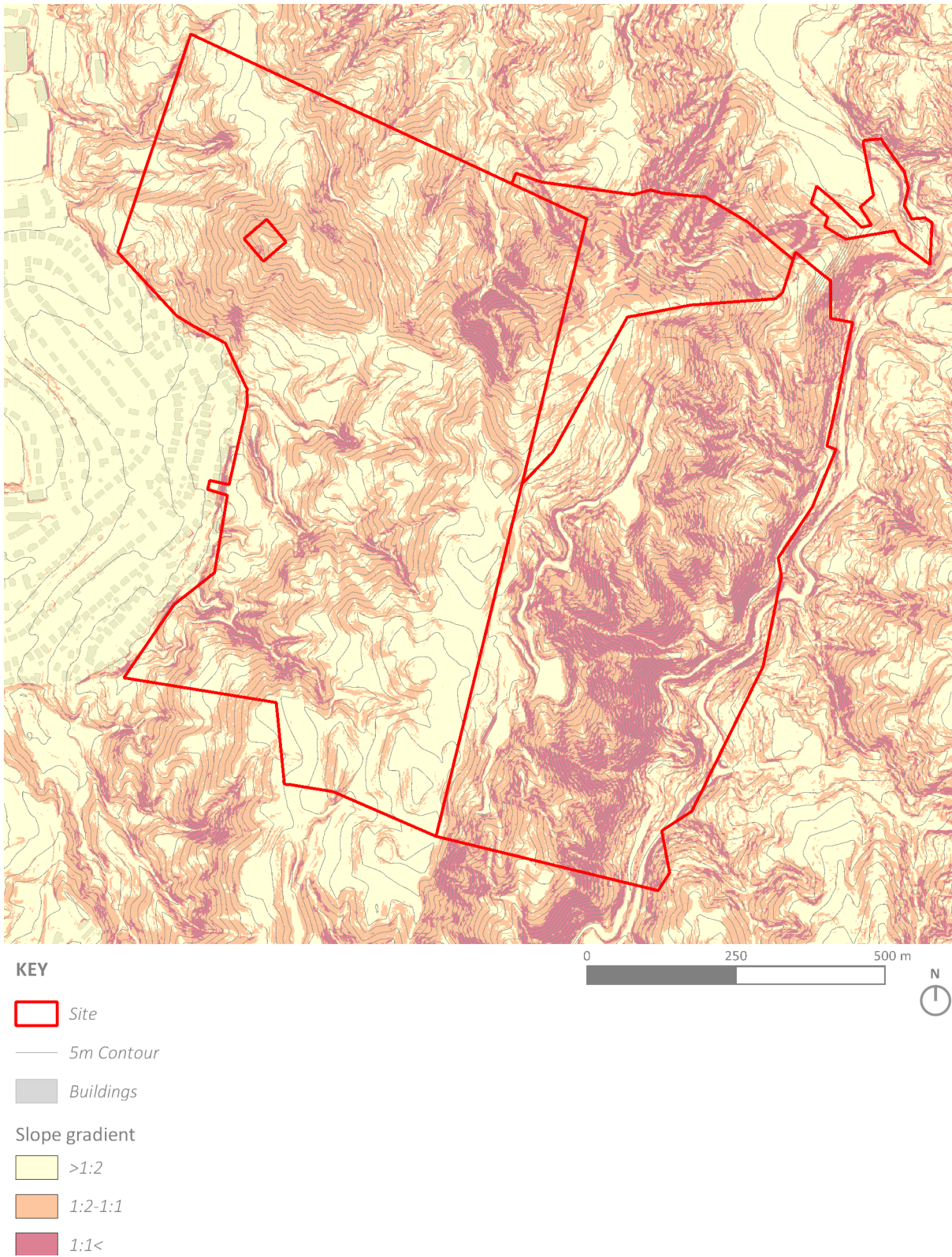


Figure 42: Slope gradients

DRAFT STRUCTURE PLAN

68. Through collaborative workshops, the multi-disciplinary consultancy team provided input into the Draft Structure Plan prepared by Lauren White, from Urban Acumen.

Development Areas

69. The draft structure plan outlines five different development areas. These each have different capacities for development due to varying topography, urban context, landscape sensitivity and character. These are termed:

- Development Area 1 - Hillside Living
- Development Area 2 - Whitby Views
- Development Area 3 - Waitangirua Community
- Development Area 4 - Hilltop Clusters
- Development Area 5 - Bush Living

70. 'Hillside Living' is located within Lot 6 South, on the east of Cannon's Creek ridge. This area is predominantly only visible from Transmission Gully and Belmont Hills and so, is the least vulnerable.

71. 'Whitby Views' is located within the Landcorp lot and within Cannons Creek SAL. However, the basin on the north facing slope is hidden from most of Porirua. Well connected by Waitangirua Link road, this site has a higher capacity for development.

72. 'Waitangirua Community' is also placed within the Landcorp lot and Cannons Creek SAL, but, adjacent and connected to Waitangirua suburb. At lower elevations this may be appropriate for some development to soften the transition from suburbs to open space.

73. 'Hilltop Clusters' is in a potentially vulnerable location: on the west of the Cannons Creek ridgeline. To mitigate the effects of development here, structures must be set to the east, below the ridge, and clustered along the road in less sensitive locations to ensure building envelopes are not read against the skyline.

74. 'Bush Living' is the most vulnerable development area; on hard to access slopes, and/or at high elevations on the west face. This area has a low capacity for change and would be restricted to a rural lifestyle, to maintain large areas of open space.

75. It is recommended that as part of the future structure plan process, controls be placed around all development within the SAL to appropriately manage changes to landform and landcover. These should have higher levels of control and

development guidance in the development zones which are more vulnerable to change.

76. It is also highly recommended that within the SAL the siting of infrastructure, structures, and planting, would be controlled for areas of high elevation, and/or on the west aspect, as these are highly visible areas. Irrespective of the indicative development area, structures within these areas should be positioned and constructed within the landscape as sensitively as possible with particular consideration given to the view of the ridgeline and undulating topography. Keeping the ridgeline and hilltop west facing upper slopes of the Landcorp lot free from built form is important, while maintaining consistent land use along this skyline and upper area will contribute to the '*predominantly natural backdrop to the city to the east*' as identified as an important sensory value in the SAL provisions included in the Porirua Proposed District Plan.
77. Housing can be located on the eastern side of the brow and not penetrating the skyline. Existing topographic undulations should be utilised to shield houses from view, while achieving some pleasant views from the houses. Vegetated gullies may also be exploited to this affect, along with additional screen planting.
78. Existing landform may also be utilised for the collector road, between Development Area 2 - Whitby Views and Development Area 3 - Waitangirua Community, which may pass over the ridge at the low point of the saddle
79. For maintaining the '*naturalness*' of the hillside, vegetation should be planted in organic forms and comprised of eco-sourced native species typical of the local ecology. Rows and monotonous palettes should be avoided.
80. Furthermore, in sensitive areas such as Bush Living, Hilltop Clusters, and Waitangirua Community, conventional benching techniques which are used to create large building sites should be discouraged. This is due to the sizeable visual impact which these earthworks cause, with limited mitigation options available. Instead, all infrastructure within these development areas should be located and sited as sensitively as possible.

Protection Areas

81. Given the visual prominence of certain areas, it is recommended (and agreed by the other members of the team) that regulatory tools such as protective covenants, reserve management plans or open space covenants should be applied.
82. Clustered housing is proposed, with smaller lots in some areas, to incentivise the preservation of landscape values in others, e.g. covenants on the larger balance areas of some lots in order to achieve consistent land cover. Such consistency

increases visual coherence, which in turn reinforces the perception of a *'predominantly natural backdrop to the city to the east'*

83. The SAL emphasises that the ridgeline holds significant amenity value. Consequently, this has been identified in the draft structure plan and marked as a ridgeline protection area. This means that this area is unsuitable for any structures and should be treated as open space. The draft structure plan reflects this.
84. A current value of the SAL is the *'large areas of modified landcover (pasture, exotic, shelterbelts and exotic forestry) with indigenous vegetation/regeneration at Maara Roa Reserve'*. We are of the opinion that this value could be enhanced by converting more landcover to regenerating bush. Opportunities for this have been provided in the Draft Structure Plan.
85. Pertaining to the SAL, the waterways and vegetation in gullies also hold considerable value. The Draft Structure Plan intends to maintain the ecological significance of these areas and enhance them with additional planting in *'drainage corridor protection'* areas placed around wetlands and/or riparian corridors.
86. A shared and recognised value of Cannons Creek SAL is accessibility to Belmont Regional Park through Waitangirua farm. The Draft Structure Plan aims to enhance this value by providing a ridgeline walkway from Waitangirua suburb, through to walkways in the neighbouring reserve. This may be further enhanced by walkable connectivity to Whitby. The ridgeline walkway may further add value by incorporating high quality lookout points for recreational use.
87. It is also recommended that additional SAL values could be enhanced, to mitigate other adverse effects. If managed appropriately, the open spaces *'forming the backdrop to Maraeroa Marae in Waitangirua'* may be enhanced through participatory design. For example, *'inland forested areas'* could be established within this part of the SAL for *'providing important resources and links to other areas for Māori'* as described in the District Plan provisions for Cannons Creek Ridge SAL.

RECOMMENDATIONS

88. Given rezoning is granted, further consideration and assessments will be required to inform a final Structure Plan and rezone the site to Development Area.
89. On-site investigations and documentation of possibly significant ecological areas, within the Landcorp boundary, is needed for ensuring indigenous vegetation and habitats are protected.
90. Refine the values of Cannons Creek SAL in relation to the proposed development through further consultation. In particular, the value of the SAL to local iwi as the *'backdrop to Maraeroa Marae in Waitangirua'*, requires more articulation to determine the appropriateness of residential dwellings at the base of this hillside. Furthermore, the extent to which value is placed on pasture to create *'changes in light and shadow'*, comparative to the value of indigenous landcover. This will determine the most suitable treatment of the ridgeline protection area.
91. At a later stage, utilise the final Structure Plan to guide future development. This would be achieved by incorporating the Structure Plan into the Operative Porirua City District Plan and setting provisions to control the siting of infrastructure, buildings, and planting. These should aim to:
- Maintain the prominent unmodified ridgelines, and ensure it is free from incongruous structures.
 - Avoid development within deep gullies and promote revegetation of these waterways and wetlands.
 - Encourage development that is low impact, integrated and designed sensitively in response to the existing terrain to limit prominence.
 - Maintain open space as a characteristic land use.
 - Enable public access through networks across the site and along the ridge, enabling walking and biking access to Belmont Regional Park. Over time, this could link in with the Cannons Creek Bothamley Park Walkway via Niagara Street, and Whitby via Banks Boulevard, and Duck Creek.
92. Require a Landscape Development Plan for lots and infrastructure within the Cannons Creek SAL. This should be prior to Resource Consent and subject to a Landscape and Visual Assessment with consideration given to the earthworks, vegetation, buildings density, and structures as part of the subdivision.
93. Maintain and enhance the values of the Cannons Creek SAL through inclusion of specific design controls at subdivision that will manage:
- Earthworks; building density, setbacks, and heights; building materials and reflectivity; site coverage; street trees; streetlights; fencing; and planting.

94. Due to the sensitivity of the ridgeline and the west aspect, possible landscape and visual amenity effects of the collector road should be further mitigated through controls such as:
- Required testing of roading parameters such as placement, width, and gradients, to minimise visibility of the road and the earthworks associated.
 - Rehabilitate fill batters with planting to merge with surrounding landscape patterns, and to provide visual screening.
 - No visible cut slopes along the collector road where the road crosses over the saddle of the ridgeline, when viewed from Waitangirua, Cannons Creek, and Aotea.
 - No streetlights along the collector road where the road crosses over the saddle of the ridgeline, to maintain '*distinctive patterns of open spaces with few prominent or incongruous structures*'.
95. Inclusion of a requirement to prepare a Landscape Management Plan for public and private open space for protecting and enhancing regenerating gully vegetation and maintaining open spaces along the ridgeline. Additional requirement for legal measures such as covenants and/or consent notices to achieve coherence through consistent development, management, and maintenance of these areas.
96. Employ best-practice water sensitive urban design strategies and ecological enhancement to avoid, remedy or mitigate the adverse effect of development on freshwater quality and wetlands.
97. The location, gradient and scale of roading and building typologies should be carefully considered, in relation to topography, to ensure earthworks are suitable for the site.
98. Lots on the Landcorp site, within Cannons Creek SAL, should be located adjacent to the Waitangirua suburb on the lower elevations. Also, consider utilising a clustered housing strategy, in areas with less visual impact to minimise adverse visual effects overall.
99. Minimise adverse visual effects with indigenous buffer and mitigation planting.
100. Encourage connectivity and neighbourhood permeability by providing connections to public transport nodes at suitable distances from higher density zones. Also integrate a network of desirable walkways for active transport.

101. Establish a well-connected open space network for both new and existing residents. This should:

- provide connection to surrounding suburbs,
- promote diverse outdoor recreation activity,
- enhance and expand ecology areas, establishing an ecological corridor for region-wide environmental benefits.

CONCLUSION

102. Much of the site is identified as a Special Amenity Landscape partially due to its proximity to the Eastern Porirua suburban areas of Waitangirua, Cannons Creek and Aotea. For this reason, it also an appropriate site for development.

103. While the landscape has numerous developmental constraints, there are pockets within the topography which are well-suited for residential dwellings if implemented in a sensitive and low impact manner.

104. The approach to development is therefore crucial. The Draft Structure Plan is intended to provide guiding principles which will inform a future plan change process if the site is rezoned to FUZ and the future resource consent applications which would follow.

105. Through incorporation of the recommendations set out in this landscape assessment, significant adverse landscape amenity effects could be adequately avoided, remediated, or mitigated. However, considerably more work is required to ensure the site is developed in a manner which maintains and enhances the values of the Cannons Creek Ridge Special Amenity Landscape.

106. If this is done rigorously, we are confident that development of the site could positively contribute to the urban fabric of the surrounding suburbs and enhance this landscape for the wider Porirua Region.

REFERENCES

- [1] Boffa Miskell, "Porirua Landscape Management Strategy for Rural and Open Space Areas," Porirua City Council, Porirua, 2013.
- [2] NZILA Education Foundation, "NZILA Best Practice Note: Landscape Assessment and Sustainable Management 10.1," NZILA, 2010.
- [3] Isthmus, "Final Landscape Evaluation 2020," Porirua City Council, Porirua, 2020.
- [4] Boffa Miskell, "Porirua Landscape Evaluation: Draft Technical Assessment," Porirua City Council, Porirua, 2018.
- [5] Porirua City Council, "Porirua Growth Strategy 2048," Porirua City Council, Porirua, 2019.

APPENDIX SEVEN

TRANSPORT SUMMARY REPORT

TRANSPORT SUMMARY REPORT
FUTURE URBAN ZONE SUBMISSION

PREPARED FOR SILVERWOOD CORPORATION LIMITED

October 2020



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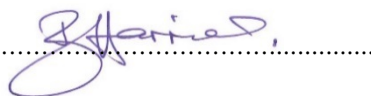
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Future Urban Zone Submission

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1. Introduction

Stantec has been commissioned by Silverwood Corporation Limited to assess the traffic and transportation effects of their proposed submission to rezone land to the east of Waitangirua, from the current predominant¹ 'General Rural Zone' captured within the Porirua Proposed District Plan (**PDP**), to a 'Future Urban Zone' (**FUZ**) classification that will enable subsequent residential development via a future structure plan / plan change process.

This Transport Summary Report has been prepared to provide an overview of the transportation investigations and traffic analyses undertaken to accompany the submission and to inform the Draft Structure Plan, which sets out a vision for future development of the land for residential purposes. Accordingly, this report includes the following:

- Chapter 2: Site Context and Location – describes the site location in the context of the surrounding transport network, including the Transmission Gully Motorway (**TGM**) and associated new Link Roads;
- Chapter 3: Development Proposal – describes the Draft Structure Plan and vision for developing the Site;
- Chapter 4: Site Access and Connectivity – describes the proposed access strategy for connecting the Site to the external road network, including walking, cycling and public transport connections to support the Site;
- Chapter 5: Traffic Generation – describes the expected trip generation and distributions onto the adjacent transport network, assuming full development of the Site;
- Chapter 6: Development Traffic Impacts – provides an assessment of the anticipated development traffic impacts on the network; and
- Chapter 7: Internal Rooding Arrangements – describes the proposed surface level access strategy for the Site.

In summary, based on the assessment undertaken to date, it is concluded that the proposed rezoning of the site to FUZ can be supported on traffic and transportation grounds.

¹ Some of the northern portions of the site fall within the General Residential Zone

2. Site Context and Location

The area of land included in the submission extends over several properties (including parcel ID 7542741 "Lot 1"; parcel ID 7542744 "Lot 6 south"; parcel ID 7542743 "Lot 6 north", and parcel ID 6981752 "Landcorp" property), with this land currently comprising a mixture of pasture, scrub and plantation forestry. These properties, collectively referred to as the 'Site', have been identified as part of the Council's future growth area and lend themselves well to accommodating residential activity in an equivalent manner to the established residential land use to the north and west, with ready access to the primary road network and local amenities via the new Waitangirua Link Road.

Figure 2-1 shows the location of the Site in the context of the surrounding land use and transport network.

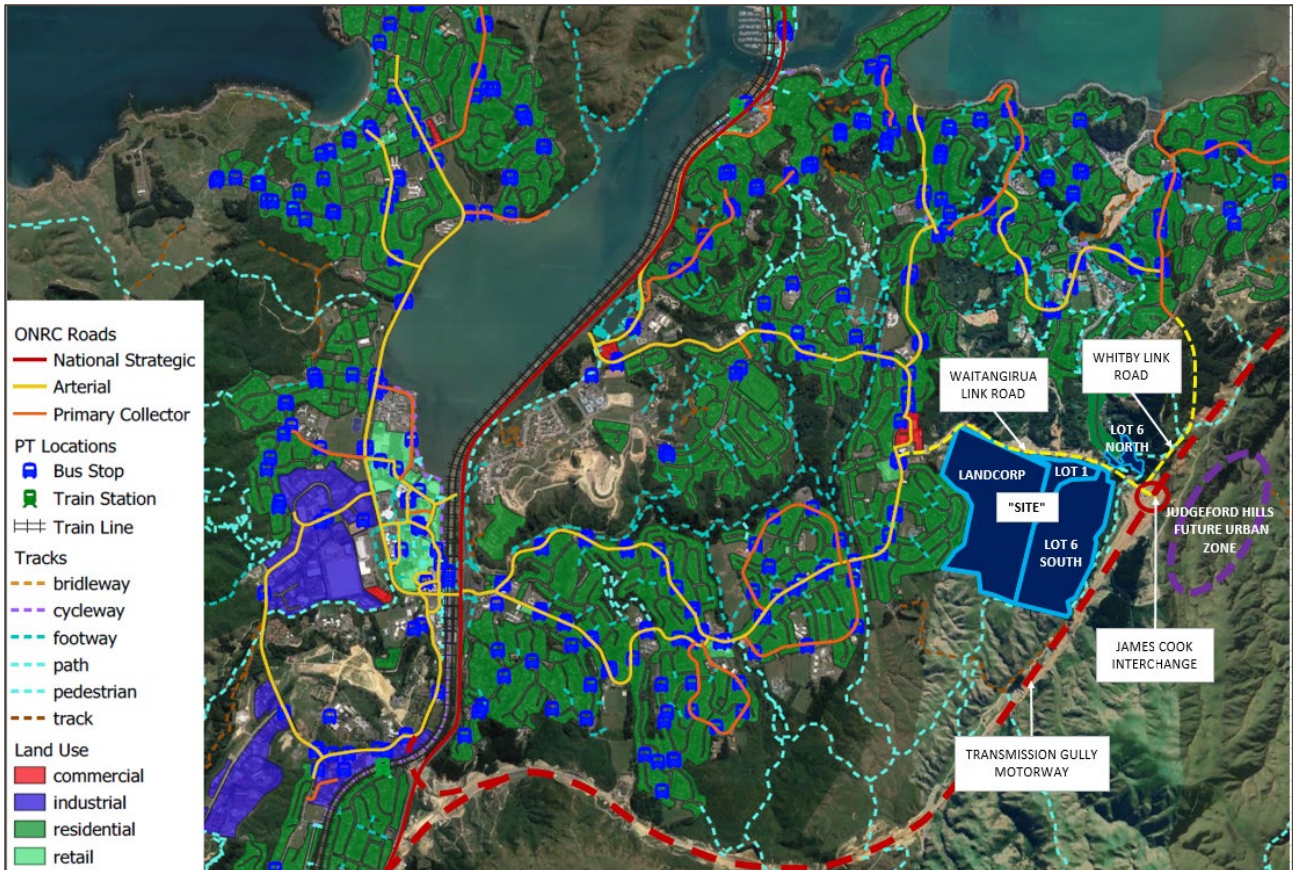


Figure 2-1: Site Location

As shown above, the Site is well located in terms of ready access to the established Waitangirua retail and commercial neighbourhood centre, public transport routes that operate along Warspite Avenue, and the emerging TGM and associated link road infrastructure which is described in more detail below.

2.1.1 Transmission Gully

The TGM is a 27km four lane motorway connecting between Mackays to the north and Linden to the south, that will form the key north-south State Highway 1 route for Wellington. New interchanges located at State Highway 58, James Cook (which in turn provide access to the Waitangirua and Whitby Link Roads) and Kenepuru, will provide for convenient access to and from this key roading corridor for local Porirua traffic.

TGM and its associated link roads are scheduled to open in September 2021 and provide an opportunity for development of land adjacent to this significant new transport infrastructure, through delivery of improved access and road network capacity.

2.1.2 Waitangirua Link Road

The new Waitangirua Link Road connects with TGM at the James Cook interchange, and extends west some 2km to intersect with Warspite Avenue via a new signalised four-way intersection with Niagara Street. The road has been designed to provide a single traffic lane in each direction (with cyclists accommodated within a wide shoulder), a 50km/h speed limit, and has provision for a future footpath on

the northern side of the carriageway. Approximately 150m west of the James Cook interchange the Waitangirua Link Road intersects with the new Whitby Link Road via a standard give-way t-intersection, with priority afforded to traffic on the former.

2.1.3 Whitby Link Road

The new Whitby Link Road will provide a 1.5km long connection between the Waitangirua Link Road and Navigation Drive to the north. It includes an equivalent road typology and posted speed limit as the Waitangirua Link Road, with provision for a future footpath to be constructed on the western side of the carriageway.

2.2 Local Traffic Volumes

Future traffic volumes for the local network in the vicinity have been obtained from the Northern Wellington Area SATURN Model (**SATURN model**), with future peak period and daily traffic volumes summarised in **Table 2-1** below, for the forecast years 2021 and 2031.

Table 2-1: Local Traffic Volumes

Road Name	Number of Traffic Lanes	2021			2031		
		AM (vph)	PM (vph)	Daily (vpd)	AM (vph)	PM (vph)	Daily (vpd)
Waitangirua Link Road ²	2	500	600	5,000	600	700	6,000
Whitby Link Road	2	300	200	3,000	300	250	3,400
TGM ³	4	1,900	2,200	20,000	2,150	2,500	23,000
Warspite Avenue ⁴	2	600	670	6,000	650	750	7,000

The expected traffic volumes at both 2021 and 2031 during the peak periods, and across the day, can be adequately accommodated on the proposed new roading infrastructure with some link capacity to spare. A quantitative assessment of the proposed FUZ development traffic on the performance of the local key intersections is provided at Chapter 6.

² between Warspite Avenue and Whitby Link Road

³ TGM through traffic lanes south of the James Cook interchange

⁴ north of the Waitangirua Link Road intersection

3. Development Proposal

The purpose of the proposed submission is to achieve a single FUZ zoning across the Site (to align with those areas already zoned 'General Residential') and enable a more integrated approach to be taken for residential development in the future.

The current vision for the Site includes a mixture of residential development typologies which have been designed to be cognisant of the Site's natural topography, and seek to achieve an appropriate level of scale, density, and integration with the existing landscape.

By way of providing a framework for what the future development of the Site may look like, a draft structure plan (provided separately in the wider submission documentation) has been prepared to show potential residential development areas, indicative roading layouts and connection points to the external network, along with walking and cycling links to (and through) the wider Site.

With regard to vehicle connectivity, the draft Structure Plan includes a total of four potential access points off the Waitangirua Link Road, providing individual connections to the Landcorp, Lot 1, Lot 6 south and Lot 6 north sites, respectively.

Whilst exact dwelling yields will need to be confirmed through further site investigations within the context of topography, landscape amenity, and the extent of existing wetland/significant natural areas (**SNA**), for the purposes of assessing the development traffic impacts a total site-wide yield of 500 dwellings has been assumed.

3.1 Engagement with Key Stakeholders

To date, engagement with both Porirua City Council (**Council**) and the Waka Kotahi NZ Transport Agency (**Transport Agency**) has been undertaken to invite feedback on the proposed rezoning and associated draft precinct plan.

This liaison is expected to continue through the successive phases of the project as more detailed design for development at the Site is progressed through future structure planning processes.

4. Site Access and Connectivity

4.1 Vehicle Access

Development of the Waitangirua Link Road which the Site has direct frontage to, provides a significant opportunity for connecting the respective properties to the external road network. As described in the previous chapter, it is intended that provision be made for individual access to each of the four separate properties, thereby allowing flexibility in how and when the Site may be developed.

The challenging topography and presence of SNAs along a portion of the Link Road alignment / Site frontage presents some constraints in terms access. In this manner, the Waitangirua Link Road construction plans include provisional access locations to each of the respective Site lots, which logically have taken account of both the Link Road alignment (to ensure appropriate sightlines can be achieved) and topography, to ensure a practicable outcome for delivering vehicle connections to these adjacent properties.

Essentially, the Structure Plans proposed access strategy has adopted these indicative locations for accommodating the new Site roading connections, which would likely comprise a standard t-intersection for each of the Lot 1 and the Landcorp sites, whilst a four-way priority intersection is considered to represent an appropriate arrangement for accommodating combined access to Lot 6 north and Lot 6 south.

For context, these indicative access locations are illustrated (by the red arrows) in **Figure 4-1** and **Figure 4-2**, below.



Figure 4-1: Indicative Access Locations to Lot 6 North and Lot 6 South (view south)

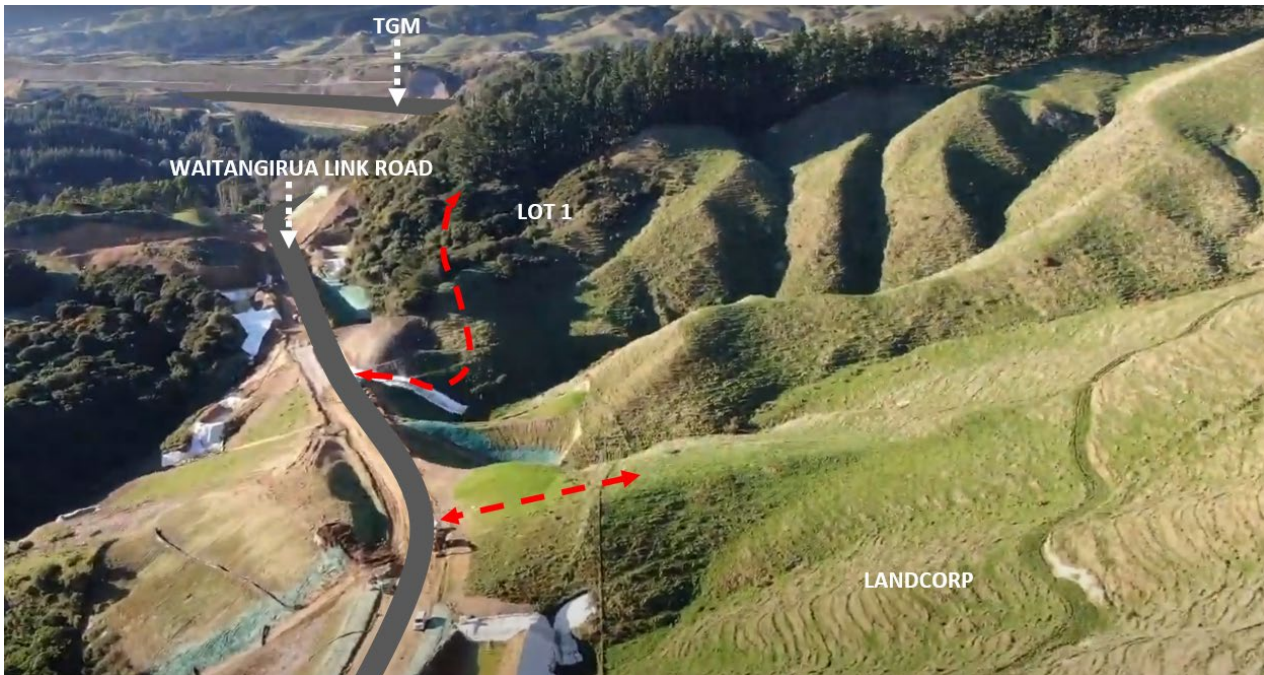


Figure 4-2: Indicative Access Locations to Lot 1 and Landcorp (view east towards TGM)

Confirmation of the ability to achieve the minimum sight distance⁵ requirements for the new roads at these locations will need to be demonstrated as further details of the access arrangements are developed, in the context of the completed Link Road and operating speed environment. The indicative locations are assessed as being able to achieve the desirable intersection separation distances in line with Austroads⁶, to avoid any left turn overlap and satisfy influence distance requirements.

It is anticipated these new intersections would include localised widening to enable right turning vehicles on the Link Road to wait, clear of through traffic. Assessment of the associated performance of these potential new intersections has been undertaken and is described in detail at Chapter 6.

4.2 Pedestrian and Cycle Connections

At present, the Site has limited access in terms of established walking and cycling routes, and there are no formal connections to the Belmont Regional Park which abuts the Site's southern boundary. The draft Structure Plan has therefore been developed to be cognisant of opportunities to support public access, and envisages the following active mode benefits across the wider Site:

- walking and cycling 'local connection' opportunity through to Arahura Crescent;
- opportunity to provide pedestrian and cycle connection through Lot 6 North, to link with Banks Boulevard, which delivers a convenient connection to possible future bus stops on the Waitangirua Link Road for existing development to the north;
- Duck Creek walking and cycling routes; and
- ridgeline walk / improved active mode connections through the site to Belmont Regional Park.

4.3 Public Transport

The nearest established bus stops are located on Warspite Avenue and are served by Route 220 (Ascot Park – Porirua – Titahi Bay), which operates every 20-mins in the peaks and half hourly in the off-peak. These existing bus stops are located about 5-10 minutes' walk from the Landcorp property, and about 10-20 minutes' walk from the Lot 6 north and south. A new future bus route operating along the Waitangirua Link

⁵ "Porirua City Council 'Code of Land Development and Subdivision Engineering' (2010)" - Figure 3.3 (based on to RTS-6 Approach Sight Distance and Safe Intersection Sight Distance) requires 115m clear sightline (noting where operating speeds are not known, posted speed limit must be factored by 15%, 50km/h posted speed limit for the Link Road = 60km/h operating speed)

⁶ Austroads (2017) 'Guide to Road Design Part 4 - Intersections and Crossings: General' – Appendix E

Road would provide an opportunity for most residents at the Site to be within a 10-minute walk of a bus stop.

5. Site Traffic Generation

In order to assess the effects of the change in zoning to FUZ that would enable future residential development, associated trip generation rates have been sourced from relevant industry standards.

5.1 Trip Generation

Surveys of households reported within the Transport Agency's Research Report 453 'Trips and Parking Related to Land Use' 2011 (**RR453**) indicates daily trip generation rates for 'Suburban' residential activities typically average around 10.9 vehicles per day (**vpd**) per dwelling, with associated peak hour movements of 1.2 vehicles per hour (**vph**). For comparison, the RTA 'Guide to Traffic Generating Developments' (**RTA Guide**) provides slightly lower peak hour generation rates for residential 'Dwelling Houses' of 0.85vph per unit.

For the purposes of providing a robust assessment of effects of the overall residential traffic generated by the proposed development on the surrounding road network, the higher RR453 peak hour and daily traffic generation rates of 1.2vph and 10.9vpd per unit, have been applied to the indicative total Site yield of 500 units, with the resultant totals of generated traffic as summarised in **Table 5-1**, below.

Table 5-1: Forecast Traffic Generation (500 dwellings)

	Arrivals	Departures	Total
AM Peak ⁷	150	450	600
PM Peak ⁸	380	220	600
Daily			5,450

At full development of the Site, around 600 vehicle movements are expected to be generated by the residential development during the morning and evening peaks, which translates to a daily traffic generation of some 5,000-5,500 vehicle movements to / from the adjacent road network.

5.2 Traffic Distribution

It is anticipated that the majority of peak hour traffic associated with commuter trips to Wellington and the Hutt Valley (via SH58) will route towards TGM, with a smaller proportion of traffic routing to and from the local area to the west / Waitangirua.

In this manner, the development traffic distribution has been determined using these wider network route choice assumptions, as well as the SATURN Model forecast traffic patterns, as the basis for informing flows at the key local intersections. The performance of these intersections with development traffic added is assessed in the following chapter.

⁷ AM Peak: 75% departures, 25% arrivals (taken from ITE 'single family dwelling')

⁸ PM Peak: 63% arrivals, 37% departures (taken from ITE 'single family dwelling')

6. Development Traffic Impacts

This chapter sets out the adopted approach for assessing the impact of generated traffic due to the FUZ zone on the adjacent road network, both in terms of the performance of the proposed new Site accesses as well as the key local Link Road intersections. The assessment considers 2021 (i.e. opening of the Link Roads and TGM) as well as 2031, representing a 10-year evaluation period to appropriately account for the uncertainty around timing of development at the Site. In each case, the critical morning (**AM**) and evening (**PM**) commuter peaks have been assessed.

6.1 Intersection Analyses

For the purposes of assessing the performance of the intersections, they have been modelled using the industry-recognised modelling package SIDRA⁹, and adopting the following assumptions:

- development trips have been assigned on the following basis: Landcorp - 40%; Lot 1 - 40%; Lot 6 south - 20%; and 16 dwellings to Lot 6 north;
- Site accesses have been modelled with a right turn bay on Waitangirua Link Road (to allow right turning vehicles to wait clear of through traffic), and a single exit lane from the development;
- the Waitangirua Link Road / Warspite Avenue intersection has been modelled as a four-way signalised intersection (with Niagara Street), with two lanes on each approach (except Niagara Street), and dedicated pedestrian crossing phases on each leg; and
- Whitby Link Road intersection has been modelled with localised widening, to allow traffic turning right from the Waitangirua Link Road to wait clear of through traffic.

Table 6-1 below provides a summary of the Level of Service (**LoS**)¹⁰ for the various intersections, with and without development traffic added. Where appropriate (e.g. roundabouts and signalised intersections), the overall intersection LoS has been reported; whereas for priority intersections the LoS on the 'worst approach' has been included.

Table 6-1: Forecast Waitangirua Link Road LoS at Intersections

Intersection	2021				2031			
	AM		PM		AM		PM	
	Base	Dev	Base	Dev	Base	Dev	Base	Dev
Warspite Ave	C	C	C	C	C	C	C	C
Landcorp Access	-	B	-	B	-	B	-	B
Lot 1 Access	-	B	-	B	-	B	-	B
Lot 6 (north & south) Access	-	C	-	C	-	C	-	C
Whitby Link Road	A	A	A	B	A	B	A	B
James Cook Interchange	A	A	A	A	A	A	A	A

The two key intersections at either end of the Waitangirua Link Road (i.e. at Warspite Avenue and at the James Cook Interchange) are shown to be operating well, with an acceptable LoS C at the signals at Warspite Avenue, and a highly performing LoS A for the James Cook Interchange roundabout. The intermediary priority t-intersections are also shown to be operating at a very good LoS B or better on all approaches, whilst the four-way intersection at Lot 6 north & south is operating well at LoS C during the peaks.

Overall, this preliminary assessment shows that with full development of the Site, there will be adequate capacity on the local road network to accommodate the forecast development traffic while maintaining entirely appropriate and acceptable Levels of Service at all key intersection points.

⁹ using the latest Version 8 of the SIDRA software

¹⁰ Level of Service (LOS) is a six-level grading system for intersection performance (A to F), where Level A represents totally uncongested operation with minimal delays and queues, and Level F represents highly congested operation with long delays and extensive queuing.

7. Internal Roading Arrangements

The Porirua City "Code of Land Development and Subdivision Engineering" (**Code**) sets out standards for new subdivisions including in respect of 'Roading and Access', for which reference is made to the New Zealand Standard NZS4404:2004 'Land Development and Subdivision Infrastructure' (which has since been superseded by a 2010 version). In addition, a number of 'Special Provisions' are included which have been adopted around the district, and which allow for narrower 'non-standard' typologies, subject to specific environment or circumstance. Accordingly, it is likely that a series of roading typologies that provide an appropriate fit for the level and nature of activity within the Site would be developed as more details of the densities and site-specific constraints emerge.

Given the challenging topography which exists across parts of the Site, appropriate consideration of internal road gradients will be required, relative to the Code, which sets out guidelines on maximums for general roads (to be vested) and suburban / rural private ways. In this regard, and noting that a single circulating roadway through the wider site extent at this stage is not considered practicable, provision for a future full-size City-bus service within the Site's movement network is unlikely to be viable.

8. Conclusions

The assessments presented in this report have been undertaken as a preliminary study of the transport related needs and implications of changing the zoning of land within the Site to FUZ. On this basis, the following conclusions have been drawn:

- traffic arising from development of the FUZ can be adequately accommodated within the adjacent roading network, with the future planned roading infrastructure providing good connectivity to the local Waitangirua neighbourhood centre and the regional transport corridor of TGM;
- the indicative location of individual site connections to the external roading network are assessed as appropriate, with future consideration of detailed intersection layout and design ensuring that the anticipated demands can be suitably accommodated;
- the structure plan provides some real benefits and opportunities to support and encourage local access and connectivity for active mode users; and
- there is no apparent traffic engineering or transportation planning reasons to preclude the rezoning of the Site to FUZ.

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APPENDIX EIGHT

GEOTECHNICAL ASSESSMENT



ENGEO

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Geotechnical Suitability Report

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Whitby

Porirua

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- Appendix 1: Slope Gradient Map

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1 Introduction

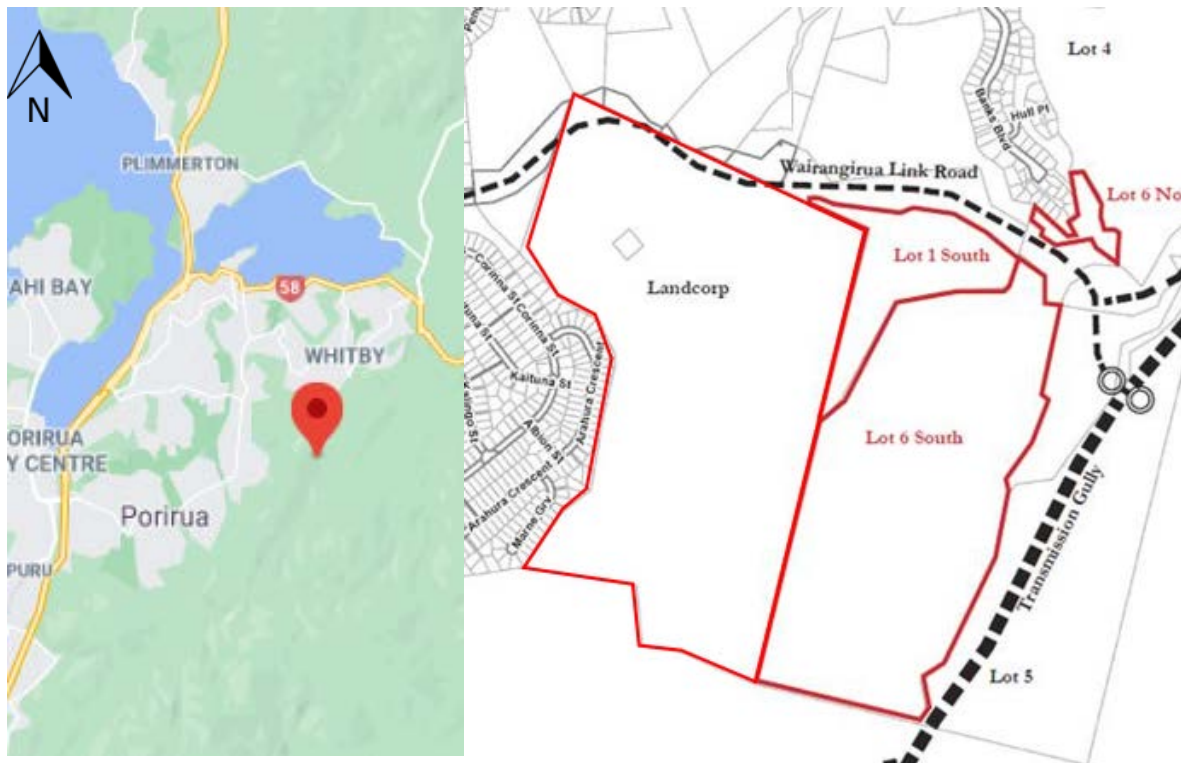
ENGEО Ltd was requested by Silverwood Corporation Ltd to undertake a Geotechnical Suitability Report of the property (herein referred to as ‘the site’) at Lot 6 Silverwood. This work has been carried out in accordance with our signed agreement dated 30 August 2020. The purpose of our assessment is to provide preliminary geotechnical advice for a Zone change of the property from a rural zone to a future urban zone (FUZ)

The purpose of this report is to provide an assessment of the geo-hazards that may affect any proposed development, and to specifically comment on potential site geotechnical challenges / constraints, and provide additional information on where such areas are located. It is our understanding that the proposed zone change is for the combined Landcorp area, Lot 6 North, Lot 1 South and Lot 6 South.

2 Desktop Study

The proposed property is situated east of the Waitangirua residential area, with farmland in-between. The Whitby residential area is to the north and immediately to the east is the Transmission Gully development. The site location plan is presented in Figure 1.

Figure 1: Site Location Plan



Images received from Google Maps and Envelope Engineering.

The site is split into four land parcels:

- Landcorp;
- Lot 6 North;
- Lot 1 South; and
- Lot 6 South.

A brief site description for each land parcel is provided below. Aerial photography has been reviewed for these areas. Due to the similarities with Lots 1 and 6 South, these two areas have been combined for the purposes of this report.

Landcorp

The majority of the site is west and north facing hillsides with steeply inclined ridgelines and valleys with the Waitangirua residential area at the base of the western facing hill slopes. Aerial photography shows that the land has been cleared of vegetation from at least the 1940s. Some slip scarps are visible on the aerial photography. Several farm tracks cross the site and two dams are present within the east facing valleys.

Lot 6 North

This section is directly east of Banks Road Boulevard and is adjacent to the Wairangura Link Road. To the east is Duck Creek and Lot 4. No significant features were noted on the aerial photography.

Lot 1 and Lot 6 South

This site is on predominantly east facing hillside with steeply inclined ridgelines and valleys. An access track runs along the west boundary and offshoots are to the power pylons which generally follow the track alignment. The site has been planted in forest between 1980 and 1988 which has since been cleared. The site currently consists of gorse and natural regrowth.

Duck creek is a narrow and shallow meandering creek which runs along the eastern boundary of the site

This site currently contains overhead power pylons and a high pressure gas main which run in a north / south orientation on the east portion of the site.

A preliminary hazard map is presented in Figure 2. A detailed map of the topography including slope grades is presented in Appendix 1. This map shows bands of increasing slope gradient which highlights increasing potential soil instability with increased slope angle.

Figure 2: Preliminary Hazard Map

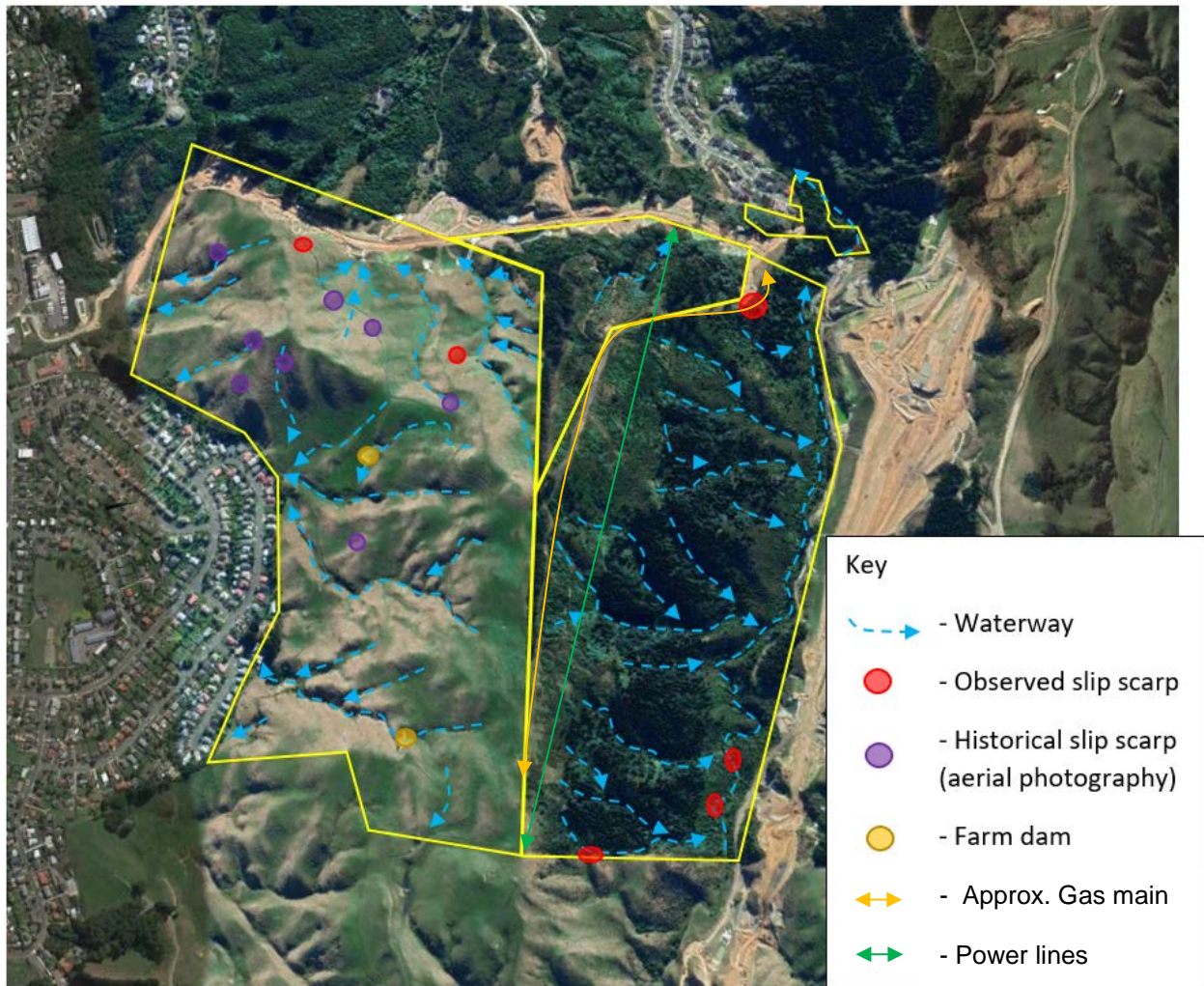


Image retrieved from Google Earth

2.1 Regional Geology

The geology of the area around the proposed subdivision is generally mapped as Triassic age Torlesse Complex (Begg and Mazengarb, 1996). Commonly termed “Greywacke”, the Torlesse rock consists of variably bedded Sandstone and Siltstone / Mudstone (Argillite) sequences which have been repeatedly folded and faulted by a series of tectonic events.

Deposits of colluvium and alluvium material (typically a gravelly silt) are likely to be located at the base of hillslopes in the area, although these deposits are not delineated on the geological map due to the large map scale.

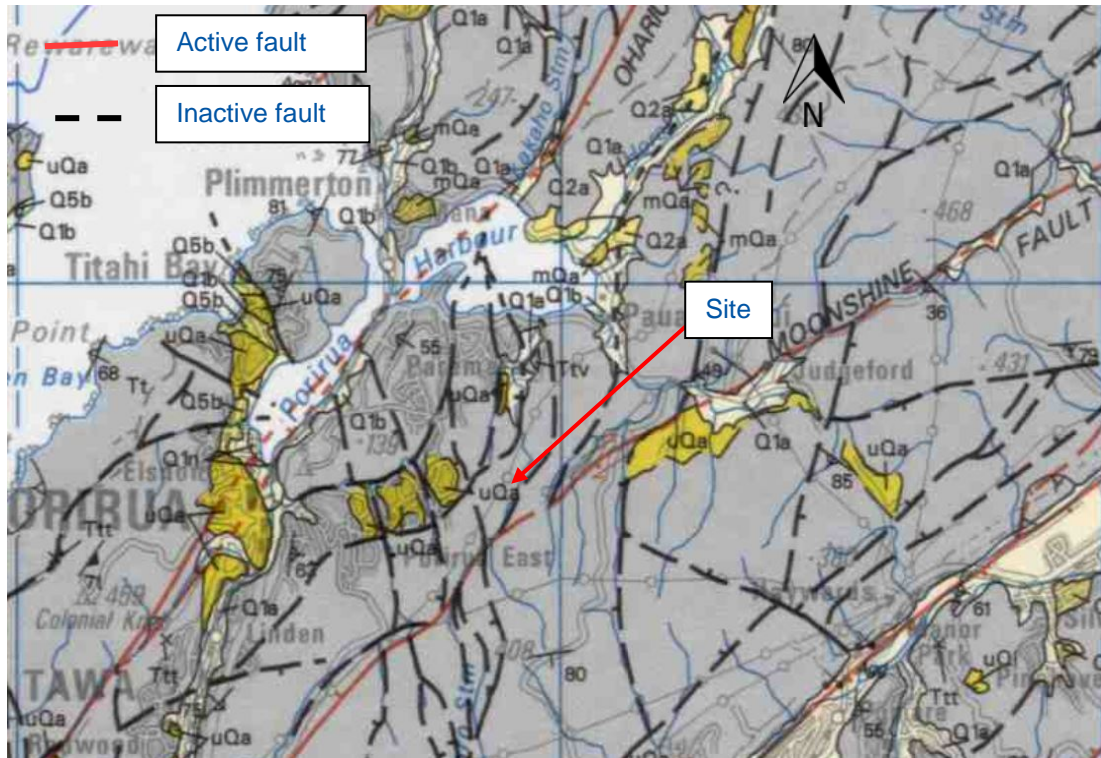
2.1.1 New Zealand Geotechnical Database

No information is available on the NZGD for this site.

2.1.2 Previous Geotechnical Publications

No geotechnical publications or reports have been retrieved which directly relate to the site.

Figure 3: GNS Science Geological Map 1: Geological Map of New Zealand



2.2 Fault Rupture

Reference to the GNS New Zealand Active Faults Database indicates that the site is located within 12 km of four active faults:

Table 1: Summary of Nearby Active Faults

Fault Name	Location Relative to Site	Recurrence Interval	Slip Rate	Single Event Displacement
Otaki / Moonshine Fault	0.1 km Southeast	Unknown	Unknown	Unknown
Ohariu Fault	3.5 km Northwest	Between 2,000 and 3,500 years	Moderate	Moderate
Wellington Fault	2.4 km East	Between 700 and 1,000 years	High	Moderate
Whitemans Valley Fault	11.6 km Southeast	Unknown	Very Low	Unknown

Data retrieved from GNS

There are no known active faults within the site however the Otaki Fault is approximately 100 m from the southern boundary.

2.2.1 Regional Seismic Hazard

The Wellington Regional Council Hazard maps for the site area indicate a “Moderate to High” combined earthquake hazard rating. This is derived from the parameters set out in Table 2.

Table 2: Lot 6 Silverwood Geohazards

Hazard Category	Rating
Combined earthquake hazard rating	Moderate to High
Liquefaction potential	Low
Ground shaking hazard	Low
Slope failure	Low to Moderate

The site is not within the mapped zone by the Greater Wellington Regional Council for either potential flooding hazard or likelihood of tsunami inundation. It should be noted that the maps are regional in nature and the hazard potentials indicated on the maps do not necessarily apply to any specific site.

2.1 Flooding and Inundation

The site is not within the area mapped by the Greater Wellington Regional Council as prone to flooding. Although we have not been engaged to conduct a site specific hydrological assessment, it could still be a potential hazard on this site in the lower lying areas and this should be taken into account during the planning and project development stage.

3 Site Walkover Assessment

A site walkover assessment was undertaken over Lot 1 and Lot 6. Landcorp and Lot 6 North were not accessible at the time of the walkover assessment.

3.1.1 Lot 6 South

A site walkover assessment was undertaken by ENGEO on the 10 September 2020 for Lots 1 and 6 South.

During the site walk the ridge track along the west boundary, as well as the southern ridgeline and Duck Creek were accessed.

We make the following observations based on our site visit:

- Duck creek which flows north and is on the eastern bounds of the site. Bedrock was observed at the surface within the creek.
- Gullies that all have a predominant flow path in an easterly direction as shown on Figure 3.
- Spurs with steep sides which are often densely vegetated with native or gorse vegetation.

- Dense vegetation which was impassable. This vegetation comprised mostly of gorse and medium sized bush thought to be natural regrowth.

The dominant material types observed were Greywacke sandstone, colluvium and alluvium.

Some bedrock was observed at the surface immediately adjacent to the site at the southern boundary. It is likely that within the site, currently covered in vegetation, there is also exposed bedrock.

The slip scarps (< 1 m in length to 5 m in length) were observed on the steep terrain and access track. These were shallow rotational failures which consisted of colluvium sliding over bedrock. It is possible that other historical slips have occurred on the steep areas, however due to the dense vegetation no observation could be made. Recent deep seated landslide hazard features were not observed during our walkover.

Figure 4: Site Photos



Photo 1: Slip scarp in access track cut.

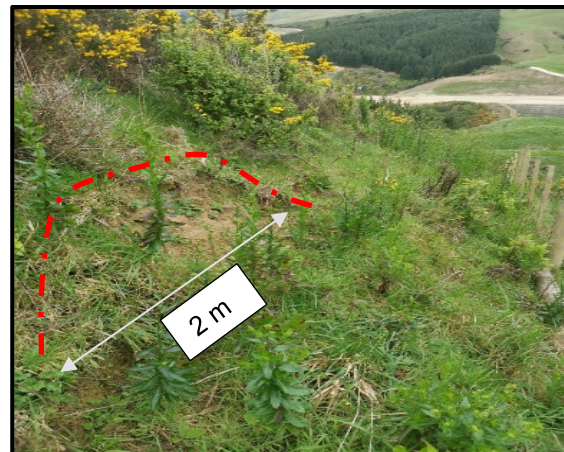


Photo 2: Slip scarp on southern boundary.

3.1.2 Ground Water

Groundwater seepage was not encountered in any of the track cuts or minor scarps identified over the sloping topography of the site. We consider it likely that the true groundwater level sits within the Greywacke rock at depth, however, perched or transient groundwater tables may exist in the soil / rock interface during significant rainfall events.

4 Potential Site Specific Geohazards

Based on our site walkover assessment and desktop study review, we consider the site is likely to be subject to several geohazards which are discussed below. A hazard risk matrix is provided in Table 3 which specifies each hazard and includes possible mitigation options for consideration.

4.1 Seismic Hazards

Potential seismic hazards resulting from nearby moderate to major earthquakes can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting.

The common secondary seismic hazards include ground shaking, soil liquefaction and lateral spreading, landslides, regional subsidence or uplift, tsunamis, flooding, or seiches.

4.1.1 Primary Fault Hazard

As previously discussed, there are no known active faults located within the immediate site area. However a major fault is mapped fault approximately 0.1 km southeast of the site. Based on our review of the GNS New Zealand Active Fault Database, it is our opinion that primary fault-related ground rupture and its effects may be possible close to the south-eastern boundary of this site, but is considered to be unlikely to extend into the development site.

4.1.2 Secondary Seismic Hazards

Tsunamis and Seiches

Based on topographic and lithologic data, the risk of tsunamis and seiches are considered negligible at the site.

Settlement, Liquefaction and Lateral Spread

As the site is generally sloping and there are limited low lying areas, settlement, liquefaction and lateral spread is not considered likely over the majority of these Sections. Lot 6 North and along Duck Creek on Lot 6 South may contain areas which are susceptible to these hazards.

4.2 Slope Instability

We consider that failures of the soil mantle on the slopes could occur as a result of either prolonged rainfall leading to ground saturation or following significant seismic events. Shallow soil failures could either occur as reactivations of existing features or as 'first-time' failures.

4.2.1 Global Instability

We consider that deep seated "global" failures may potentially occur at the site, due to steep slopes and evidence of large scale historical slip scarps. Deep seated, large scale failures typically occur where a deep weathering soil profile overlies a non-weathered rock material. Failure of this type can also be further accelerated by prolonged rainfall, or large seismic events. Soil failures could potentially involve up to 5 m depth of soil and vegetation and extend over an area of up to about 50-100 m².

4.2.2 Shallow Instability

We consider that shallow surface failures of the soil mantle on the site slopes could potentially occur as a result of prolonged rainfall, or seismic events. Soil failures could potentially involve up to 3 m depth of soil and vegetation and extend over an area of up to about 10-20 m².

4.2.3 Rockfall

Exposed bedrock has been observed and therefore we consider rockfall to be a potential hazard at the site.

4.2.4 Erosion

The removal of any vegetation is likely to accelerate the erosion and transport of surface soils downslope during rainfall events or as part of downhill soil creep.

5 Assessment of Effects

As outlined in Section 106 of the Resource Management Act (1991):

A consent authority may refuse to grant a subdivision consent, or may grant a subdivision consent subject to conditions, if it considers that:

(a) the land in respect of which a consent is sought, or any structure on the land, is or is likely to be subject to material damage by erosion, falling debris, subsidence, slippage, or inundation from any source...

We consider that all the hazards identified in Section 4.0 will require some form of mitigation to meet the requirements of the RMA. A summary of suitable mitigation options for each hazard are outlined in Table 3.

Table 3: Identified Geotechnical Hazards and Potential Mitigation Options

Hazard	Potential Mitigation options	Comments
Global Slope Failure	Creation of setback zones and / or site specific mitigation works.	A setback area allows for the potential runout distance of landslides, or loss of ground in front of structures that may occur from the steep natural slopes. Specific engineering solutions such as slope regrading, buttressing, retaining walls and drainage are also valid mitigation solutions. Detailed site geomorphological mapping and sub-surface investigation is recommended at the subdivision consent stage to indicate areas of instability.
Shallow slope failure	Creation of setback zones and / or site specific mitigation works	As indicated above but also including certain slope face treatments such as anchored netting with planting. Debris bunds may also be appropriate, typically constructed at the base of narrow gully features.
Settlement in low lying areas	Either (a) area wide ground remediation or (b) site specific design solution, such as deep piles.	Ground remediation techniques such as preloading, gravel rafts or rammed aggregate piers are proven viable solutions to mitigate against static settlement along with piled foundations through to dense, non-compressible material. Detailed site investigations in the form of CPT and Machine Boreholes are required at the sub-division consent stage to gain the depth, lithological description and density of the alluvial material.
Liquefaction	As above	As above
Erosion	Erosion control plan, blending of material during earthworks	A sediment control plan should be developed to control any potential erosion during site works.

Appendix 1 contains the slope angles at the site which have been divided into coloured bands which are geotechnically significant in terms of potential future buildability. This includes:

- 0-26 degrees – Design possible with little engineering input and bulk earthworks.
- > 26 – 45 degrees – Design possible with a moderate to large amount of engineering input and bulk earthworks.
- > 45 – 70 degrees – Only possible with significant engineering input and bulk earthworks.
- > 70 degrees – Very few locations have registered on the maps as greater than 70 degrees. Unlikely to be suitable for future development.

6 Conclusion and Recommendations

6.1 Summary of Geotechnical Constraints

The main geotechnical constraints in these land parcels is regarding bulk earthworks and methodology related to the relatively steep grade of the existing natural slopes. The site is generally suitable for cut to fill earthworks operations, however, care will need to be undertaken at the design stage to create a methodology that will enable efficient earthworks and concurrently allow to safely working beneath cuts. The steep slopes in some areas may make it impractical or difficult for certain bulk earthworks operations.

The key geotechnical considerations for site development are:

- Slope gradient; and
- Soft compressible / liquefiable ground in low lying areas.

In summary, we see no geotechnical reasons why future development that will be enabled through rezoning cannot be successfully engineered and constructed.

We recommend that site / stage specific investigation and design is undertaken at Resource / earthworks consent stage.

7 Limitations

- i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Silverwood Corporation Ltd, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.
- ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.
- iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.
- iv. This Limitation should be read in conjunction with the Engineering NZ/ACENZ Standard Terms of Engagement.
- v. This report is not to be reproduced either wholly or in part without our prior written permission.

We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on (04) 472 0820 if you require any further information.

Report prepared by



Thomas Vollebregt
Engineering Geologist

Report reviewed by



Guy Cassidy, CMEngNZ (PEngGeol)
Principal Engineering Geologist



APPENDIX 1:
Slope Gradient Map

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Legend

site

Slope (deg)

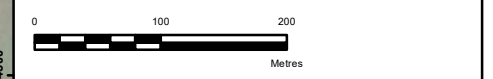
0 - 26°

> 26° - 45°

> 45° - 70°

> 70°

Aerial: LINZ and Eagle Technology, CC BY 4.0.
Map image: Eagle Technology.



PROJECTION: NZGD 2000 New Zealand Transverse Mercator

ENGEO

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Title: Slope Gradient Map

Client: Silverwood Corporation Ltd		Figure No:
Project:	Designed: TV	1
Lot 6 Silverwood	Drawn: RW	
	Checked: GC	
	Date: Sep 16	Size: A3
Proj No:	Scale:	Revision:
17754.000.000	1:6,000	A

ORIGINAL FIGURE PRINTED IN COLOUR

APPENDIX NINE

NGĀTI TOA CORRESPONDENCE



**Te Rūnanga o
Toa Rangatira**

Proposed District Plan
Environment and City Planning
Porirua City Council
PO Box 20-218
PORIRUA

16 November 2020

To whom it may concern

Silverwood Corporation Limited Submission on Proposed Porirua District Plan

This letter is written in support of the Silverwood Corporation Limited (SCL) submission on the publicly notified Proposed Porirua District Plan to rezone the Silverwood and Landcorp sites from Rural to Future Urban Zone (FUZ).

The Landcorp site was listed as a Deferred Settlement Property (DSP) in the Ngāti Toa Rangatira Deed of Settlement. DSPs are offered to iwi as commercial redress, and therefore the intention that sits behind that offer is to redress the economic resources lost through Crown breaches of the Treaty of Waitangi. The rezoning of this site therefore aligns with this intention as it enables the ability or opportunity for future development.

The SCL submission *does not seek* to amend or remove any of the overlays or notations carried over from the operative Plan, or the proposed plan, but rather seeks to work within these constraints. This aligns with the values that Ngāti Toa holds in relation to the Silverwood site, the Landcorp site, and more broadly, the Eastern Porirua area. These values are noted in the document appended to this letter.

SCL have engaged and consulted with Ngāti Toa on their submission, and we are supportive of the rezoning proposal.

Ngā mihi

A handwritten signature in black ink, appearing to read 'H. Modlik'.

Helmut Karewa Modlik
Chief Executive

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Ngāti Toa Values Assessment of Silverwood and Landcorp Sites for Submission on Proposed Porirua District Plan

Cultural values associated with an area or activity are more than just those things that are important to the iwi. They are a reflection of who we are as tangata whenua and a living expression of the contribution we have to make to the future development of our people and our community.

Based on the review and analysis of existing information (including previous CIA's, Deed of Settlement, Strategic Plans, the following are a list of Ngāti Toa values that are identified as important and/or significant to the proposed area and proposal to rezone the Silverwood and Landcorp sites from Rural to Future Urban Zone

Kaitiakitanga

Kaitiakitanga is a critical value regarding environmental stewardship and it is summed up best as:

‘an inherited responsibility of those who hold mana moana and mana whenua to ensure that the mauri of the natural resources of their takiwa is healthy and strong, and the life-supporting capacity of these ecosystems is preserved’.

The RMA defines Kaitiakitanga as:

“the exercise of guardianship by the tangata whenua of an area in accordance with tikanga Māori in relation to natural and physical resources and includes the ethic of stewardship.”¹

This definition recognises that we all have a part to play as guardians to maintain and enhance our natural resources for current and future generations. Any activity that has the potential to adversely affect the environment must be avoided.

Kotahitanga - Partnership

Working in true partnership built on shared commitment, good faith, active engagement and commonality of purpose.

This value identifies a shared commitment that Ngāti Toa seek to work proactively and in partnership to ensure that the values identified are reflected and expressed in a meaningful way. Working as one (kotahitanga) for the benefit of the community is a critical value.

Mana

Ngāti Toa's role as mana whenua is critical to any current and future development. Opportunities to revitalise, promote and uphold our connection to place should be explored. This can include, but is not limited to, signage, place and street names, landscaping and development. The role and visibility of Ngāti Toa should be advanced at every opportunity.

Ki Uta Ki Tai – Holistic and Integrated Management

This value (which translates to ‘from the mountains to the sea’) arises from a shared belief by Ngāti Toa that resource management cannot be viewed in isolation. It requires a holistic approach which recognises the interconnected nature of the natural world. Māori resource management practices have always recognised that an effect on one resource can also have a flow on effect to others. In order to mitigate the impact of one, you must also consider how you mitigate or manage the others. This holistic approach to resource utilisation is a critical component of a Māori world view and to

¹ Section 2, Resource Management Act 1991.

the value of kaitiakitanga. Any potential adverse effect from this activity on fresh or coastal water, sites of significance, waahi tapu or other interests of Ngāti Toa must be avoided, remedied or mitigated.

Mātauranga and Te Reo Māori

This value recognises that mātauranga Māori and Te Reo Māori are a taonga and should be respected and valued for the contribution they can make to decision making processes and operational delivery for holistic (community, environmental, cultural) wellbeing. Te Ao Māori is an equally valid source of knowledge in understanding the rich interactions that exist within tribal decision making.

Rangatiratanga

Self-determination and the ability to determine one's own direction and approach to sustainable development. This recognises Ngāti Toa's desire to introduce a unique approach to co-govern and co-manage urban develop projects moving forward.

Manaakitanga

Protection and preservation to ensure good health and well-being. Recognition that our actions will be considered and justified by using the best available information and good judgement to ensure positive cultural, economic and environmental outcomes.

Te Mana o Te Wai

Valuing freshwater and all that it represents and provides for, including its inherent right to exist in its own state, as well as the species and ecosystems within and surrounding it. To Ngāti Toa (and to Māori generally) water is a taonga – 'he taonga te wai'. Our ancestors referred to freshwater as the 'lubricant of life', and they maintained a strong reliance on water for physical and spiritual sustenance.

Mauri

Mauri is the life force that exists in all aspects of the natural world. Customary concepts of whakapapa, tapu, and tikanga are exercised in order to preserve and nurture mauri inherent in the environment.

Mahi mo te iwi

Opportunities to build capability and capacity of iwi members is a critical priority for Ngāti Toa. This includes employment, education, training, mentoring and governance. Opportunities to provide long term and sustainable employment and training for our people is valued.

Oranga/Ohanga

Sustainable housing and economic development opportunities are valued by Ngāti Toa. The ability to invest in sustainable opportunities to grow the tribal assets and also the provision of healthy homes is a priority. Tribal wellbeing (cultural, economic, environment) is a key measure of success in this development.