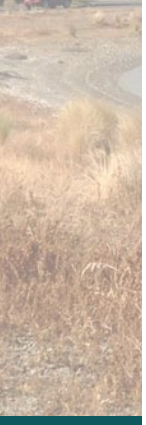
NELSON
LANDSCAPE STUDY 2015
Landscape Character Assessment

Boffa Miskell

canopy



ACKNOWLEDGEMENTS

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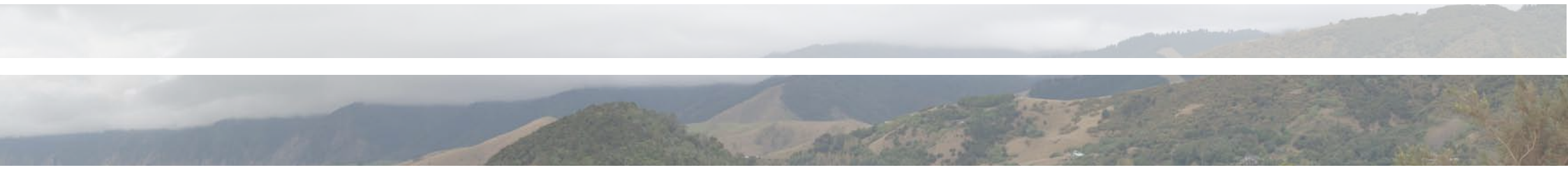
DISCLAIMERS

At the time of releasing this draft, community consultation and engagement with iwi was yet to occur. Information relating to Significant Natural Areas was also not available. The outcomes of future engagement and assessment work may be used to inform future revisions of character area descriptions.

Landscape Character Assessment

23 March 2015

NELSON
LANDSCAPE STUDY 2015



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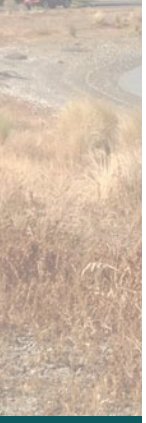


SECTION A: BACKGROUND

INTRODUCTION

The Nelson Landscape Study has been commissioned by Nelson City Council to assist in developing planning measures for managing landscape change in Nelson District. This assessment forms the first phase of an initial two stage landscape study encompassing a landscape character assessment and a preliminary landscape evaluation. This has also been prepared in conjunction with the Coastal Natural Character project.

The flow chart opposite shows the staged structure of the landscape study process; each stage informs the next. The landscape character assessment process has informed a preliminary landscape evaluation and will inform future stages of work.

PURPOSE OF THE NELSON LANDSCAPE STUDY

The purpose of the Nelson Landscape Study is to help inform a review of the Nelson Resource Management Plan (NRMP) and production of the combined district and regional plan known as the 'Nelson Plan'.

Landscape, as defined by the New Zealand Institute of Landscape Architects, is the "cumulative expression of natural and cultural features, patterns and processes in a geographical area, including perceptions and associations"(NZILA, 2010). All landscapes are dynamic and continually change. The rate of change varies under different conditions which include changes in geomorphology, climate, and use. In Nelson, the rate of change in the landscape varies from the essentially natural changes in vegetation and topography along remote areas of the Bryant Range and Richmond Forest Park; to the rapid change of urban development – that is evident along parts of the Port Hills Ridge and Stoke Foothills. In between, there are changes associated with land-based production activities such as farming and forestry; developments providing for peri-urban or rural residential life-style; and the provision and upgrading of utility services and community infrastructure.

People have a significant influence on the patterns and features of the surface of the land. Their values, attitudes, aspirations and activities contribute to both the character of the landscape and its perceived attributes and qualities throughout the region. Some landscapes have an iconic ranking that is largely secured by the land being incorporated in the public estate of national parks where there is little threat of change other than through natural processes. Other areas may also have specific purposes as reserve areas, and strong management measures over changes that can be made. Elsewhere, there is less constraint on changes to the management and appearance of land.

In many instances, there is tension between how individuals want to use and modify land, which they own, and the community interest in some aspect or feature of that land. Following the identification of the character of the landscapes and seascapes which make up the Nelson region, this study seeks to facilitate understanding the nature and rate of change which is acceptable in landscapes across the District/Region and enable public views and opinions to be explored and represented through planning provisions.

NELSON LANDSCAPE STUDY METHODOLOGY

STAGE 1:
NELSON LANDSCAPE CHARACTER DESCRIPTIONS

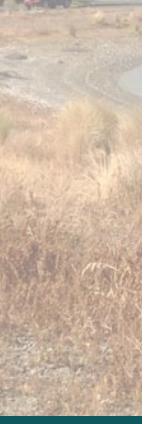
- Land typing
- GIS analysis
- Desk Study
- Aerial reconnaissance and photography
- Field Survey
- Identification of landscape / seascape character types and areas, mapping and descriptions
- NCC Review of Draft Landscape Character Descriptions
- Finalisation of landscape character descriptions and report

STAGE 2:
PRELIMINARY LANDSCAPE EVALUATION RECOMMENDED ONL / ONF

- Preliminary identification of landscape values, threats and sensitivities within landscape / seascape character areas
- Mapping potential outstanding natural features and landscapes (including those within the Coastal Environment)
- Review of Landscape Management Issues and identify pros and cons of different management options
- Prepare preliminary landscape evaluation report together with mapped candidate ONF / L sites and options to address identified threats and sensitivities

FUTURE STAGES

- Engagement with resource users, stakeholders and the community
- Confirm identification of Outstanding Natural Landscapes/ Outstanding Natural Features and other community landscape values
- Development of objectives, policies and rules and incorporation into the district plan



STUDY AREA

The study area encompasses the entirety of the Nelson City Council boundary. This includes landscape up to the boundary adjoining Marlborough District Council to the east and Tasman District Council to the south. The seaward boundary extends out to 12 kilometres from the Mean High Water Springs (MHWS) and encompasses Seascape Character Areas identified along the coastal edge.

Definition of this study area follows an initial assessment which considered the immediate backdrop to Nelson's existing urban area and coastal margin up to and including Hira Basin. The wider landscape study represents findings at a district wide scale and encompasses the finer grained focus along the margins of urban areas including the more intensively used backdrop of Nelson.

Urban areas, as defined by Nelson City Council, are not generally included within the study. An assessment of urban character is carried out at much greater detail than for wider areas of rural landscape and requires consideration of a greater density of urban residential and commercial development where the scale, age and design of the building stock, together with the pattern and scale of the streets contribute to character of the townscape.

The one exception to the defined study area is the character area associated with Port Hills Ridge. This adopts the existing shape of the Landscape Overlay identified in the Nelson RMP and is contained entirely within the urban area as defined by Nelson City Council. Whilst the character expressed within this area has been described and assessed as part of this study, the boundary does not reflect a process of determining a distinct area of landscape or townscape character within an urban environment.

LANDSCAPE CHARACTER ASSESSMENT

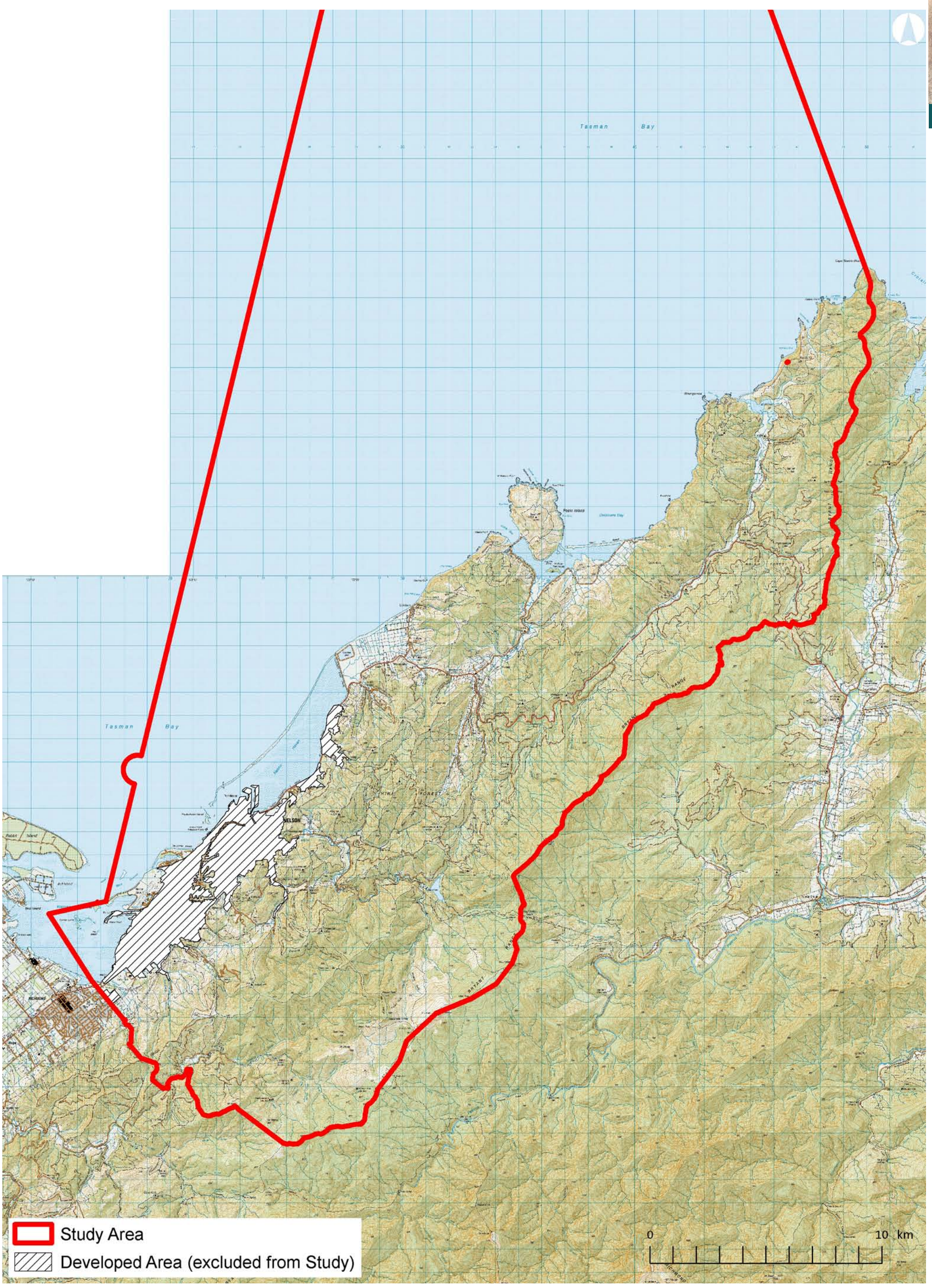
The Nelson Landscape Study is similar to several other landscape studies that have been carried out in various parts of New Zealand. This study also builds on previous work undertaken in the 2005 Nelson Landscape Study (Boffa Miskell Ltd, 2005) which focused on identifying specific areas with landscape value. Most regional and district landscape studies commence by first classifying the landscape into a series of 'units' based on definable landform, land cover and land use – the differences between various parts of the area under investigation form the initial step and basis for such subsequent work. This approach is a pragmatic response to the scale and complexity of what are often extensive and highly diverse areas of land.

Within character areas there are often sites or features that are significant components of the wider landscape and have often been identified by various specialists as having some particular importance such as a geological formation, an area of native vegetation, stretch of coastline or historic feature. These sites and features add depth and meaning to the landscape and contribute to landscape character. Communities identify with them and seek to recognize them in some way – through naming them and representing them in art and literature. Once these characteristics have been identified, then values can be assigned to help determine appropriate landscape management options.

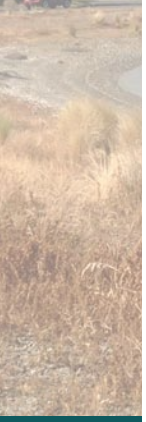
For each of the character areas identified in Nelson, the description seeks to evoke what sets it apart from any other. It aims to create a mental image of that area through words, maps, and photographs. The descriptions are not intended to prescribe any particular course of action in terms of value or how areas should be managed with these aspects dealt with in future stages of the study.

In summary, the objectives of the Landscape Character Assessment are to:

- Analyse the landscape through review of GIS data, land typing, maps, aerial and land-based photographs, and field survey;
- Identify character types and landscape character areas and their boundaries;
- Map landscape character type and landscape character areas;
- Describe each character area objectively; and
- Define key characteristics within each landscape character area.


Tasman Bay
Tasman Bay
Rocks Islands
NELSON
RICHMOND
Study Area
Developed Area (excluded from Study)
0
10 km

STUDY AREA



WHAT IS LANDSCAPE CHARACTER?

Landscape character is defined as 'a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse'. Put simply, landscape character is that which makes an area unique (Natural England, 2011).

'Landscape characterisation' is the term used for the process of identifying, mapping and describing character areas. Each of these areas has an identifiable character based on its cumulative natural and cultural expression. Characterisation provides a sound descriptive and analytical basis defining what makes an area of landscape distinct.

New Zealand has been referred to as a land of 'little landscapes'. That is, there is considerable variation in New Zealand's landscape over relatively short distances and areas. Such landscape may reoccur in regional patterns of similar types but remain distinct from one another in contributing to sense of place. Communities identify with 'their' landscapes and recognise them as having a particular combination of attributes and features that give them a distinctive 'character'.

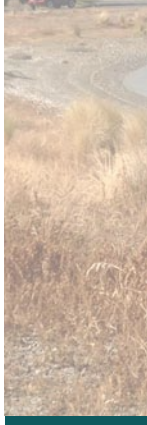
In association with the identification of landscape character areas, the Nelson Landscape Study also includes specific reference to 'seascapes'. Whilst there is no specific New Zealand guidance assisting with seascape characterisation, this component of the assessment shall draw on the NZCPS (2010), recent relevant UK guidance (Natural England, 2012) together with related methodology applied in other parts of New Zealand. This approach follows the same principles and stages as required when undertaking a Landscape Character Assessment and typically applies to areas below Mean High Water Springs (MHWS). In this context, emphasis is given to additional coastal elements, patterns and processes which need to be considered when characterising coastal and marine areas.

Landscape characterisation draws upon the work and descriptions prepared by scientists and other specialists to develop an understanding of 'sense of place'. Essentially landscape character is the interrelationship of three broad factors – landform, land cover and land use. Within these broad factors there are many variables and it is the way in which these combine that gives broad areas of the landscape a cohesive and distinctive character. Landscape characterisation, is a means to describe places in a way that is meaningful to the greater community and related to how people experience the landscape.

This study is largely descriptive and objective. Its focus is to identify distinguishing characteristics, which make one part of a district different from another. An understanding of the landscape characterisation of all landscapes at a district and regional level provides a meaningful basis for the identification of significant and important landscapes in subsequent landscape evaluation exercises.

The findings of this stage of Nelson's Landscape Study can be used in several ways:

- Providing a spatial framework for helping to develop district-wide policy (i.e. District Plan and Long Term Plans);
- Providing an integrated landscape resource document to assist landowners / applicants in preparing assessments of environmental effects (AEEs) and resource consent applications;
- As one of the tools for assessing development potential, i.e. to help in identifying appropriate areas for managed development / growth on the urban fringes and in rural environments;
- Informing the siting, scale and design of particular forms of development, such as rural residential development, wind farms, industry, etc.;
- Contributing to landscape capacity studies relating to the supply of land for housing, rural activities and forestry use;
- Providing a spatial framework for planning consistency with wider regional and national policy instruments and initiatives;
- Providing a base line against which future landscape change and the effect of landscape protection and management measures in the district plan can be monitored; and
- Informing work on special areas including areas for designation, mapping of boundaries, justifications for special application of policies.



MAPPING CHARACTER AREAS

Character areas need to be mapped to communicate their location and general spatial extent. However, as discussed above, many varied factors culminate to make one character area different to another. These factors are rarely discrete entities that conveniently stop and start at a particular point or boundary. Consequently, the lines on the maps used to identify the character areas should generally be considered as 'zones of transition' rather than precise lines that mark definable points of change.

Defining character areas is not an exact science; it relies on an understanding of work done by various specialists, analysis of topographic and various other mapping and spatial data (datasets), field survey and photography, and aerial photography. For this particular study, ground truthing was also carried out in 2013 and 2014 and included an assessment of the district by boat and helicopter. This mapping exercise has been captured and mapped at a scale of 1:25,000.

The boundaries for this character study are mostly based on topographical features such as tops of escarpments, ridgelines and hilltops, and waterways. However, in some locations, such as where the plains adjoin the hills, the toe and lower slopes of the hills have been included as part of a valley or basin character area because the lower slopes are an integral part of that local environment and cannot be separated from it. Ridgelines form natural boundaries to visual catchments (as experienced from the ground) and as such are often logical boundaries for character areas. But that is not to say every ridgeline is a boundary to a character area.

In order to identify natural features and landscapes which occur within the coastal environment, the boundary defining the inland extent of the coastal environment adopts the findings of the Nelson Natural Character Assessment (Boffa Miskell, 2015). This coastal environment boundary encompasses all seascape character areas (ie. areas below MHWS) and all or part of relevant landscape character areas which extend along Nelson's coastal edge. The assessment defining this boundary was undertaken in accordance with New Zealand Coastal Policy Statement 2010 (Policy 1) concurrently with the Nelson Landscape Study.

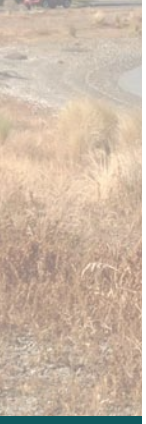
GEOGRAPHIC INFORMATION SYSTEM (GIS)

Use of spatial data through geographic information systems (GIS) has been an integral part of this study. GIS is a powerful tool used for analysing, visualising, and mapping spatial and non-spatial geographic data. GIS systematically organizes graphic data to enable a person reading an electronic map to select or de-select specific information about the area under review.

Data provided by Nelson City Council, was the primary source of data, supported by additional National GIS Datasets which were made available. This included the following information:

- Topo Maps
- Aerial Photography
- Land Typing
- Geology
- Geopreservation sites
- Soils
- Elevation
- Slope
- Catchment Boundaries
- Land Holdings
- Archaeological Sites
- Heritage Buildings and Precincts
- Land cover (LCDB3)

SECTION B: LANDSCAPE / SEASCAPE CHARACTER TYPES



SECTION B: LANDSCAPE / SEASCAPE CHARACTER TYPES

As an initial step in the landscape characterisation exercise, broad landscape character types have been identified within which distinct landscape character areas have then been defined. 'Landscape character types' form generic areas of landscape which may occur in different areas in the region. These share broadly similar combinations of geology, topography, vegetation, land use and perceptual attributes which are relatively homogenous in character. This initial step of landscape characterisation is used to inform a further division into distinct landscape and seascape character areas.

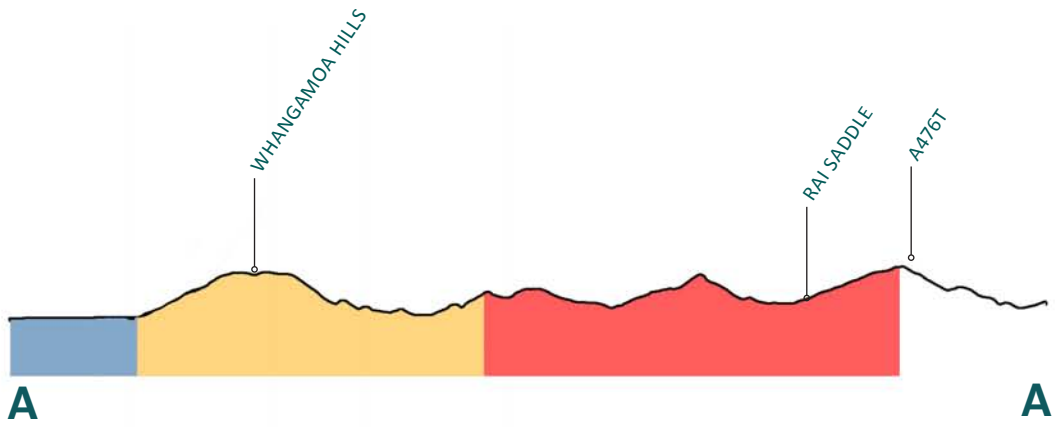
Based on this exercise, the Nelson Landscape can be defined by four readily identifiable landscape character types and two seascape character types, described in the following sections:

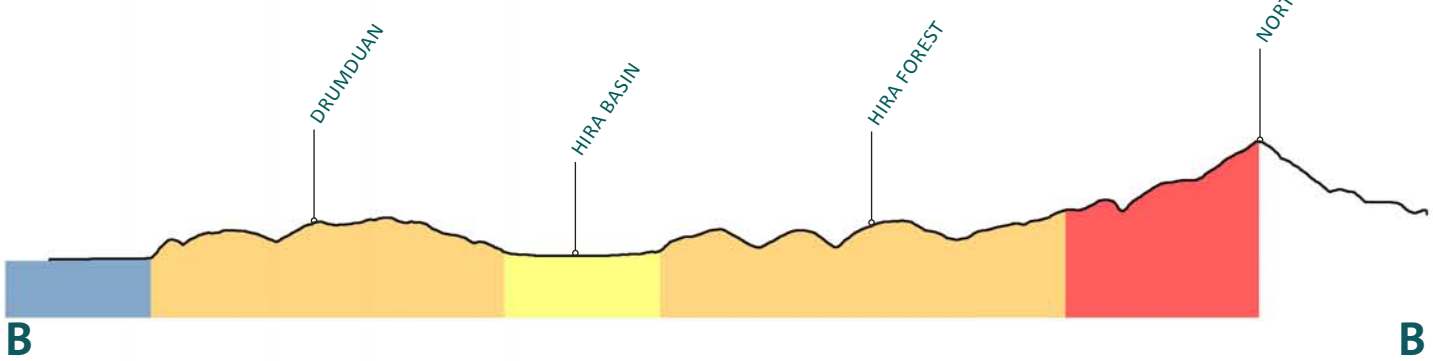
LANDSCAPE CHARACTER TYPES

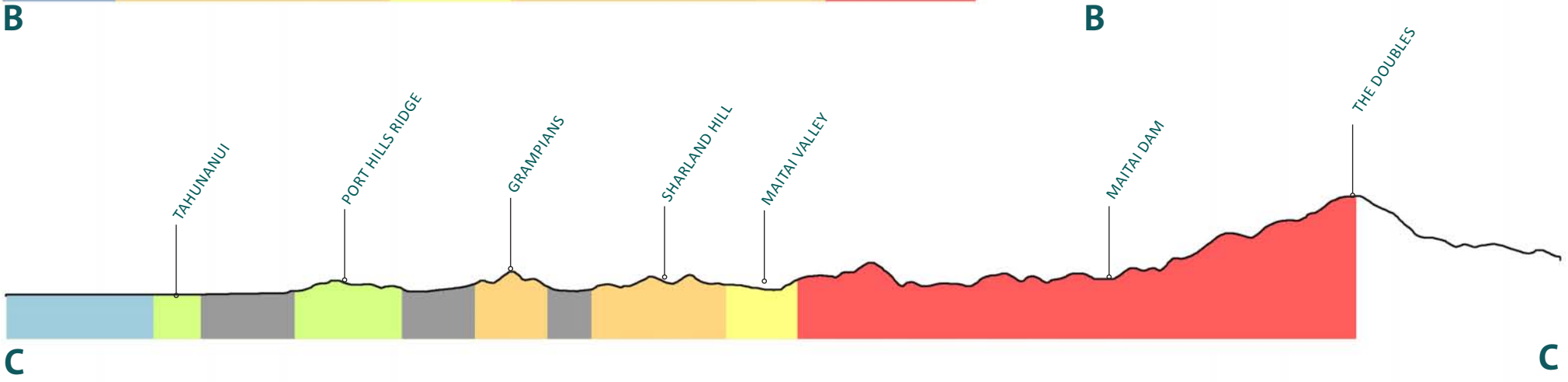
- **RANGES**
- **HILLS**
- **VALLEYS**
- **PLAINS AND FOOTHILLS**

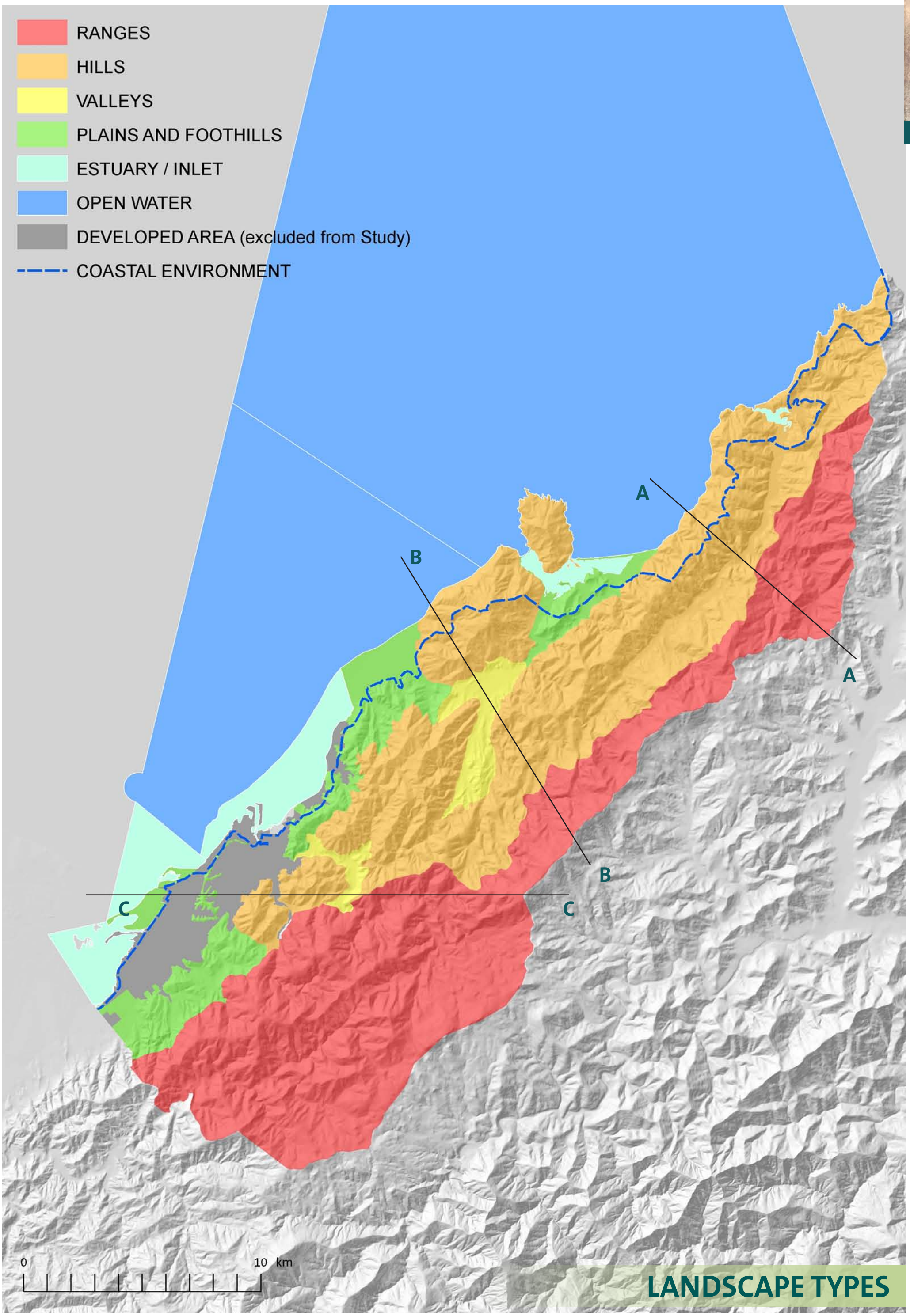
SEASCAPE CHARACTER TYPES

- **ESTUARY / INLET**
- **OPEN WATER**

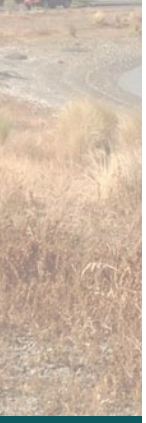








LANDSCAPE TYPES



LANDSCAPE CHARACTER TYPES

Landscape character types have been identified across all land areas above mean high water springs (MHWS). These can be identified according to the following brief descriptions:

RANGES

The ‘ranges’ landscape character type forms Nelson’s larger mountainous backdrop which are predominately established in exotic or indigenous forest. These landforms typically rise above 700 masl and run south-west to north-east along Nelson’s eastern inland boundary.

HILLS

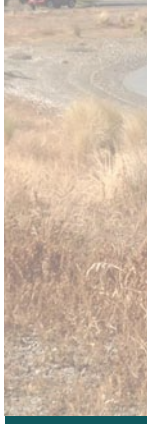
The ‘hills’ landscape character type form elevated parts of Nelson’s rural hinterland and coastal environment typically characterised by agriculture, forestry and native vegetation with limited rural settlement. Hills generally include land elevated above 200 masl and form both visible skylines in foreground views or lower elements seen against a more distant backdrop of ranges. To the north of Nelson, the Hills Landscape Character Type extends also extends along the coastline.

VALLEYS

The ‘valleys’ landscape character type forms an integral part of Nelson’s rural hinterland and generally form the setting for recreation use and rural lifestyle settlement which has become established. This includes alluvial terraces along river corridors which form contained basins or valleys enclosed within the surrounding hills and ranges.

PLAINS AND FOOTHILLS

The ‘plains and foothills’ landscape character type comprises of the foothills, toe slopes, narrow valleys and plains which typically form the foreground of more elevated hills and ranges. These landforms predominately occupy areas below approximately 200 masl and are typically seen against a more elevated hill backdrop along the skyline with varying degrees of settlement and land use.



SEASCAPE CHARACTER TYPES

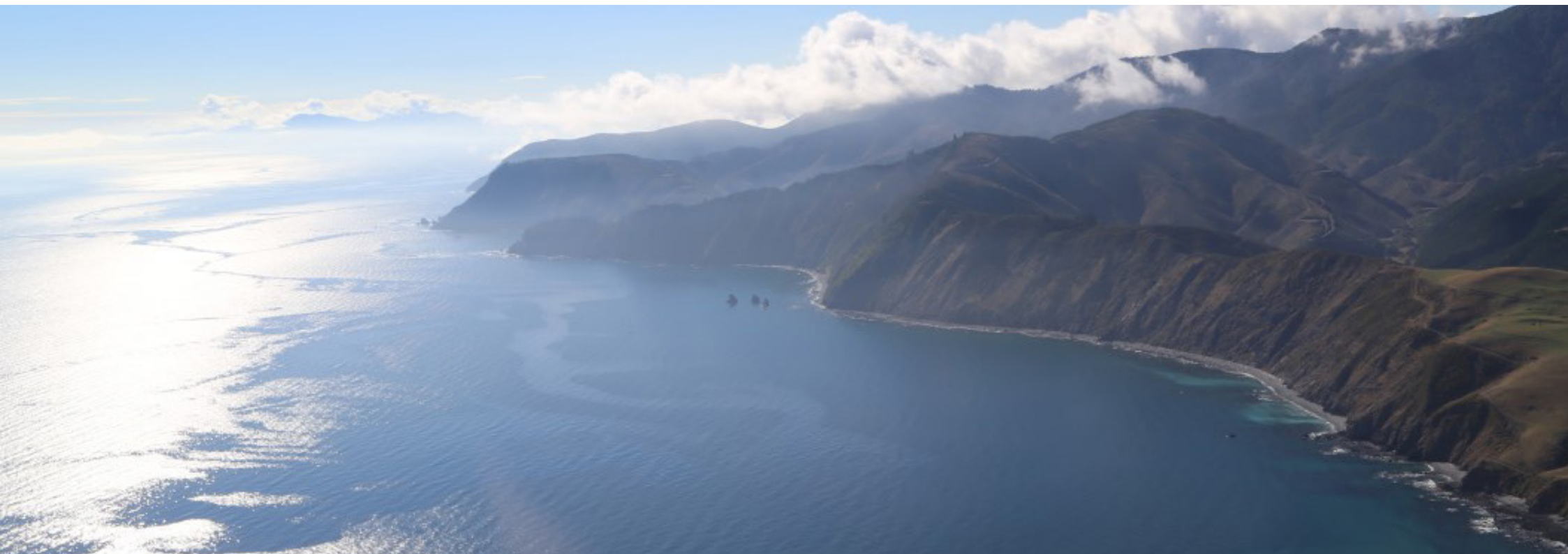
In association with landscape character types, seascape character types have been defined and typically reflect areas which include a dominant area of water seaward of the Mean High Water Springs (MHWS) mark. These can be divided into the following seascape character types:

ESTUARY / INLET

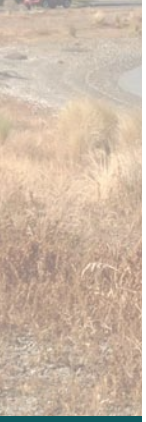
The estuary/Inlet seascape character type defines expansive areas of semi-enclosed and shallow water within which large expanses of water create the dominant seascape element. At the regional / district level, some estuaries/inlets form part of a larger unit and are not separated out.

OPEN WATER

The open water seascape character type reflects a more exposed land interface with areas of open sea. Within Nelson, this character type is framed by a variety of coastal edges including lower lying sandy and boulder beaches with spits, dunes and higher sea cliffs within Tasman Bay.

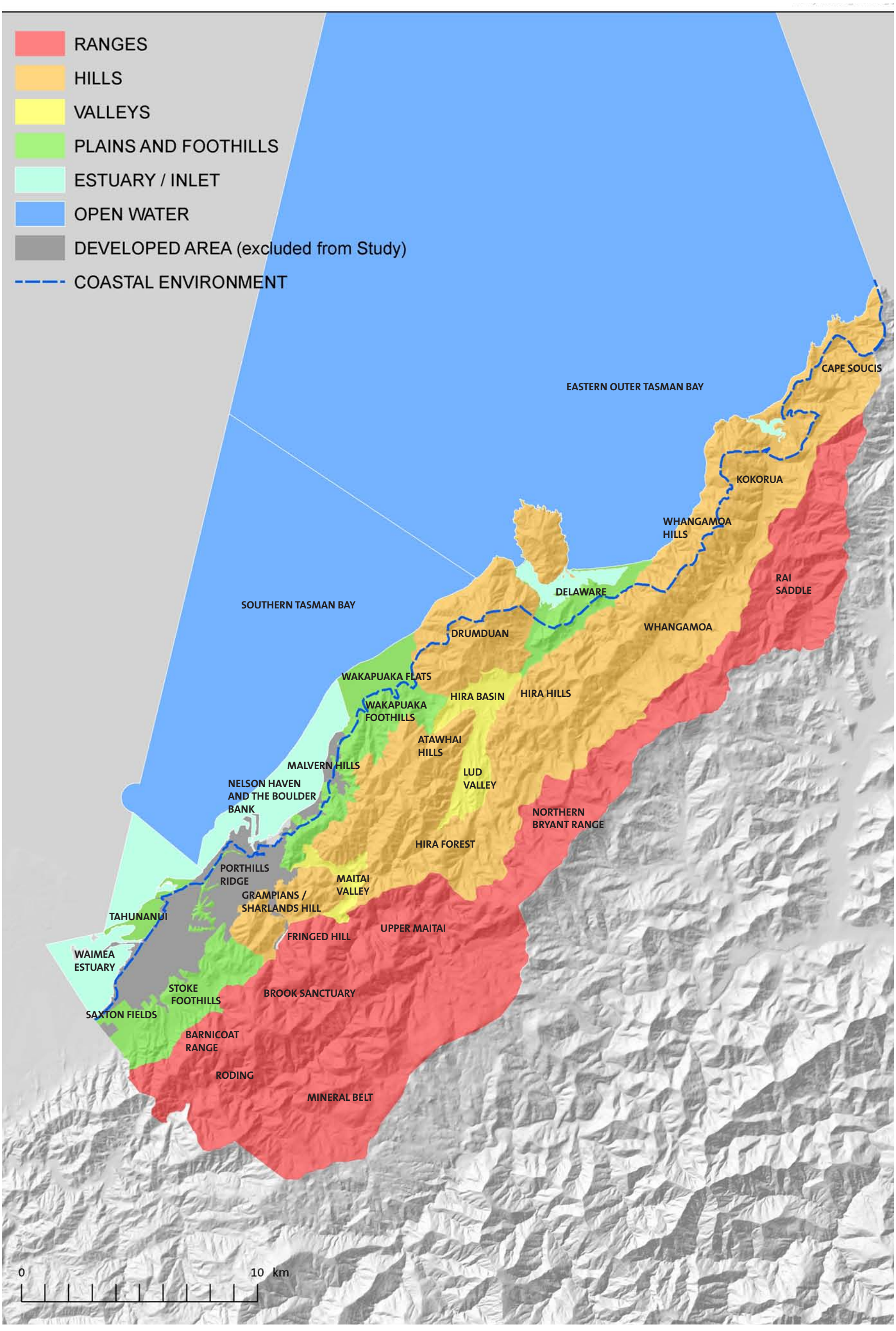


SECTION C: LANDSCAPE / SEASCAPE CHARACTER AREAS



SECTION C: LANDSCAPE / SEASCAPE CHARACTER AREAS

Based on the identified distinctive Character Types above, 32 landscape and seascape character areas have been identified. Character areas are described in the following section of the report, as follows:



LANDSCAPE /SEASCAPE CHARACTER AREAS

MINERAL BELT

The Mineral Belt forms part of a larger mountain range sequence (the Bryant Range) which extends along the eastern edge of Nelson and follows a south-west to north-east grain. The boundaries of this character area align with parts of the southern and eastern boundaries of Nelson. Its northern boundary culminates within the catchment above the Maitai Dam. The western boundary follows a transition from the more open vegetation pattern characteristic of the Mineral Belt to more substantial vegetation within the Roding Valley and lower elevations within the Maitai catchment.

LANDFORM

The mineral belt extends to a maximum elevation of 1,129 masl at Dun Mountain and follows a sequence of elevated summits above 900 masl. The slopes along the Mineral Belt are moderately steep with steep upper mountain slopes and summit ridges. Numerous craggy outcrops and scree deposits are also scattered throughout the landform and reflect an open, rugged and exposed character. This unique assemblage of mineralised rock was once a part of an identical assemblage which outcrops in Fiordland today and has been horizontally offset some 480km by successive movements on the Alpine Fault during the past 20 million years.

The rocks and soils of the Mineral Belt have a distinctive reddish-brown colour on account of their 'ultramafic' origin consistent with the Ultramafic Land Type (Lynn, 2013). This reflects dark coloured 'mafic' minerals high in iron and magnesium and generally low in silica and potassium. The resultant serpentine soils typically lack plant nutrients and so are devoid of vegetation, apart from stunted and sparse shrub cover and grasses. A cluster of lakelets at Dew Lakes and Rush Pools also occupy elevated parts of the Upper Maitai catchment.

LAND COVER

Vegetation within the mineral belt is strongly influenced by the underlying geology which provides a sharp contrast with adjoining areas of native forest in lower areas of the Roding Valley and neighbouring areas of the Marlborough District. The contrast between vegetation types has been accentuated by both Maori and European burning and it appears much of the mineral belt at lower altitudes was originally covered in forest of a different composition to adjoining areas (Johnston, 1987).

The predominant vegetation type within the mineral belt includes open tussock grassland, notably the dominant tussock Chionochloa defracta, with areas of stunted flax and shrubs. There are many examples of dwarf species of vegetation found within the belt that grow much larger elsewhere, for example Kapuka (Griselinia littoralis) which can normally grow up to 20m tall but is reduced to 2 or 3 metres.

LAND USE

The Mineral Belt has had a long history associated with mining which extends from early Maori. Initially early Maori mined pakohe (grey argillite), a prime source of rock for working into stone implements and include abandoned mining sites at Rush Pool and Dew Lakes (Johnston, 1987). Later, copper mineralisation was found within the Mineral Belt in 1852 in the headwaters of the southern branch of the Maitai River and spurred a subsequent wave of copper and chromite mining throughout the later part of the 19th century and early 20th century. A number of disused mines from this period are also peppered throughout this character area, particular at Coppermine Saddle and towards the southern boundary of Nelson, many of which are accessed from the Historic Dun Mountain Railway Line (1862). The remainder are accessed from the Roading area.

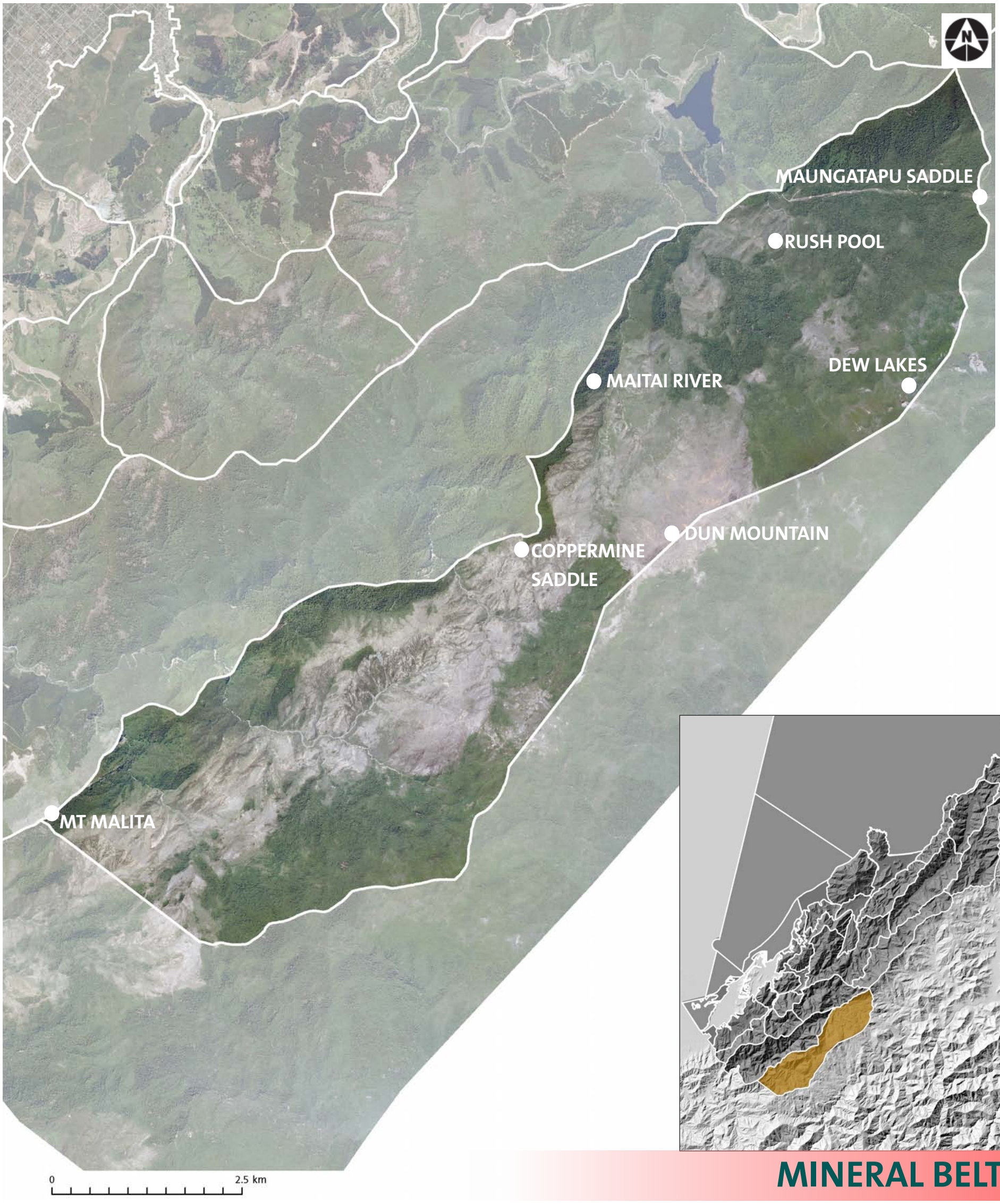
The entire Mineral Belt is owned by Nelson City Council and includes land managed as part of the Maitai and Roding Water Reserves (Nelson City Council, 2009). Numerous recreation tracks also access this mountainous backdrop including the upper extent of the former Dun Mountain Railway now forming a popular mountain bike track. The historic Maungatapu track provides access acrross the Maungatapu Saddle, with transmission lines also passing between Nelson and Marlborough in this area.

KEY CHARACTERISTICS:

- Rugged mountain range backdrop forming part of the larger eastern spine of Nelson
- Distinctive reddish-brown colour of soils and rocks with an associated sparse cover of vegetation
- Distinctive plant communities with high proportion of threatened and locally endemic plant species
- Historic association with mining and abandoned Maori and early European mining sites
- Land is retained in public ownesrship and includes numerous recreation tracks accommodating tramping and mountain bike access
- Setting for the historic Dun Mountain Railway Line and Maungatapu Track
- Transmission lines pass between Nelson and Marlborough accross the Maungatapu Saddle

Above: Numerous craggy outcrops and scree slopes dispersed throughout stunted vegetation

Below: View looking south-west along legible belt of red-brown soil indicating the Mineral Belt extending through the larger mountain range



Below: The red colour of the Mineral Belt forms a striking element of the larger mountain range seen from the coast

NORTHERN BRYANT RANGE

The Northern Bryant Range continues north of the catchment of the Upper Maitai along the Bryant Range. The boundaries of this character area follow the ridge crest of the Bryant Range and district boundary to the east and a sequence of rounded hills which define the transition into lower areas of the Whangamoa Valley between approximately 500 and 600 masl to the west. The northern extent of this character area culminates along the upper edge of the catchment accommodating Collins River within Rai Saddle.

LANDFORM

The Northern Bryant Range continues a steep to very steep mountainous backdrop along the eastern edge of the Nelson region. This extends above approximately 500 masl and reaches a maximum elevation of 1,215 masl at Saddle Hill, forming the highest point in Nelson. Saddle Hill and a slightly lower summit to the south, are recognised as 'the Doubles', part of the larger mountainous backdrop seen from parts of Nelson City.

The Ultramafic Land Type continues the along the main ridgeline (Lynn, 2013), although evidence of this is more fragmented and less cohesive in comparison to the Mineral Belt character area encompassing Dun Mountain to the south. The remainder of the character area is accommodated within the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013) comprising of sandstone and siltstone and pockets of alluvial gravel which continues west into Whangamoa Valley. Soils include a mix of steepland soils derived from the mixed ultramafic and sedimentary parent material (Chittenden, Hodgson, & Dodson, 1966).

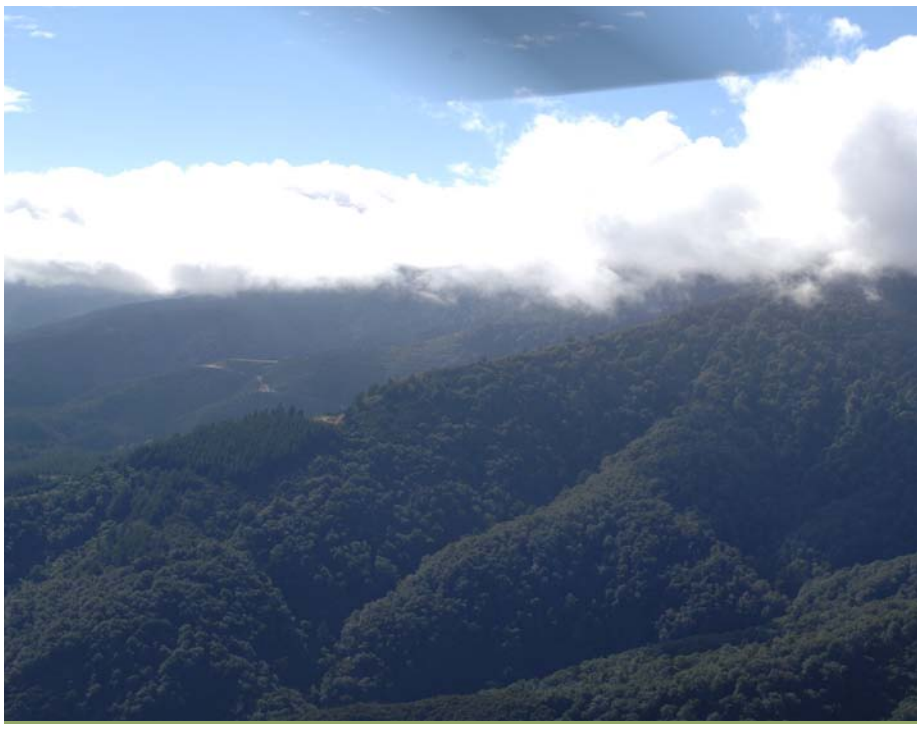
LAND COVER

The majority of this character area is established in indigenous vegetation forming a thick cohesive cover of upland beech forest and including areas of southern rata. Isolated pockets of stunted vegetation reflective of the underlying geology, also occur at the summit of Mount Duppa and a defined area within the upper reaches of the Whangamoa River. Wilding pine is also present along the transition with plantation forestry on the lower slopes of adjoining character areas.

LAND USE

Almost the entirety of the North Bryant Range is contained within Mount Richmond Forest Park and managed for conservation and recreation purposes. Built development is not apparent, with the transition from native vegetation cover to plantation forestry forming a distinctive boundary distinguishing this character area from lower areas of the Whangamoa Valley and Hira Forest. Some recreation tracks extend into the ranges and include access to Mount Duppa from an unnamed forestry road in the Whangamoa valley.

Above:Patches of stunted vegetation reflecting fragmented ultramatic soild along the main ridge.

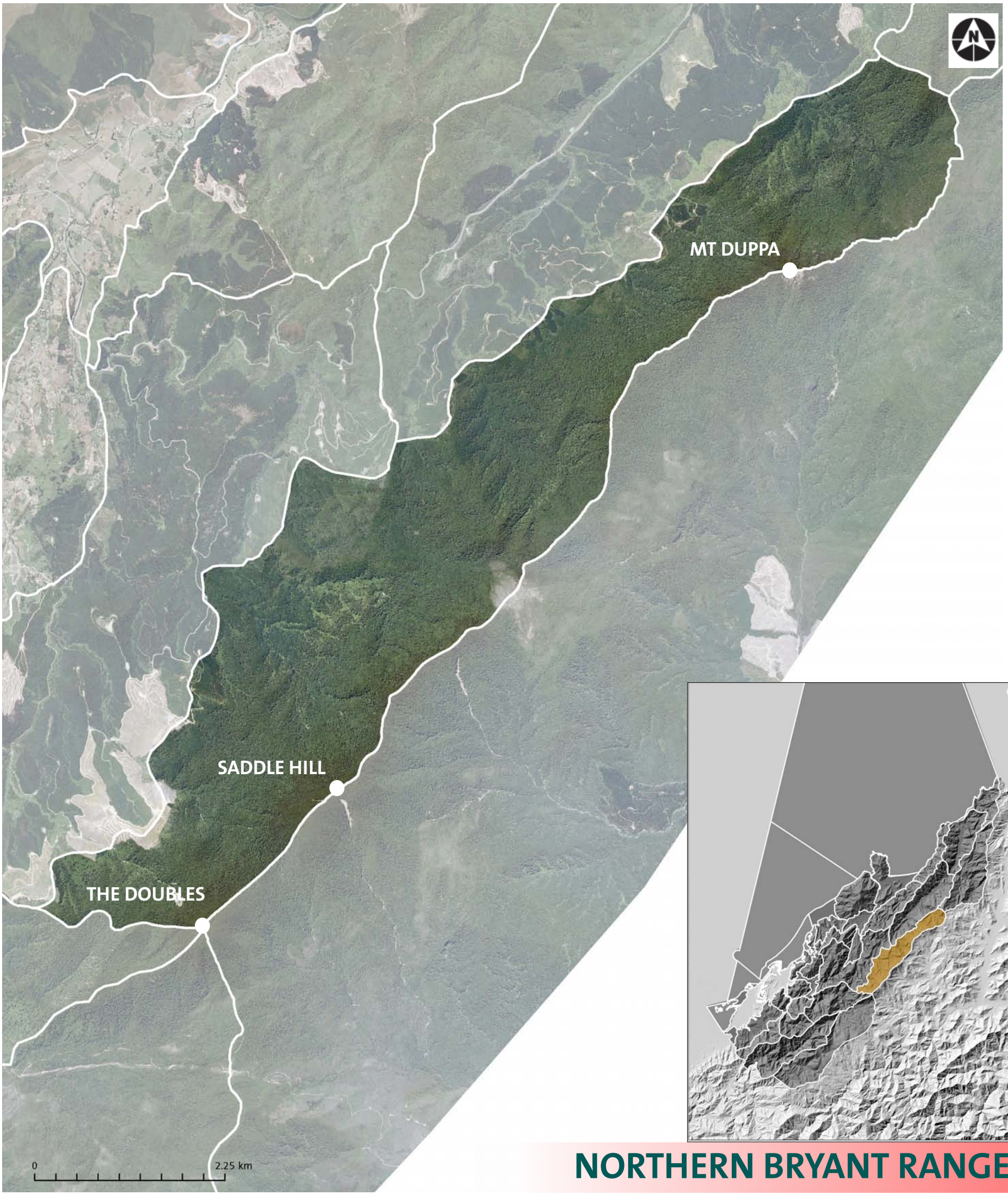


Above: Uniform cover of indiginous forest above pine plantation

KEY CHARACTERISTICS:

- Undeveloped mountainous backdrop defining the eastern edge of the district
- The Doubles form distinctive ridgeline features visible from Nelson
- Cohesive cover of indigenous vegetation with some wilding pine present in association with plantation forestry in adjoining areas
- Extensive mixed beech forest with scattered podocarps
- Land managed for conservation and recreation purposes

Below: Aerial oblique view looking north-east towards Mount Duppa with legible change in vegetation visible along the base of the Mount Richmond Forest Park



NORTHERN BRYANT RANGE

Below: The Doubles as seen from Nelson form a legible backdrop along the horizon

Below: A dark green silhouette extends along the backdrop spine along most of the character area

RAI SADDLE

The Rai Saddle accommodates State Highway 6 along the margins of the Collins River between the relative enclosure of the Whangamoa Valley to the west and the Marlborough District boundary along the crest of the Bryant Range to the east and south. The character experienced when moving through this area is strongly associated with plantation forestry which typically adjoins and encloses the road corridor. Beyond this, a more distant and elevated backdrop of native vegetation is occasionally apparent and continues a cover of native vegetation within the northern extent of the Northern Bryant Range to the south and Cape Soucis further north.

LANDFORM

The Rai Saddle extends between approximately 40 masl adjoining the floor of the Whangamoa Valley to the west and rises to a maximum elevation of 882 masl at North Castor Peak. The lowest point of the saddle traversed by State Highway 6 reaches an elevation of approximately 240 masl with much of the road corridor accommodated along the valley floor adjoining Collins River. Above the road corridor, the slopes within Rai Saddle accommodate an assortment of steep sided valleys and gentler spurs extending from the Bryant Range into the Whangamoa Valley.

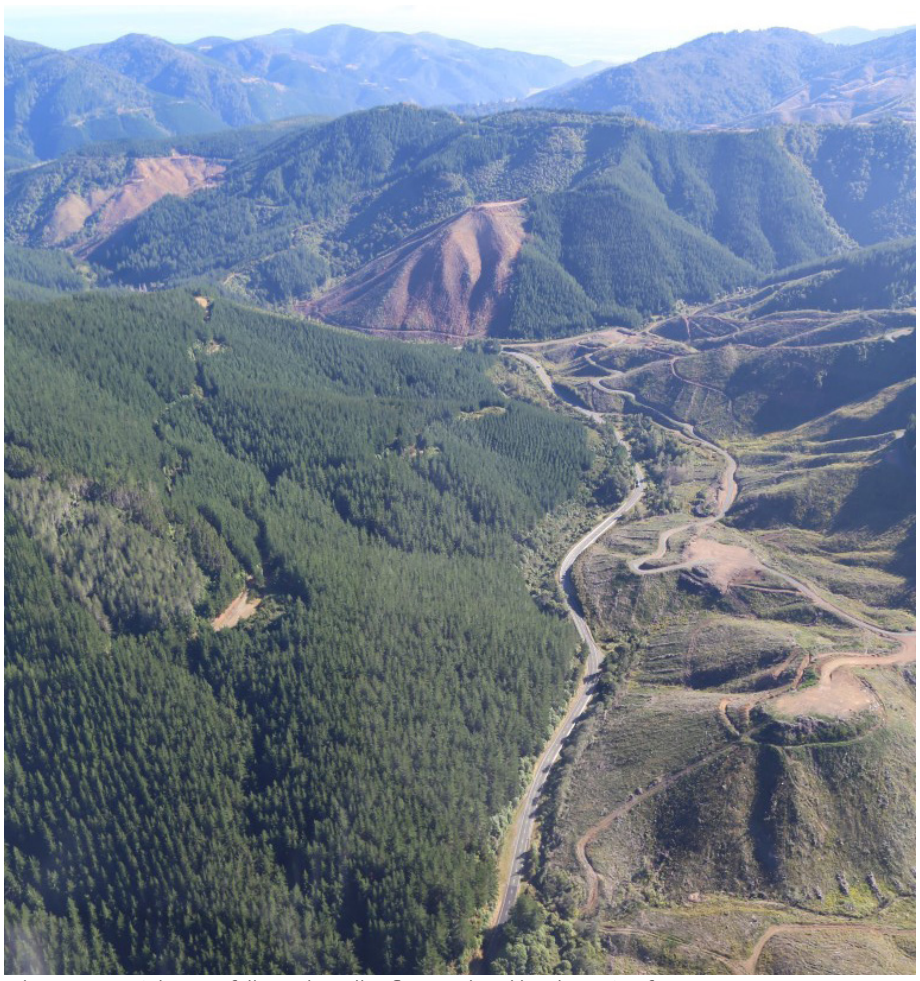
In contrast with southern areas of the Bryant Range, the Ultramafic Land Type extends along the lower western area of the Rai Saddle with elevated areas contained within the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013). These adjoining land types reflect an underlying geology of ultramafic volcanics and indurated sandstone and siltstone respectively.

LAND COVER

Most of this character area is vegetated comprising a mix of pine plantation and indigenous forest. Areas of pine plantation are more typically established alongside State Highway 6 and form a mosaic of forestry of various ages and harvest patterns. Where forestry harvest has occurred, tracking and scarring of the steep hill slopes is also apparent. More elevated areas to the north and south of the character area introduce a distant backdrop of indigenous forest on the ridgetops. Native vegetation in these areas includes a mix of beech forest types encompassing Lowland and Upland Hill County ecosystems (Courtney, Bradshaw, Moore, & Atkinson, 2003).

LAND USE

The majority of the land is established in plantation forestry fringed by conservation reserve. Settlement and built elements are not significant with rest areas providing the only respite for road users. Forestry access tracks culminate at the edge of the conservation estate and provide limited recreation access into adjoining areas within Richmond Forest Park. Historic argillite mining by Maori occurred in the lower reaches of the valley.



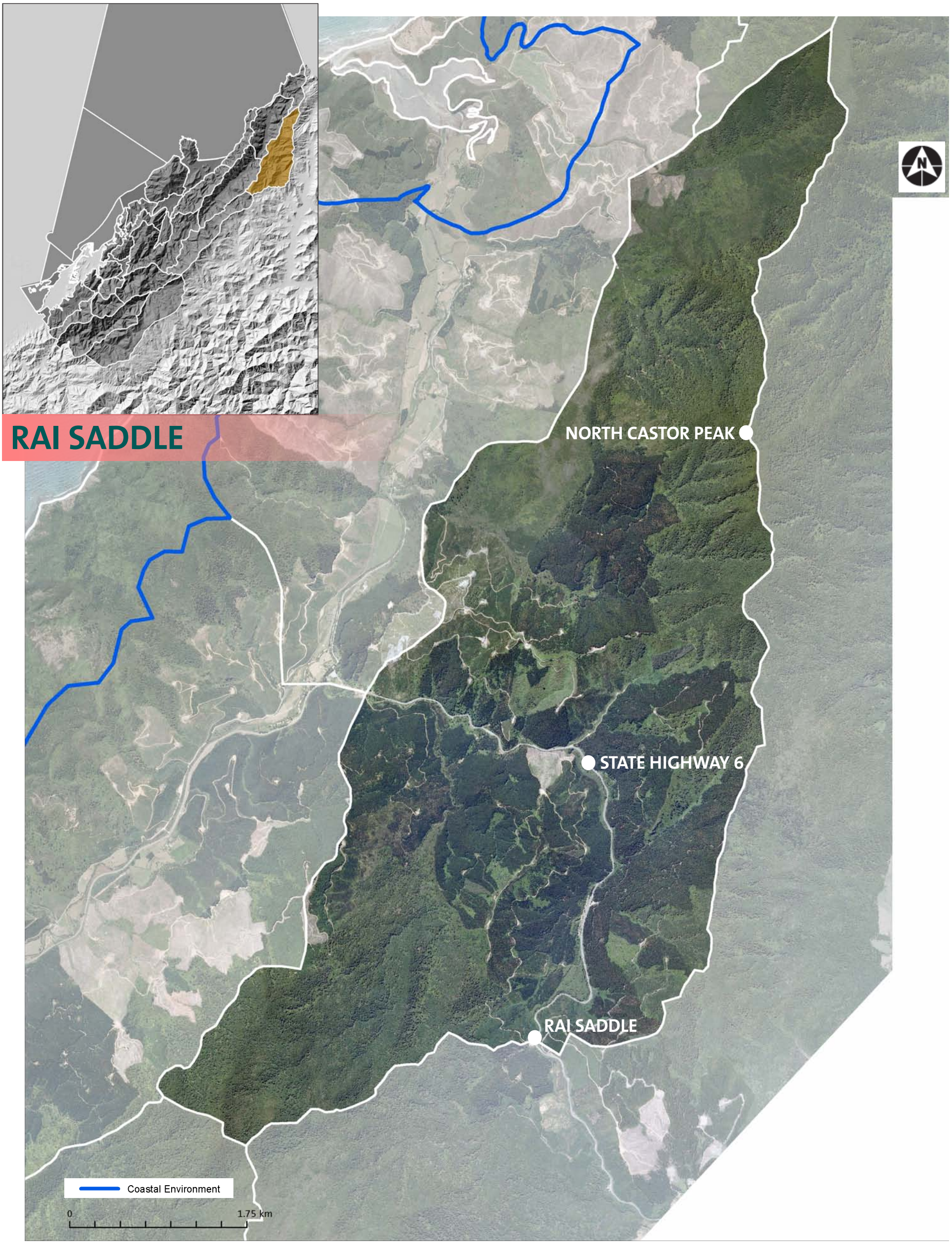
Above: State Highway 6 follows the valley floor enclosed by plantation forestry.

Below: Forestry tracks shape the land form visible through recently harvested pine plantation.

KEY CHARACTERISTICS:

- Continuation of mountain range crest along the eastern edge of Nelson
- Elevated backdrop of native vegetation on high points encompassing the saddle
- Accessible saddle traversed by State Highway 6 along the margins of the Collins River and connecting Nelson and Marlborough
- Mosaic of plantation forestry in various stages of establishment and harvest enclosing the road corridor
- Working rural landscape with no significant settlement apparent
- Historic Maori mining sites

Below:Mosiac of harvested and established forestry visible from Stat Highway 6.



Below:Rest area along State Highway 6 accomodates mature parkland trees within wider backdrop of plantation forestry.

FRINGED HILL

Fringed Hill extends from the northern edge of the Barnicoat Range and rises to the south-east of Sugarloaf above Tantragee Saddle. The northern and western edges of Fringed Hill adjoin the Maitai Valley and Brook Street respectively and is visible as part of the mountain range backdrop to Nelson. The southern boundary follows the crest of Cummins Spur along the northern edge of Brook Sanctuary. The eastern boundary adjoins the Upper Maitai character area along a spur defining the southern edge of the catchment containing Neds Creek.

LANDFORM

Fringed Hill rises to the south-east of the Waimea - Flaxmere Fault System and marks a transition between Nelson's immediate hill forms and more elevated backdrop ranges. The topography of Fringed Hill forms steep to very steep slopes containing long angular shoulder spurs. The summit of Fringed Hill reaches an elevation of 793 masl and accommodates tributaries of the Maitai River and The Brook.

The underlying geology of Fringed Hill reflects the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013)comprising sandstone, siltstone, mudstone and limestone. Whangamoa Steepland Soil is found throughout this area and is characterised by its shallow depth and prevalence of limestone outcrops and scree slopes (Chittenden et al., 1966).

LAND COVER

Large blocks of pine plantation, some of which has recently been cleared occupy much of the northern face of Fringed Hill. This, together with scrub and regenerating indigenous forest form a mosaic of vegetation types along this visible face of the ranges. Scarring and skidder tracks are also visible in association with cleared areas of forestry and detract from the pattern of vegetation. To the south of the character area, stands of kanuka and a scattering of wilding trees are also established along Bullock Spur, contiguous with more extensive areas of native vegetation within the Brook Sanctuary to the south-east.

LAND USE

The northern face of Fringed Hill, is managed as production forestry separating The Brook Conservation Reserve from the Maitai Water Reserve partly being replanted in native vegetation. Recreation tracks access the summit of Fringed Hill from within Brook Sanctuary and along a dominant spur connecting with Tantragee Saddle. From this point, a number of walkways and mountain bike trails access Nelson's mountain range backdrop. The start of the Dun Mountain Walkway along an historic railway line also passes through Fringed Hill from the vicinity of Tantragee Saddle.

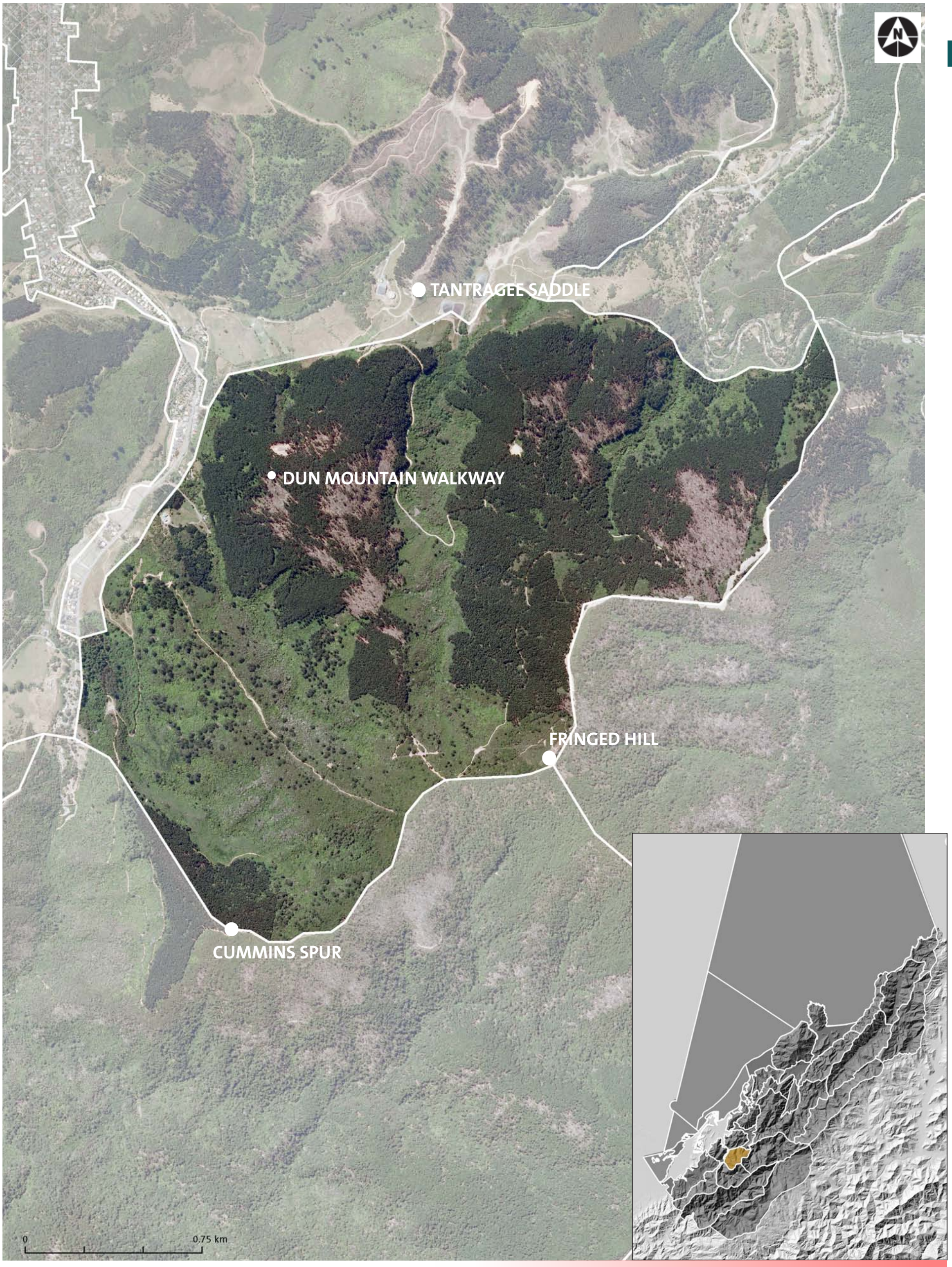
Pylons cross Tantragee Saddle along the northern toe of the Fringed Hill. Residential development does not generally extend onto the face of Fringed Hill and culminates along the adjoining accessible valley floor areas associated with Brook Street and the Maitai Valley.

Above: Aerial oblique view of Fringed Hill covered in a mosiac of exotic plantation, scrub, and access tracks rising from the southern end of the Maitai Valley character area

KEY CHARACTERISTICS

- Legible transition between Nelson's hill and mountain range backdrop rising above and beyond the Grampians and Sharlands Hill
- Mosaic of ever changing pattern of exotic forestry, scrub and regenerating kanuka
- Residential development does not extend onto the visible face of Fringed Hill and culminates along adjoining areas of valley floor in The Brook and Maitai Valley
- Important recreation areas including walkways and mountain biking trails accessing the Brook Sanctuary and the Dun Mountains

Below: View from Brook Street observing Fringed Hill as part of a larger mountain range backdrop.



FRINGED HILL

BROOK SANCTUARY

Brook Sanctuary adjoins the northern end of the Barnicoat Range and forms the head water catchment of The Brook. This extends south of Fringed Hill along Cummins Spur and adjoins the larger extent of the Barnicoat range to the south-west and the Roding (Aniseed) Valley to the south-east. As a catchment, views into Brook Sanctuary are largely contained, providing an enclosed forested experience separated from adjoining urban areas.

LANDFORM

The Brook Sanctuary occupies a contained catchment between Jenkins Hill and Fringed Hill. This extends from approximately 100 masl at the southern end of Brook Street and reaches above 800 masl along the northern boundary adjoining the Upper Maitai character area.

The underlying geology comprises sandstones and mudstones consistent with the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013). Soils comprise of a mix of steepland soils with rock outcrops and scree slopes common, including small outcrops of limestone (Chittenden et al., 1966).

LAND COVER

The majority of the sanctuary contains native forest except for the valley floor and lower slopes of the northern part of the reserve. Beech forest is the predominant vegetation throughout with occasional podocarps (rimu, kahikatea, matai, miro and mountain totara) present in gullies and on lower slopes. Kanuka forest also occupies sites where the former forest cover has been removed.

LAND USE

Brook Sanctuary is totally contained within the Brook Conservation Reserve, which was set aside in 1865 and a dam constructed in 1868 to supply water to Nelson City. Further dams were constructed in 1905 and 1909 to meet the increased demand for water, the remains of which are still present following decommissioning of the water supply in 2000.

Since the water supply has been decommissioned, the Brook Waimarama Sanctuary Trust has been established as a community-based initiative to create a pest-free wildlife sanctuary close to the city centre. This follows intensive plant and animal pest control undertaken since 2004 and includes a current project to construct a predator-proof fence around part of the perimeter of the catchment. A visitor centre was also opened to the public in 2007 and there are several walking tracks throughout the sanctuary.

The main access to the reserve is via Brook Street from Nelson. The Dun Mountain Walkway following the old railway line also extends from Fringed Hill through the northern area of the Brook Sanctuary character area outside the proposed predator-proof fence and accommodates a popular recreation track accessing the Mineral Belt. Third House Shelter also provides a recreation facility along the eastern ridgeline of the characer area.

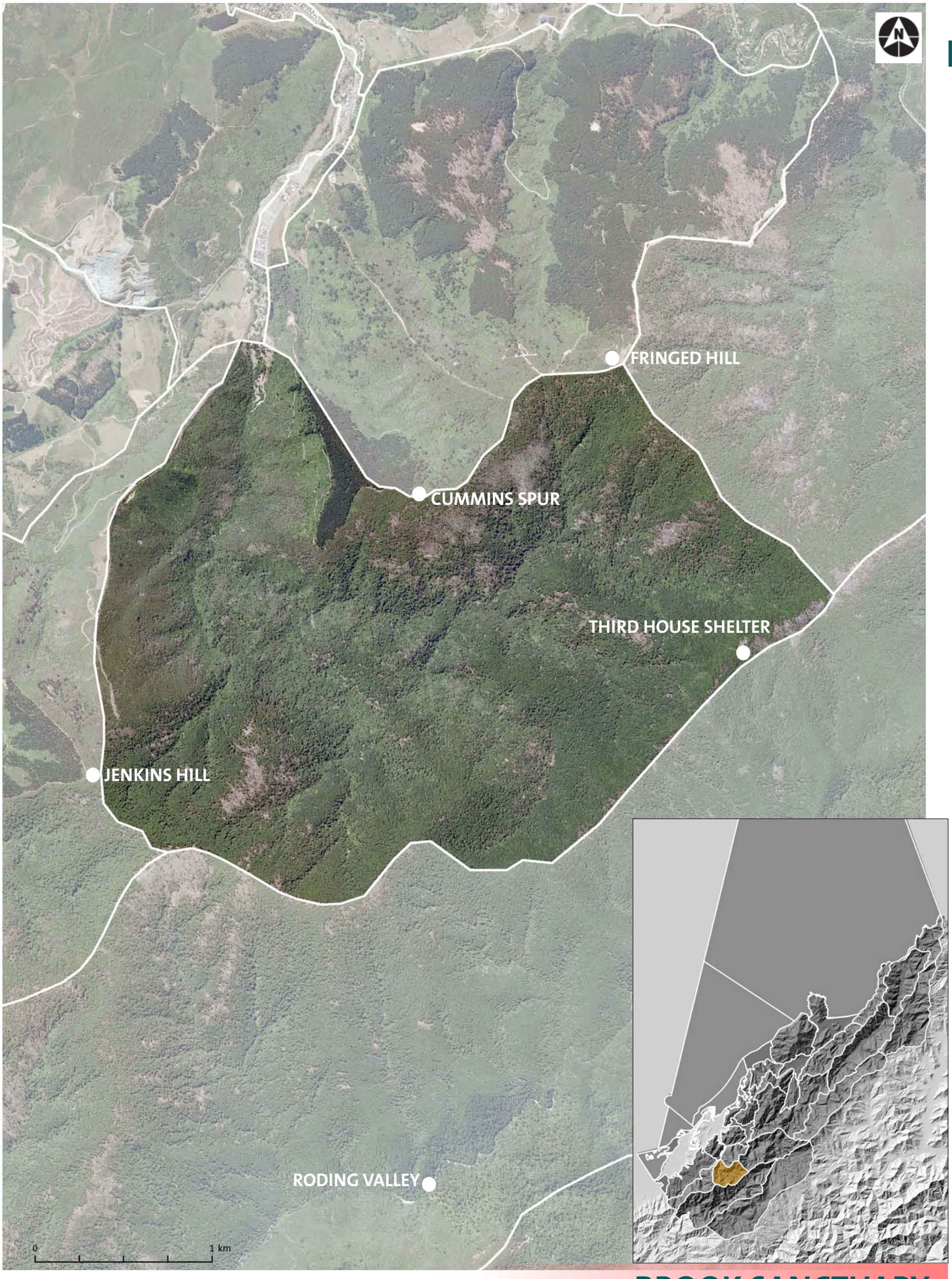
Above: Brook Sanctury Visitor Centre opened in 2007.

Above: Entrance to Brook Sanctuary at Southern end of Brook Street, introduces historic dam elements.

KEY CHARACTERISTICS:

- Enclosed forested catchment separated from adjacent urban areas with no residential development
- Community based wildlife sanctuary inlcuding visitor centre and associated conservation activity close to Nelson City – 'The Brook Waimarama Sanctuary'
- Extensive beech forest with pockets of podocarp and kanuka forest
- Setting for historic dams associated with Nelson's former water supply
- Numerous recreation walking tracks including the Dun Mountain Walkway providing access to Nelson's mountainous backdrop

Above: Extensive beach forest coveres and encloses much of the catchment.



BROOK SANCTUARY

BARNICOAT RANGE

The Barnicoat Range character area extends between Nelson region's southern boundary and the Maitai Valley. This rises above the Stoke Foothills and provides the primary mountainous backdrop and skyline visible throughout the southern Nelson area. The eastern edge of the Barnicoat Range culminates along the ridge crest adjoining the Roding Valley. The northern boundary adjoins the edge of the Brook Sanctuary catchment.

LANDFORM

The dominant ridge of the Barnicoat Range runs parallel to the coast following a north-west to south-east axis. The landform begins to rise more steeply above approximately 200 masl along the western edge of the character area and reaches a maximum elevation of 789 masl along the main ridgeline to the south of Jenkins Hill. The ridgeline follows a rounded and relatively uniform alignment accommodating forestry access along much of the summit. A flattened dome form is also evident at Saxton Hill marking the southern edge of the region.

The geology of the Barnicoat Range rises above the Waimea-Flaxmere Fault System along its western edge and comprises of sedimentary sandstone, siltstone, mudstone and limestone consistent with the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013). Soils have developed on steep to very steep mountain slopes with weathered rock and small limestone outcrops common (Chittenden et al., 1966).

LAND COVER

Exotic production forest forms the primary land cover creating a mosaic of forested areas of different ages dissected by forestry tracks and scarring in places. Some scrub and areas of remnant native vegetation are also present. The combined pattern of vegetation establishes an overall dark green backdrop extending to the skyline to the south of the district above pastoral and residential areas established along lower lying areas of the Stoke Foothills.

The Barnicoat Range forms part of the Lowland Hill Country ecosystem (Courtney et al., 2003). Whilst limited pockets of native forest remnants remain apparent, pockets of matai and beech are present on both conservation land and private land. Broadleaved forest of tawa, mahoe, pigeonwood and tree fuchsia also occurs in some gully areas.

LAND USE

Settlement along the Barnicoat Range is limited with most residential and rural-residential development occurring below 200 masl along the Stoke Foothills below its western edge. Some localised quarrying has been established at the eastern end of Marsden Valley. Recreation use has also been established in association with forestry tracks and passing through areas of native bush and connects with increased recreation facilities established at the northern end of the Barnicoat Range within the Brook Sanctuary. The crest of the Barnicoat Range is used as a launch site for hang gliders and paragliders.

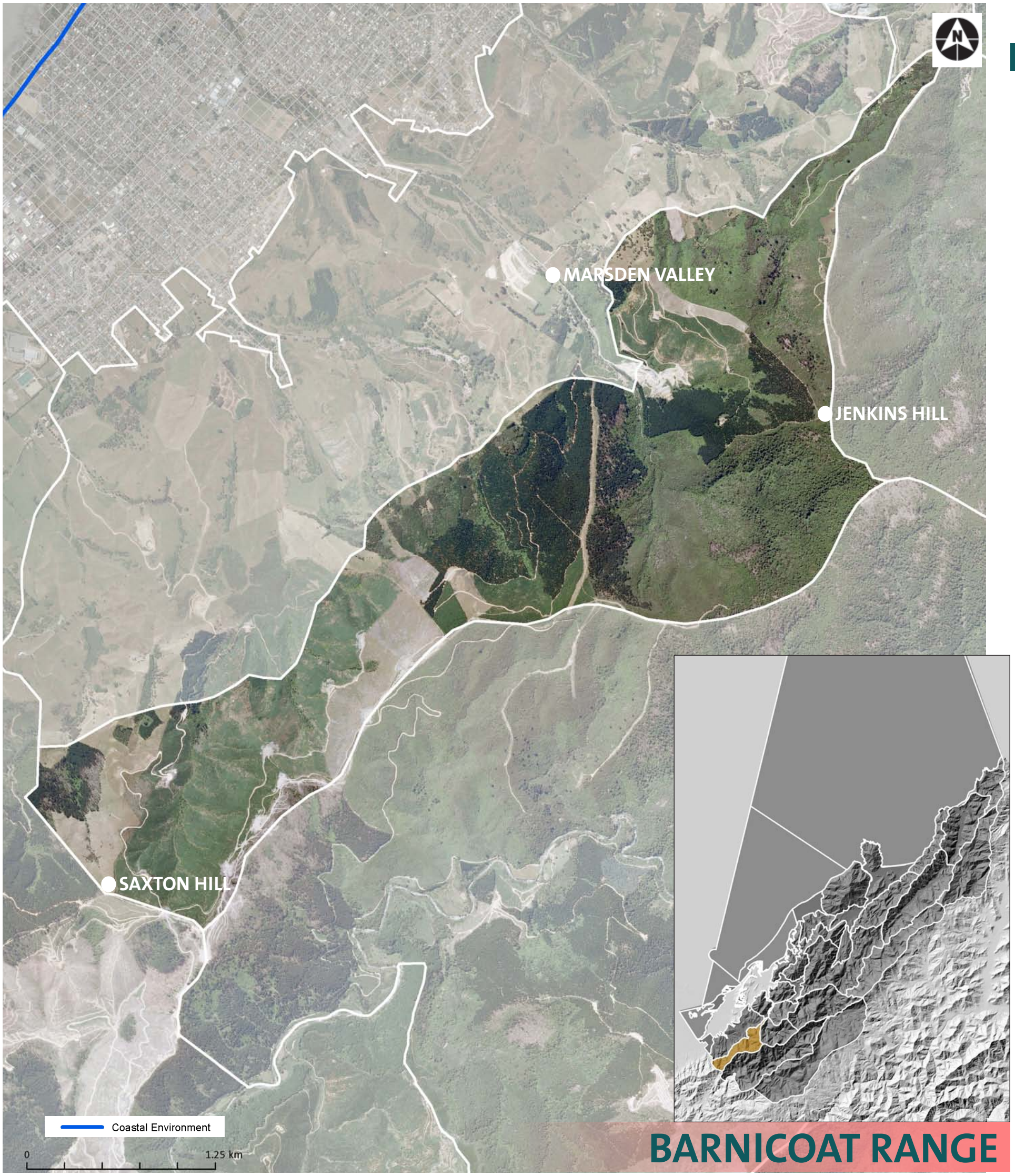
Above: Sequence of rounded pine covered ridgelines along the horizon [photo courtesy of NCC]

Above: Quarrying activity extended into Barnicoat Range at eastern end of Marsden Valley.

KEY CHARACTERISTICS:

- Forested mountainous backdrop following a south-west to north-east alignment to the skyline
- Vast relatively un-built and steep rugged landform providing spine to the Nelson and Stoke areas with groups of urban and suburban development along its base
- Primarily plantation forestry with areas of scrub and areas of indigenous vegetation forming a cohesive mosaic of vegetation cover
- Scarring from roads, quarrying and skidder sites
- Recreation networks established along forestry tracks and native bush areas and linking with the urban edge of Nelson

Below: Barnicoat Range forms dominant ridgeline visible beyond the Stoke Foothills from Waimea Inlet.



Below: Barnicoat Range forms dominant ridgeline and green backdrop visible beyond the Stoke Foothills from the Waimea Inlet.

UPPER MAITAI

The Upper Maitai accommodates part of the catchment of the Maitai River which extends inland from the Maitai Valley character area and encompasses the Maitai Dam. Most of the northern boundary of this character area adjoins Hira Forest with the Northern Bryant Range character area located at higher elevations further east. The Barnicoat and Bryant Ranges extend to the south and include Fringed Hill, Brook Sanctuary, Roding and the Mineral Belt along the south-eastern edge of Nelson.

LANDFORM

The upper reaches of the Maitai River Valley forms the main landform element recognised within the Upper Maitai character area. This is accessible along Maitai Valley Road through a narrow and winding valley accommodating the Maitai River. The upper reaches of the valley open out to accommodate Maitai Dam within an elevated basin. This was constructed in 1987 as part of the water supply network for Nelson.

The elevation within the Upper Maitai character area varies between approximately 70 masl at the point at it extends into the lower Maitai Valley and reaches a maximum elevation of 1,168 masl at the upper catchment of Mill Creek to the east of the Maitai Dam. Steep and very steep mountain slopes are encountered throughout this area with accessible flat areas limited to intermittent picnic areas adjoining the Maitai River accessed along Maitai Valley Road.

The underlying geology of the Upper Maitai is predominantly sandstone and siltstone associated with the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013). Steepland soils are overlaid upon this geology with rock outcrops and scree slopes common (Chittenden et al., 1966).

LAND COVER

Vegetation within the Maitai Valley is varied and typically more modified along the more accessible valley walls containing the Maitai River. The margins of the Maitai River are commonly framed by remnant beech and podocarp with stands of plantation forest present on slopes in the vicinity of the Maitai Dam. In other areas, slopes support scrub dominated by exotic species, and regenerating forest. Plant pest infestations also occur in association with the Maitai Water Reserve and include wilding conifers, gorse and old man's beard in the lower altitude forests.

In higher elevations of the Upper Maitai, indigenous vegetation becomes more prevalent and includes areas of beech forest within the Upland Hill Country Ecosystem (Courtney et al., 2003).

LAND USE

Limited residential development extends into the narrow confines of the Upper Maitai Valley, creating an obvious transition from more extensive rural lifestyle settlement within the Maitai Valley. Where residential development does occur, this is typically limited to isolated rural dwellings accessed from the Maitai Valley Road along the river corridor.

The majority of the Upper Maitai character area is contained within the Maitai Water Reserve. The Maitai Dam and associated pipe constructed along the base of the Maitai River Valley provide a visual link with this activity. A wider recreation network continues inland along the Maitai River Valley from the Maitai Valley and accommodates a variety of picnicking and swimming opportunities in clearings along the Maitai River together with mountain bike access into the surrounding ranges.

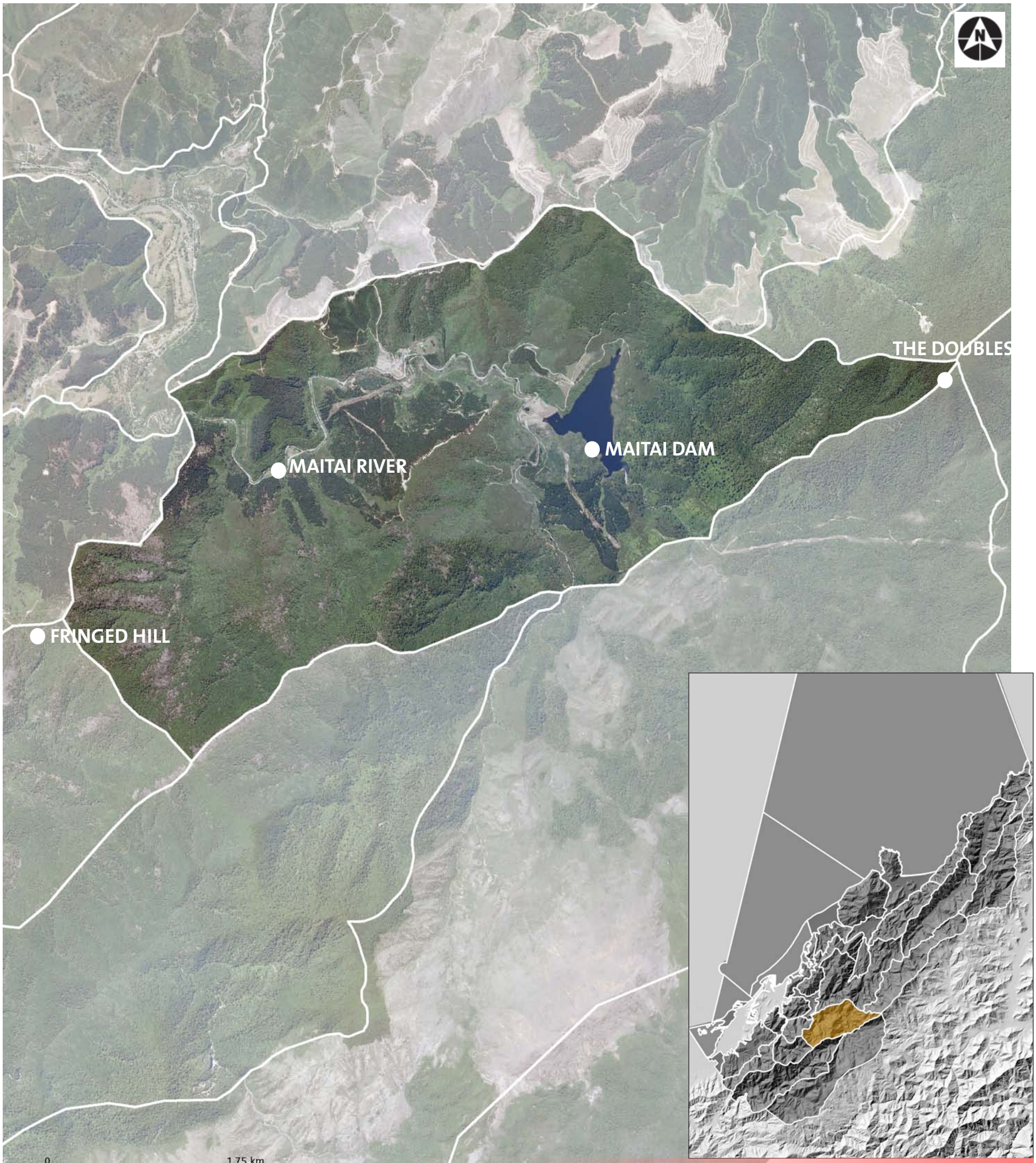
The Maitai River also has had a long association with pakohe (argillite) mining, a tough sharp edged mudstone used for making tools and weapons. Several historic argillite working areas are identified in the upper reaches of the Maitai River valley and continue into the upper catchment above the Maitai Dam.

Above: Maitai Dam occupies the upper reaches of the Maitai Valley accomodating a large triangular lake accessible from the end of the Maitai Valley Road

KEY CHARACTERISTICS:

- Narrow winding gravel road following course of the Maitai River
- Isolated residential development along the valley floor
- The Maitai Dam and associated water pipe networks are a fundamental part of Nelson's main water supply
- Network of recreation along the Maitai River, including popular picnicking and swimming opportunities as well as a network of mountain bike tracks
- Historic association with pakohe (argillite) resource used by early Maori
- Vegetation transition from plantation pine forest, through exotic scrub and regenerating forest to intact mixed beech forest at higher elevations

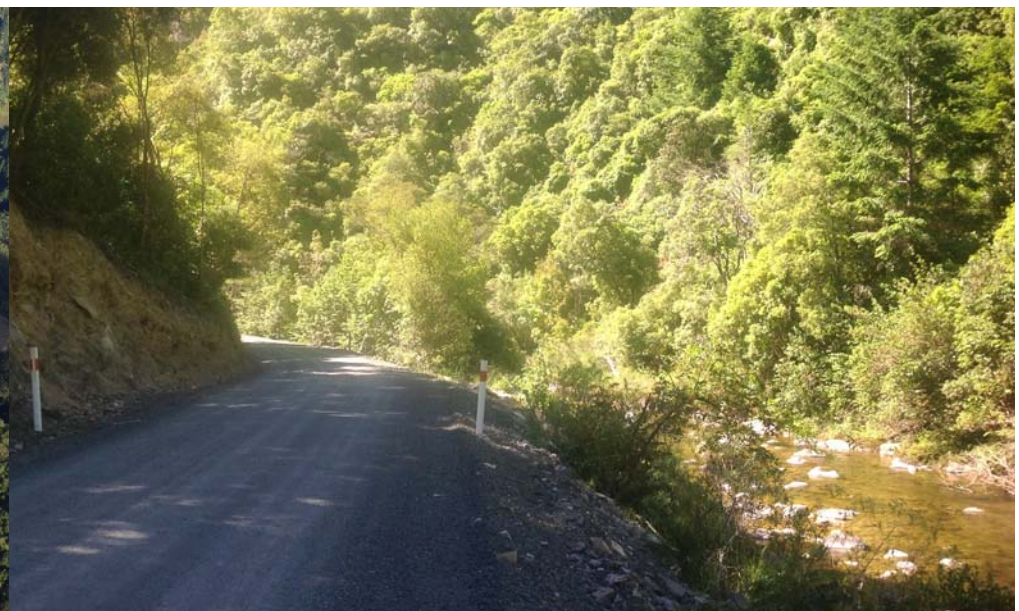
Below: Mixed remnent beech forest and plantation forest encloses the valley walls, with Maitai Dam and water pipes visible on the valley floor and some transmission infrastructure visible on the horizon.



UPPER MAITAI

Below: The Maitai River and Maitai Valley Road snake their way through the larger mountain range

Below: The Maitai River and the Maitai Valley Road follow an narrow corridor along the valley floor.



RODING

The Roding character area accommodates a contained visual catchment within upper reaches of the Aniseed Valley between the Barnicoat and Bryant Ranges accessed from the Tasman District along Aniseed Valley Road. The boundaries of this character area follow a distinctive change in land cover marking a transition between native forest and stunted vegetation within the Mineral Belt to the east. The western boundary of the character area follows the crest of the Barnicoat Range to the west and marks a similar although less distinctive transition with plantation forestry. The northern edge of this character area follows a ridgeline separating the Roding Valley from Brook Sanctuary and the Upper Maitai.

LANDFORM

The Roding landform is predominantly contained in the catchment of the Roding River comprising of steep to very steep mountain slopes rising above a narrow valley floor. Further north, the Roding character area also encompasses Sclanders Creek, a tributary to the Upper Maitai River beyond Wells Ridge. As a valley system within a mountain range, the character area extends from a low point of approximately 140 masl adjoining the Roding River at the boundary with Tasman District Council to the south and reaches a maximum elevation of 1,111 masl at Wooded Peak along Wells Ridge.

The entirety of the Roding character area is contained within the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013). This expresses an underlying geology of sedimentary sandstone and siltstone overlaid by steepland soils. Rock outcrops and scree slopes are common including small outcrops of limestone becoming more prevalent to the north. A band of Pikikiruna steepland soils overlaid upon marble and limestone are also encountered along the eastern edge of the Roding Valley encompassing Wooded Peak (Chittenden et al., 1966). The presence of limestone is also associated with caves accessed along Sclanders Creek.

LAND COVER

Indigenous forest occupies the majority of this character area with plantation forestry also encountered in the southern area of the Aniseed Valley. Indigenous vegetation typically includes diverse beech-podocarp forests with podocarps (kahikatea, rimu, matai and miro) more dominant at lower altitudes and beech present at mid-altitudes. This forest grades to red beech-silver beech forest with occasional podocarps at higher altitudes.

Built elements are limited throughout this character area with domestic elements limited to isolated rural dwellings accessed along Aniseed Valley Road. In elevated areas, some isolated huts occur alongside dam and pipe structures associated with Nelson's water supply.

LAND USE

The majority of the Roding character area is contained within the Roding and Upper Maitai Water Reserves, providing water for Nelson City. A long association with mining and access into the Mineral Belt is also apparent and includes a number of historic sites from the 19th century including the abandoned Champion smelter.

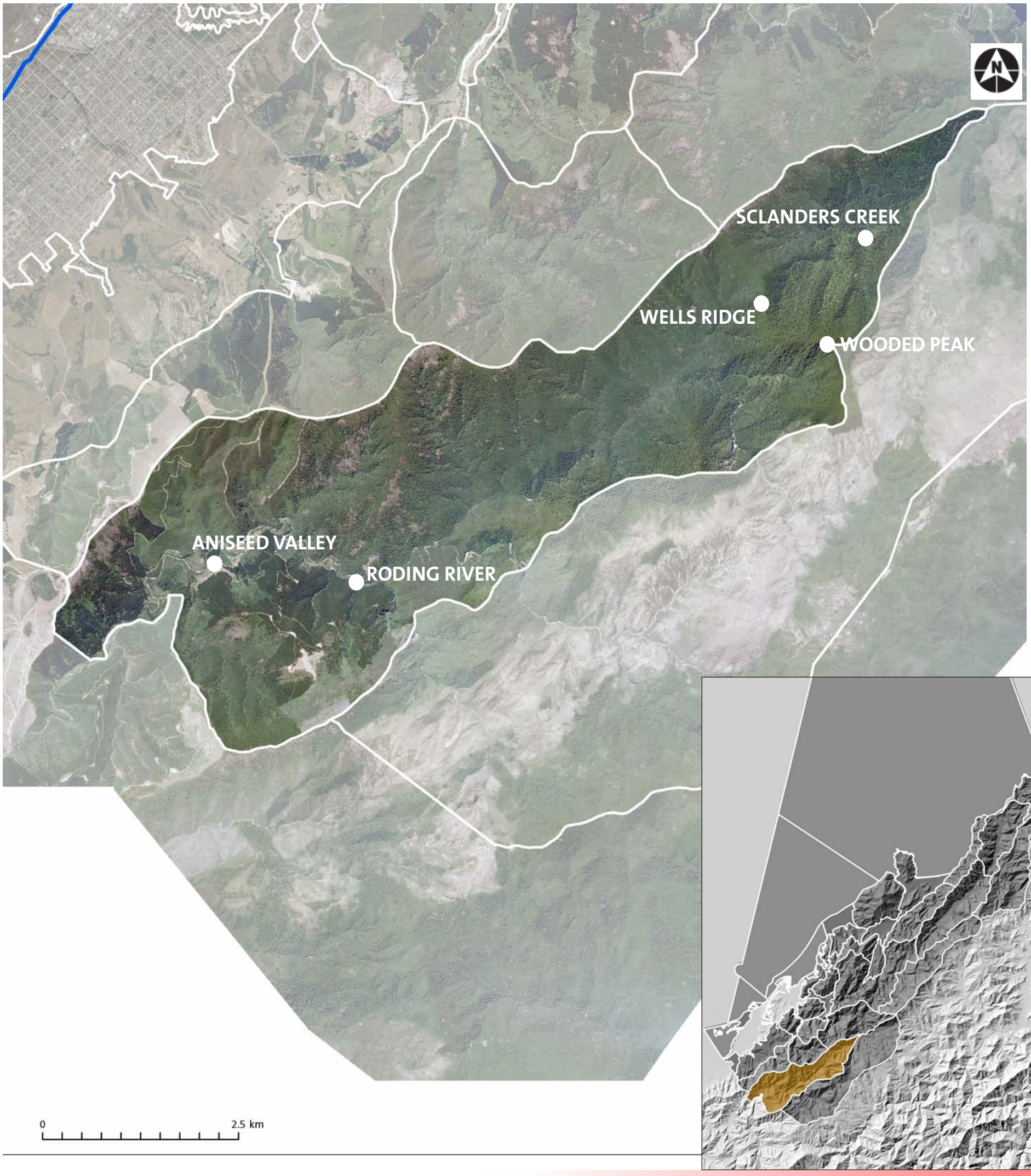
Popular recreational activities are walking, mountain-biking and historic site appreciation, including part of the Dun Mountain Railway which extends along Wells Ridge through the northern area of the character area. Other activities include fossicking, rock-hounding, hunting and 4WD access to Mt Malita (Nelson City Council, 2009).

Above: A cohesive cover of beech-podocarp forest covers the majority of this character area.

KEY CHARACTERISTICS:

- Contained visual catchments within the larger mountain range backdrop
- Predominant cover of native forest defining a marked change in vegetation adjoining the mineral belt to the east
- Transition from farmland and plantation pine forest in lower valley to intact mixed beech-podocarp forest in upper valley
- Band of exposed limestone and accessible limestone caves at Sclanders Creek
- Isolated rural dwellings on terraces along the Roding River accessed along the Aniseed Valley Road
- Ongoing management as part of Nelson's water reserve
- Popular recreation tracks including walking and mountain bike tracks

Below: A distinct contrast can be seen between vegetation in the Roding Valley and stunted vegetation within the Mineral Belt



RODING

Below: Plantation forestry has extended into the southern end of the character area to the east of the Roding River.

CAPE SOUCIS

Cape Soucis marks the northernmost land mass within the Nelson region and forms an isolated and rugged landform with limited public access and with a large portion in the coastal environment. The eastern boundary of this character area follows the ridge crest of the Bryant Range south until Croisilles Hill. From this point, the southern boundary then follows the edge of the catchment to Frenchmans Stream, before turning back to encompass the catchment associated with Toi Toi Stream towards Manuka Hill along the northern extent of Kokorua. The western boundary follows the coastal edge from the coastal cliffs north of the mouth of the Whangamoa River and Cape Soucis.

LANDFORM

The Cape Soucis character area extends from the eastern edge of Tasman Bay to a high point of 694 masl at Croisilles Hill. This area accommodates steep and rugged landforms and includes a series of narrow bays and very steep eroding cliffs along the coastal edge. Narrow alluvial plains are also accommodated along valley floor areas in Oananga and Omokau Bay. Further inland, steep vegetated hill slopes extend along the northern spine of the Bryant Range.

The underlying geology of Cape Soucis predominantly comprises of hardened sandstone and siltstone overlaid by steepland soils, consistent with the Maitai Group Eastern Hill and Mountain Land Type. The beaches are dominated by boulders, rocky headlands, sand and mud. This broader land type is bisected by the northern extent of the larger Ultramafic Land Type which passes immediately south of Bush Hill into the neighbouring Marlborough District (Lynn, 2013).

LAND COVER

Almost all of the Cape Soucis character area is forested with a spine of indigenous vegetation to the east along the crest of the Bryant Range and commercial exotic forest plantation and scrub occupying lower lying western areas. There are a number of distinctive biota, communities and habitats including mixed beech forests, podocarp-broadleaved forest, cliff vegetation and dune ecosystems. Along the coastline itself, vegetation becomes more sporadic with steep eroding sea cliffs and narrow beaches occupying the coastline with high numbers of threatened and at-risk plant species, especially along the narrow band of coastal habitat.

A transition from indigenous vegetation meeting the sea to an increased prevalence of scrub and wilding pine is also evident moving from north to south.

LAND USE

Most of this character area remains devoid of development retaining a rugged and isolated coastal character. Where houses occur, they remain isolated and primarily accessible from the coast or via easements over private land. Forestry access tends to follow spurs adjoining the northern end of Kokorua and terminates short of elevated areas within the Bryant Range.

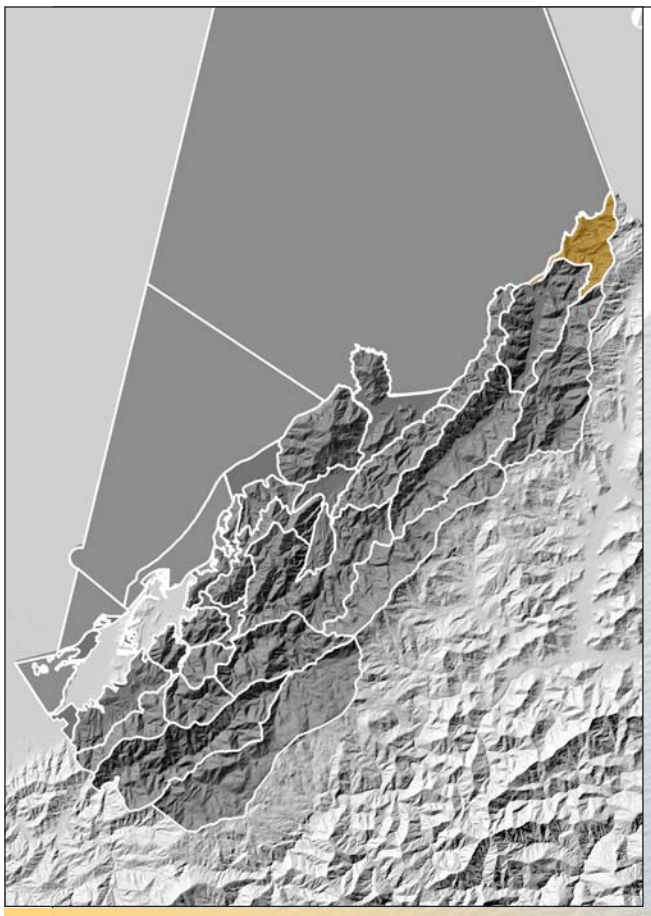
Above: Cape Soucis defines the eastern edge of Tasman Bay establishing dramatic sequences of unmodified mountain ranges and coastal cliffs.

Above: The elevated mountain range is established in isolated mixed beech-podocarp forest.

KEY CHARACTERISTICS:

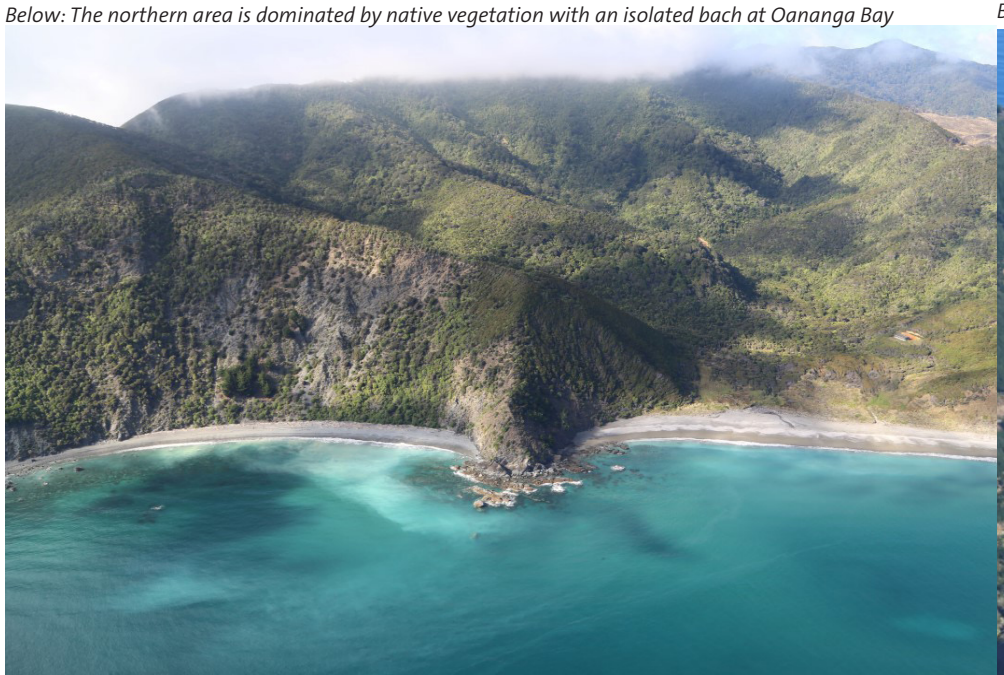
- Dramatic cliff edges with narrow beaches and rugged outcrops define the coastal margins
- Cohesive block of native forest which continues south along the Bryant Range
- High numbers of threatened and at-risk plant species, especially along the narrow band of coastal habitat
- Breeding habitat along the coast for several sea bird species
- Plantation forestry and associated access tracks become more prevalent in southern areas accessed through the Whangamoa Valley and contrasts with indigenous forestry on the mid and upper slopes occurring inland
- The northern bays remain secluded with isolated and limited residential development tucked into bays where access is afforded along the coast

Below: Dramatic coastal scarps with narrow rock beaches and rock outcrops define the coastal edge.



CAPE SOUCIS

Below: The northern area is dominated by native vegetation with an isolated bach at Oananga Bay



Below: Plantation forestry surrounding Omokau bay

DRUMDUAN

The Drumduan character area extends along Nelson's coastal edge and rises to the north-east of the Wakapuaka Flats and north-west of Hira Basin. The northern boundary of this character area adjoins Delaware Inlet along Cable Bay Road. The character area comprises a prominent isolated hill form and provides a transition between coastal influences and inland areas.

LANDFORM

Drumduan has a strong and defined ridgeline/skyline with broad open ridges and bluffs. This is characterised by broad rolling hillsides and spurs and a prominent hill and skyline along the coast. The summit of Drumduan reaches a maximum elevation of 657 masl. Below this, a series of rounded spurs and shoulder slopes extend to its base, some of which enclose deeply incised valleys, more commonly on the western slopes. Along the western coastal edge, Mackay Bluff forms a distinctive landscape feature and very steep cliff face of between 200-300m in height which fronts the sea.

The geology of Drumduan reflects part of the Brook Street Land Type (Lynn, 2013) expressing a broad legible dome shaped landform. The underlying geology comprises mixed sandstones, siltstones, mudstones, breccias, tuffs and basalt from mixed sedimentary and volcanic origin. The steep western coastal cliffs include distinctive areas of granodiorite and andesite intrusives reflecting areas of forced molten rock. Soils include a mix of steepland soils on the upper slopes which are shallow in places and characterised by scree in some areas. A fringe of hill soils (Sunnybank Hill Soils and Sunny Bank Hill Complex) on the lower eastern and southern toe slopes characterised by their increased fertility and agricultural use (Chittenden et al., 1966).

The southern boundary of Drumduan forms part of the northern entrance experience into Nelson passing through Gentle Annie Saddle with the first views across Tasman Bay.

LAND COVER

Exotic forestry and pasture are the predominant land cover to the east with small patches of scrub and kanuka present around the forestry edges. There are large scars evident, particularly where forest has recently been cleared and where affected by heavy rain events.

The lower slopes facing Glenduan and including Mackay Bluff are part of the Coastal Hill Country ecosystem (Courtney et al., 2003). Coastal hill country forest is generally confined to seaward-facing slopes up to the first major ridgeline. Common canopy and emergent species include matai, kohekohe, tawa, titoki and nikau on good soils. On drier ridges with poorer soils black beech, hard beech, rimu, kanuka, akiraho, ngaio and akeake are also present. Vegetation on Mackay Bluff is sparse with windswept coastal plants present down to the rocky shore. The shrublands on the most extreme coastal slopes are dominated by kanuka, ngaio, akeake tauhinu, taupata and puka.

Areas of native vegetation are also established along the summit and eastern hill slopes as part of the Lowland Hill Country ecosystem (Courtney et al., 2003). In this area bush remnants can include matai – black beech forest on lower slopes, with red beech becoming dominant on upper slopes where there is good soil.

LAND USE

A strong pattern of ribbon development runs along the western base of Drumduan. This settlement area is named Glenduan but known colloquially as 'The Glen'. The Glen forms a suburban enclave with houses orientated to maximise coastal views and nestled amongst coastal vegetation in response to their exposed coastal location. A ribbon of development continues along the eastern edge of Glen Road and follows a transition from the rising form of Drumduan into the flat and open character of the Wakapuaka Flats. Further north, an extension of lower density ribbon development overlooking Delaware Inlet is also accessed along Cable Bay Road.

Above residential development established near the toe of the landform, a more dispersed pattern of residential property, farm buildings and rural structures are also apparent further up the slopes, consistent with an open broad rural land use pattern. Farmland and forestry continues above built development and represents a prominent open skyline.

Within the visual catchment of Hira Basin, development within the Drumduan character area tends to culminate below approximately 100 masl, forming a transition between the more natural slopes of Drumduan and a settled margin along its toe and the adjoining valley floor. A single telecommunication mast is visible in an area of plantation forestry, however, there are limited structures on the middle and upper slopes.

Access within Drumduan is limited with the notable exception of the Cable Bay Walkway which provides recreation access through private land from The Glen to Cable Bay.

KEY CHARACTERISTICS

- Large scale landscape forming dominant open landform backdrop to the north of Nelson
- Broad open dome form expressive of formative volcanic processes
- Steep exposed coastal cliffs at Mackay Bluff including visible bands of granodiorite and andesite rock
- Mosaic of vegetation types including pasture, forestry, scrub and remnant native forest with significant conservation value
- Dispersed rural residential pattern established along lower western and eastern toe forming transition between hill slopes and the respective Wakapuaka Plains, Hira Basin and Delaware Inlet
- Natural backdrop and enclosing element to the western edge of the Hira Basin

Below: The settlement of Glenduan(The Glen) extends along the lower western slopes of Drumduan adjoining the coastal edge

DRUMDUAN

Below: The elevated form of Drumduan is covered in a mosaic of pasture, pine plantation and remnant indiginous forest above dispersed settlememnt along its base.

Below: The steep cliffs of Mackay Bluff define the western extent of Drumduan along the coastline.

ATAWHAI HILLS

The Atawhai Hills character area rises above the Malvern Hills and Wakapuaka Foothills to form the dominant ridgeline and backdrop to the north-east of Nelson. This ridgeline complex includes a series of ridgetops including Kaka and Wells Hills. The northern edge of the Atawhai Hills culminates at the southern edge of the Hira Basin and rises west of the Lud River. Kaka Hill forms part of the northern edge of the Maitai Valley. The larger inland boundary adjoins the elevated rural hinterland accommodating Hira Forest.

LANDFORM

Atawhai Hills follows a south-west to north-east alignment extending between Kaka Hill and the local landform trig station B1YN. Most of the character area extends above the 200 metre contour and reaches a maximum elevation of 514 masl at B1YN at its northern end. The dominant ridge contributes to Nelson's backdrop setting and skyline and frames part of the northern entrance experience beyond the lower rounded foreground form of the Malvern Hills.

The geology of the Atawhai Hills follows a pattern of steep hill slopes with conspicuous conical hills associated with the Brook Street Land Type (Lynn, 2013). This reflects the weathering of formative volcanics which have shaped this area. Soils (Atawhai Steepland Complex) are derived from a complex mixture of igneous and altered sedimentary rocks with low to moderate fertility (Chittenden et al., 1966).

LAND COVER

Most of the more visible western slopes are covered in tall, well established gorse and manuka / kanuka scrub with plantation forestry becoming more prevalent in inland areas. Bush remnants, including forest in Sharland Creek, includes matai – black beech forest on lower slopes, with red beech becoming dominant on upper slopes. Tawa, mahoe, pigeonwood and tree fuchsia can also be found in gully areas. Grazed farmland also occurs on the south-western slopes – a characteristic that continues into the northern edge of Maitai Valley. The mosaic of vegetation patterns is frequently broken by firebreaks along ridgelines.

LAND USE

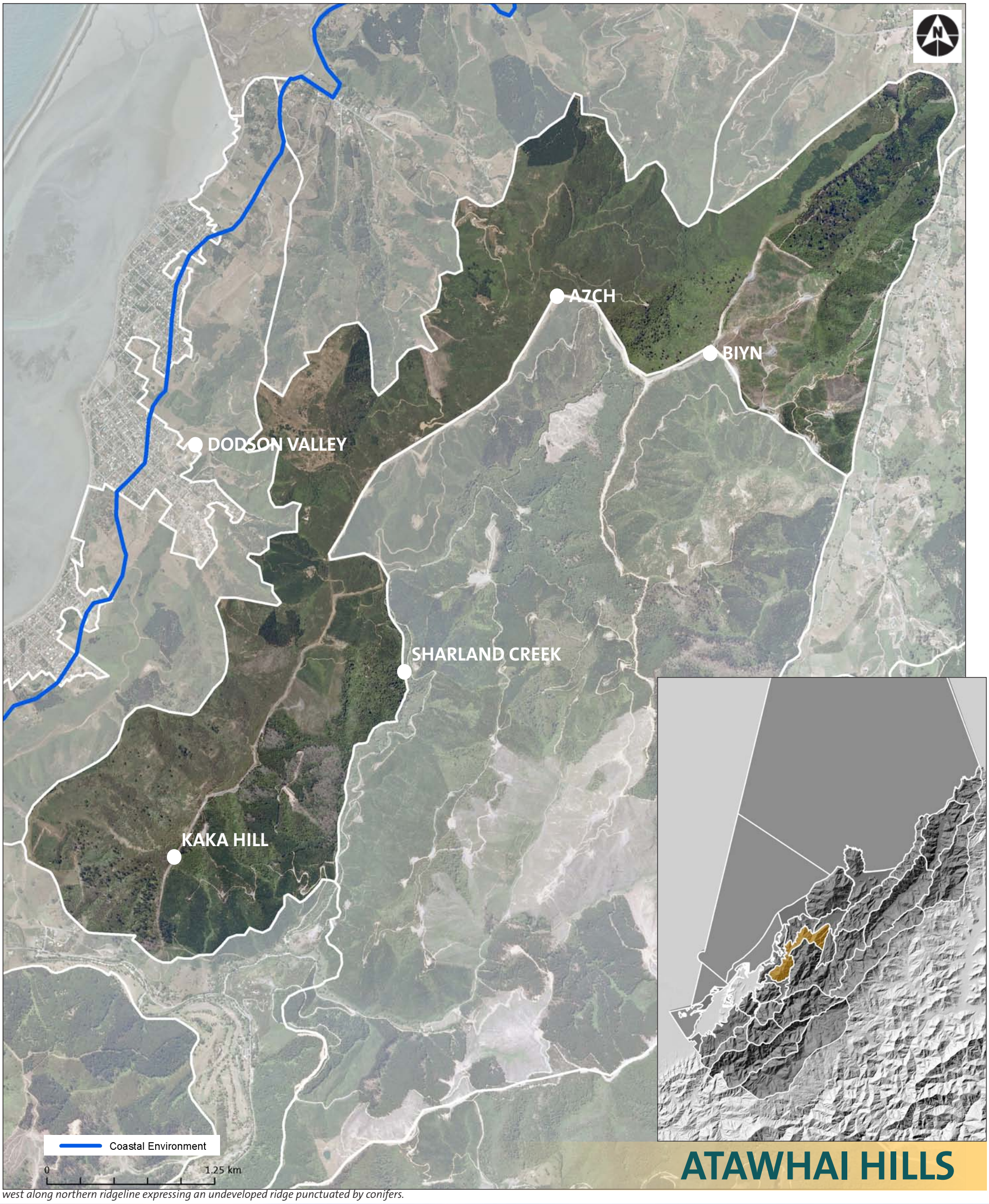
Limited settlement has been extended onto the upper slopes the Atawhai Hills. This residential development is restricted by the steepness of slope and access, but is notable for its occurrence at a higher elevation compared with other areas of Nelson. There are some scattered rural lifestyle dwellings in the upper slopes of Todds Valley, however much of the steep upper slopes remain open and continue a 'green backdrop' along the northern edge of the City.

Above: Kaka Hill marks the southern end of the Atawhai Hills along the skyline above the ridgeline of the Malvern Hills seen from Nelson Haven

KEY CHARACTERISTICS

- Dominant ridgeline extending above the Malvern Hills
- Distant backdrop and upper edge of northern entrance into Nelson City
- Densely vegetated with mixed scrub and kanuka tending towards the west and plantation forestry becoming more prevalent in inland areas
- Areas of mixed beech-podocarp forest with high recreational use in Sharland Creek at southwest of area
- Firebreaks common along ridgelines
- Limited settlement throughout with some elevated scattered rural lifestyle development at the elevated inland ends of Dodson and Todds Valley

Below: The Atawhai Hills form the open vegetated backdrop seen beyond a foreground of lower lying residential development, extended onto the foothills.



Below: View looking west along northern ridgeline expressing an undeveloped ridge punctuated by conifers.

GRAMPIANS / SHARLAND HILL

The Grampians / Sharland Hill character area encompasses a group of distinctive conical shaped hills which form the immediate backdrop to the east of Nelson City and foreground of the Barnicoat and Bryant Ranges. These adjoin the Stoke Foothills but are more elevated and distinct. Sharland Hill, Sugarloaf and the Grampians form recognised peaks bisected by ribbon development established along Brook Street, with Fringed Hill forming the southern boundary of the Brook Valley. Waimea – Flaxmore Fault System extends to the east of the Grampians along The Brook and passes through Tantragee Saddle.

LANDFORM

The Grampians / Sharland Hill character area is expressive of weathered volcanics creating conspicuous conical hills. The resultant moderately steep and steep slopes are connected by rolling summits and elongated spurs along which access tracks and fire breaks have typically been established. The maximum heights of the main peaks remain generally consistent with the Grampians and Sugarloaf to the south reaching an elevation of 390 masl and Sharland Hill to the north reaching an elevation of 351 masl.

The underlying geology of the Grampians / Sharland Hill character area reflects a combination of sandstone, siltstone and compacted volcanic ash, consistent with the Brook Street Land Type (Lynn, 2013). Local instability is evident with slips and slumps revealing scars following heavy rain. Erosion effects are often exacerbated during forestry activity with access and skidder tracks evident in some areas.

LAND COVER

Vegetation across the western face of this character area forms a mosaic of established and recently cleared forestry, pasture, scrub and native broadleaf species. Gorse, broom and wilding pine trees are common in scrub covered areas. Pine forest is common on Sugarloaf and the eastern face of Sharland Hill with stands of gum trees and open pasture along the western toe of the Grampians adjoining Waimea Road. A large area of regenerating native vegetation also characterises the central area of the Grampians in Grampians Reserve.

LAND USE

Residential development has largely been contained below the more visible and steeper upper slopes and retains a predominantly ‘green’ character associated with farmland and forestry forming the backdrop to urban areas, particularly along Trafalgar Street and the backdrop to Nelson Cathedral.

Quarries are located along the southern edge of Sugarloaf and Grampians with pylons also following the alignment of the Tantragee Saddle although these are mostly concealed and are located beyond Nelson’s backdrop. With the exception of a prominent television transmission tower on top of the Grampians, the upper slopes form a dominant open backdrop from urban areas. Recreation access for walkers and mountain bikers in the Grampians Reserve reinforces access into this area of Nelson’s backdrop with tracks accessible from the Maitai, Brook and York valleys.

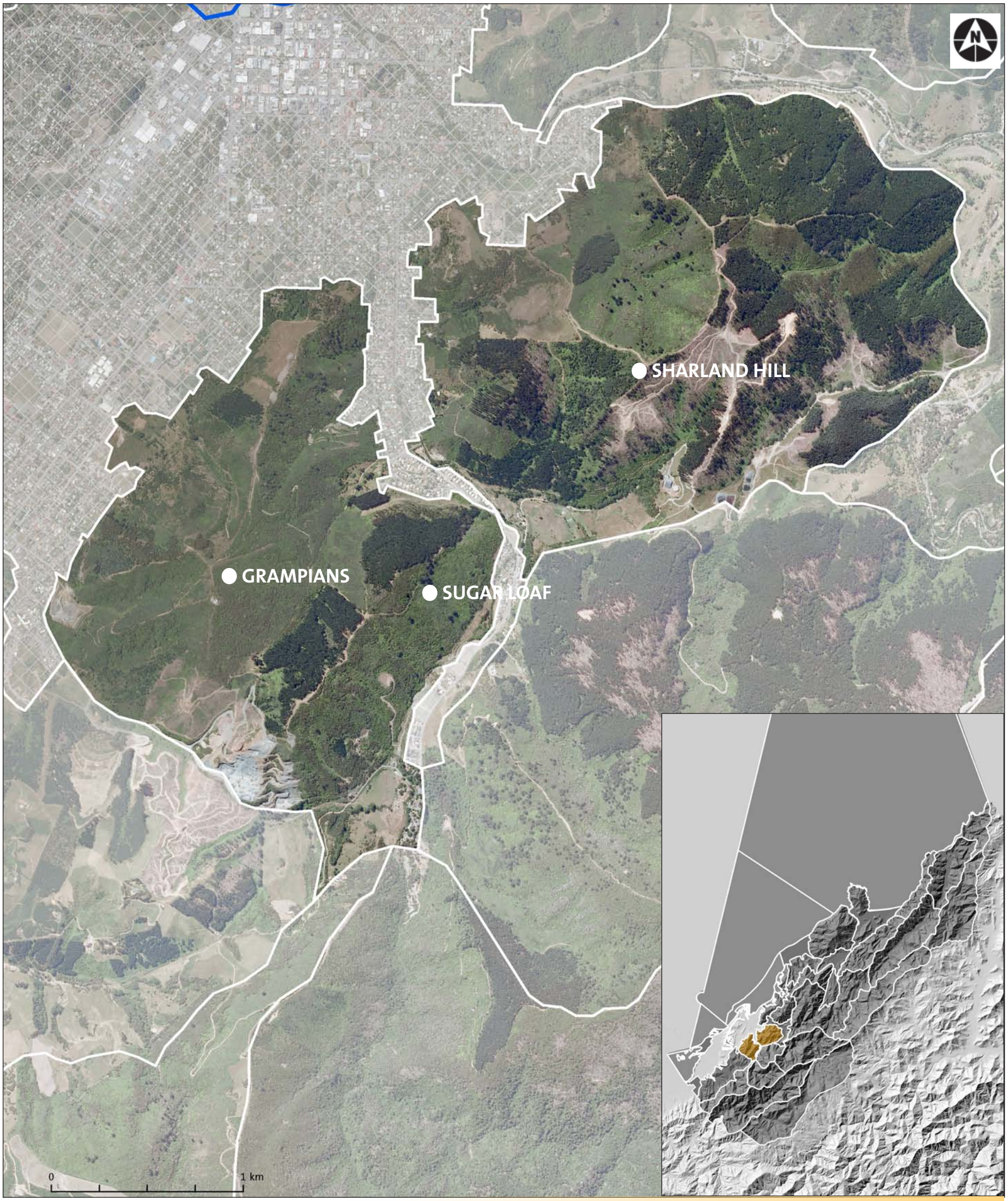
Above: Patterns of vegetation cover and clearance on the sugarloaf provide backdrop context seen from Westbrook Terrace.

Above: The open conical form of the Grampians is characterised by the relative lack of structures above settlement at its base.

Above: The backdrop of Sharland Hill includes some residential development at City Heights on its northern end.

KEY CHARACTERISTICS

- Distinctive weathered conical hill forms reflective of formative volcanics
- Open rolling shoulders and rounded hills providing a prominent ‘green’ backdrop to urban development
- Bisected by valley floor residential development entering The Brook
- Mix of kanuka dominated scrub and broadleaf species with forming large unbroken tract of native forest in Grampians Reserve
- Scars noticeably visible from Nelson and increasing in prevalence where associated with recently cleared areas of forestry
- Prominent television transmission tower on the Grampians
- Several public walkways and cycle tracks provide recreation access into Nelson’s backdrop



Below:
A mosiac of vegetation types provides a cohesive green backdrop along the Grampians seen from York Valley

GRAMPIANS / SHARLAND HILL

HIRA FOREST

Hira Forest occupies a large area of rural hinterland east of Nelson City and surrounding the Lud Valley. The western boundary of this character area follows Sharlands Creek before rising to the summits and trig stations of Wells Hill, A7CH and B1YN along the eastern edge of the Atawhai Hills. The southern boundary follows the edge of part of the catchment of the Maitai River, whilst the eastern boundary follows a transition with Mount Richmond Forest Park along the more elevated Northern Bryant Range.

LANDFORM

Hira Forest comprises of a series of crumpled undulating hills broken into a series of rounded shoulder slopes and spurs. Hill summits typically reach heights of between 400 and 600 masl and follow a loose south-west to north-east grain. The Maitai, Lud, Teal and Wakapuaka Rivers also thread through this area, occasionally disrupting this north-west to south-east grain.

The underlying geology of Hira Forest reflects a combination of the Brook Street Land Type to the west and the Maitai Group Eastern Hill and Mountain Land Type to the east, separated by the Lud Valley (Lynn, 2013). Whangamoa Steepland Soils predominate throughout this area comprising of a shallow profile with low to moderate fertility and frequent rock outcrops and scree slopes (Chittenden et al., 1966)

LAND COVER

Plantation forestry forms a unifying feature which dominates this character area, interspersed with small pockets of scrub and remnant indigenous vegetation. In places, this more varied harvest pattern is apparent forming a mosaic of cleared areas and established pine forest. With the exception of an area of mature beech trees in Whangamoa Scenic Reserve near the top of Whangamoa Saddle, there is limited association with the former Lowland Hill Country Ecosystem identified in this area (Courtney et al., 2003).

LAND USE

Production forestry forms the dominant land use and typically includes forestry tracks and clearings, some of which are used for recreation purposes, including mountain biking. Residential development is not apparent retaining a strong productive working forestry character.

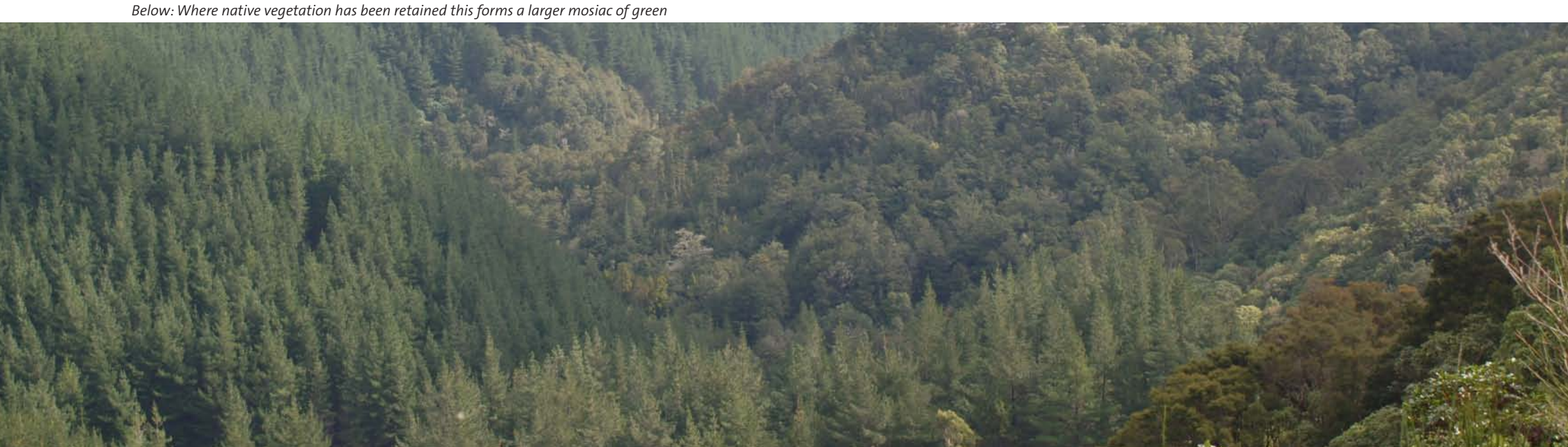
Above: Plantation forest creates a cohesive cover throughout this character area

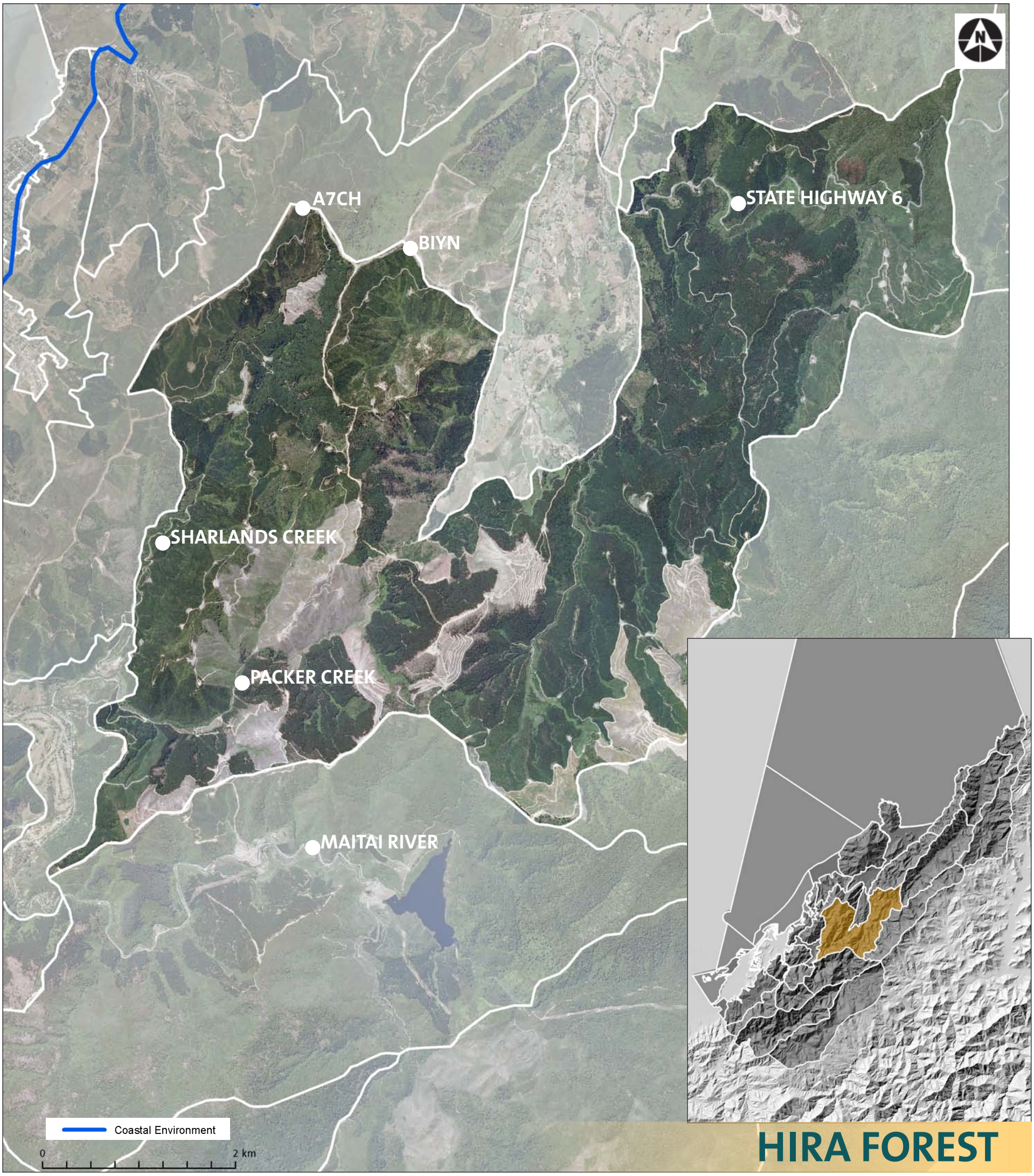
Above:Forestry tracks and clearings are dispersed throughout plantation forests

KEY CHARACTERISTICS:

- Broken rounded ridgeline to south of Whangamoa Saddle following broad south-west to north-east alignment
- Dominant cover of plantation forest with limited pockets of remnant Lowland Hill County Beech forest remaining
- Extensive array of forestry tracks, some of which accommodate recreation use
- No apparent residential settlement

Below: Where native vegetation has been retained this forms a larger mosiac of green





Below: Remnant beech forest is encountered against a large backdrop of plantation forestry near Whangamoa saddle

Below:Recently planted forestry trees and tracks typically follow the contour of the steep rounded shoulder slopes

HIRA HILLS

The Hira Hills character area encompasses the north-western aspect of a band of inland hills which separate Hira Basin and Delaware / Cable Bay from the Whangamoa Valley. The northern edge of this character area culminates at the summit of Gentle Annie above Delaware Bay, and defines the boundary with the Whangamoa Hills landscape character area within the coastal environment to the north. The eastern boundary extends along the western crest of the Whangamoa Valley encompassing Blue Hill. The southern boundary adjoins an area of Hira Forest which extends north of State Highway 6 between the Lud Valley and Whangamoa Saddle.

LANDFORM

The Hira Hills character area forms part of a larger band of hills running south-west to north-east from the rural hinterland into the northern area of the region. This landform rises from a transition between areas of valley floor in Delaware Bay and Hira Basin and consists of steep to very steep slopes up to 609 masl at the summit of Blue Hill; the highest feature along the hill sequence to the north of Whangamoa Saddle.

The underlying geology reflects hardened sedimentary sandstone and siltstone consistent with the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013). This geology is overlaid by Whangamoa Steepland Soils derived from sedimentary rocks with moderate to low fertility and includes frequent rocky outcrops and scree slopes (Chittenden et al., 1966).

LANDCOVER

Whilst there is pasture on some lower slopes adjoining Delaware Inlet, the vegetation over most of this character area is scrub and indigenous forest. Indigenous vegetation is associated with the Lowland Hill Country Ecosystem (Courtney et al., 2003) with bush remnants comprising of matai – black beech forest on lower slopes and red beech becoming dominant on upper slopes where there is deeper soils. Some plantation forestry with an associated spread of wilding pine is also apparent although this is more typically contained along toe slopes adjoining Hira Basin and SH6.

LAND USE

Limited residential development has been established within the hill areas with this more commonly contained to low lying areas within Hira Basin. Where dwellings have extended higher into the Hira Hills, these are typically concealed from public view and are enclosed by forestry, which adds to the 'green backdrop' that extends across the hill faces.

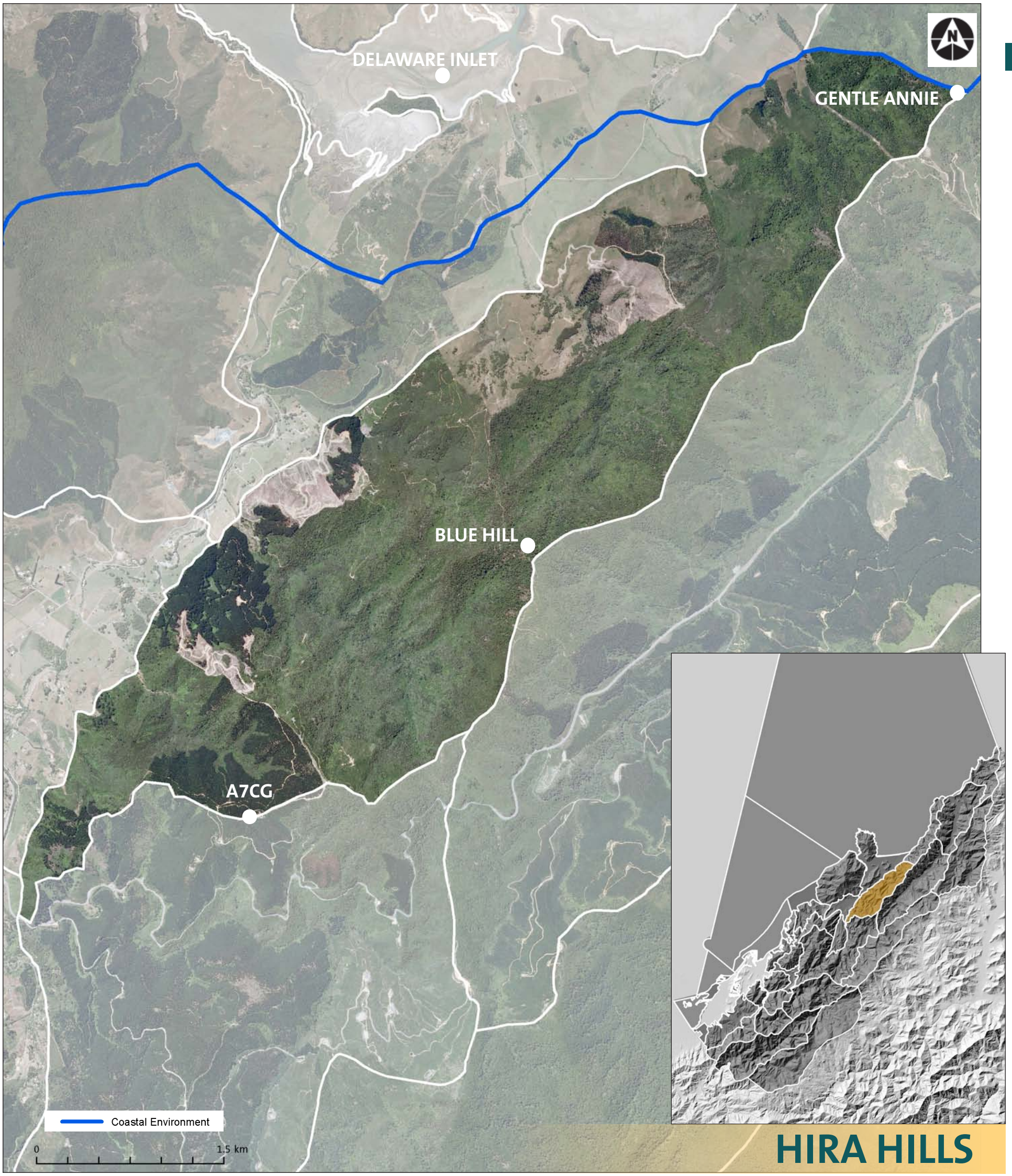
Access throughout the character area is limited. Some forestry tracks provide access to Trig A7CG at the southern end and private tracks cross Blue Hill between the Hira Basin and the Whangamoa Valley in assocaition with a transmission line corridor. Given the limited nature of access and enclosure of surrounding vegetation, views of the Hira Hills are limited. Where visible, the hills continue a cohesive dark green backdrop elevated above lower areas of rural settlement.

Above: Hira Hills form the southern extent of a larger sequence of hills which extend north of Nelson

KEY CHARACTERISTICS

- Steep, hilly and vegetated landscape backdrop which forms a band of inland hills which run south-east to north-east between Hira Basin and the Whangamoa Valley
- Dominant pattern of indigenous vegetation comprising of dense scrub and indigenous vegetation of varying ages including matai – black beech forest on lower slopes and red beech becoming dominant on upper slopes
- Some plantation forestry and wilding pines along the lower more accessible slopes with some wilding pines in areas of scrub
- Limited access with occasional forestry and farm tracks
- Small areas of rural settlement with dwellings and other structures typically concealed in the 'green backdrop'
- Wider views are limited with views from adjoining areas of State Highway 6 typically enclosed by intervening vegetation along the skyline

Below: Mosiac of vegetation types create a green backdrop beyond a pastoral settled valley floor



Below: Glimpsed views through vegetated upper slopes of A7CG observing rural lifestyle development dispersed accross Hira Basin floor [Photo courtesy of NCC]

WHANGAMOA HILLS

The Whangamoa Hills extend northeast from the Delaware Inlet and Hira Hills within the coastal environment. This is separated from the Whangamoa Valley and Kokorua along the ridgeline crest of the larger hill form. The northern extent of this character area culminates at the mouth of the Whangamoa River.

LANDFORM

The Whangamoa Hills extend from flat terraces along the northern edge of Delaware Bay into a narrow linear rocky shore along the coastal edge backed by steep and very steep coastal hills and escarpments to the first major ridgeline. Some steep headlands and rock outcrops also extend from the coastal edge, including notable outcrops out Whangamoa and Red Rocks. The inland boundary reaches a maximum elevation of 560 masl along the ridge crest at Maunganui, maintaining a north-western aspect.

The underlying geology predominantly reflects sandstone, siltstone, mudstone and limestone consistent with the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013). This is typically overlaid by steepland soils which frequently includes slips and screes along seaward slopes which reveal its dark grey to pale yellowish-brown silt loam structure (Chittenden et al., 1966).

LAND COVER

Most of the character area is covered in indigenous forest consistent with the Coastal Hill Country ecosystem (Courtney et al., 2003). Common canopy and emergent species include matai, kohekohe, tawa, titoki and nikau. The shrublands on the steeper more extreme coastal slopes are dominated by kanuka, ngaio, akeake, tahinu, tauputu and puka.

Pine plantation in various stages of establishment and harvest occupy the northern end of the Whangamoa Hills, and include pockets of more mature pine trees along some of the edges of the more precipitous and inaccessible slopes. Below this, wilding pine also frequently colonises the adjoining steep coastal scarps.

LAND USE

With the exception of northern end of the Whangamoa Hills managed as productive forest, much of this land area is retained in its original forest cover, part of which is managed for conservation purposes by the Department of Conservation as part of Mount Richmond Forest Park. Limited access is provided throughout most of the character area with the exception of forestry tracks and a small recreation track accessing Hori Bay at the northern end of the character area.

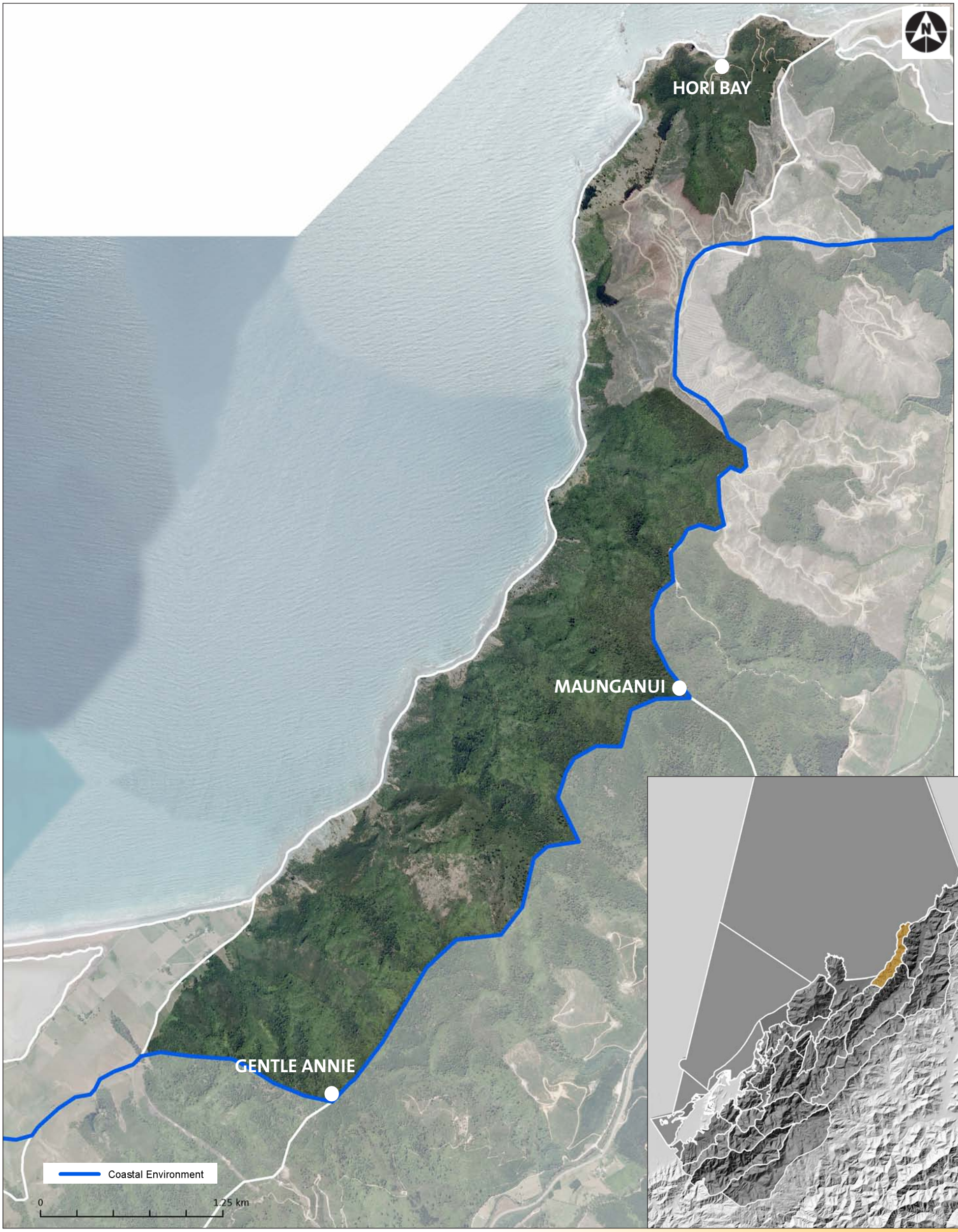
Above: Sporadic shrubland and wilding pine established along precipitous coastal cliffs

Above: Series of vegetated hills with steep coastal cliffs extending along the coastline

KEY CHARACTERISTICS:

- Band of elevated hills within the coastal environment which separate Delaware Bay from the Whangamoa Inlet
- Narrow linear rocky beach and rock outcrops backed by steep coastal steep cliffs and hill slopes contained entirely within the coastal environment
- Dominant cover of indigenous forest, regenerating native vegetation and scrub consistent with the Coastal Hill country ecosystem
- Plantation forestry established at the northern end of the hills along near the mouth of the Whangamoa River, with wilding pines also spread onto adjoining steeper exposed coastal cliffs
- No obvious or apparent residential development with limited recreation access in larger area of conservation estate

Below: A narrow linear rock shore beneath steep impressive coastal cliffs defines much of this coastal edge



WHANGAMOA HILLS

Below: Native forest dominates the ridge crest along the majority of the character area

WHANGAMOA

Whangamoa encompasses much of the upper catchment of the Whangamoa River with State Highway 6 located along the valley floor. This character area is contained between the crest of the Whangamoa and Hira Hills to the west and the transition with more elevated areas of the Bryant Range which include Rai Saddle to the east. The southwest boundary is defined along Whangamoa Saddle and the catchment of the Wakapuaka River within Hira Forest. The northern boundary culminates at the intersection with Kokorua Road as State Highway 6 heads east into the Rai Saddle.

LANDFORM

The Whangamoa encompasses an enclosed narrow inland valley which extends between 40 masl along the Whangamoa River and rises to between 600 and 700 masl along the eastern edge of the valley defining a transition into more elevated areas along the Bryant Range. The western boundary of the character area culminates along the coastal ridge crest between approximately 400 masl and a high point of 506 masl at the Gentle Annie ridgetop that sits above Delaware Bay.

Most of the character area is contained within the Maitai Group Eastern Hill and Mountain Land Type with a band of ultramafic volcanics encountered to the north of the character area, adjoining the Rai Saddle (Lynn, 2013). A narrow band of alluvial gravels extend along the Whangamoa River surrounded by steepland soils derived from sedimentary greywacke, sandstone and siltstone frequently exposing areas of rock and scree slopes (Chittenden et al., 1966). The Whangamoa Fault also extends along the southern end of the valley and crosses the road in several places (Hayward, Kenny, & Johnston, 1999).

LAND COVER

With the exception of a narrow swathe of pasture established on river terraces adjoining the Whangamoa River, most of the valley is enclosed by vegetation. Pine plantations are more substantial to the east of the valley below a transition with indigenous vegetation established in Richmond Forest Park in the adjoining Northern Bryant Range character area. To the west of the valley, pine plantation is more often limited to pockets contained within a larger expense of indigenous vegetation established on both private and conservation land.

Where present, indigenous vegetation is consistent with the Lowland Hill County ecosystem (Courtney et al., 2003) and includes matai – black beech forest on lower slopes, with red beech becoming more dominant on upper slopes where there is good soil. Gullies typically have broadleaved forests of tawa, mahoe, pigeonwood and tree fuschia with ridges containing rimu, miro, thin barked totara, sliver beech and lancewood.

LAND USE

State Highway 6 forms a dominant feature along the floor of the valley, following the true right bank of the Whangamoa River. Along this, some isolated rural dwellings have been established, most typically along the margins of the river corridor and rarely along the steeper valley sides. There is an established rest area along the road corridor.

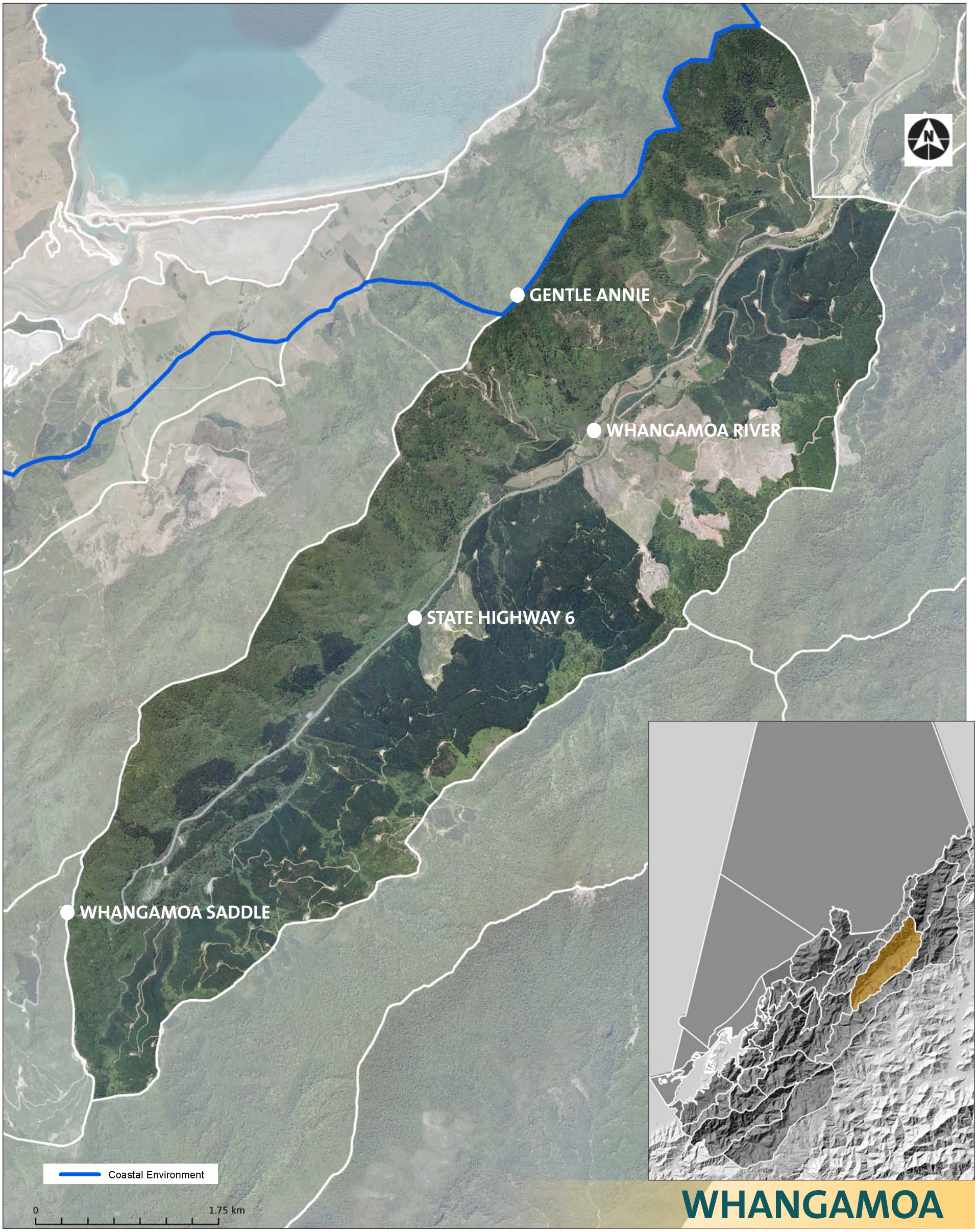
Where forestry has been established, forestry tracks are also apparent and include clearings and skidder sides at various stages of harvest. Some recreation access has also been established into adjoining more elevated areas of the Richmond Forest Park including access to Mount Duppa.

Below: State Highway 6 snakes its way through an enclosed hinterland character.

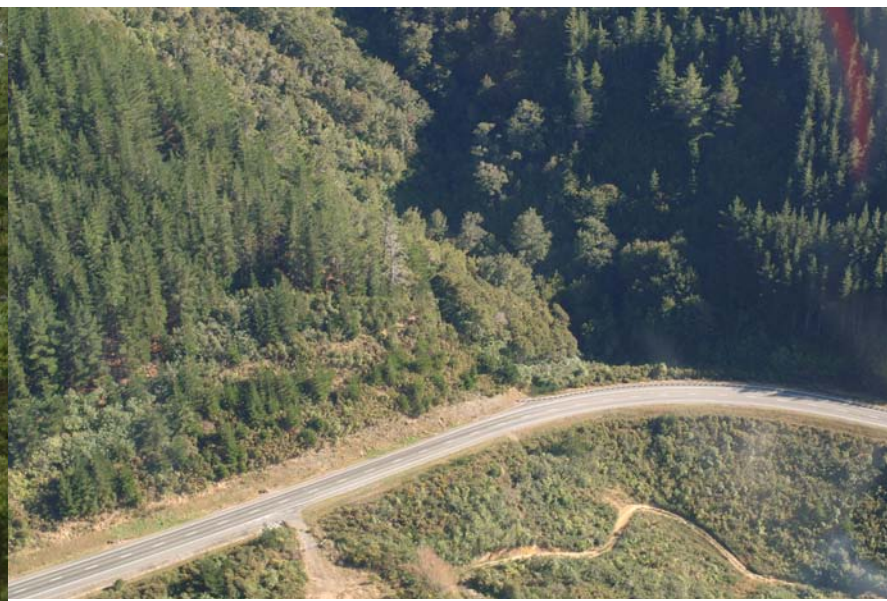
KEY CHARACTERISTICS:

- Enclosed inland valley accommodating the upper catchment of the Whangamoa River
- Narrow swathe of pasture along the valley floor enclosed by cover of mixed forestry and indigenous vegetation along valley sides
- Remnant pockets of indigenous forest contained on private and public land
- Dispersed rural settlement pattern with farmsteads typically established along river terraces accesses along State Highway 6

Below: Pine plantation dominates the valley walls visible along State Highway 6 interspersed with remnant native vegetation



Below: Pockets of gorse and scrub remain apparent along the fringes of forestry areas (left) with pine trees (centre) present along the edges of State Highway 6 (right)



KOKORUA

Kokorua occupies the northern lower reaches of the Whangamoa River and extends from the base of the Rai Saddle traversed by State Highway 6 into the catchment surrounding the Whangamoa Estuary to the north within the coastal environment. The eastern boundary of this character area defines a transition with elevated land within the Bryant Range and culminates at Manuka Hill within Cape Soucis to the north. The south-west boundary culminates along the ridge crest defining the edge of the coastal environment.

LANDFORM

The landform accommodates the hydrological catchment along the Whangamoa River and estuary. At the northern end, the Whangamoa Estuary is surrounded by steep hills and fronted by a sandspit with a narrow entrance into Tasman Bay and the small hill of Mt. Victoria to the east. Extensive alluvial flats also surround the mouth of Toi Toi Stream extending inland to the east. Further south, the valley floor rises gradually to approximately 40 masl at its southern extent and forms a series of river terraces enclosed by steep to very steep valley walls.

The underlying geology in this area is consistent with Valley Floor and Marine Margin Land Type contained by the Maitai Group Eastern Hill and Mountain Land Type (Lynn, 2013). The eastern valley wall also marks a transition into the larger Bryant Range following a band of ultramafic rocks. Soils along the valley floor are formed on alluvium derived from greywacke, argillite, sandstone and limestone surrounded by a more complex mix of steepland soils derived from sedimentary parent rocks and ultramafic material in the vicinity of Red Hill (Davidson & Preece, 1994).

LAND COVER

Much of the elevated land within this character area is established in mixed indigenous and pine plantation vegetation with pasture more typically contained to areas of valley floor. In places this forms a strong contrast between the valley floor and its enclosing walls. The pine plantations form a mosaic with blocks of trees of different ages and gaps where trees have been felled.

Within the coastal environment, the main body of the estuary is relatively unmodified and includes areas of shrubland and forest remnants (Davidson & Preece, 1994). Salt marshes fringe the estuary and provide habitats for a variety of shrubs, grasses, sedges, rushes, including marsh ribbonwood. Some coastal duneland is associated with the beach enclosing the estuary to the north, where pingao (Desmoschoenus spiralis), scrub, dune slack, carex and danthonia grassland are present.

Further south, pockets of regenerating kanuka and remnant lowland valley floor and hill country forest are also apparent and include isolated totara trees encountered along terraces along the Whangamoa River.

Above: A sharp contrast of pasture and forest characterises much of the valley floor.

LAND USE

A strong isolated rural character is retained throughout with very limited built development. Residential use is most commonly associated with isolated farmsteads established on river terraces accessed along the valley floor. Production forestry has been established throughout on the valley sides and forms a mosaic of established trees, harvested areas, access tracks and skidder sites.

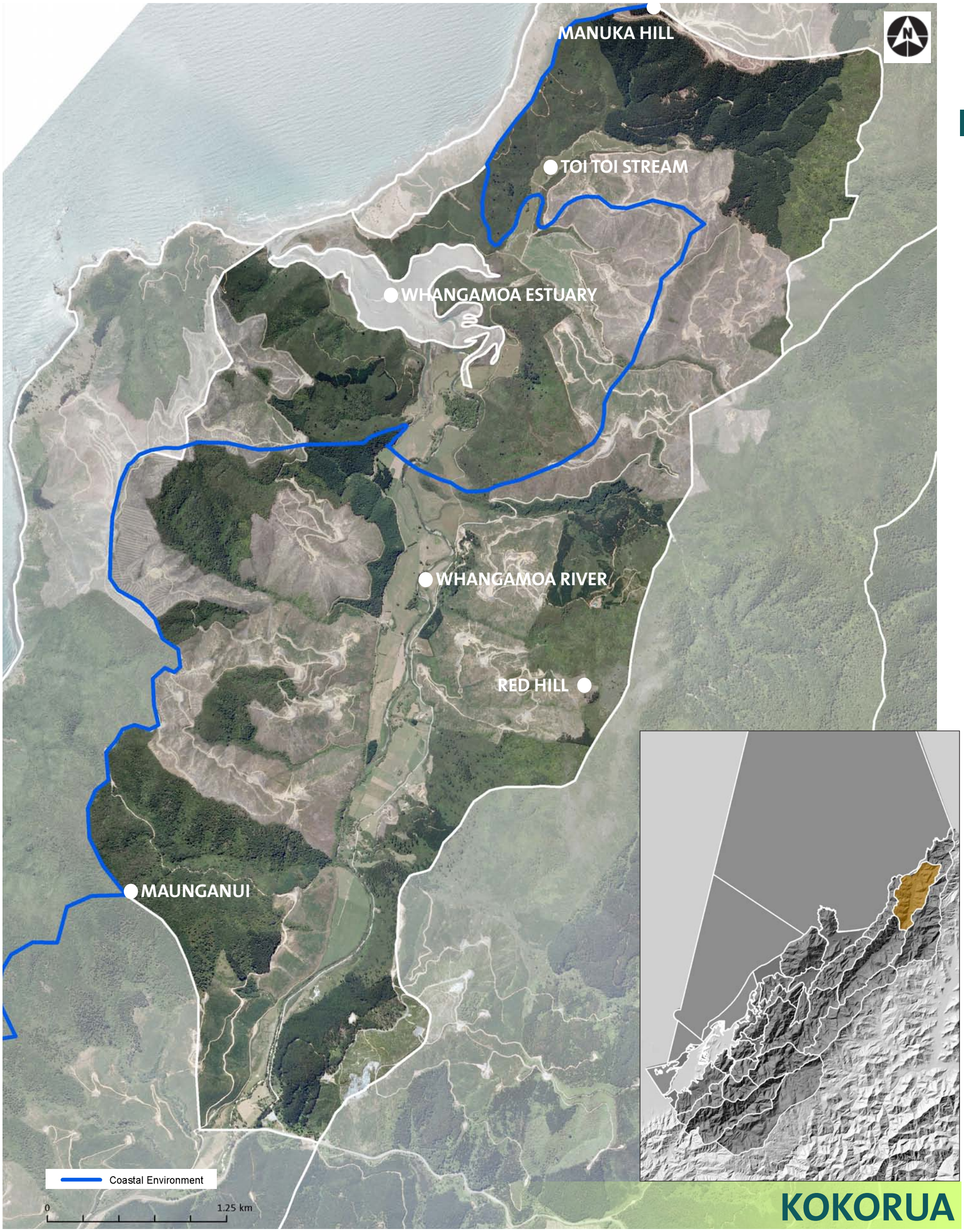
A long association with Maori occupation is also recognised in this area with history of occupation dating back 1200 years (Davidson & Preece, 1994). Several archaeological sites have been identified in the vicinity of Whangamoa Estuary, especially on the sandspit.

Above: Forestry tracks have been formed throughout the northern catchments encompassing Toi Toi Stream

KEY CHARACTERISTICS:

- Enclosed valley containing the lower reaches and estuary along the Whangamoa River
- Areas of pasture along the valley floor surrounded and contained by mixed indigenous forest and plantation forestry on valley sides
- Relatively unmodified estuary including areas of shrubland and lowland forest remnants
- Isolated farmsteads associated with rural land uses along the valley floor
- Long association with Maori settlement with several archeological sites surrounding Whangamoa Estuary

Below: Pastoral land use has established along these areas of valley floor against a backdrop of plantation forestry on the walls of the valley.



Below: areas of salt marsh extend from the eastern edge of the estuary either side of Mount Victoria (left). Mixed scrub and forestry contain the valley sides surrounding the Inlet (centre) with sand and grassland along the outer estuary spit (right)



MAITAI VALLEY

The Maitai Valley character area stretches inland from Nelson's urban edge between Sharland and Botanical Hills and adjoins the Upper Maitai character area further inland at its south-eastern end. The boundaries of this character area typically culminate along the lower slopes of the more elevated hill forms which contain this area of valley floor. This encloses an enclave of accessible open space and recreation opportunities with limited rural lifestyle development to the east of Nelson City.

LANDFORM

The Maitai Valley is largely characterised by flat alluvial gravels along the margins of the Maitai River and Sharland Creek. These open out from the relatively more confined river corridor within the Upper Maitai and Hira Forest further east. Much of the underlying geology comprises of sand, mud, clay and peat and accommodates a stony sandy loam consistent with the Valley Floor and Marine Margin Land Type (Lynn, 2013).

LAND COVER

Vegetation along the floor typically includes areas of open grass framed with exotic amenity planting and willow along the river corridor. As the valley narrows at its southern end in the vicinity of the Maitai Valley Motor Camp, native vegetation becomes more dominant with areas of regenerating kanuka, manuka and mahoe and established pockets of beech forest following the Maitai River corridor. There are areas of plantation forest on the slopes above.

The transition with the more elevated slopes enclosing the valley floor includes areas of scrub with plantation forest and frequent wilding pines.

LAND USE

The Maitai River forms a significant landscape feature associated with land use in the valley. This has provided a key focus of popular picnic and swimming areas. A golf course, camping ground and cricket pitch have also been established and provide a strong recreation focus with peripheral rural lifestyle settlement predominantly clustered in the vicinity of Maitai Campground. Mountain bike tracks linking through to the Brook, Atawhai Hills and Hira form an extended recreational network ia forestry roads.

In the upper reaches of the valley, natural values associated with the river are more accessible with views along Maitai Valley Road, a narrow and winding gravel road that follows the river up the valley. The Maitai Valley also forms part of the Maitai Water Reserve Conservation area, with the Nelson's water supply and assocaited dam in the upper Maitai Valley.

The Maitai River also has had a long association with pakohe (argillite) mining and food gathering for early Maori.

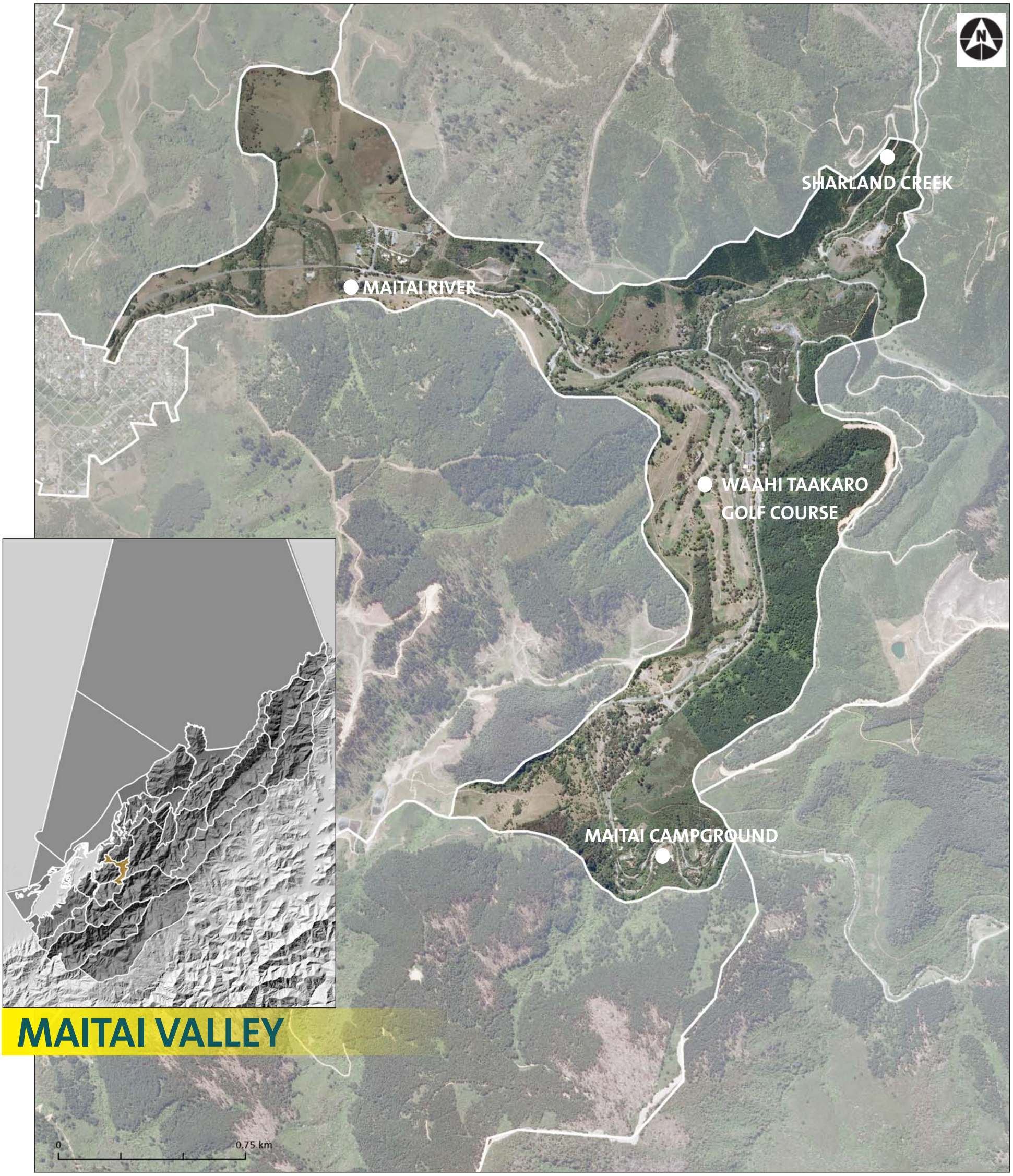
Above: Rural residential development tends to be clustered in association with increased areas of vegetation

Above: The valley forms a narrow pastoral setting contained within the wider hinterland

KEY CHARACTERISTICS

- Flat accessible area of valley floor providing numerous recreation activities and picnicking areas along the Maitai River, which provides a distinctive setting
- Varied vegetation patterns, including willow and exotic amenity planting and plantation forestry and scrub extending onto adjoining valley sides
- Dispersed rural lifestyle development which tends to be clustered in the vicinity of Maitai Campground at the southern and of the valley
- Maitai River has historic association with pakohe (argillite) mining and food gathering for early Maori

elow: Open space recreation areas extend throughout the valley floor framed by exotic parkland tree species.



MAITAI VALLEY

Below: Car parking(left), picnic areas (centre) and a golf course (right) establishes an open character along much of the valley floor.



HIRA BASIN

The Hira Basin character area forms a broad inland valley bounded by Drumduan to the north-west, the Wakapuaka Foothills and Atawhai Hills to the south-west and the Hira Hills to the east. Dispersed settlement within the valley retains an open rural character with rural lifestyle dwellings clustered in the vicinity of Hira Shop and school and extending into the western toe slopes of Drumduan on elevated shoulders and spurs. At the south-eastern end of the basin, the valley narrows within the adjoining enclosure of the Lud Valley with a smaller valley accessed along Rayners Road contiguous with the open form of Hira Basin.

LANDFORM

The geology of the Hira Basin is predominantly alluvial deposits with sandy and silt loams. These are typically derived from greywacke, argillite and sandstone. Adjoining this, the toe slopes of Drumduan consist of the Brook Street Volcanics sequence reflecting formative volcanic processes.

The Hira Basin is characterised by a broad undulating inland valley enclosed by surrounding coastal and inland hills. Distinctive conical forms and rounded shoulder slopes are also contained within the northern area of the basin and maintain a more legible association with the Brook Street Volcanics in this area. Minor terracing is also encountered along the margins of the Wakapuaka River. To the south-east, the Hira Basin extends into the foothills of the Atawhai Hills and reaches approximately 230 masl. This area accommodates rural lifestyle development, which has established along Rayners Road. The eastern edge of Hira Basin culminates at approximately 100 masl beneath the steeper and vegetated slopes of the Hira Hills.

LAND COVER

The majority of the valley floor is established in pasture divided by exotic tree belts, including gum, pine and poplar with conifer woodlots in some areas. Bands of willow are also prevalent along the margins of the Wakapuaka River in addition to some remnant kahikatea and totara consistent with the former Lowland Flats and Alluvial Terraces ecosystem (Nelson City Council, 2003). Fingers of scrub and kanuka also help to define the toe slopes of adjoining areas of Drumduan and the Atawhai Hills. Areas of rural lifestyle development has led to recent amenity planting, including hedges and parkland trees around dwellings and outbuildings. The pattern of vegetation typically separates a settled rural enclave from a more expansive green backdrop of forestry and scrub. In damp shady areas tree fuchsia, nikau, raurekau and seven finger are found.

LAND USE

Dwellings and community facilities including a church, shop and school with access off State Highway 6 and Cable Bay Road, both of which are established 'through roads' bisecting the Hira Basin. More recent residential settlement has expanded along the elevated toe slopes of Drumduan and into the side valley accessed along Rayners Road. Whilst recent rural lifestyle expansion is apparent, the overall settlement pattern remains dispersed with a strong open pastoral character.

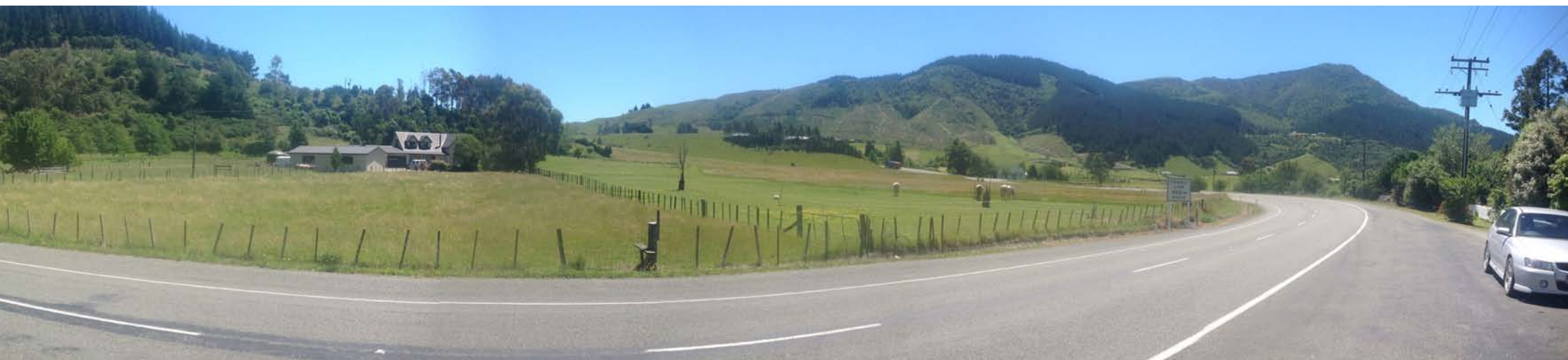
Well established farm buildings, stock yards and fences help to reinforce a strong rustic rural character. In areas where more recent development has occurred, dwellings are mostly sited on spurs and terraces, which afford expansive views of the valley floor; water tanks associated with these developments are evident on some ridge tops.

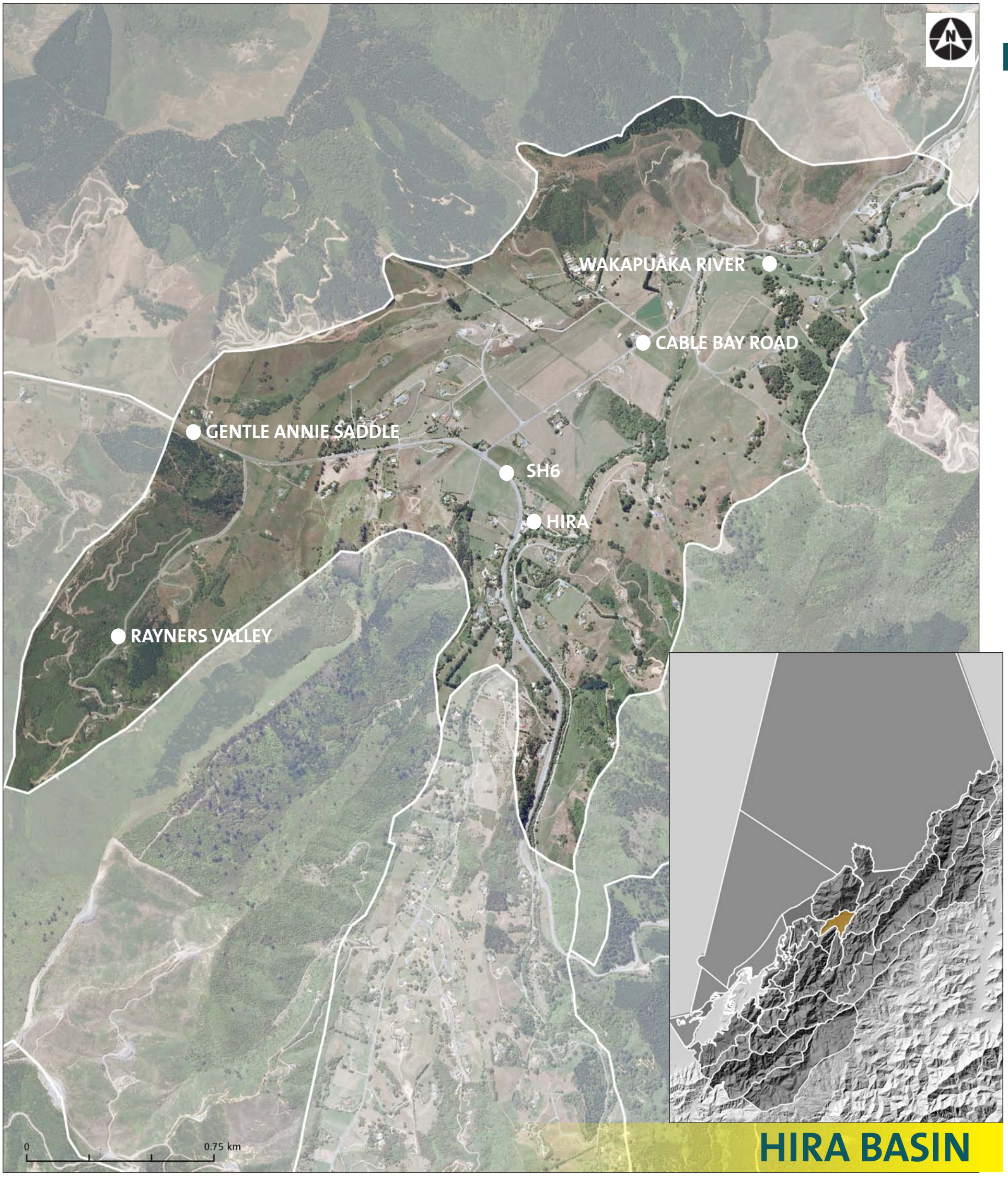
Above:Conical hills define the transition between the northern edge of the basin and Drumduan.

KEY CHARACTERISTICS

- Enclosed inland valley nestled below coastal and inland hills
- Flat alluvial plain and terraces formed by the Wakapuaka River with distinctive conical forms along the toe of Drumduan
- Pasture and exotic tree belt species comprising gum, pines and poplars with willow established along the margins of the Wakapuaka River corridor
- Small service centre, including a fire station, dairy and petrol station, small primary school (Hira School) and church
- Scattered rural settlement including rustic farm buildings and associated fencing and structures
- Recent rural lifestyle development has expanded into elevated areas affording views of surrounding areas but still retaining a strong open pastoral character

Below: Houses and amenity planting set within wider areas of pasture characterises much of the valley floor landscape.





Below: The relatively undeveloped 'green backdrop' of the Hira Hills encloses the eastern edge of Hira Basin.

LUD VALLEY

The Lud Valley extends to the south of Hira Basin and encompassess the Lud and Teal Rivers enclosed by plantation forestry, which is part of Hira Forest. A rural lifestyle character has established across much of the valley, comprising, occasional access ways, rural dwellings and amenity plantings. Parts of the Atawhai and Hira Hills also enclose the narrower northern entrance to the valley, which is accessed from State highway 6.

LANDFORM

The Lud Valley forms a long inland valley system connected with the Hira Basin. This contains a mix of gentle and steep slopes and provides an intimate sense of enclosure throughout. The Lud River flows north along the western edge of the valley floor with the Teal River running parallel with this to the east. An elevated ridge rises between these river systems in the centre of the valley and reaches a maximum elevation of approximately 280 masl above the valley floor.

The uderlying geology forms a transition between the Brook Street Land Type to the west and the Maitai Group Eastern Hill and Mountain Land Type with a band of Valley Floor and Marine Margin Land Type extended along the valley floor adjoining the Lud River (Lynn, 2013). Valley floor soils include terraces derived from greywacke, argillite and sandstone surrounded by Whagamoa Steepland Soils where much of the surrounding areas of Hira Forest has been planted (Chittenden et al., 1966).

LAND COVER

There is a diverse pattern of land cover throughout the valley with areas of pasture more common in low lying areas and gorse and kanuka becoming increasingly more prevalent in elevated southern areas. Plantation forestry is more prevalent throughout the surrounding areas of the Hira Forest, there are also pockets of forestry in the eastern areas of the valley floor at the southern end of Teal Valley Road.

Extensive tree cover has also been established in association with rural lifestyle development, including many woodlots, orchard trees and amenity plantings. Whilst remnant indigenous vegetation is not extensive, there are areas of scattered mature beech and kowhai.

LAND USE

Rural lifestyle development is the most prevalent land use throughout this character area. Lot sizes accommodating typically range between 1 and 5 hectares. Horse and stock grazing is however still present on river terraces and some open spurs.

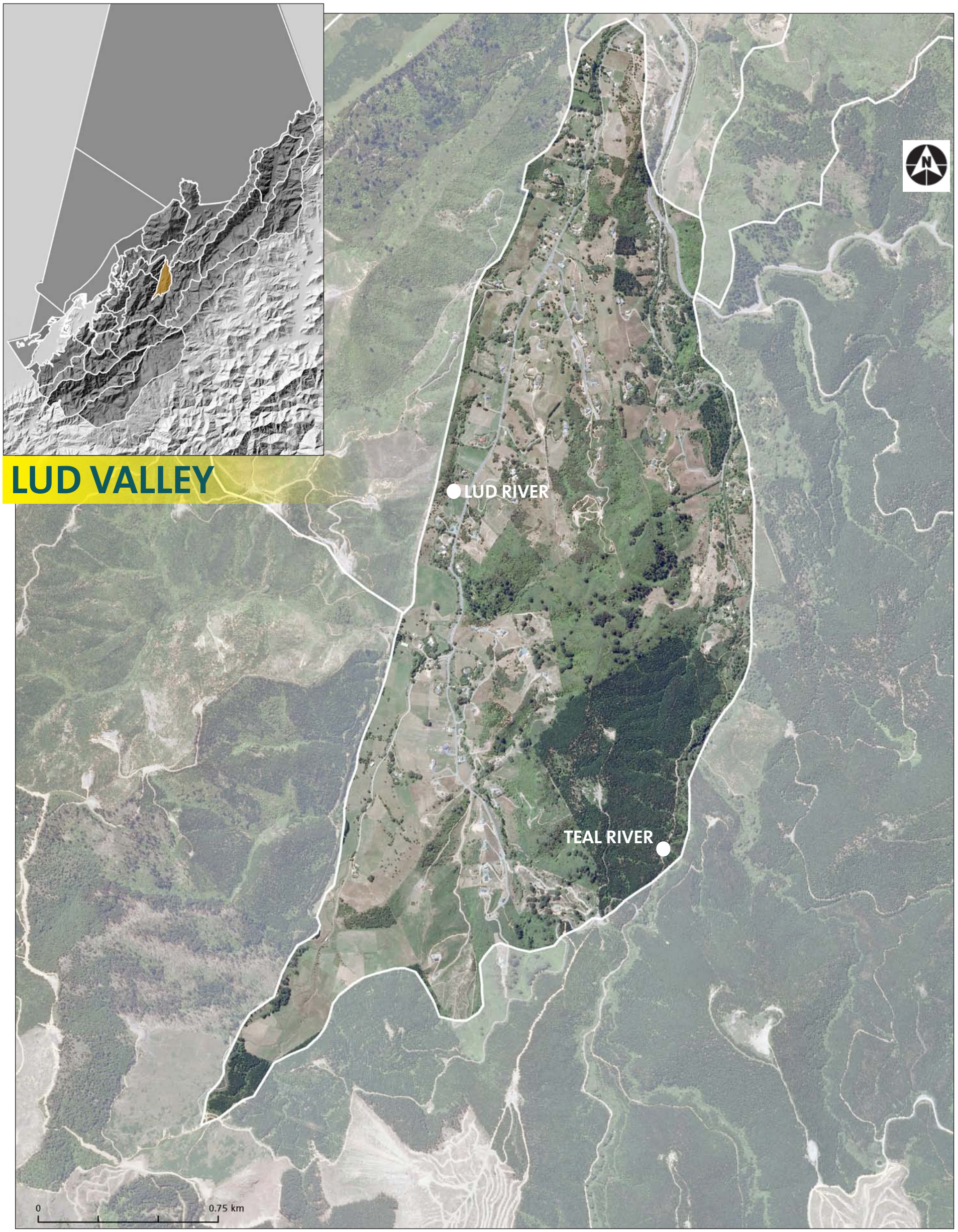
Above: Settlement along the valley floor provides a strong contrast with the dark green enclosure of the Hira Forest

KEY CHARACTERISTICS:

- Long inland valley comprising an intimate sequence of gentle and steep slopes enclosed by plantation forestry (Hira Forest)
- Diverse vegetation pattern comprising of amenity planting, woodlots and orchards with increasing areas of scrub and forestry at the southern end of the valley
- Established rural lifestyle character with access ways, rural dwellings and amenity plantings dispersed along a rural road network
- Grazed pasture dispersed throughout the character area retains a strong association with rural land use

Below: Rural lifestyle development is dispersed along much of the valleu floor terraces

Below: Areas of pasture and exotic riparian species extend along the Lud River



Below: A settles rural lifestyle character has established throughout the valley with dwellings, amenity planting and access ways contributing to visual amenity.



STOKE FOOTHILLS

The Stoke Foothills character area extends between the York Valley and Upper Brook Valley adjoining the Grampians / Sharlands Hill to the north and the edge of the Nelson region boundary to the south and generally follows the eastern edge of urban development at Stoke. The upper edge of the Stoke Foothills culminates at approximately 200 masl and coincides with a transition from the upper limit of scattered residential development into the steeper more vegetated and undeveloped slopes of the Barnicoat Range.

A series of narrow valleys dissect the foothills within which development has historically been contained. Some spurs separating these valleys accommodate more recent urban expansion with dwellings on elevated benched sites. This pattern of expanding development on elevated sites fringing the existing urban area is particularly apparent on spurs to the north of Enner Glynn and south of Ngawhatu Valley. Elevated urban development has also been established between Marsden and Enner Glynn Valley in adjoining urban areas. Beyond areas of urban development, open rolling summits with regenerating native vegetation on steeper slopes remains apparent through much of the characer area. To the south of the Stoke Foothills, an open rural character also extends to the east of Saxton Fields and retanis a visual seperation between Nelson and Richmond.

Above: Recent residential development along the floor of the Marsden Valley os typical of recent expansion in this area.

LANDFORM

The foothills includes an undulating character which can be further divided into areas of enclosed valley floors and rolling shoulder slopes. Spurs and summits along the rolling shoulder slopes typically reach up to approximately 200 masl with the eastern edge culminating below the steep to very steep forested backdrop forming the Barnicoat Range. The valleys and eastern saddles extending between valley heads form the most accessible areas of landform with access onto the spurs typically requiring more substantial retaining structures in association with access tracks.

The underlying geology of the Stoke Foothills is consistent with the Soft Rock Hill Country (Lynn, 2013) and consists of the rolling to steep soft rock hill country on sand, mud, clay and boulders. The transition into the Barnicoat Ranges to the east coincides with the Waimea-Flaxmere Fault System. Soils within the hills include a variety of clay and silt loams with deep alluvial gravels established along valley floor areas. Shallow slip erosion and localised deep seated slumping is common throughout the area (Chittenden et al., 1966).

LAND COVER

Land cover throughout the foothills includes a mosaic of pasture with colonising scrub and plantation forestry. Tree planting is most common along the valley floors and includes poplar, willow, pine and gum commonly arranged in copses and tree belts following the topography. Established amenity planting also occurs in association with the Ngawhatu Hospital grounds, with more recent amenity planting established within Marsden Cemetery and in association with more recent residential development. Spurs typically express a more open pastoral character with scrub occupying steeper faces in some areas. Areas of plantation forest are mostly in the northern area adjoining the Grampians, however, patches can be found throughout this character area.

LAND USE

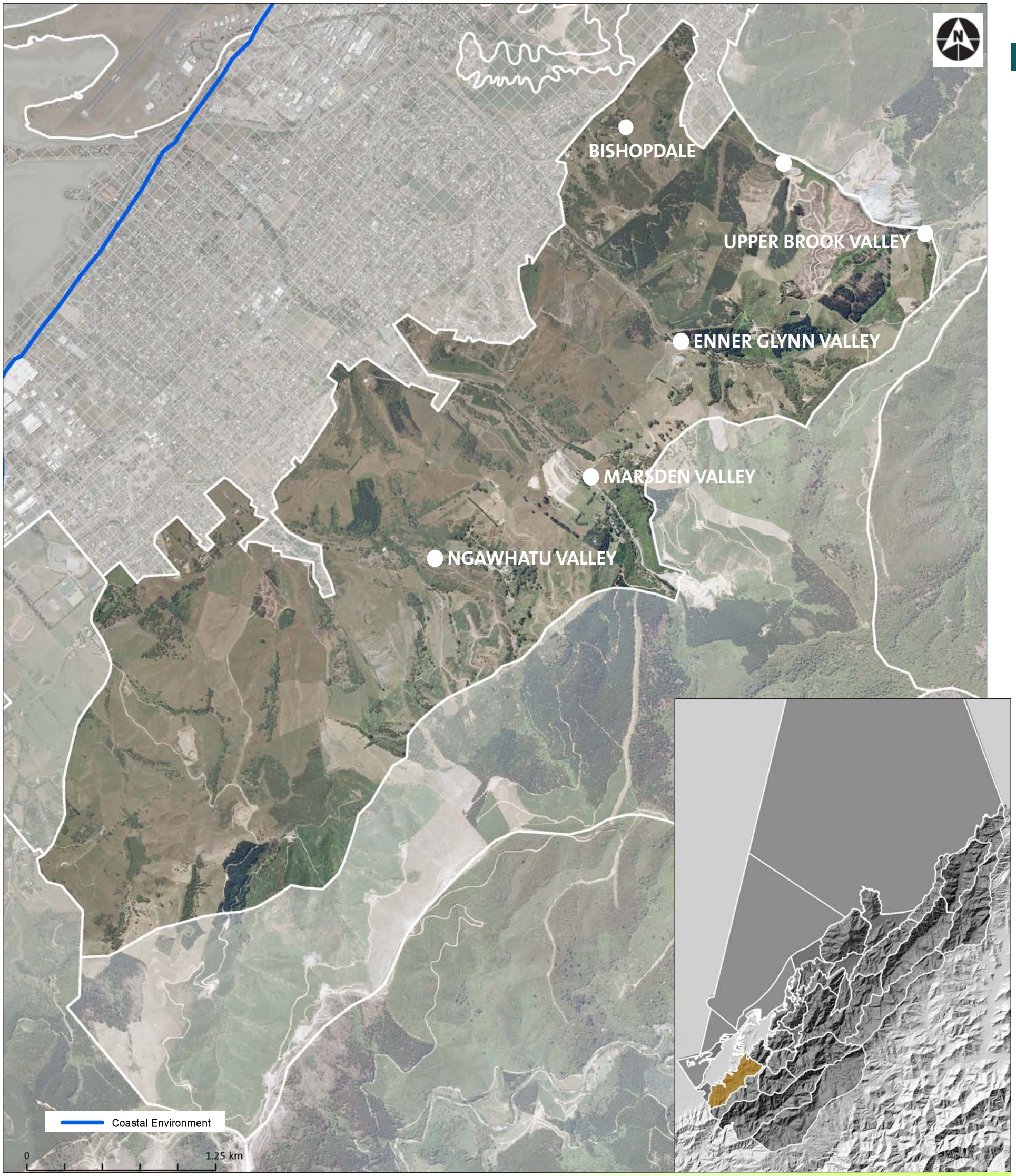
The predominant land use is agricultural in association with areas of scrub and pockets of production forestry. Residential development is expanding, particularly within the Ngawhatu and Marsden Valleys, having previously extended onto the front face of some spurs adjacent to this characer area. The more recent development pattern tends to be of standard residential density clustered within rural valley floor areas and avoids the steeper and more exposed spurs. Transmission lines to and from Marsden sub-station are clearly visible across the front face of the foothills. Concrete reservoirs and the Marsden sub-station are located at the entrance to Marsden Valley and operational quarries are present in York and Marsden Valleys; there is also an operational landfill in the York Valley.

Access to recreational tracks in Upper Marsden Valley and Barnicoat Range.

KEY CHARACTERISTICS

- Undulating pastoral / lightly vegetated foothills extending between the urban edge of Stoke and the more steeply sloping Barnicoat Range
- A rolling to steep soft rock hill country on sand, mud, clay and boulders with evidence of scarring and slumping
- A series of rounded spurs and contained valleys with historic and recent residential development along valley floor areas creating a settled rural character
- Mosaic landscape cover with scrub, pine plantations and open fields on many open spurs
- Prominent pylons running along ridge extending from Marsden Valley and front faces above Stoke
- Access to recreational tracks in adjoinng areas of the Barnicoat Range

Below: Open undeveloped spurs above urban development and punctuated by transmission towers to the south of Marsden Valley at Ngawhatu



STOKE FOOTHILLS

Below: Sequence of foothills accomdating urban development in low lying areas (left), whilst retaining strong rural features and mature trees in localised areas (centre and right)

MALVERN HILLS

The Malvern Hills Character area forms part of the low lying and open rounded foothills which extend to the north-east of the city centre along the toe of the higher Atawhai Hills. Botanical Hill (the Centre of New Zealand) forms the southern end of the Malvern Hills character area and contributes a prominent feature along the immediate backdrop of Nelson together with Sharland Hill and the Grampians. The western edge of the Malvern Hills character area adjoins Nelson's residential suburbs which fringe Nelson Haven. The northern edge culminates along a spur which encloses the southern area of Todds Valley.

LANDFORM

Compared with the Atawhai Hills, the elevation of the Malvern Hills is much lower and reaches a maximum height of 312 masl, below the more elevated backdrop of Kaka and Wells Hills which are located within the Atawhai Hills. The geology of the Malvern Hills reflects part of the same Brook Street Volcanics Group sequence comprising a series of distinctive domes and rounded spurs (Lynn, 2013). Soils (mixed Atawhai Steepland Complex and Sunnybank Hill Complex) are derived from basic igneous (solidified molten rock) and altered sedimentary rocks (Chittenden et al., 1966). They are generally of low to moderate fertility and prone to drying off in summer.

LAND COVER

Land cover throughout the character area comprises predominately mixed pasture and scrub, including gorse, manuka and kanuka. Blocks of gum and pine are also established along the southern edge of the hill above Walters Bluff with oak trees also enclosing Wakapuaka Cemetery further north. Pockets of regenerating indigenous forest are also established to the east of Botanical Hill and to the north of Dodson Valley.

Whilst pasture covers much of the remainder of the character area, gorse and regenerating kanuka is also common particularly in steeper areas. Plantation forestry has also been established in some parts of the Malvern Hills, however, this tends to occur in the less visible parts but becomes more common in eastern areas.

LAND USE

Much of the character area retains a strong rural character in close proximity to Nelson. Whilst urban areas are not included within this character area, urban development and associated exotic amenity tree planting provides a strong urban influence along its base and extends into the fringes of the character area in several places. Such development has tended to avoid spurs and ridgelines at its southern end, encompassing Botanical Hill and retaining open 'gaps' separating the coastal edge suburbs of Brooklands, Atawhai and Marybank. Beyond Marybank, some residential development has spilled onto the northern spur whilst retaining a rural character separating the Malvern Hills from Todds Valley. Pylons are also evident along the ridge above Marybank and define part of the northern edge extending into Todds Valley.

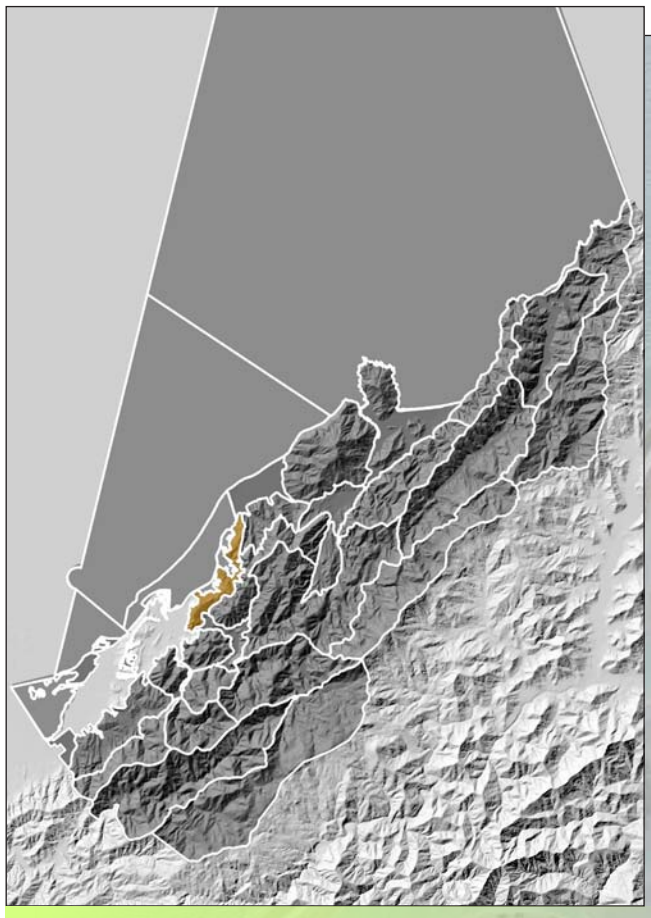
Malvern Hills provides an important recreation area and backdrop for Nelson with the walk to the Centre of New Zealand on Botanical Hill particularly popular. The southern end of Botanical Hill is owned by Nelson City Council with walkways to the north of this extending through private land. This area of the Malvern Hills retains a strong open character above a distinct well defined urban edge along its base.

Above: Immediate foothill context adjoining urban development along Nelson Haven estuary and below the more elevated backdrop of the Atawhai Hills.

KEY CHARACTERISTICS

- Sequence of low lying conical hills forming part of the foothill backdrop to Nelson east of Nelson Haven
- Open rural character rising above urban development along its base
- Northern urban areas of Nelson form three discrete areas separated by open undeveloped spurs
- Land use comprises a mix of regenerating scrub, pine and open pasture consistent with a rural working landscape
- High levels of recreation use including one of Nelson's most popular walkways ascending Botanical Hill

Below: Elevated working rural landscape retained above urban development restricted to lower lying areas.



MALVERN HILLS

Below: The open character of the Malvern Hills forms the primary backdrop to the east of Nelson.

WAKAPUAKA FOOTHILLS

The Wakapuaka Foothills extends north of the more urban development pattern established within the Malvern Hills and forms the north-west edge of the larger Atawhai Hills. This character area rises south of the Wakapuaka Flats and encompasses a series of lower lying foothills which accommodate a pattern of lower density rural residential and rural lifestyle development focused within Todds Valley and along Hillwood Drive and Kanuka Rise.

LANDFORM

The geology of the Wakapuaka Foothills continues part of the Brook Street Volcanics Group expressing rolling summits and spur crests characteristic of weathered volcanic processes. Deep alluvial soils (Waimea Clay Loam) are established along the floor of Todds Valley and have historically been recognised for their market garden potential. Soils extending into elevated areas (Sunny Bank Hill Soils and Atawhai Hill Complex) are derived from historic volcanic processes with lower fertility and reduced moisture content (Chittenden et al., 1966).

Todds Valley forms the main catchment area within the Wakapuaka Foothills and drains into the DoC Reserve in Wakapuaka Flats. A small stream runs down the centre of the valley and has undergone some engineering as part of recent subdivision and the need for storm water management. The valley sides are typically steeper and more difficult to access culminating along long spur crests extending from the higher surrounding Atawhai Hills. At the northern extent of the Wakapuaka Foothills a contained valley area is also formed in association with Hillwood Drive and Kanuka Rise, providing a more enclosed and intimate character associated with the flat valley floor.

LAND COVER

Within Todds Valley, vegetation is mainly limited to exotic plantings in association with paddock boundaries and residential development. Patches of regenerating native vegetation are also present in Little Todds Valley. Along Hillwood Drive, pasture dominates along the valley floor, with a mix of exotic specimen plantings, shelterbelt and amenity plantings comprising macrocarpa, Douglas fir, cypress, oaks and willows. Some old fruit trees also surround well-established dwellings in this area. The spurs separating valley floor areas include a dominant cover of pines and regenerating scrub with gorse, broom and kanuka common throughout.

LAND USE

Most rural lifestyle development has occurred within Todds Valley and includes a community church at the foot of the valley. Dwellings in this area represent a mix of ages and include recent rural residential subdivisions and sections. There are expansive views from elevated viewpoints extending into the head of the valley, including views of the coast with dwellings tending to capitalise on views along spurs. The smaller branch of Little Todds Valley has a more rural and intimate character with limited residential development.

The pattern of residential development to the north of Todds Valley includes lower density rural lifestyle development encompassing Hillwood Drive and Kanuka Rise. This forms a small rural settlement with disused glass houses and Hillwood Homestead at the head of the valley. Beyond this, the settlement pattern is more dispersed at the head of the valleys and typically enclosed by mixed pine plantation and scrub. Areas of pasture are also retained in low lying accessible areas retaining a strong sense of rural character. Garindale is a notable historic building in this area.

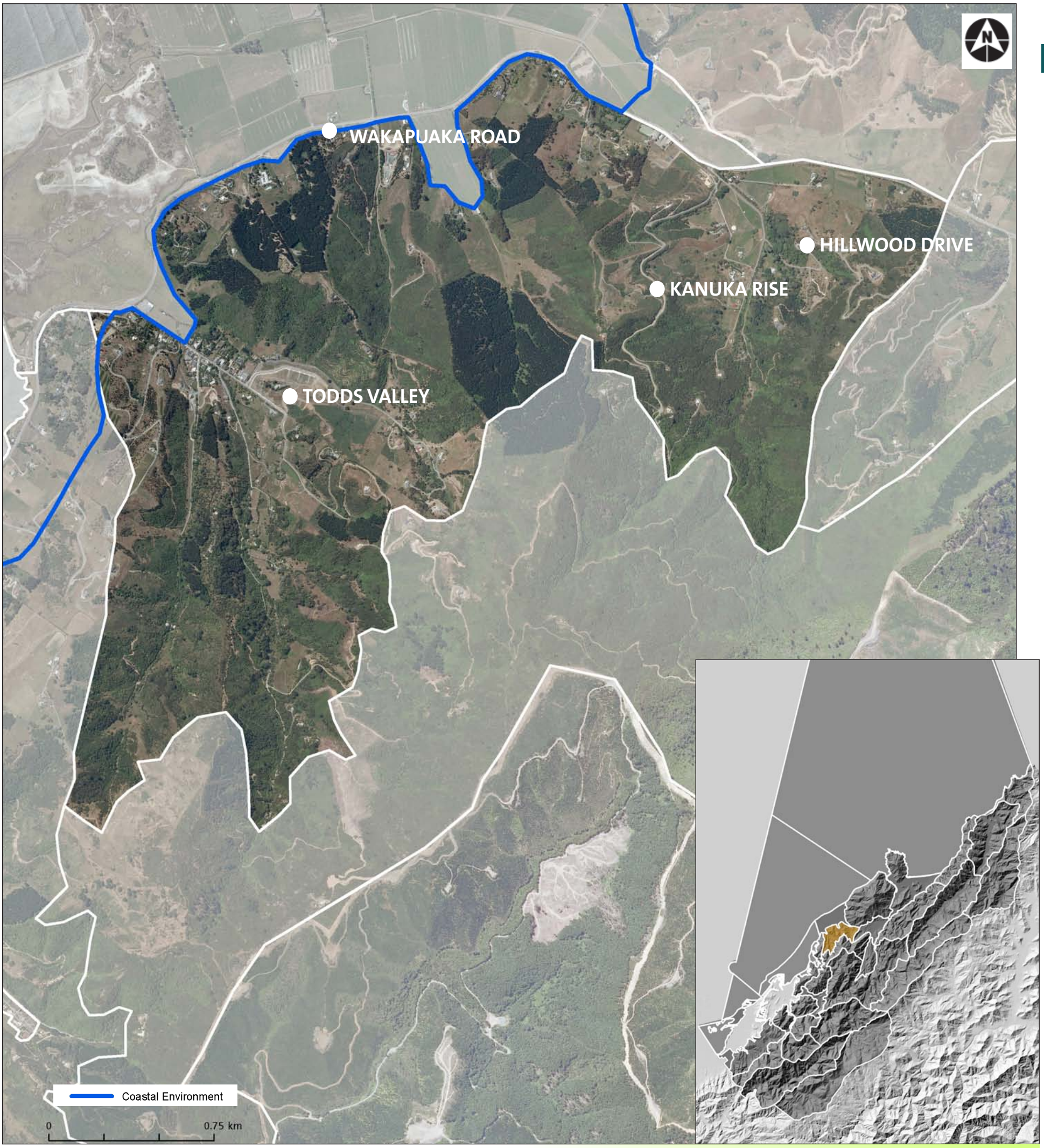
Above:Flattened platforms have been formed along spurs in order to accomodate future residential development.

Above: Residential development is visible extending into the upper areas of Todd Valley seen from the coast.

KEY CHARACTERISTICS

- Undulating foothills elevated above the Wakapuaka Flats and forming the lower rounded slopes of the higher surrounding Atawhai Hills
- Rural settlement extended throughout valley floor areas and includes more recent subdivision on spurs extending into the head of Todd Valley
- Strongly vegetated hillsides flank settlement contained within the valleys and includes mixed plantation forestry and scrub vegetation
- Areas of pasture retained in low lying accessible areas contributing to rural character

Below: Parts of Todds Valley accomodate an urban road layout accomodating new residential development



WAKAPUAKA FOOTHILLS

Below:Gravel roads, mixed scrub and exotic vegetation retain an enclosed rural character along Parutane Way

PORTHILLS RIDGE

The Porthills Ridge forms a set of low foothills with a dominant ridgeline and side spurs that run parallel to the coast. This accommodates varying levels of residential development within Nelson's urban area. This character area differs from the other character areas identified during this study in that it is entirely contained within the residential zone and, by association, defined urban area. The Port Hills Ridge Overlay (AP9.3), as identified in the Nelson Resource Management Plan, has been used to identify the boundaries of this landscape character area and tends to follow spurs that include both developed and undeveloped areas.

LANDFORM

Port Hills Ridge forms a narrow spine which runs northeast above a narrow saddle separating Bishopdale from Enner Glynn. This passes through Observatory Hill reaching 175 masl before culminating along Stanley Crescent and Maori Road along its northern end. This ridgeline is visible from Tahunanui to the west, the northern area of Stoke to the south, parts of central Nelson and Nelson South to the east and forms the backdrop to Port Nelson to the north.

The geology of the Port Hills Ridge is derived from Port Hills Gravels on sand, mud, clay and boulders. Soils (Wakatu Hills Soils) tend to be shallower than Wakatu Silt Loam which occur along the western face of the ridge. Parts of the ridgeline are very steep with shallow slip erosion and deep seated slumping common throughout this character area.

LAND COVER

The northern end of the ridge has largely been developed and includes single and double story dwellings with access off Princes Drive, particularly north of Britannia Heights. Amenity planting including redwoods planted along Princes Drive are also visible along the skyline in this area. The southern area of Port Hills Ridge is less developed adjoining recent dwellings within Tasman Heights. Part of the central summit and western face adjoining Princes Drive remains undeveloped due to topography and stability.

From Tahunanui, parts of the Port Hills Ridge contain housing within a vegetated backdrop. There are larger areas of open land along the steep eastern and southern slopes, including areas of undeveloped skyline visible from Stoke and Nelson South. From within the Port Hills Ridge, open spurs extending to the east are also visible and provide an area of open space separating the summit from the larger urban area of Nelson established along the valley floor. In undeveloped areas, vegetation is patchy comprising mostly of pasture and gorse. Occasional willow and poplar trees are present at the southern end of the ridge.

LAND USE

Residential buildings are the most prevalent element along the spine of this character area accessed from roads constructed along spurs. In contrast, housing/subdivision is yet to be established in the steeper eastern and southern areas although recent development at Tasman Heights has begun to extend into this area. Views from the northern end of Stoke and western edge of Toi Toi include views of an open undeveloped foreground and ridgeline with a strong rural character. A pedestrian walkway network traverses the spine of the Porthills Ridge, linking the Nelson South area with the Port and Rocks Road.

Above: Residential development at Tasman heights has extended along the southern end of the Port Hills Ridge.

Above: The northern extent of the Port Hills Ridge is characterised by houses punctuated by amenity planting along the skyline.

KEY CHARACTERISTICS

- Series of low foothills and ridgelines that run parallel to the coast
- Views along spine of ridge impeded due to large houses and amenity planting established at northern end
- Shallow slip erosion and deep seated slumping is common throughout much of this area
- Visually and physically accessible from Tahunanui, Stoke and Nelson South with an open undeveloped slopes and ridgeline remaining visible in eastern and southern areas

Below: Some recent residential development has extended onto accessable spurs to the south of Port Hills Ridge accessed off Princes Drive.

PORTHILLS RIDGE

Below: Pasture and regenerating scrub covers much of the south-eastern slopes facing towards Nelson South.

SAXTON FIELDS

The Saxton Fields character area forms part of the southern edge of the Nelson region between Champion Road and Saxton Road and below the Stoke Foothills. The current mix of open space, rural land and residential development provides physical and visual separation between the urban areas of Stoke and Richmond. Recreational playing fields and facilities in this area contribute to the sense of openness along Main Road Stoke. The eastern boundary of the character area adjoins the Stoke Foothills and is contiguous with the open rural character higher up the slopes.

LANDFORM

The Saxton Fields topography is flat to gently rolling and mostly below 20 masl. The upper edges of the character area encompass the catchment of Saxton Creek along the toe of the adjoining Stoke Foothills. The low-lying landform within the Saxton Fields character area is consistent with adjoining areas of Stoke and Richmond where residential development is well established.

The geology forms part of a broader alluvial fan which has been washed down from the Barnicoat Range. Soils (Richmond Clay Loam and Ranzau Gravelly Silt Loam) reflect alluvium deposits derived from greywacke, argillite, sandstone and calcareous shale (Chittenden et al., 1966).

LAND COVER

Land cover is a combination of amenity turf of the playing fields, pasture and crops. Tree belts are common along flat paddock boundaries and include a mix of poplar, willow, gum and pine. Further clusters of poplar and other exotic amenity species extend along the southern edge of the character area and enclose established rural lifestyle development. The eastern toe slopes of the character area remain in open pasture with some clustered willow trees following stream boundaries.

LAND USE

Land use includes a mix of playing fields, grazing and cropping. Much of the surrounding flat land has been established for residential use, which contributes a strong urban influence, particularly in low lying areas accessed along Champion Road. There is also recent urban subdivision along Hill Street North. The current mix of open land has previously been recognised as important to maintain a ‘green belt’ between Richmond and Nelson.

Above: Playing fields, sports complexes and carparking comprises part of the open space character

Above: Saxton Fields forms a legible open gap between the urban areas of Nelson and Richmond

KEY CHARACTERISTICS

- Low lying alluvial fan below the rising form of the Stoke Foothills accommodating Saxton Creek
- An open landscape comprising playing fields and rural land providing a sense of separation between Richmond and Nelson
- Recent urban subdivision and expansion along Hill Street North
- Cohesive landscape with tree belts in lower lying areas and established amenity planting enclosing rural lifestyle development along toe slopes
- Wider area of pastoral land use contiguous with the rising form of the Stoke Foothills

Below: Saxton Fields forms an open space break along the Stoke Foothills experienced from Main Road

SAXTON FIELDS

Below: Recent residential development has extended along Hill Street and introduces pressure to further erode green gap seperating Richmond from Nelson

TAHUNANUI

Tahunanui forms the landward extent of 'Nelson's Beach' and retains a strong connection with Nelson's seaside identity. This encompasses the land area above the Mean High Water Springs along Tahunanui Beach and continues south within Nelson's coastal environment incorporating the sandy low lying areas. Recreation grounds, Tahunanui Beach Holiday Park, Nelson Golf Course and Nelson Airport are all located within this area along the eastern edge of the entrance to Waimea Inlet. Shifting sand margins and an open coastal setting extend throughout most of the character area and help to unify the mixed land uses present.

LANDFORM

The geology of the Tahunanui character area is almost exclusively sand dune deposits forming a complex arrangement of spits, beach ridges, inter-dunal swamps and estuaries. A small area of boulders and gravel sand also passes through part of the airport runway, however this remains indistinguishable along the surface from surrounding sandy areas. Underlying soils are predominantly Tahunanui Sand; a dark grey, fine sand (Chittenden et al., 1966). The character area is low lying and characterised by expansive modified dune fields which extend between the coast and an established urban edge. The highest parts of this area are 10 masl or less along the top of sand dunes and mostly no more than a few metres above sea level.

LAND COVER

Beyond a sandy coastal edge, grass covers most of this character area, including playing fields to the north and most of the airport and golf course. Additional areas of planting become more common in the northern part of the character area with amenity planting providing enclosure and avenue planting associated with part of the camp ground, sports ground and fun park areas. Phoenix palms are common through this area. Dune restoration with native plant species has been implemented along the Tahunanui beach dunes. The northern and western ends of Tahunanui Beach include extensive areas of ngaio and pine as an erosion protection measure. Small creeks with brackish water with coastal saltmarsh vegetation occur throughout this area.

Commercial, industrial and recreation buildings are dispersed throughout the Tahunanui character area, particularly in association with the funpark / playing fields, camp ground and airport areas. Aircraft hangars and industrial buildings form the largest and most utilitarian elements in the vicinity of the existing urban edge; however, an open and accessible western coastal edge is retained. Buildings within the camp ground and adjoining Tahunanui Beach have a low profile and are typically enclosed by coastal vegetation which maintains a low key presence along the coastal edge.

LAND USE

A complex mix of land use types have been established throughout the Tahunanui character area. Car parking and access points established along Tahunanui Beach cater for the most significant area of recreation activity along Tasman Bay within Nelson. Adjoining fun park activities including modeller's pond, BMX Track, Natureland, roller rink, hydroslide, bumper boats and playgrounds which introduce a strong 'carnival' character to the beach and environs. Further to the south, more passive recreation activities occur in association with the camp ground and golf course with formal and informal coastal walkways connecting through these areas. Nelson Airport is located on an area of former dunes which have been heavily modified and introduces an open utilitarian character similar to the character of the adjoining golf course.

Above: Coastal erosion has reclaimed vegetation planted to manage Tahunanui Bach Beach.

Above: Tahunanui is recognised as 'Nelson's beach' and provides an important recreation resource.

KEY CHARACTERISTICS

- Sandy open coastal edge comprising complex mix of spits, beach ridges, inter-dunal swamps and estuaries
- Recognized as 'Nelson's beach' providing popular recreational areas including sports fields and a range of associated activities
- The 'Back Beach' includes areas of ngaio and pine planted for erosion control and a large tidal sandy mudflat
- The utilitarian nature and influence of the airport extends from the established urban edge through to the open character along the rock reinforced coastal edge adjoining Nelson Golf Course
- Buildings typically follow a low profile hunkered within coastal vegetation and have limited visual prominence along the coastal edge
-

Below: Open pasture with low undulating dunes characterises much of the land surrounding the golf course

Above: The sand bank of tahunanui Beach forms the northern land mass formed by shifting areas of sand vulnerable to coastal erosion.

TAHUNANUI

Below: Flat open pasture characterises much of the land area surrounding the airport

WAKAPUAKA FLATS

The Wakapuaka Flats character area forms an open, flat rural landscape to the north of Nelson. The northern coastal edge is defined by the Boulder Bank and adjoins Nelson Haven estuary to the west with the inland boundaries enclosed by the rising forms of Drumduan to the east and the Wakapuaka Foothills to the south. The character area also forms part of the northern entrance experience into Nelson and provides a strong rural edge and open space to the established settlement pattern further south. Oxidation Ponds and reserve areas are also contained along the western edge of the flats adjoining Nelson Haven.

LANDFORM

The Wakapuaka Flats comprise a flat coastal plain composed of mud, sand and gravels formed by swamp deposits. Alluvial deposits also adjoin the flats along the margins of the enclosing foothills and include mixed sand, mud, clay, boulders and peat. Soils (Richmond Peaty Clay Loam and Motukarara Silt Loam) from alluvium derived from solidified molten rock and a high salt content in western areas (Chittenden et al., 1966). Much of the land lies below MHWS and encroachment from the sea is controlled by stopbanks and floodgates. The resultant paddock layout is strongly linear with field drains and creeks. The north-western boundary of Wakapuaka Flats also forms part of the larger Boulder Bank along the coastal edge extending between the Glen and the western edge of Nelson Haven.

LAND COVER

Land cover is mainly pasture with macrocarpa, gum and poplar tree belts disbursed along field margins. Flax and ngaio are common areas along the margins with salt marsh vegetation well established together with exotic grasses within Wakapuaka Sandflats and adjoining DoC Reserve to the south of the Oxidation Ponds. Boulders also form the northern coastal edge along the Boulder Bank.

LAND USE

The overall settlement pattern remains sparse throughout most of the flat coastal plain. Open grazed paddocks cover the majority of the Wakapuaka Flats with dairy cows and cattle together with occasional farm buildings and dwellings. Along the coastal edge, nodes of commercial and utility development have been established, including the Cawthron Institute and a large prominent transmission mast. Oxidation ponds are located at the northern end of Boulder Bank Drive.

Along the margins of Wakapuaka Flats, residential settlement becomes more apparent along the outer edges of Wakapuaka and Glen Road. Such development typically marks the transition into the Wakapuaka Foothills and Drumduan landscape character areas respectively. Across the remaining area of the Wakapuaka Flats, recreational use is limited and mostly associated with walking tracks and access along the northern coastal edge managed as part of a DoC Reserve and access to Wakapuaka sandflats.

Above: Boulder Bank snakes its way south along the coastline south of Mackay Bluff

Above: Grazing pasture and linear creeks cover much of the character area

Above: Shelter planting border creeks throughout the coastal plain

KEY CHARACTERISTICS

- Uniformly flat coastal landscape with distinctive rural elements, such as fences and occasional tree belts and culminating along Nelson's Boulder Bank which forms a distinctive coastal edge
- A largely reclaimed estuarine area with stop banks, field drains and oxidation ponds creating strong linear elements
- Mainly grazed pasture with clusters/groups of macrocarpa, poplar and gum shelter belts and limited native plantings
- Sparse settlement pattern across much of the flats with occasional farm buildings and isolated commercial and utility buildings and structures
- Along eastern and southern edges residential settlement marks the transition from the flats to the foothills
- DoC managed reserves along the Boulder Bank and with regenerating indigenous estuarine vegetation
- Recreation tracks with local play areas located along northern coastal edge

Below: A flat expansive rural character is retained throughout the flats with limited buildings

WAKAPUAKA FLATS

Below: A legible transition between the open expanse of Wakapuaka Flats and the rising form of Drumduan is legible to the east

Above: Pepin Island is linked by a boulder tombolo seperating Cable Bay from Delaware Inlet.

DELAWARE

This character area covers a composition of landscape character types which occur at the lower reaches and mouth of the Wakapuaka River and includes Delaware Inlet, Cable Bay Causeway, Delware Spit and Pepin Island within the coastal environment. The boundaries of this character area delineate the valley floor from the rising hills of Drumduan to the west and the Hira and Whangamoa Hills to the east. A narrow gully formed between Drumduan and Hira Hills separates the lower reaches of the Wakapuaka River from Hira Basin and defines the south-western boundary of the character area.

LANDFORM

The northern edge of this character area is separated from open water in Tasman Bay by Cable Bay Causeway and Maori Pa Beach, which are located either side of the summit of Stuart Hill and reaching 401 masl on Pepin Island. Within Delaware Inlet, the landform includes a shifting pattern of tidal channels and mudflats connecting with Outer Tasman Bay at the western end of Maori Pa Beach. Further inland, river terraces extend south-west towards Hira Basin and surround a series of low lying hills which rise to the east of Maori Pa Road and extend along the southern edge of Delaware Inlet.

The underlying geology of this character area reflects a combination of the rising dome forms of the Brook Street Land Type and the lower lying Valley Floor and Marine Margin Land Type (Lynn, 2013). This encompasses a mix of very steep rugged and exposed coastal cliffs along the outer edge of Pepin Island in contrast with the flatter and rolling landforms along the margins of the Wakapuaka River. A variety of soil types are also encountered throughout this area include steepland soils derived from the Brook Street Volcanics in elevated areas, mixed sandy and silty loams associated with terraces along the Wakapuaka River and sand and dunes along Maori Pa Beach (Chittenden et al., 1966). Areas of slumping and erosion are also visible throughout grazed areas of Pepin Island.

LAND COVER

Most of the valley floor areas and most of Pepin Island is in pasture with pockets of scrub, kanuka and coastal forest in the gullies and along steep inaccessible cliff edges. Plantation forestry, together with scrub and kanuka is more prevalent along the low lying ridge rising east of Maori Pa Road.

The main body of Delaware Inlet contains several coastal vegetation communities from salt marsh through to coastal forest on Bishop Peninsula (Davidson & Preece, 1994). Further inland, willow trees are scattered along the margins of the Wakapuaka River together with scattered totara and kahikatea on adjoining river terraces. Some isolated mature macrocarpa trees also occupy the grazed eastern margins of Delaware Inlet. An important remnant of coastal flat forest forms part of the Council's Paramata Flats Reserve alongside the Wakapuaka River. This includes the only known occurrence of lowland ribbonwood in Nelson City.

LAND USE

Delaware Inlet has a long history of settlement with a large number of historic sites in a small locale. The inlet and many adjoining areas are recognised as important to Maori, proving a major centre of historic and more recent occupation, an important food source and a number of Waahi Tapu sites (Davidson & Preece, 1994). This includes a number of archaeological sites identified within dunes along Delaware Spit. Cable Bay has a long history associated with European settlement and is named because it was the site of New Zealand's first overseas telegraphic cable in 1876.

Numerous small farms and houses are peppered throughout the valley with densities increasing to the west of the Inlet along Cable Bay Road and Maori Pa Road. Older and well established housing is typically surrounded by vegetation, with more recently developed housing located on hill slopes and elevated positions to capture sea views.

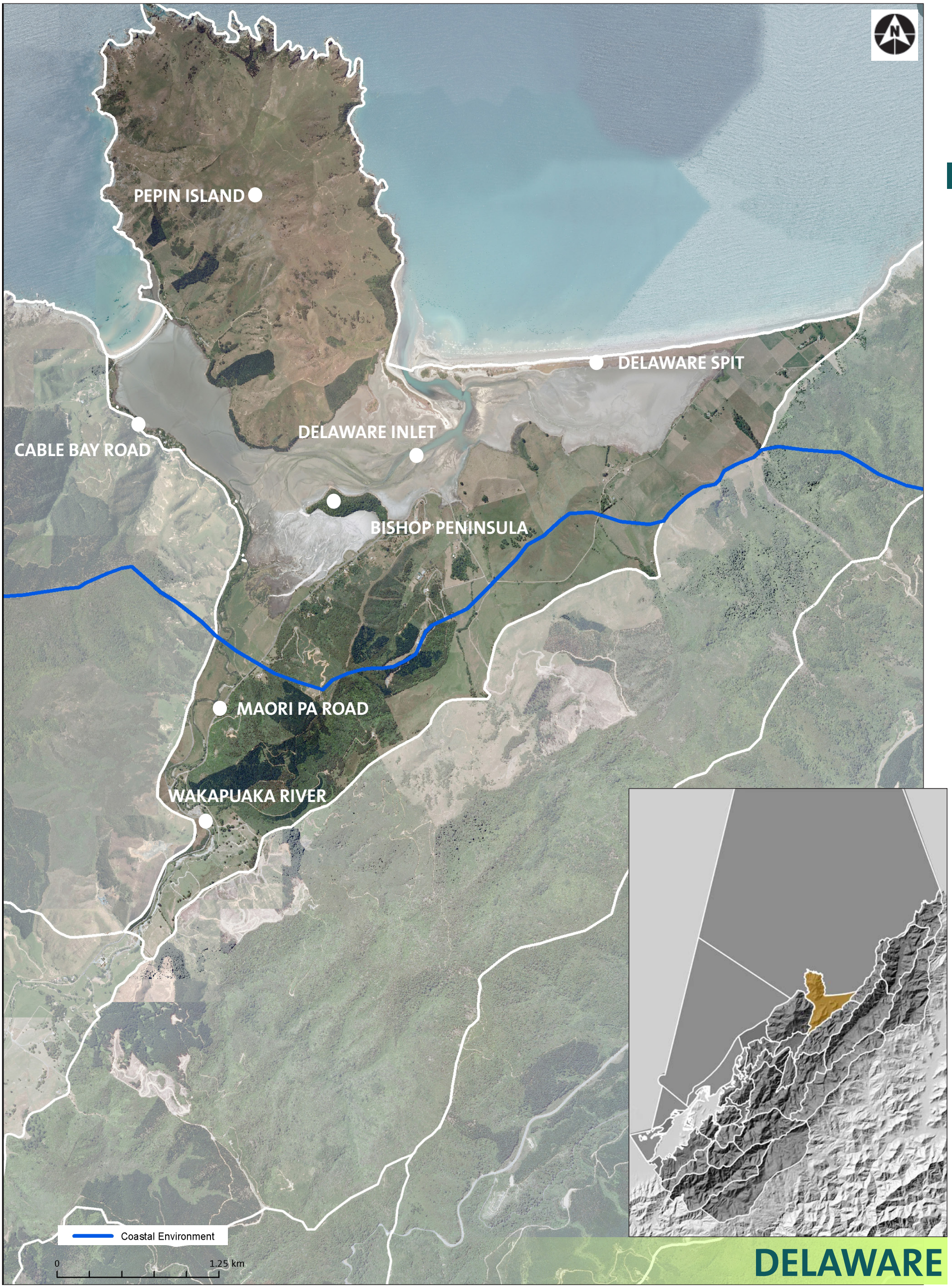
Above: Residential development on the northern edge of Drumduan overlooking mudflats in Delaware Inlet.

Above: Deleware Spit and an inner spit seperate the sea from Delaware Inlet.

KEY CHARACTERISTICS:

- Varied coastal edge character with a variety of river terraces, an inlet, a causeway, and sand beach and the characteristic rising dome form of Pepin Island
- Rugged steep coastal cliffs defining an exposed coastal edge
- A shifting pattern of tidal channels and mudflats in Delaware Inlet connecting with Outer Tasman Bay at the western end of Maori Pa Beach
- Remnants of indigenous coastal vegetation including species now very rare elsewhere in Nelson
- Ribbon of residential settlement extends along the western edge of the Inlet with more dispersed rural use to the east of the Delaware Inlet and south along terraces following the lower reaches of the Wakapuaka River
- Long history of Maori and European settlement and activity with numerous historical sites found within a small area including Wahi Tapu on Maori Pa Beach and the siting of New Zealand's first overseas telegraphic cable in Cable Bay

Below: A rock fringe and indigenous vegetation fringe the coastal margin of Pepin Island (left), Grazed pasture with isolated Willow frame and the margins of Wakapuaka River(centre), and Deleware Spit includes coastal vegetation along the northern edge of the Delaware Inlet (Right).



Below:Bishop Peninsular covered in indiginous forest marks a legible feature along the southern edge of Delaware Inlet

WAIMEA ESTUARY

The Waimea Estuary character area forms the southern coastal edge of the region and eastern edge of the larger Waimea Estuary. The northern edge of Waimea Estuary forms Tahunanui Beach and encompasses the transition with deeper water encountered within Inner Tasman Bay. The landward margins of this character area and have been significantly modified over the last 150 years.

LANDFORM

The landform of Waimea Estuary reflects a dynamic tidal pattern of water and mudflats. The geology associated with the coastal edge includes beach deposits consisting of marine sand, mud and boulder banks. Sand is more prevalent to the north with rocky and pebble shorelines adjoining mudflats in the estuary. Islands and submerged mudflats are also present and include Oyster, Saxton and Pig Island within the estuary and a more recently emerged sand bank north of Blind Channel. Islands typically extend no more than a few metres above sea level and reflect a dynamic pattern of shifting sands along their margins.

Along the edge of Waimea Estuary, rock lined embankments and retaining walls are common along residential property boundaries and reinforce the linearity and strong horizontal landform. The majority of the adjoining inland areas are typically located below 5.0 masl and are at times prone to flooding.

LAND COVER / BENTHIC

As much of the coastal edge of this character area has been lined with rock riprap and adjoins a hard urban edge, much of the original indigenous vegetation along the margins of the estuary has been lost. Within the estuary, soft sediment communities are healthy and relatively diverse, containing animals such as polychaete worms, cockles and other small bivalves and supporting high numbers of invertebrates, fish and birds using the estuary. Some pockets of salt marsh vegetation have also been re-established including a shallow bay to the east of Monaco.

Vegetation on Saxton Island includes areas of scrub and exotic conifers with much of the land area dominated by sand and dune swamp associated with the wider estuary. Oyster Island is colonised by mixed exotic shrub land with some native vegetation also established on Pig Island. Sandy Island further north is more open and frequently covered with seabirds.

LAND USE

Much of the land use adjoining this character area is associated with urban development defining a narrow interface along the coastal edge. As part of this, Tahunanui Beach is recognised as Nelson's main swimming beach providing easy recreation access to a shallow and relatively sheltered area of coast. Further south, the community of Monaco has established a quaint seaside 'bach' character with nautical themed buildings reflecting strong associations with the adjoining water edge and estuary.

Boats are a feature of the estuary even when the tide is out. Footpaths and jetties provide a public interface along the coastline with moored boats and buoys extending a settled coastal character into the adjoining estuary from vehicle access along the edge. The land and sea interface also continues a strong dynamic influence throughout the day with access along part of Point Road only provided during low tide.

Above: Residential development along Monaco forms part of the immediate backdrop to Waimea Inlet against a larger mountain range backdrop

Above: Gravel and rock rip rap surrounding Monaco with coastal access extended along the edge of the urban area

KEY CHARACTERISTICS

- Dynamic pattern of water and exposed mudflats consistent with estuarine context
- Mix of sand and rocky shingle edge coastline with limited areas of native vegetation
- Strong recreation associations with Nelson's main swimming beach at Tahunanui and boating within the estuary
- Developed urban edge along eastern edge of Waimea Estuary including quaint seaside 'bach' character established in the urban area of Monaco
- Recreation opportunities associated with the cycle/walkway along Whakatu Drive and the Monaco Peninsula walking track

Below: Pocket of coastal vegetation re-established in shallow tidal bay to the east of Monaco

WAIMEA ESTUARY

Below: Sequence of Oyster , Saxton, and Pig Islands extend into Waimea Inlet to the west of Monaco.

NELSON HAVEN AND THE BOULDER BANK

Nelson Haven forms a prominent gateway and accessible estuary adjoining Port Nelson and a hard urban edge following the margins of State Highway 6. This character area has a long association with Nelson City and encompasses deeper channels providing boat access to the port that transitions into shallower estuarine waters where changing tidal patterns and mudflats form visible meandering channels at low tide. The horizontal character of the estuary is reinforced by the Boulder Bank, a natural spit separating Nelson Haven from the sea. This is a long strip of boulders, cobbles and gravels which snakes off-shore in a south-westerly direction from Mackay Bluff. To the south of the Boulder Bank, Haulashore Island and Arrow (Fifshire) Rock form iconic gateway features in association with Rocks Road to the south of Port Nelson.

Port Nelson and marina forms a strong urban influence and built edge at the southern end of Nelson Haven. Port buildings, cranes and container vessels within this area are visible across most of the character area and typically seen against a backdrop of the Port Hills Ridge and the more elevated hills further east. Rock riprap continues around the north eastern boundary of Queen Elizabeth II Drive and the Boulder Bank Drive towards Atawhai and frames the urban edge. Beyond Port Nelson, limited development frames the edge of the estuary with isolated posts, poles and boats accentuating a coastal shipping character. There a few buildings on the Boulder Bank with the notable exception of an historic lighthouse at its southern end and a scattering of six low key historic baches.

LANDFORM

Nelson Haven forms part of a larger flat, open and low-lying coastal edge which continues south-west from the Wakapuaka Flats. The Boulder Bank includes rock material derived from Mackay Bluff and is thought to be formed along the coastline through a process of long shore drift (Warren, 2009). The Boulder Bank typically extends no more than a few metres above sea level and forms a strong horizontal edge along the coastline. At its southern end, Haulashore Island was permanently severed from the Boulder Bank in 1906 and thereafter dredged to provide a channel and safer access to the harbour for ships. Mudflats define the bed of the estuary, the margins of which include beach deposits with gravel sands along the toe of the Malvern Hills.

The landward boundaries typically follow roads formed on reclaimed rock-lined embankments. This continues the strong linear character and clearly defined urban edge along the margins of Rocks Road and the estuary. The Nelson Marina and Port are located on reclaimed land along this edge and continue a pattern of horizontal rock-lined edges. The mouth of the Maitai River flows into the Nelson Haven along the south eastern boundary of Nelson Marina.

To the south of Port Nelson, the geology adjoining the coastal edge of Rocks Road is characterised by beds of tilted sandstone which follow a strong south-west to north-east alignment. Together with Arrow (Fifeshire) Rock, this contributes a comparatively more rocky character along this area of coastline together with mud boulders and beach deposits. The cliffs adjoining Rocks Road comprise a band of eroded sandstone below housing established on Port Hills Ridge.

LAND COVER / BENTHIC

The Haven has lost almost its entire original saltmarsh habitat due to reclamation and development. Soft sediment species, such as cockles, polychaete worms and wedge shells inhabitat the estuary including the largest colony of eel grass beds in Tasman Bay. Vegetation surrounding the estuary is limited, with coastal ground covers and orange lichen clinging to rocky embankments and drier pockets along the Bolder Bank. Vegetation along the margin of State Highway 6 inlcudes mown grass and the occasional pohutukawa framing Nelson's northern entrance.

In contrast, Rocks Road is distinctive on account of its rock and engineering influences. With the exception of two gum trees and a narrow swathe of mown grass, there is no vegetation along this section of coastal edge. Haulashore Island includes mature pine trees with an understory of ngaio. There is also a small estuary also established in the centre of the island.

LAND USE

Vehicle access extends along Rocks Road, throughout Port Nelson and along State Highway 6 (QE II drive) following the eastern edge of the estuary with further access established along Boulder Bank Drive. Beyond this, mixed commercial, residential and industrial development frames much of the southern and eastern boundaries of this character area and continues onto the foothill areas overlooking the estuary. There are areas of public open space on reclaimed land along the southern edge of the estuary with reserves, recreation areas and playing fields (Haven Foreshore, Neale Park and Founders Heritage Park). Beyond Port Nelson, pedestrian access continues along Rocks Road with its engineered fishing platforms, steps and ladders all providing access to the water through this area.

Heritage associations to both Maori and early European settlement are present throughout this character area. This includes links with fishing and coastal shipping, such as the man-made opening through the Boulder Bank (known as "the cut") to the north of Haulashore Island which forms the modern day entrance to the harbour; the iconic lighthouse with its strong white vertical form contrasting with the long horizontal line of the boulder bank; and the historic ship wrecks providing a link with Arrow (Fifeshire) Rock and the old natural entrance to Nelson Haven.

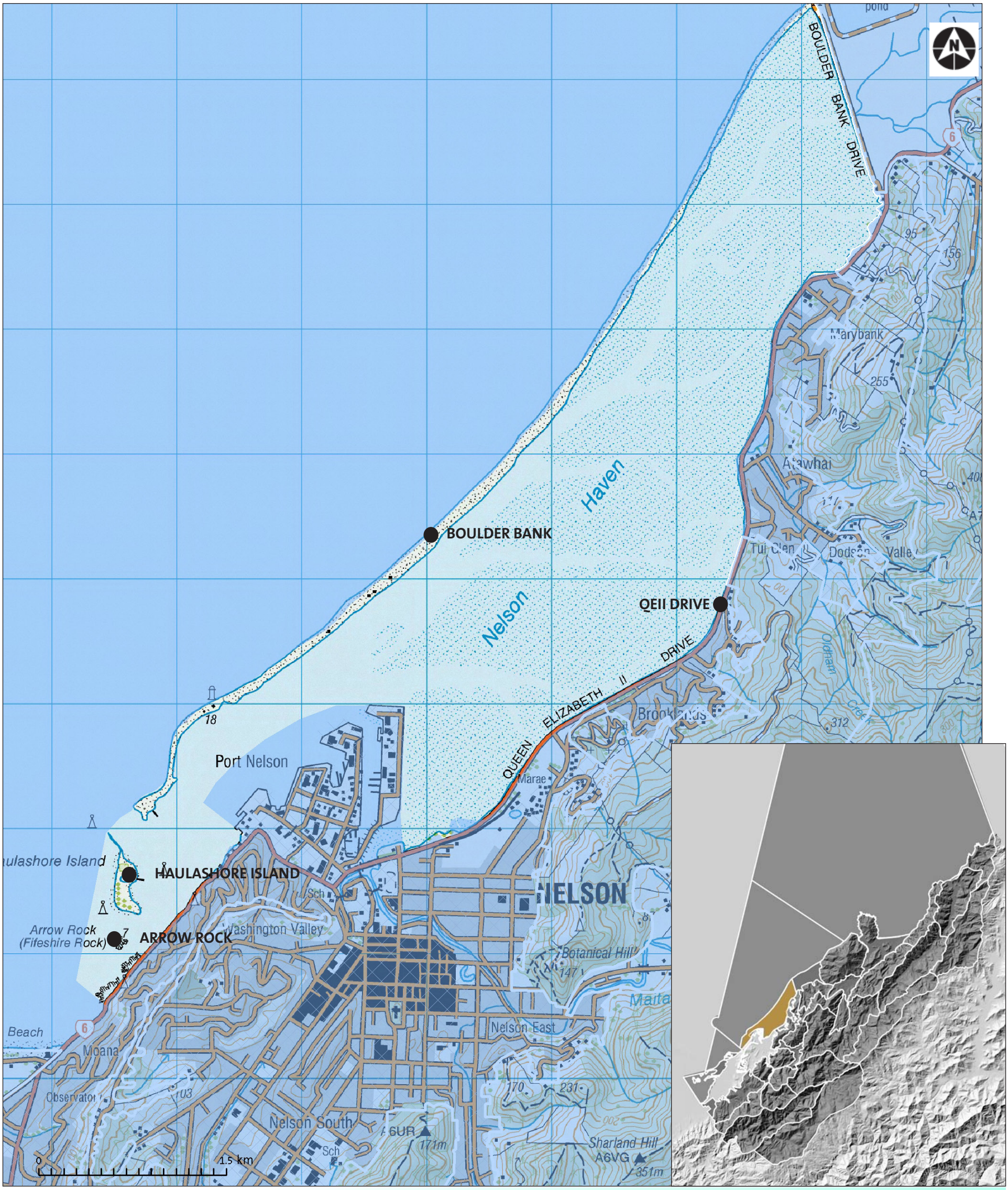
Roadside access and boat clubs within the Marina and along Wakefield Quay enable kayak / windsurf / sailing /rowing and kite surf use of the Haven. Organised sea swims are held in the Nelson Haven during summer.

Above: Haulashore Island and Arrow (Fifshire) Rock extend south of the Boulder Bank beyond "The Cut" providing access to the port.

KEY CHARACTERISTICS:

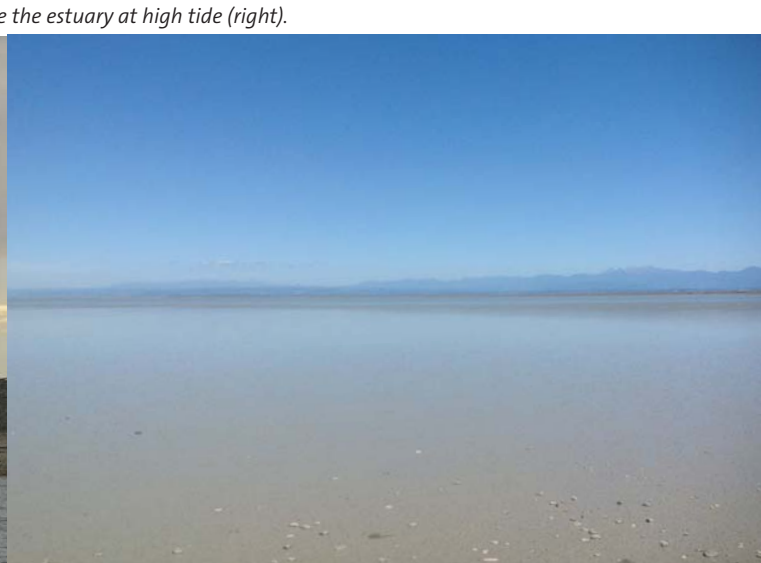
- Part of a wider horizontal coastal plain comprising of an estuary, boulder bank and coastal rock outcrops encompassing Port Nelson
- The Boulder Bank together with Haulashore Island and Arrow (Fifeshire) Rock form iconic coastal features along the southern entrance into Nelson City
- Strong eastern urban edge associated with Port Nelson and rock lined embankment and State Highway 6.
- Limited built development within estuarine area including isolated poles, boats and a remote lighthouse at south-western end to the south of scattered historic baches
- Engineered form of Rocks Road following narrow coastal edge and memorable gateway experience associated with Nelson's identity as a seaside town
- Long association with Maori and early European settlement and activity in this area

Below: The Boulder Bank spit seperates Nelson Haven from Southern Tasman Bay



NELSON HAVEN AND THE BOULDER BANK

Below: Beds of tilted sandstone run beside SH6 into Nelson (left), Historic Baches (centre) along the southern end of the Boulder Bank, and masts and boats punctuate the estuary at high tide (right).



SOUTHERN TASMAN BAY

Southern Tasman Bay extends into open water beyond Tahunanui Beach and forms part of the sheltered inner waters of Tasman Bay. The northern boundary culminates along Mackay Bluff and marks the transition from the more sheltered waters in close proximity to Nelson City to the more remote outer areas of Tasman Bay. From the coastal edge, there are distant panoramic views across the sea to Abel Tasman National Park located in the westernmost part of Tasman Bay.

LANDFORM

Nelson Boulder Bank forms a unique landform along this stretch of coastline which is thought to be formed through longshore drift from pebbles and boulders originating from Mackay Bluff. This forms a barrier between Tasman Bay and Nelson Haven creating a sheltered harbour. Along the seaward edge of the Boulder Bank the intertidal and shallow subtidal zones are characterised by boulders grading into extensive and a comparatively uniform mud / silt bottom in Tasman Bay. This area of coastline is relatively sheltered and affected mainly by weather events originating from the north or north-east.

The northern portion of the Boulder Bank adjoins the steep eroding cliffs at Mackay Bluff which form a dramatic backdrop to Horoirangi Marine Reserve. Along this section of coastline, the inshore boundary is characterised by boulders with mud and silt becoming dominant from about 15 m depth. A number of rocky reefs are also scattered along this section of coast and form a wide intertidal zone which extends offshore for up to 400m and a depth of around 20m (Department of Conservation, 2006). The maximum depth offshore is less than 30 m.

LAND COVER / BENTHIC

The boulders on the upper shore, regularly moved by waves are mostly devoid of plant life. At depths of around 4 m to 10 m boulder habitat is sparsely populated with sea urchins, limpets, sea stars, ascidians, sea cucumbers and flapjack macroalgae (C. flexuosum and C. maschalocarpum; Forest and Bird 1999; Nelson City Council 2003). Beyond approximately 15 m the soft sediment bottom provides habitat for species such as heart urchins, polychaete worms, small bivalves and hermit crabs (Nelson City Council, 2003). A variety of fish and invertebrate species are commonly observed in this area including snapper, blue cod, kahawai, kingfish, gurnard, spotties, goatfish, terakihi, blue moki and octopus.

The Horoirangi Marine Reserve runs along the coastline from Ataata Point, near Cable Bay, to Glenduan. This encompasses the bluffs and rocky shore whose erosion form the base for the Boulder Bank. South of the Horoirangi Marine Reserve, a notable sponge garden habitat occurs at depths from 10 m to 15 m and includes several species of very large sponges and numerous finger sponges, which provide important habitat and shelter for juvenile fish (Nelson City Council, 2003).

LAND USE

Bottom trawling and dredging occurs offshore from the Boulder Bank, although dredging has been infrequent since the collapse of the Tasman Bay scallop fishery in 2005. No aquaculture occurs within Nelson City Council's jurisdiction, although large mussel farms exist in other parts of Tasman Bay.

Horoirangi Marine Reserve provides for snorkelling, diving, kayaking and boating, whilst fishing and taking of marine life is prohibited. Snapper Point, on the Boulder Bank, is Nelson's most popular surf break and waves at The Cut and the Glen are also surfed. Fishing occurs throughout the characer area outside the marine reserve.

The name Horoirangi derives from the Maori name of the highest peak (Drumduan) overlooking the marine reserve. For early Maori, the hilltop was an important indicator of sea conditions: cloud covering the peak signalled imminent bad weather and sea travel was suspended (Department of Conservation, 2006).

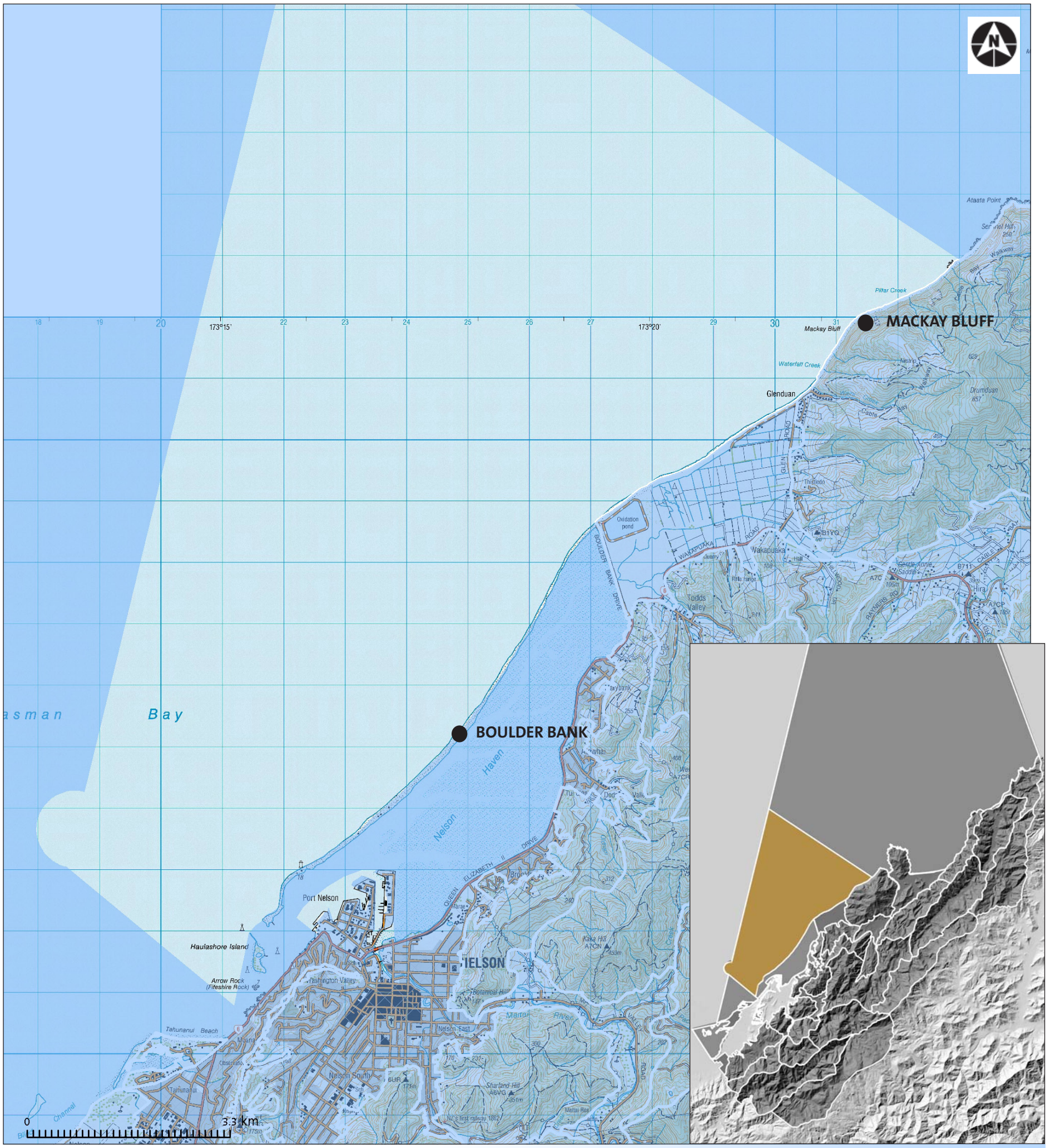
Above: The steep cliffs of Mackay Bluff enclose the northern coastal edge.

Above: The narrow linear form of the Boulder Bank defines the majority of the coastal edge.

KEY CHARACTERISTICS:

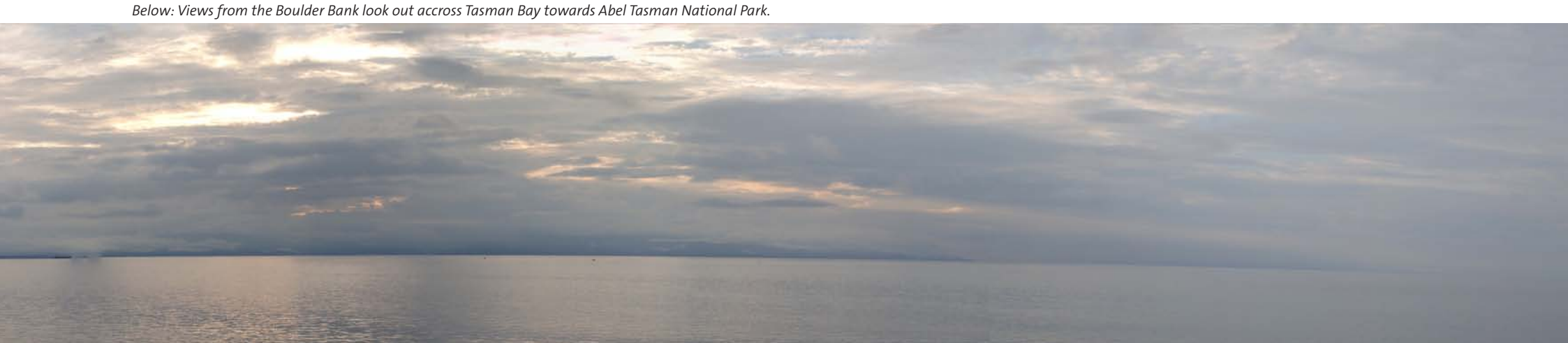
- Part of the shallow and relatively sheltered inner waters of Tasman Bay providing long distance panoramic views across water to the horizon and Abel Tasman National Park
- Nelson Boulder Bank forms a unique natural feature along the coastal edge
- The Horoirangi Marine Reserve runs along the coastline from Ataata Point, near Cable Bay, to Glenduan
- Snorkeling, diving, kayaking and boating at Horoirangi Marine Reserve
- Popular surf break and waves at 'The Cut', Snapper Point and the Glen

Below: Angular boulders below Mackay Bluff become increasingly rounded as they extend south along the coastal edge.



SOUTHERN TASMAN BAY

Below: Views from the Boulder Bank look out accross Tasman Bay towards Abel Tasman National Park.



OUTER EASTERN TASMAN BAY

Outer Tasman Bay encompasses the northern most extent of the Nelson region and includes views out across open water within the outer reaches of Tasman Bay. This coastline is the least accessible of Nelson's coastal areas and characterised by steep rugged cliffs at Cape Soucis, along the Whangamoa Hills and western edge of Pepin Island.

LANDFORM

Much of this coastline is characterised by steep coastal cliffs interspersed by spectacular rocky outcrops and small gravel or sand beaches. Below MHWS, a relatively narrow near-shore bedrock/cobble reef zone extends down to between 6 m and 20 m depth. Sandy sediments occur below the reef zone, replaced by silts in deeper offshore areas. Maximum depth offshore ranges from less than 20 m to 50 m.

While much of the coast is open to the sea, it is sheltered from large oceanic swells. The area is bathed in relatively warm coastal waters derived from the D'Urville Current and outflows from Tasman Bay. Seasonal thermal stratification is pronounced and currents are weak to moderate. Sedimentation/turbidity levels are moderate and a large tidal range exposes a wide intertidal zone at low water.

LAND COVER / BENTHIC

Much of this area expresses a low biomass and diversity of macroalgae dominated by flapjack seaweed, mostly confined to a narrow band immediately below low water. Sub-tidal reefs appear relatively barren, though there is often a high diversity of fish and encrusting animals (e.g. sponges, hydroids and ascidians) in outer rocky areas compared to other sheltered shores further south into Tasman Bay. A typical array of sediment dwelling species – shellfish, brittle stars, starfish, polychaete worms, heart urchins, crustaceans – inhabits offshore gravels, sands and silts.

Further south, the Ataata Point reef within the Horoirangi Marine Reserve supports large patches of common anemone, with a variety of sponges and colonial coral (Culicia rubeola) common on underhangs and vertical rock faces (Forest and Bird 1999). Species considered uncommon around much of the New Zealand coast (e.g. brachiopods, ambush starfish, window oysters) are found here in profusion with the numerous caves and crevices providing excellent habitat for cryptic animals.

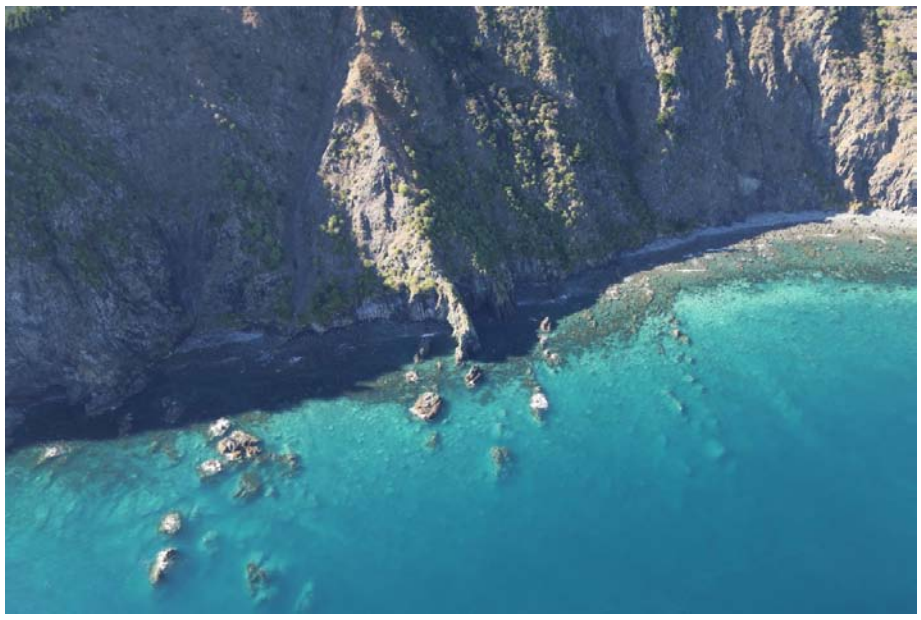
Whangamoa and Delaware Inlets are important features flowing into Tasman Bay, providing a link between terrestrial and marine ecosystems, supplying critical habitat for a variety of plant and animals, maintaining coastal productivity and nourishing the marine food web.

LAND USE

The Outer Eastern Tasman Bay is less accessible than other parts of Nelson's coastline offering largely unmodified, open coastal waters. Fishing is popular along the coastline (e.g. Delaware Bay and Hori Bay) often for paua. Due to its proximity to Nelson, Cable Bay is a high use recreational area for fishing, diving, boating, and kayaking. Cable Bay and Delaware Bay are also popular surf breaks in the right conditions.

Commercial bottom trawling occurs offshore in Tasman Bay but no aquaculture currently occurs within this area. A taiapure (local fishery area recognised to be of special significance to hapu or iwi) exists between Ataata Point and Whangamoa Head, however, no fisheries regulations have been recommended by the management committee to date (Nelson City Council, 2003).

Above: Rock outcrops extend into Outer Tasman Bay to the south of Hori Bay.

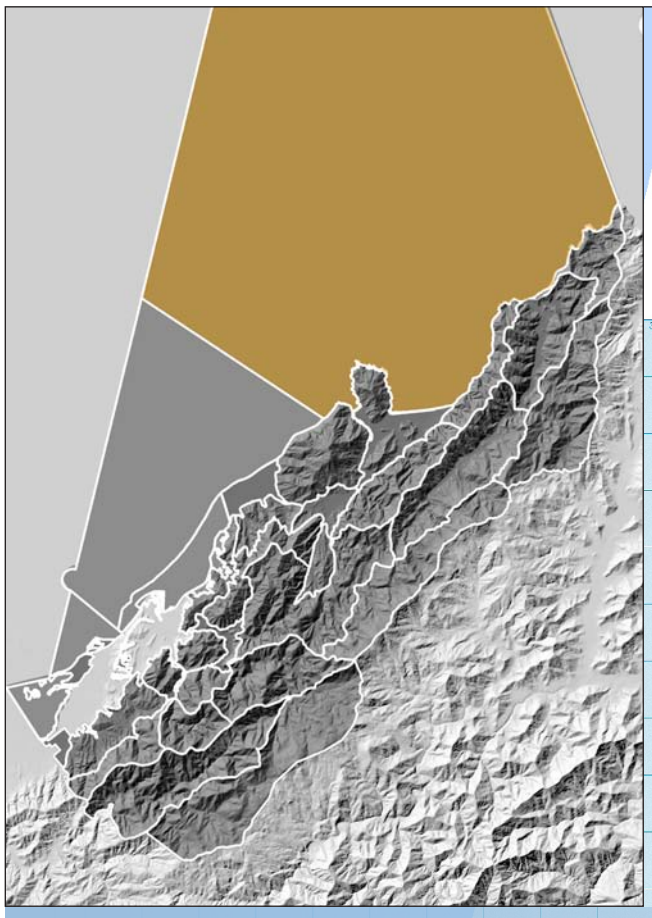


Above: An exposed dramatic coastline extends along the margins of Cape Soucis to the north of Tasman Bay.

KEY CHARACTERISTICS:

- The northern most extent of Nelson and relatively exposed outer waters of Tasman Bay
- Enclosed by steep coastal cliffs, spectacular rocky outcrops and small gravel or sand beaches
- Typically low biomass and diversity of macroalgae dominated by flapjack seaweed confined to a narrow band immediately below low water
- High diversity of fish and encrusting animals in outer rocky areas
- Ataata Point reef within the Horoirangi Marine Reserve supports species considered uncommon around much of the New Zealand coast
- High use recreational area for fishing, diving, boating, and kayaking Cable Bay
- A taiapure exists between Ataata Point and Whangamoa Head

Below: Open water in Tasman Bay extends from Delaware Bay out from the Wangamoa Hills.



OUTER EASTERN TASMAN BAY

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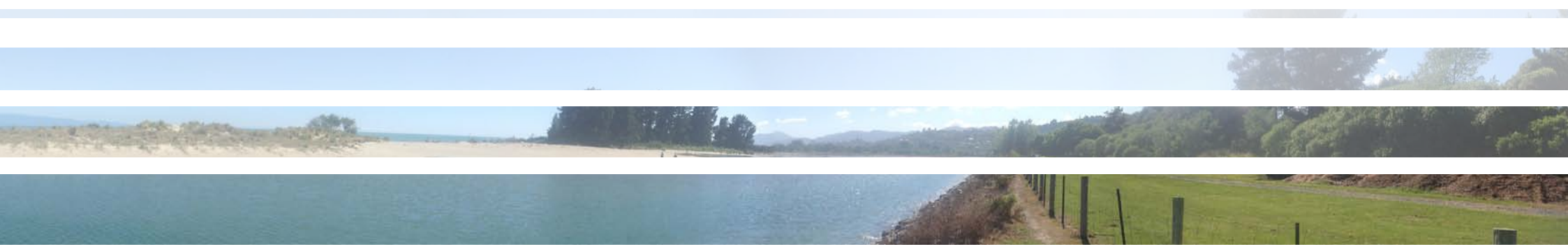


APPENDICES

APPENDIX 1: LAND TYPING

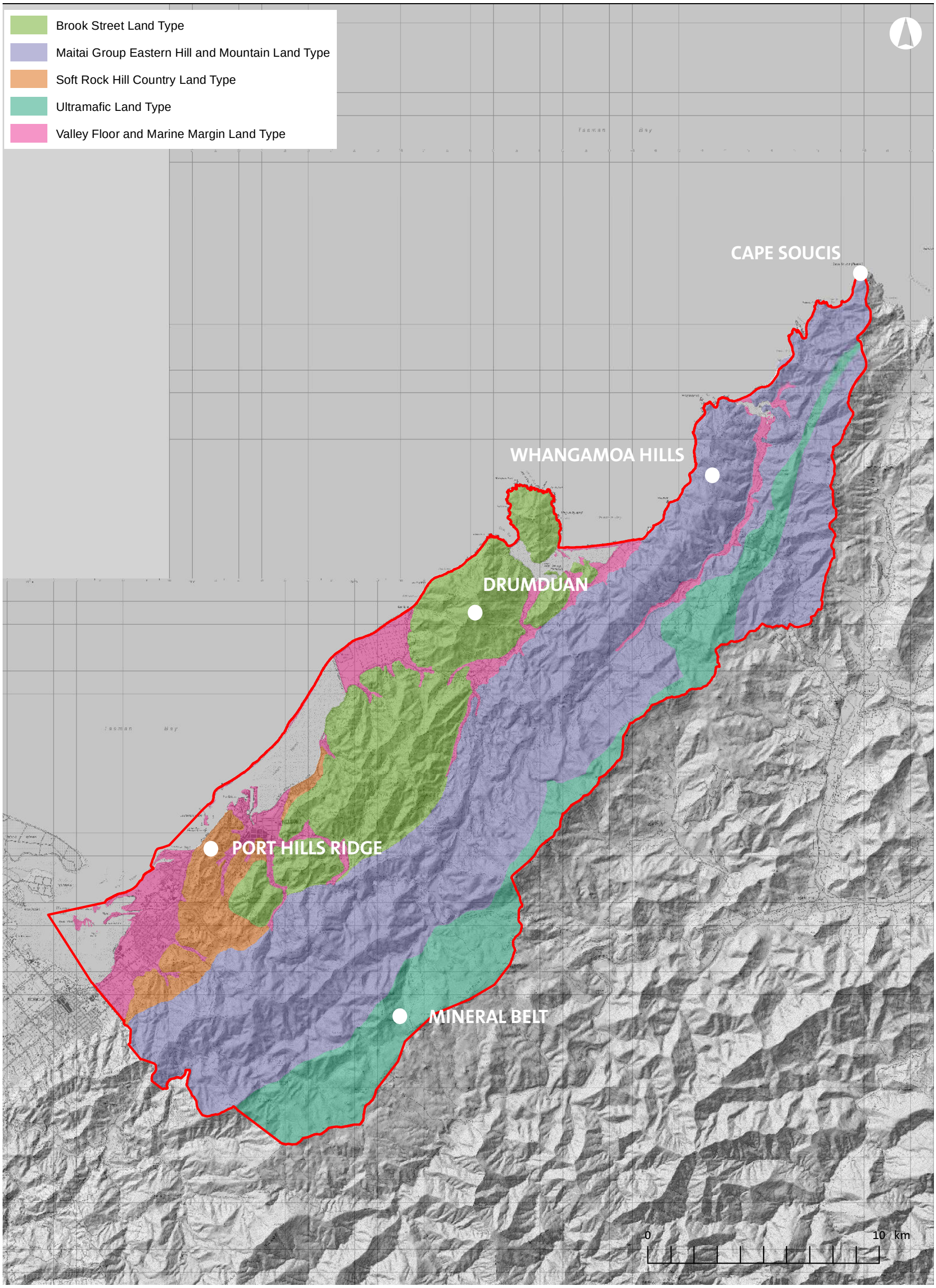
Nelson's landscapes can be subdivided into a series of 'natural segments' or land types based on a range of biophysical factors. As a starting point to the Nelson Landscape Study, Landcare Research were engaged to delineate land types of Nelson as set out in the following report.

Within Nelson, five Land Types were identified. The division of land types is based on a detailed analysis of a range of data sources including geological maps, topographic maps, Protected Natural Area Surveys, the Register of Protected Natural Areas, Earth Science Society Inventories and scientific papers. Landcare Research has undertaken similar land typing exercises for other regions and districts in various parts of New Zealand.

Each land type is described in terms of geological formation, elevation, remnant native vegetation and present land use. In addition an understanding of agronomic potential, potential land use and potential impacts is also provided. The five land types identified are listed below and shown on the adjacent map:

1. Valley Floor and Marine Margin Land Type
2. Soft Rock Hill Country Land Type
3. Brook Street Land Type
4. Matai Group Eastern Hill and Mountain Land Type
5. Ultramafic Land Type

GIS Data set used: Digitised Land Typing classification undertaken by NCC


Brook Street Land Type
Maitai Group Eastern Hill and Mountain Land Type
Soft Rock Hill Country Land Type
Ultramafic Land Type
Valley Floor and Marine Margin Land Type
CAPE SOUCIS
WHANGAMOA HILLS
DRUMDUAN
PORT HILLS RIDGE
MINERAL BELT
0
10 km

LAND TYPING

APPENDIX 2: GEOLOGY

Located within the central part of the northern South Island, this part of the country retains a particularly complex geology, where seismic, volcanic and erosional forces have sculpted and formed the landscape of today.

The Nelson region lies adjacent to the active plate boundary which passes through the West Coast of the South Island and into Marlborough and the Hikurangi Trough off the East Coast of the North Island. The region is part of the Australian plate, north-west of the boundary between the Australian and the Pacific Plates, converging at approximately 40 mm per year (Johnston, 1987). The collision between the plates is manifested by the uplift of the Southern Alps and other ranges in the South Island.

Nelson City stands at the northern apex of the 25km wide Moutere depression which slopes down from its southern apex near Nelson Lakes National Park. Tasman Bay was formed approximately 6,000 years ago following post-glacial sea level rise when the sea level flooded into the Moutere Depression (Molloy and Smith, 2002). Since then, the Waimea River has extended the northern part of its plain as a delta into the bay with marine deposition forming an impressive range of coastal landforms including islands in Waimea Estuary and Tahunanui Beach.

Further north along the coastal edge, the Nelson Boulder Bank forms a unique 13km barrier composed of hard boulders (up to 1.2m in diameter) thought to be derived from erosion from Mackay Bluff. The boulders are more angular to the north and become more rounded at their southern end consistent with a process of longshore drift as material is transported south along the coastline.

Adjoining the Moutere depression, the hills along the coastline have been shaped by volcanics which have weathered to retain a distinctive conical form. East of this lies the Waimea-Flaxmere Fault System with much of the plate boundary resulting from the collision between the Pacifica and Indian-Australian Plate which continues a pronounced south-west to north-east trend through the ranges.

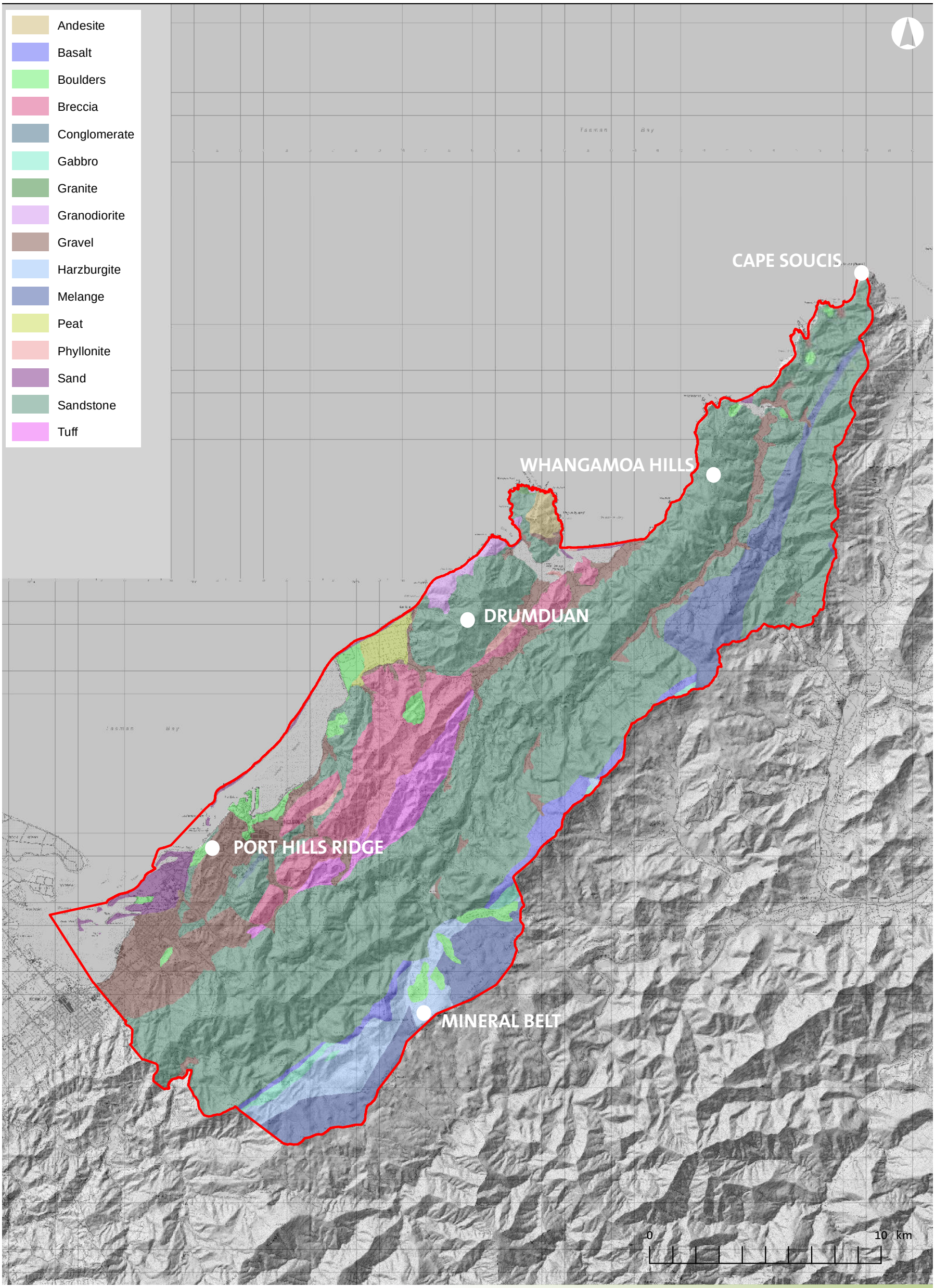
The parent rocks identified within the east Nelson hill country are a complex mixture of bands of greywacke, schist and ultramafic rocks. These are derived from sand, silt and volcanic material accumulated along the former ocean floor which has been hardened over time then uplifted by successive movements associated with the plate boundaries. The degree of weathering of these rocks varies with altitude. Below 200 metres the parent materials of soil are strongly weathered and are probably remnants of an older landscape which deeply weathered during the warmer periods between the glacial stages of the late Quaternary Period (between approximately 500,000 and 1 million years ago). Above 200 metres, the soil parent materials are weakly weathered deposits of angular gravels (including some fossil screes over 10 metres thick). These deposits were probably formed by periglacial weathering of exposed rock during the colder glacial stages of the late Quaternary period (Molloy, 1988).

MINERAL BELT

Within Nelson's mountain ranges, the Mineral Belt forms a distinctive geological feature composed of a variety of unusual rocks, such as serpentinite (commonly called 'serpentine) harzburgite, dunite, diallage and rodingite that are very deficient in silica and lie at the extreme end of the classification of igneous rocks. These rocks are known as 'ultramafics' referring to the high amounts of magnesium and iron. They weather to a reddish-brown colour (similar to iron oxide 'rust') and due to their high mineral content, few plants choose to grow on them.

The Mineral Belt originated some 280 to 300 million years ago and is thought to occur where two tectonic plates collide and a segment of oceanic crust and underlying mantle is incorporated into continental crust and becomes exposed. Such segments are called ophiolites. During the past 20 million years the ophiolite belt, has also been horizontally offset 480km by successive movements of the Alpine Fault resulting in parts of the ophiolite also being found in Otago-Southland. Dun Mountain is one of the first places in the world where a more or less complete section through an ophiolite belt was studied (Johnston, 1987).

GIS Data set supplied by NCC


Andesite
Basalt
Boulders
Breccia
Conglomerate
Gabbro
Granite
Granodiorite
Gravel
Harzburgite
Melange
Peat
Phyllonite
Sand
Sandstone
Tuff
CAPE SOUCIS
WHANGAMOA HILLS
DRUMDUAN
PORT HILLS RIDGE
MINERAL BELT
0
10 km

GEOLOGY

APPENDIX 3: GEOPRESERVATION SITES

The New Zealand Geopreservation Inventory highlights the 'best examples of the wide diversity of natural physical features and processes that together characterise each part of New Zealand and document its long complex geological history, the formation of its landforms and evolution of its unique biota'.

New Zealand has unique and diverse natural landforms, geology and soil heritage, due to its location and formative processes. The New Zealand Geopreservation Inventory 'aims to identify and list information about all the internationally, nationally and many of the regionally important earth science sites throughout New Zealand, irrespective of their current protected status'.

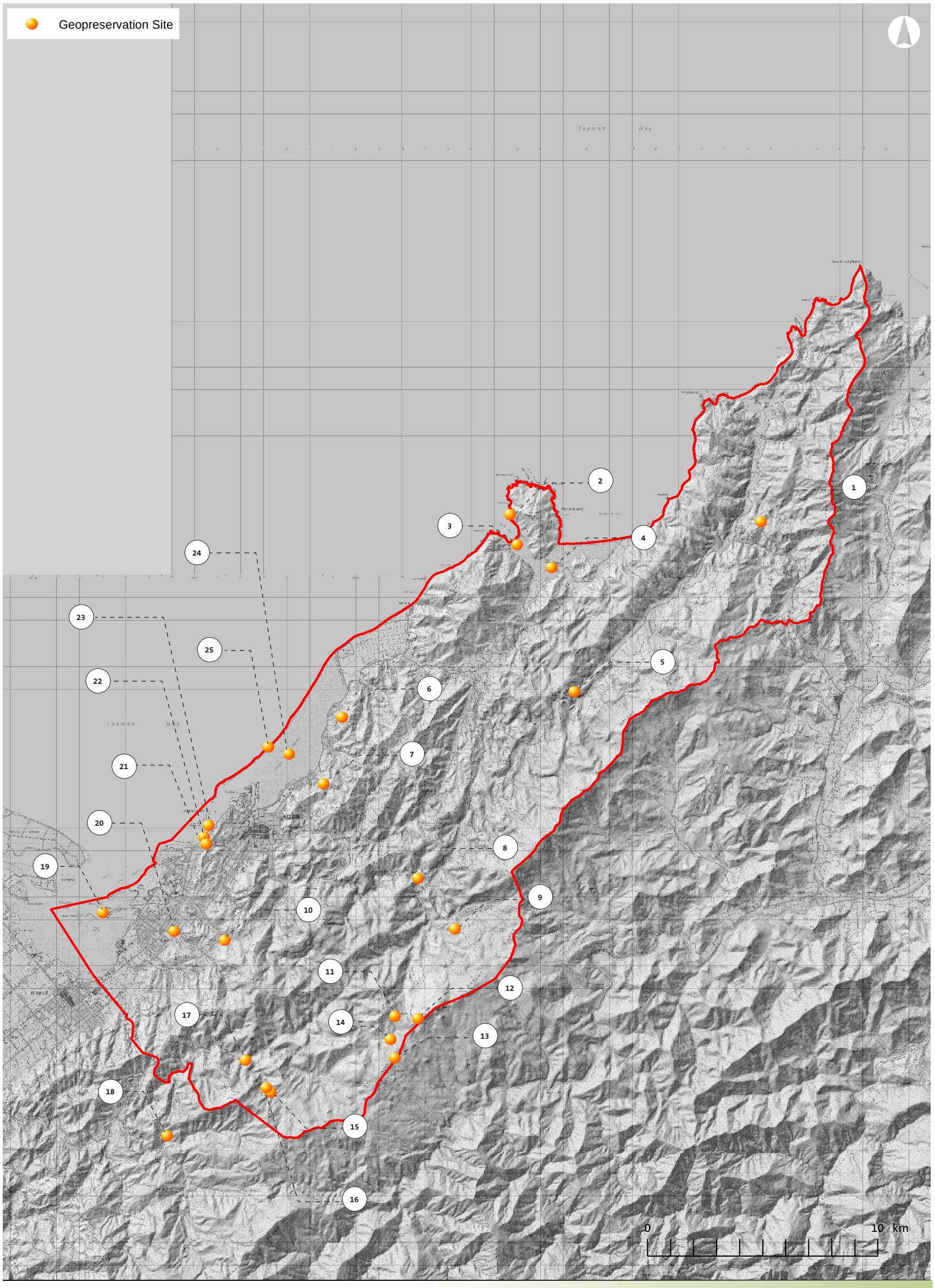
Within Nelson there are 25 recognised sites of geological importance, ranging from historic areas of mining, buildings, coastal features and estuaries, fault scarps, slumps and earth movement.

Each site is listed for its importance and significance as set out below:

IMPORTANCE (A-C)		VULNERABILITY (1-5)	
A:	INTERNATIONAL: SITE OF INTERNATIONAL SCIENTIFIC IMPORTANCE.	1	HIGHLY VULNERABLE TO COMPLETE DESTRUCTION OR MAJOR MODIFICATION BY HUMANS
B:	NATIONAL: SITE OF NATIONAL SCIENTIFIC, EDUCATIONAL OR AESTHETIC IMPORTANCE.	2	MODERATELY VULNERABLE TO MODIFICATION BY HUMANS
C:	REGIONAL: SITE OF REGIONAL SCIENTIFIC, EDUCATIONAL OR AESTHETIC IMPORTANCE.	3	UNLIKELY TO BE DAMAGED BY HUMANS
		4	COULD BE IMPROVED BY HUMANS ACTIVITY
		5	SITE ALREADY DESTROYED (NOT NECESSARILY BY HUMAN ACTIVITY)

GIS Data set used: Geopreservation Sites - Geological Society of New Zealand

ID	NAME	GENERAL LOCATION	IMPORTANCE	VULNERABLITY
1	Hebberd's prehistoric metasomatised argillite quarry, Collins Valley	Hebberd's prehistoric quarry, Collins Valley. On spur immediately north of the Nelson-Blenheim highway. Labelled on 1:50 000 map.	b	3
2	Pepin Island intrusives	Coastal sections from the northeast side of Cable Bay to Puketi Point on northern and western coasts of Pepin Island.	c	3
3	Delaware Bay coastal features	15 km NE of Nelson city, in the lee of Pepin Island.	c	3
4	Delaware Inlet phyllonite	Shore platform, Delaware Inlet, east of Cable Bay.	a	3
5	Whangamoa Fault trace	SH6, c.2 km east from Whangamoa Saddle, crossing road in several places.	c	3
6	Marybank lawsonite-bearing rocks and plant fossils	Hillside above Marybank, Nelson City.	b	3
7	Atawhai earthflow	Filling gully east of Nelson Haven.	c	2
8	Maitai Valley lawsonite-bearing rocks	Maitai Valley.	b	3
9	Rushpool prehistoric argillite quarry	On 'Bare Spur', between the north and south branches of the Maitai River.	b	3
10	Enner Glynn coal mine	Approx 1.5 km up Jenkins Creek from Enner Glynn, a Nelson suburb.	c	5
11	Dun Mountain chromite, mine and railway remains	Southeast slopes of Dun Mountain.	b	3
12	Dun Mountain dunite	On ridge crest at south end of summit of Dun Mountain, 500m north of Dun Saddle	b	3
13	Bryant Range tectonic melange	On the crest and east side of the Bryant Range.	b	3
14	Roding River rodingite with garnet and diopside	Upper part of Roding River.	a	3
15	Champion Mine copper and Smelter, Roding Valley	Aniseed Valley, in the waterworks reserve. Smelter on banks of Roding River at O27/350831.	b	3
16	Champion Creek hydrogrossular	In Champion Creek, SW of Dun Mountain.	a	3
17	United Creek-Roding River Permian sediments	Roding River and United Creek, from O27/332826 to O27/353827.	b	3
18	Miner River travertine (calcite) waterfall	On Miner River, off Hackett Creek, in the Roding Valley.	b	2
19	Eastern Waimea Inlet islands and spits	Eastern Waimea Inlet, Nelson.	c	2
20	Isel House, Stoke	Isel Park, Stoke.	c	3
21	Tahunanui slump	Tahunanui Hillside, Nelson.	c	3
22	Magazine Point Tertiary sediments and fossils	Magazine Point, Nelson City.	c	3
23	Arrow Rock (Fifeshire Rock)	South of Haulashore Island, old entrance to Nelson Haven.	c	3
24	Nelson Haven estuary	Adjacent to Nelson City.	b	2
25	Nelson boulder bank	Encloses Nelson Haven.	a	2



GEOPRESERVATION SITES

APPENDIX 4: SOILS

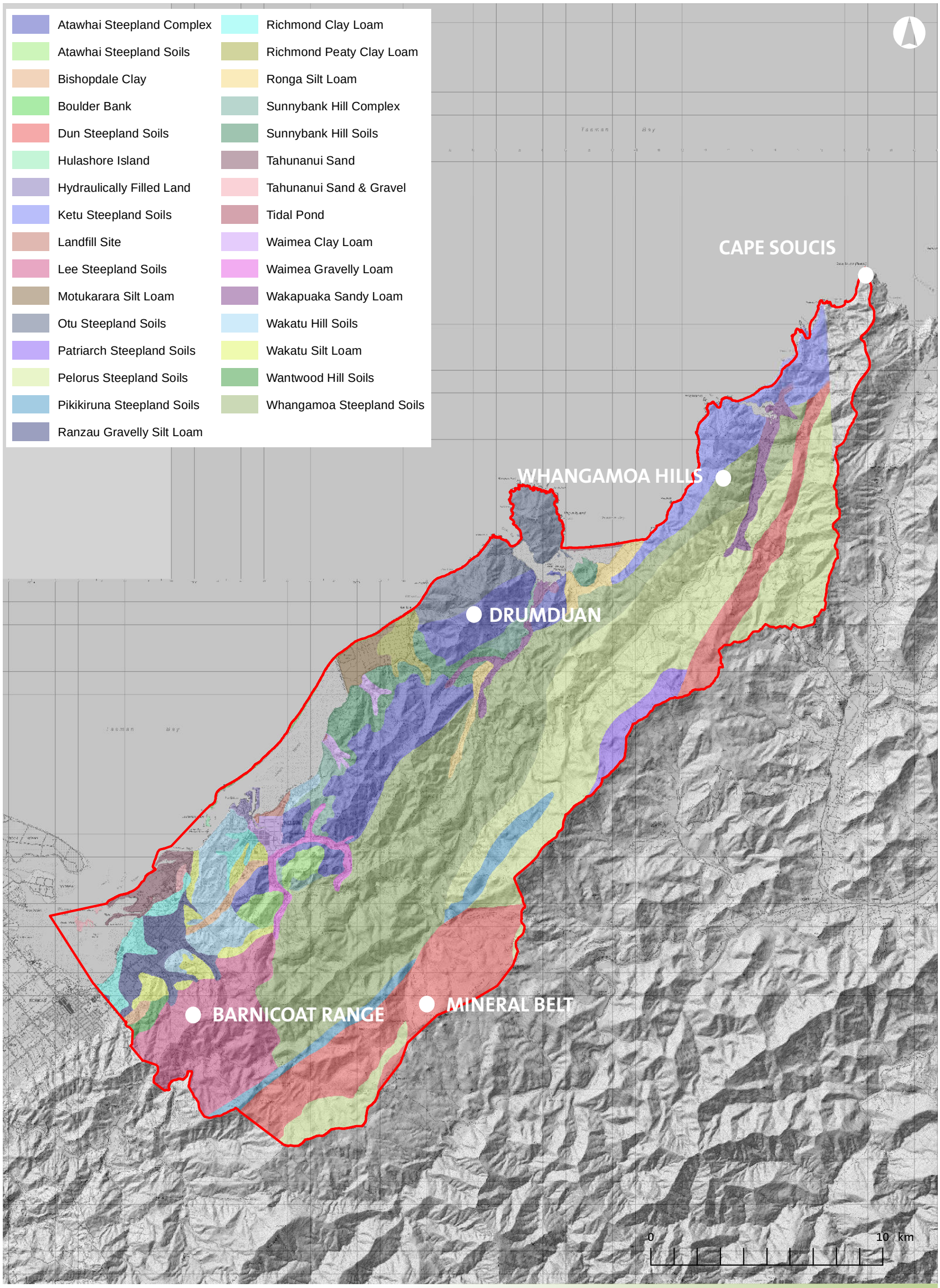
The soils in the Nelson Region reflect the complex geological process which have created them. The various land uses throughout the area are largely dependent on the soil types, topography and climate.

Within Nelson, there are relatively limited areas of fertile soils associated with floodplains, low terraces and river channels. Such areas include the pronounced fans extending westwards from the Barnicoat Range and the flanks of the major river valley valleys formed predominantly of fine-grained alluvium and estuarine deposits and slightly to extensively weather coarse-clay-bound gravels (Lynn, 2013). A complex margin of barrier islands, spits, boulder banks, beach ridges, sand dunes, interdune swamps and estuaries typically adjoin the coastline and include areas of dark grey Tahnanui sand.

The Nelson foothills are comprised of soft-rock hill country and part of the Brook Street Volcanics Group. Shallow-slip erosion is a common feature of these soils with deep-seated localised slumping also common. Beyond this, steepland soils dominate most of the rural hinterland with infertile, shallow soils (Lee, Whangamoa and Pelorus steepland soils) on the greywacke and sandstone slopes. Much of this area has been cleared of its indigenous forest and has subsequently been established in exotic forest (Molloy, 1988).

A belt of Dun Steepland Soils extend an ultramafic soil type along the Mineral Belt and in a narrow band to the north of the Rai Saddle. The fertility of the Dun soils is very low with very low phosphorous and potassium and very high magnesium – probably high enough to be toxic to most plants (Molloy, 1988). A distinctive dull red colour and stunted vegetation pattern is apparent where ultramafic soils occur.

GIS Data set supplied by NCC


Atawhai Steepland Complex
Atawhai Steepland Soils
Bishopdale Clay
Boulder Bank
Dun Steepland Soils
Hulashore Island
Hydraulically Filled Land
Ketu Steepland Soils
Landfill Site
Lee Steepland Soils
Motukarara Silt Loam
Otu Steepland Soils
Patriarch Steepland Soils
Pelorus Steepland Soils
Pikikiruna Steepland Soils
Ranzau Gravelly Silt Loam
Richmond Clay Loam
Richmond Peaty Clay Loam
Ronga Silt Loam
Sunnybank Hill Complex
Sunnybank Hill Soils
Tahunanui Sand
Tahunanui Sand & Gravel
Tidal Pond
Waimea Clay Loam
Waimea Gravelly Loam
Wakapuaka Sandy Loam
Wakatu Hill Soils
Wakatu Silt Loam
Wantwood Hill Soils
Whangamoa Steepland Soils
CAPE SOUCIS
WHANGAMOA HILLS
DRUMDUAN
BARNICOAT RANGE
MINERAL BELT
0
10 km

SOILS

APPENDIX 5: ELEVATION AND SLOPE

Elevation and slope within the Nelson Region includes a wide variety of coastal and mountain landforms, despite its relatively narrow coastal edge location.

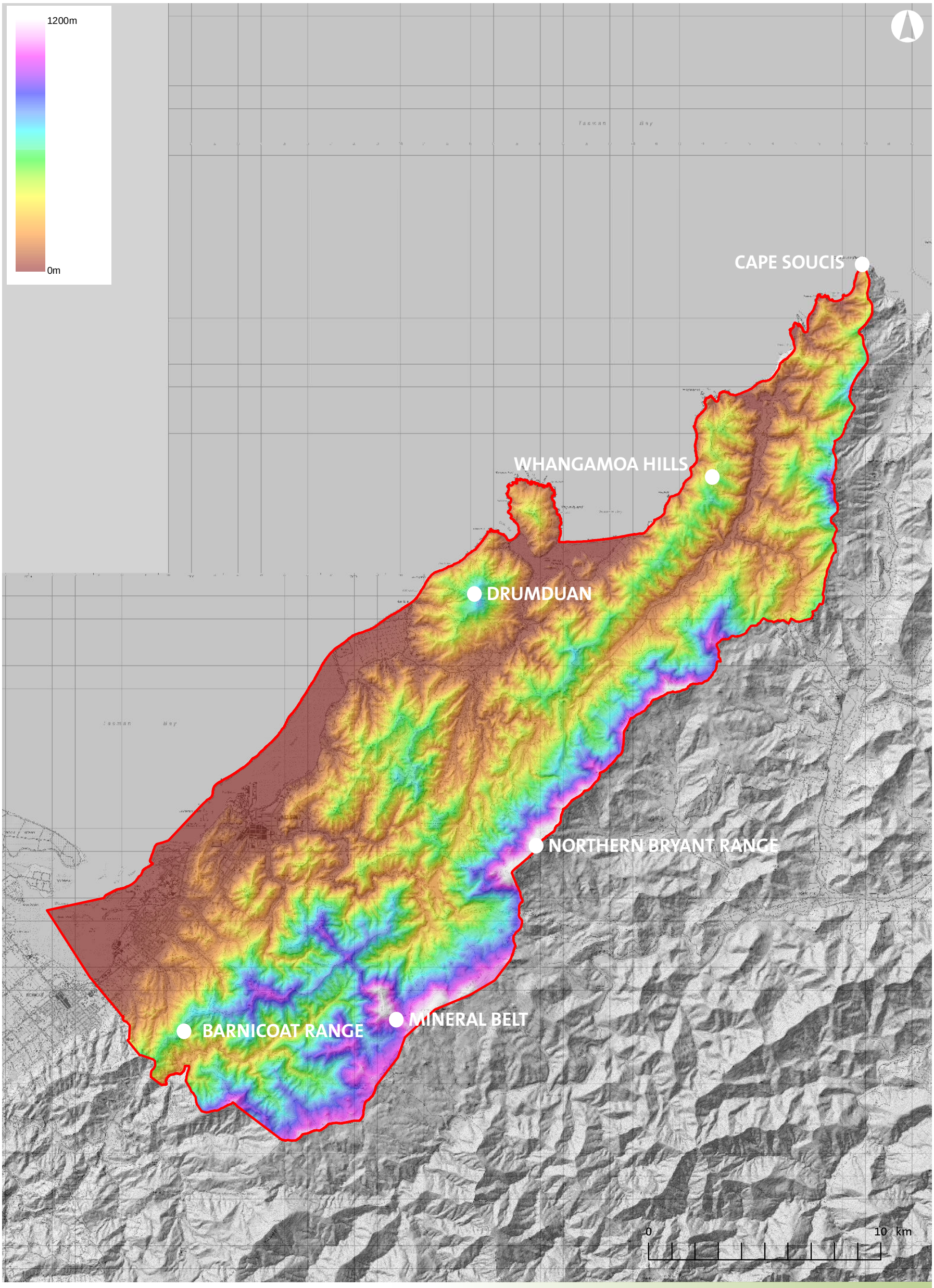
The Bryant Range has several ridges and peaks rising to over 1,000 metres with Saddle Hill (the northern most peak of 'the Doubles') reaching the highest point at 1,210 masl. Dun Mountain also forms a distinctive high point within the ranges reaching an elevation of 1,126 masl. The wider ridgeline forms a legible 'spine' along the eastern edge of the region, significantly more elevated than Nelson's hills rising from the coastal edge.

To the west of the region near the southern boundary of the region, the Barnicoat Range is the only other landform element which rises above 700 masl. Along this range, ridges and peaks typically reach heights of between 600 and 800 masl. The land area accommodated along this range is also notably steeper than the more gently sloping foothills adjoining Stoke along its western edge.

In the central and northern areas of the region, the land within Nelson's hill country is predominately steep with ridgetops rarely extending above 600 masl. In this context, Drumduan forms a prominent isolated hill form along the coastline north of Nelson reaching an elevation of 657 masl. Further north the linear band of the Whangamoa Hills also continues a distinctive uniform band of south-west to north-east configured hills along the coastal edge.

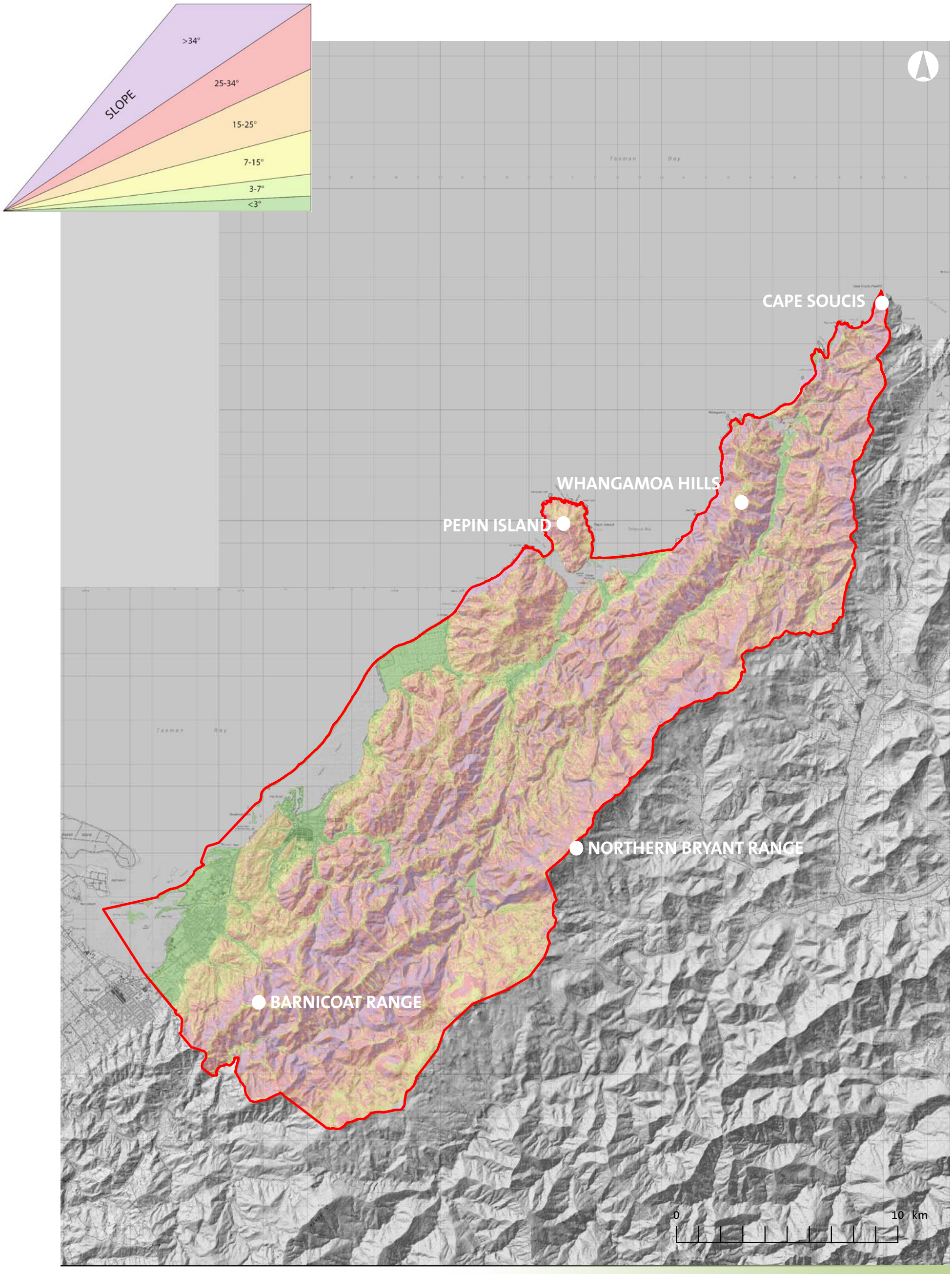
There is limited flat land within the region with much of the low lying flat land associated with the south-west coastal edge upon which Nelson City and adjoining suburbs have been established. Some flatter and lower lying areas are also encountered along the Wakapuaka Flats and within the Hira Basin and Delaware Bay.

GIS Data set: derived from elevation data supplied by NCC


1200m
0m
Tasman Bay
CAPE SOUCIS
WHANGAMOA HILLS
DRUMDUAN
NORTHERN BRYANT RANGE
BARNICOAT RANGE
MINERAL BELT
0
10 km

ELEVATION

Evidence of shallow slip erosion on Pepin Island after storm event in 2011.


SLOPE
>34°
25-34°
15-25°
7-15°
3-7°
<3°
Tasman Bay
CAPE SOUCIS
WHANGAMOA HILLS
PEPIN ISLAND
NORTHERN BRYANT RANGE
BARNICOAT RANGE
0
10 km

SLOPE

APPENDIX 6: LAND COVER

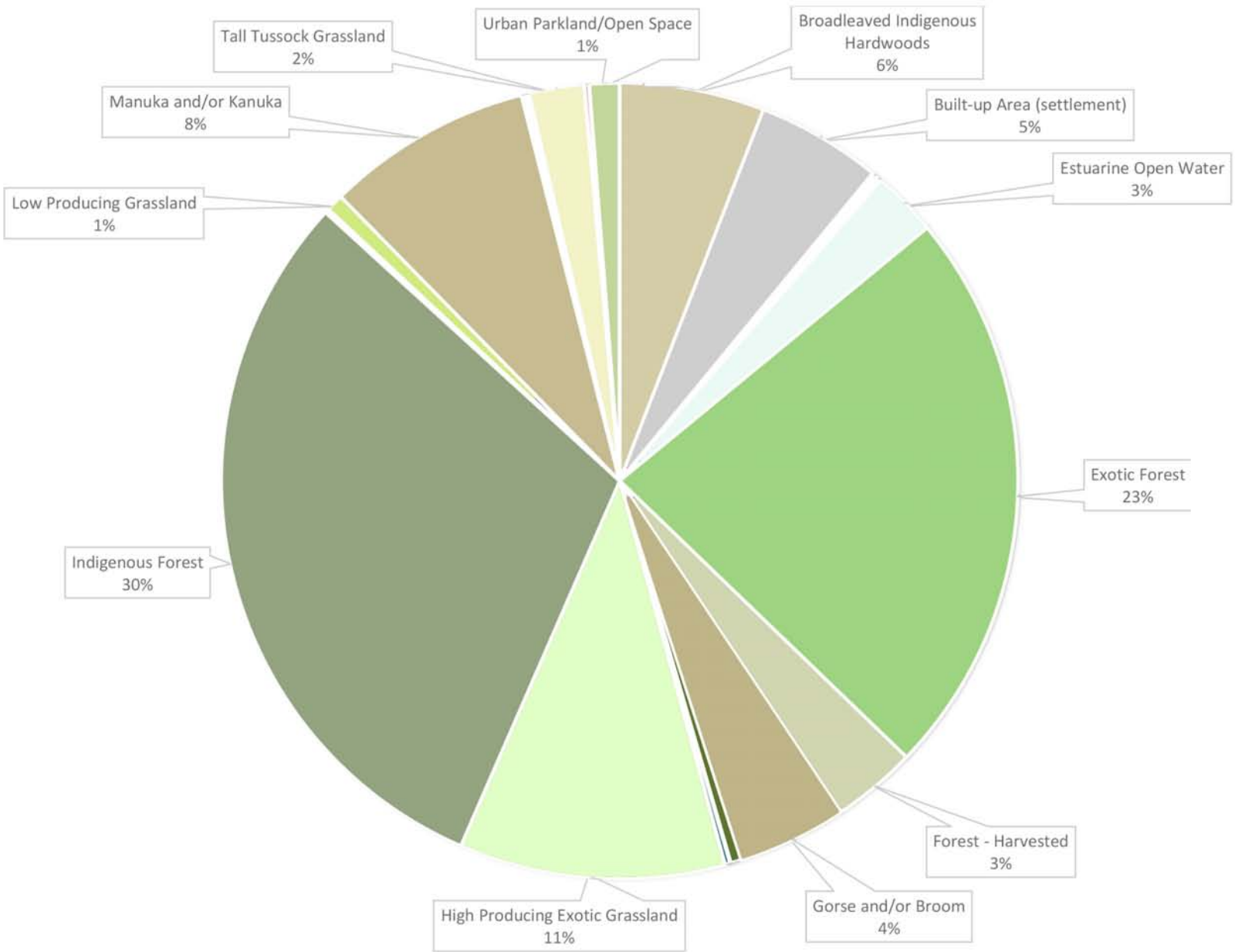
Indigenous forest is the most prevalent land cover throughout the Nelson Region with most of the Bryant Range still carrying heavy indigenous forest, a large proportion of which being conserved within Mount Richmond Forest Park. There are also substantial areas of indigenous forest within Nelson City Council's Water Reserves in the southern part of the region as well as smaller area on private land on Drumduan and along the Whangamoa Hills.

Extensive areas of exotic forest are also established throughout Nelson extending over some 10,000 hectares. This typically follows the lower slopes of the larger mountain ranges and extends from the Barnicoat Range all the way to Cape Soucis. Large tracts of the hills also accommodate kanuka dominated scrub, exotic scrub (gorse and broom) and regenerating forest which completes a mosaic of vegetation types which cover much of the elevated terrain.

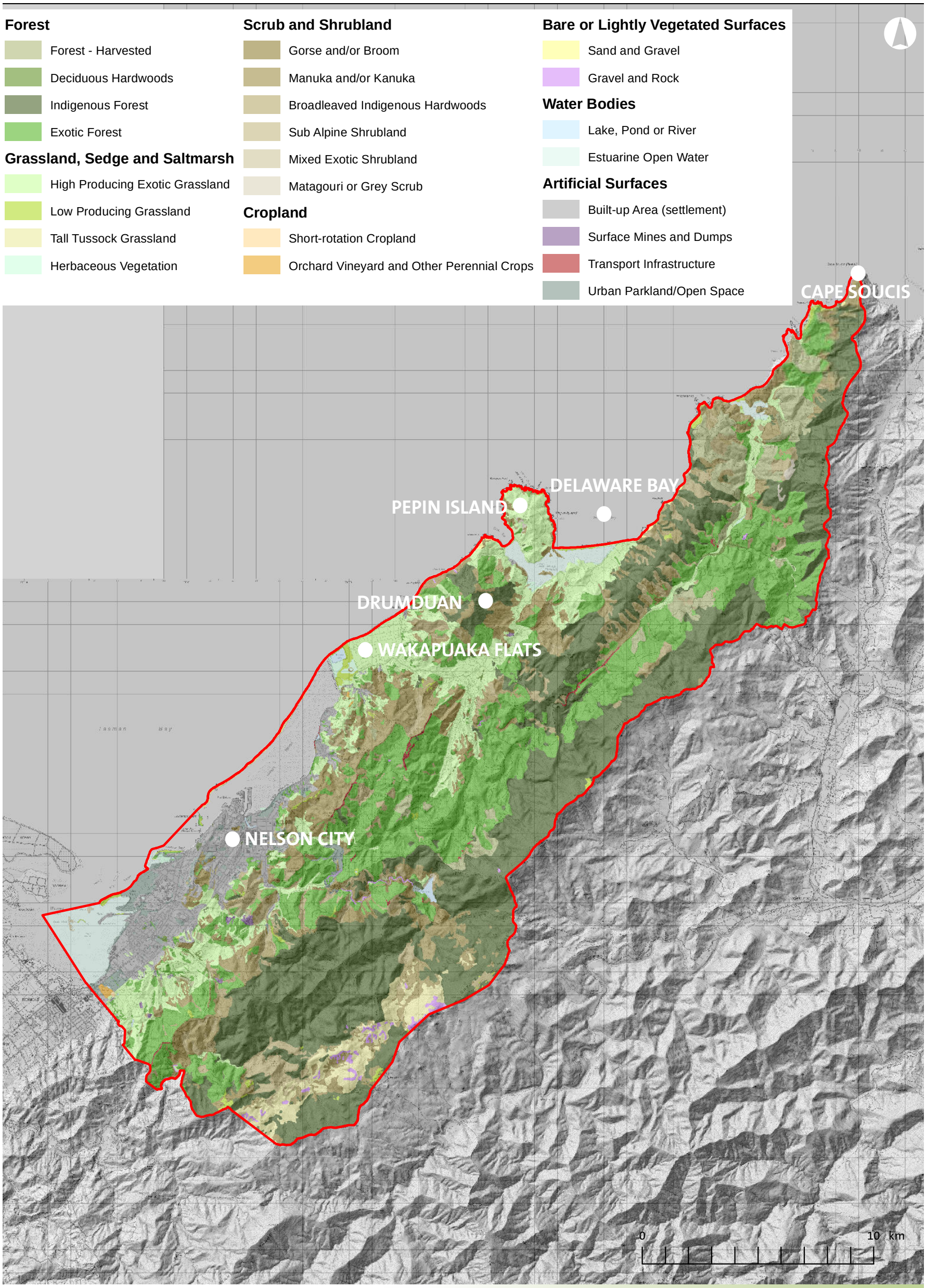
Areas of pasture are typically confined along the coastal edge encompassing the Wakapuaka Flats, Pepin Island, Hira Basin, Lud Valley and Delaware Bay to the north of Nelson City and extending into parts of the and Stoke Foothills to the south. The Built-up area of Nelson also forms a significant component of landcover along the more accessible flat coastal edge.

To the southeast of the region, the Mineral Belt is also a legible land cover feature with stunted vegetation and gravel and rock forming a distinctive feature through surrounding vegetation retained along the Bryant Range.

A breakdown of land cover across the region is set out in the pie chart below:



GIS Dataset used: LCDB3 Terralink International Ltd.


Forest
Forest - Harvested
Deciduous Hardwoods
Indigenous Forest
Exotic Forest
Grassland, Sedge and Saltmarsh
High Producing Exotic Grassland
Low Producing Grassland
Tall Tussock Grassland
Herbaceous Vegetation
Scrub and Shrubland
Gorse and/or Broom
Manuka and/or Kanuka
Broadleaved Indigenous Hardwoods
Sub Alpine Shrubland
Mixed Exotic Shrubland
Matagouri or Grey Scrub
Cropland
Short-rotation Cropland
Orchard Vineyard and Other Perennial Crops
Bare or Lightly Vegetated Surfaces
Sand and Gravel
Gravel and Rock
Water Bodies
Lake, Pond or River
Estuarine Open Water
Artificial Surfaces
Built-up Area (settlement)
Surface Mines and Dumps
Transport Infrastructure
Urban Parkland/Open Space
CAPE SOUCIS
DELAWARE BAY
PEPIN ISLAND
DRUMDUAN
WAKAPUAKA FLATS
NELSON CITY
0
10 km

LAND COVER

APPENDIX 7: CONSERVATION AND RESERVE AREAS

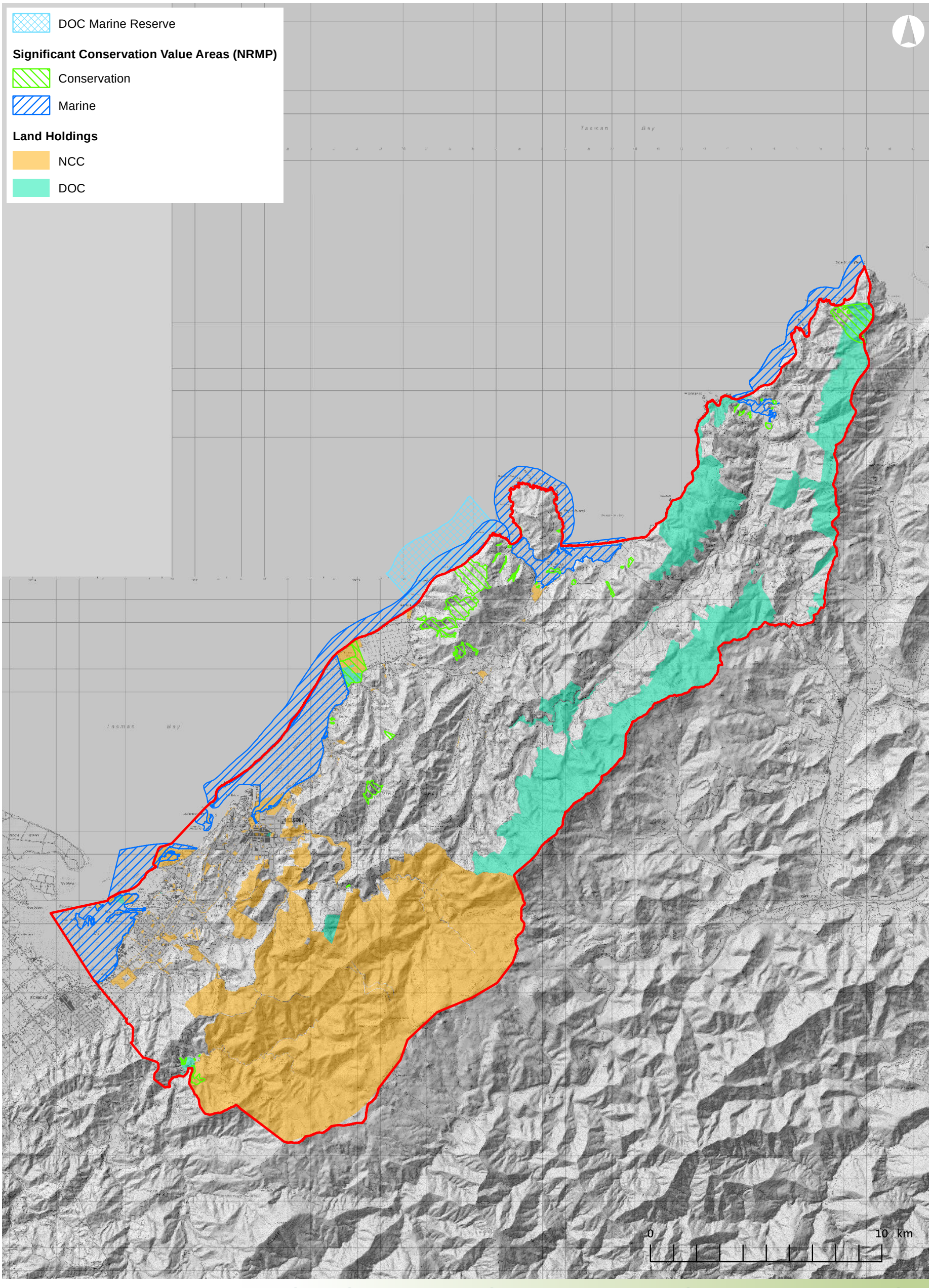
Most of the protected conservation areas in Nelson follow either the coastline or the larger mountain spine. The Horiorangi Marine Reserve forms the only DOC Marine Reserve in the region adjoining Drumduan to the north of Nelson City. Marine life and habitats are fully protected in this 904 hectare reserve following its creation in 2006.

Much of the remaining length of Nelson's coastline is also identified as a Marine Area of Significant Conservation Value in the Nelson Resouce ManagmentPlan (2004). This includes the Back Beach of Tahunanui and the Boulder Bank recognised as having international status. Waimea Inlet; Nelson Haven; The Glen to Cable Bay; Delaware Inlet, Spit and Pepin Island; Whangamoa Estuary; and the Whangamoa River Mouth to Cape Soucis are also recognised as having significant conservation value at a national level.

Above Mean High Water Springs, a further 37 Significant Conservation Value Areas have been identified as being significant including land protected as part of a formal QEII covenant. These predominantly comprise of pockets of coastal and alluvial forest and include a larger areas of coastal forest on the western face of Drumduan between the Glen and Cable Bay.

Along the eastern edge of the region, much of the larger mountain range is also in public ownership and includes land protected as either a Conservation or Landscape Reserve or forming part of the Department of Conservation Estate. This includes the Maitai and Roding Water Reserves and the Brook Conservation Reserve to the south of the Bryant Range and areas of the Mount Richmond Forestry Park which occupies the Bryant Range further north and parts of the Whangamoa Hills. A number of local purpose reserves have also been identified along the immediate backdrop to Nelson City.

Data sets supplied by DOC and Nelson City Council



CONSERVATION AND RESERVE AREAS

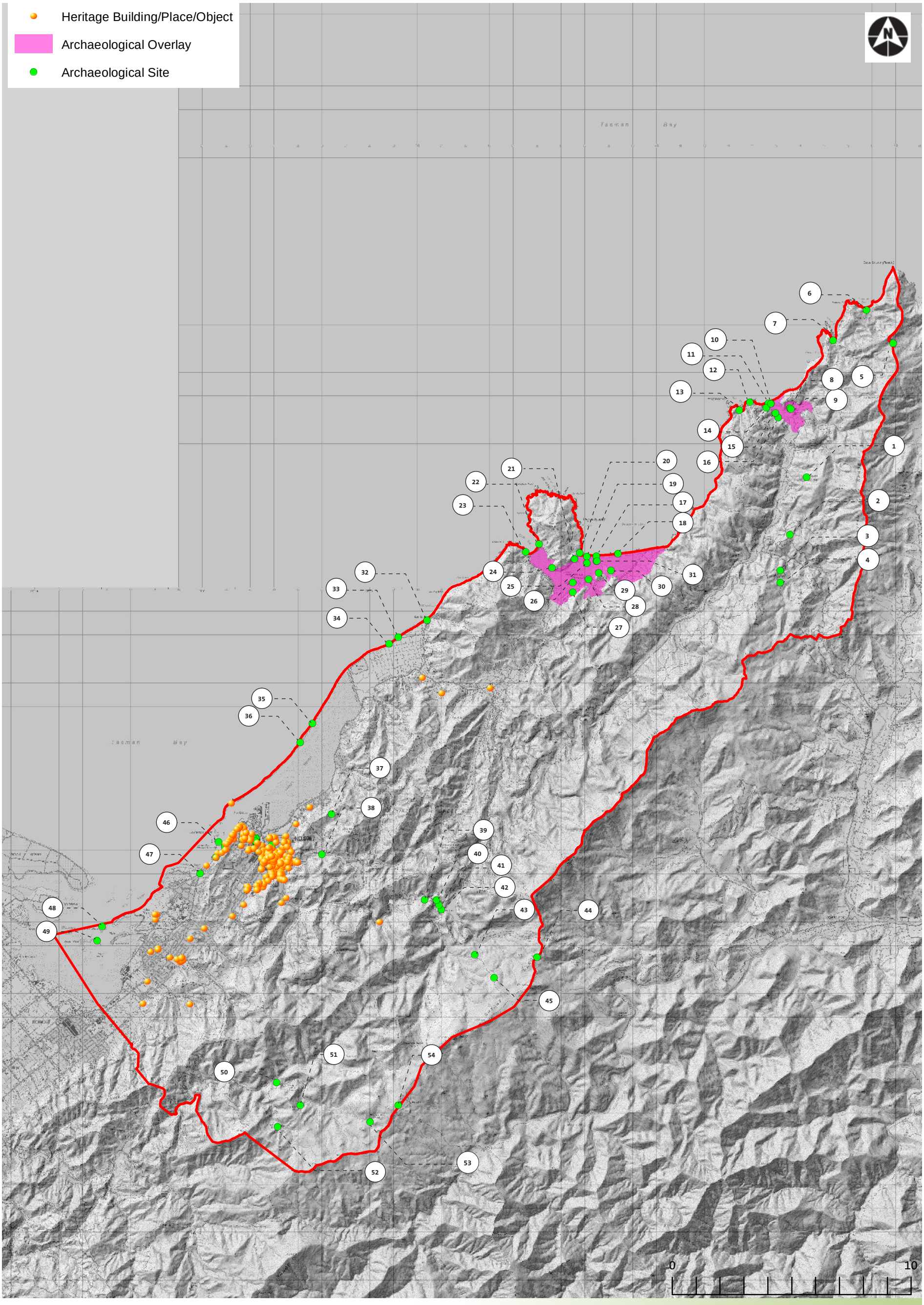
APPENDIX 8: IDENTIFIED HERITAGE SITES

Historic Heritage includes sites where traces of past activity remain such as buildings, sites of human occupation, burial and archaeological sites. It also includes sites that are significant for their spiritual or historical associations. Heritage sites are important linkages to the past and provide insight into the way communities have developed, contributing to the character and amenity value of a location or area.

Within Nelson, there are total of 389 Heritage Building / Place / Objects throughout the region, predominately sited within Nelson's Developed Area excluded from this study. To the north of Nelson, archaeological Overlays have been identified in Delaware Inlet and Whangamoa Inlet and reflect a high density of sites of significance to Maori in these areas, thought to have a history of occupation dating back 1200 years (Davidson & Preece, 1994). An additional 54 Archaeological sites have also been identified across the region outside of the archaeological overlays, the details of which are set out below, whilst acknowledging that not all archaeological sites may be recognised.

Data sets supplied by Nelson City Council

ID	DESCRIPTION
	ARCHAEOLOGICAL SITES
1	Redhill Quarry. 300m west redhill trig
2	Hebbards Quarry. Wahi Tapu. In forestry above lim*
3	Bennetts Quarry.Wahi tapu To west of Blunder Cree*
4	Oakleys Quarry. Wahi Tapu area. Argillite quarry *
5	Chrome mine, Bush Hill
6	Kainga Site mouth of stream in the bay.
7	MS34
8	Site nth side Whangamoa Inlet, treed flat base,E *
9	Site on small gravelly spit, ft nthern tip Mt Vic*
10	Kainga Site -whole of sandspit,mouth Whangamao Rv*
11	Kainga Site mouth of stream flowing to bay.
12	Terraces, Hori Bay
13	Hori Bay-Midden site in stream bank 20m above bea*
14	Sth side of of mouth of Whangamoa Inlet opp Wh. S*
15	Miden Site on Sth side of Whangamoa Inlet at edge*
16	Sth side of Whangamoa Inlet at mouth of small str*
17	Poss Pa site of N Apa till sacked in late 1820's
18	Delaware spit (Tuarawhati)
19	Maori Cemetary (Huau) end of Delaware Spit
20	Hawaiki. Wahi Tapu Area. Kainga at bottom of sma*
21	Kainga on sothern end of Pepin Isl
22	Rotokura Pa. Sheep yards at end Boulder Bank on*
23	Occupation site, from 1200 to early 1800s Rotokur*
24	May be old canoe landing place. Roughly stacked r*
25	Midden & oven site on sandspit SE corner Pepin Is*
26	Pa which occupied most of Bishops Peninsula. Also*
27	E Kapa. Old Kainga Site on edge of Delaware Estua*
28	Kainga on bend in Delaware Bay Rd where road leav*
29	Small terrace cut into hill, possible kianga site
30	Pa Site on point south side of Delaware Estuary
31	Urupa (Nga Tuaha) in middle of Delaware Estuary
32	Totarari-Kainga where Boulber Bk meets hills at G*
33	Middens inside edge Boulder Bk. 250m sth macrocar*
34	3 pits or ovens on the Boulder Bk !/2 way Glen & *
35	4 small shell middens inside edge Boulder Bk. 500*
36	Shell Midden 1/2 way Boulder Bank approx 600 m nt*
37	Kaka Hill-lookout also N Kuia Burial site
38	In Maitai Rec Res. N Kuia Pa & burial site
39	Probably Kainga Area-historical coonection to Toh*
40	Argillite workings bank Maitai Rvr first rdge bel*
41	Argillite workings junctn N & S branch Maitai Rvr
42	Argillite workings under Maitai Dam
43	Rushpool Qry. Next to Rushpool pond site covers .*
44	Argillite Quarry, on marked track halfway between*
45	Argillite Quarry, Maungatapu
46	Haulashore Island-Kainga Site Sth most end-Cairn *
47	Important early Kainga Site behind Tahuna Pharmacy
48	Oyster Island- Kainga Site - probably N Kuia or *
49	Saxtons Isl Kainga Site - probably N Kuia or Apa
50	Copper smelter
51	United Mine
52	Champion Mine
53	Monster mine
54	Argillite Quarry -ridge above Rocks Hut



HERITAGE SITES

GLOSSARY

LANDSCAPE – cumulative expression of natural and cultural features, patterns and processes in a geographical area, including human perceptions and associations.

SEASCAPE – An area of sea, coastline and land, whose character results from the actions and interactions of land with sea, by natural and / or human influences. This principally applies to coastal and marine areas seaward of Mean High Water Springs.

LANDSCAPE CHARACTER – refers to the distinctive combination of landscape attributes that distinguish any particular area of land and give an area its identity. It is determined by the inter-relationship of:

LANDFORM –Combinations of slope and elevation that produce the shape and form of the land.

LAND COVER – Combinations of land use and vegetation that cover the land surface.

LAND USE – Reflect cultural and social processes such as residential use, farming and transport and can also include spiritual and historical associations that give added meaning to places.

LANDSCAPE CHARACTERISATION – The process of sorting the landscape into different types or areas using selected criteria but without attaching relative values to the different landscape types or areas.

LANDSCAPE EVALUATION – The process of attaching value (non-monetary) to a particular landscape, usually by the application of previously agreed criteria and including consultation.

LANDSCAPE / SEASCAPE CHARACTER TYPES – These are distinct types of landscapes or seascapes that are relatively homogenous in character. They are generic in nature in that they may occur in different parts of the country, but where ever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and settlement pattern with associated perceptual and aesthetic attributes.

LANDSCAPE / SEASCAPE CHARACTER AREAS – These are single unique areas which form discrete geographical areas of a particular landscape or seascape type. Each has its own individual character and identity, even though it shares the same generic characteristics with other types.

KEY CHARACTERISTICS – Those combinations of elements which help give an area its distinct sense of place.

LANDSCAPE VALUE – Derives the importance that people and communities including tangata whenua, attach to particular landscapes and landscape attributes.

LANDSCAPE ATTRIBUTES – Comprise biophysical features, patterns and processes, sensory qualities; and spiritual, cultural and social associations including activities and meanings.

NATURAL CHARACTER – is the term used to describe the natural elements of all coastal environments within the NZCPS. The degree or level of natural character within an environment depends on:

1. the extent to which the natural elements, patterns and processes occur and;
2. the nature and extent of modification to the ecosystems and landscape/seascape.

The degree of natural character is highest where there is least modification. The effect of different types of modification upon natural character varies with context and may be perceived differently by different parts of the community

RURAL CHARACTER – Rural landscapes are, by their nature, strongly influenced by the type of rural activity and the intensity of associated settlement. Natural elements generally remain strongly evident but are overlaid by patterns and processes of human activity. Natural systems operate but,in places, are manipulated to enhance productivity. Human induced patterns and processes are related predominately to productive land uses such as agriculture, horticulture and forestry, typically including paddocks, shelter belts, woodlots and forest blocks, cropping regimes and settlement. The patterns of human activity are generally large scale (by comparison with urban areas), reflected in generally low-density settlement, few structures and often a sense of spaciousness.

COASTAL ENVIRONMENT – An environment in which the coast is a significant part of element taking account of an assessment of Policy 1 NZCPS 2010 and includes:

-The coastal marine area;

-Islands within the coastal marine area;

-Areas where coastal processes, influences or qualities are significant, including coastal lakes, lagoons, tidal estuaries, salt marshes;

-coastal wetlands, and the margins of these; (Study Team emphasis)

-Areas at risk from coastal hazards;

-Coastal vegetation and the habitat of indigenous coastal species including migratory birds;

-Elements and features that contribute to the natural character, landscape, visual qualities or amenity values;

-Items of cultural and historic heritage in the coastal marine area or on the coast;

-Inter-related coastal marine and terrestrial systems, including the intertidal zone; and

-Physical resources and built facilities, including infrastructure, that have modified the coastal environment