

Stormwater assessment report

Warkworth Structure Plan

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1 Introduction

1.1 Purpose and scope of the report

This is one of a number of reports that have been prepared for the Warkworth Structure Plan as part of the supporting information behind the structure plan document. This report outlines the existing environment in the study area and assesses the Warkworth Structure Plan in relation to stormwater management.

1.2 Study Area

The study area for the Warkworth Structure Plan is the Future Urban zone around Warkworth. It comprises around 1,000ha of land. The study area is shown outlined in red on Figure 1 below.

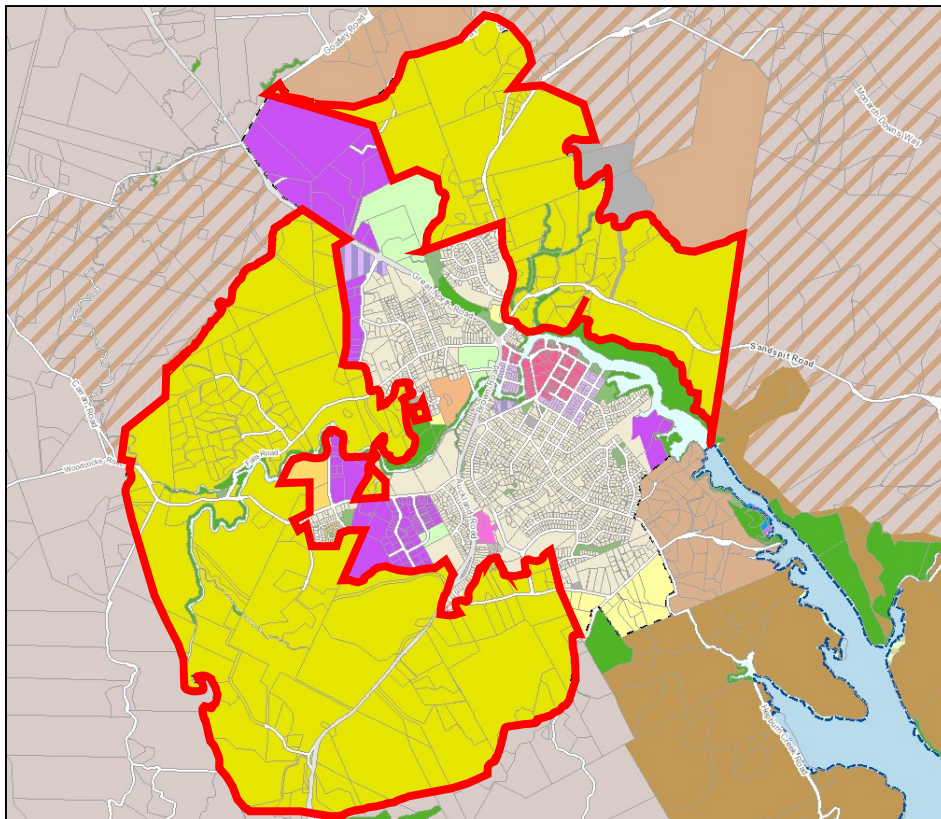


Figure 1: Warkworth structure plan study area (outlined in red)

2 Existing environment

2.1 Description of study area

A description of the stormwater environment including the topography and catchment; existing land use; geology and soils; existing stormwater infrastructure; flooding and other hazards; slope instability and liquefaction; the stream, aquifers, and coastal marine area receiving environment and stream ecology, erosion and water quality are provided in Section 4 of the Warkworth Stormwater Management Plan – Stage 1B – Preliminary SMP dated February 2019.

3 Warkworth Structure Plan

3.1 Overview of Warkworth Structure Plan

The Warkworth Structure Plan sets out the pattern of land uses and the supporting infrastructure networks for the Future Urban zoned land around Warkworth. In preparing the Warkworth Structure Plan, the following were considered:

- the context of the existing town in Warkworth
- the opportunities and constraints of the structure plan area as identified in 16 technical papers¹
- the feedback received from various stakeholders and public engagement events².

The structure plan is show in Figure 2.

Some of the key high-level features of the draft Warkworth Structure Plan include:

- Ecological and stormwater areas are set aside from any built urban development.
- The new residential areas across the Future Urban zone enable around 7,500 dwellings and offer a range of living types from spacious sections around the fringe to more intensive dwellings such as town houses and apartments around the new small centres and along public transport routes.
- Warkworth’s local and rural character is protected through various measures including provisions to protect the bush-clad town centre backdrop by the Mahurangi River and retaining the Morrison’s Heritage Orchard as a rural feature of the town.
- New employment areas are identified, comprising land for new industry (e.g. warehousing, manufacturing, wholesalers, repair services) and land for small centres (e.g. convenience retail, local offices, restaurants/cafés). The existing Warkworth town centre by the Mahurangi River will remain as the focal point of the town.

The land uses are supported by infrastructure including:

¹ 16 topic papers that were prepared in February 2018 as part of initial consultation on the structure plan

² This includes feedback from mana whenua, business, resident and community groups, engagement survey findings and community workshops held to generate land use ideas for the Warkworth area.

- Prioritising active transport in Warkworth through a separated walking and cycling network providing connectivity to new and existing centres, employment areas, schools and public transport stations.
- A roading network including a potential southern interchange on Ara Tūhono – Pūhoi to Warkworth (south facing ramps only).
- A public transport network built upon the recently introduced 'New Network for Warkworth' and in the long term has a bus station/interchange in Warkworth's southern Local Centre and a Park and Ride near the potential Ara Tūhono – Pūhoi to Warkworth southern interchange.
- Other infrastructure providers for utilities such as wastewater, water, power supply, telephone, broadband, community facilities, schools, and healthcare have plans underway to service the planned growth of Warkworth.

Further details on the Warkworth Structure Plan can be found in the structure plan document on the project website.

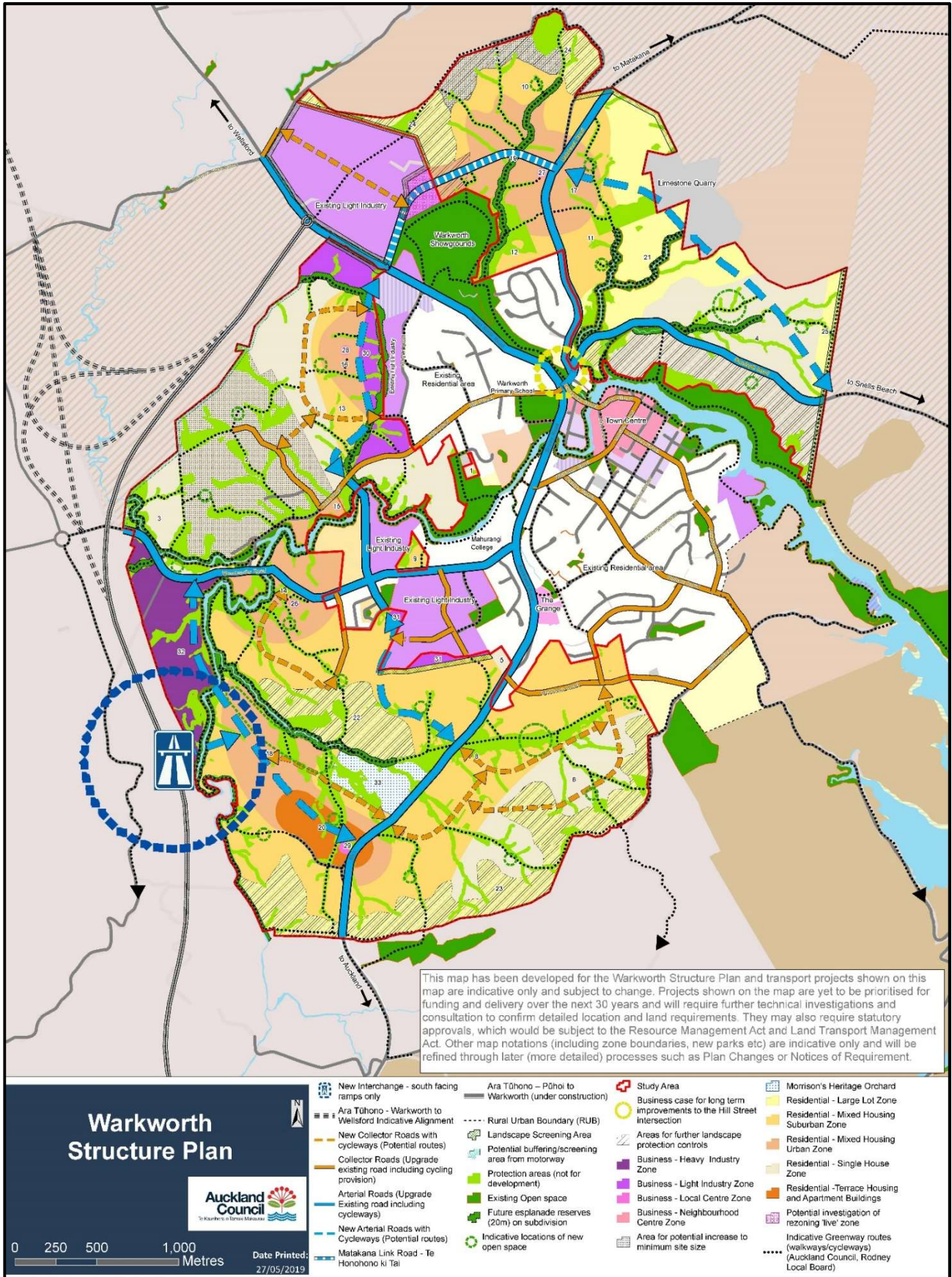


Figure 2: Warkworth Structure Plan

3.2 Assessment of the Warkworth Structure Plan proposed land uses

Healthy Waters considers that generally the land uses identified in the structure plan for the Warkworth Future Urban Area respond well to the site-specific constraints and opportunities identified in the Stage 1B - Preliminary Stormwater Management Plan dated February 2019. However, Healthy Waters notes the following:

Transport Links

The proposed arterial and collector roads generally appear aligned to ridges (as much as practicable). This will minimise road crossings of streams. One exception to this is where the proposed corridor for the southern section of the Western Link Road (from the existing State Highway 1 to Evelyn Street) is indicatively shown adjacent/overlapping an existing stream and protection area. Healthy Waters notes that in some instances this cannot be avoided. However, as the road alignments are refined through more detailed work further discussions with the Supporting Growth Alliance will be required with regards to the location of stream crossings and the potential for stream enhancements.

Healthy Waters also notes that where roads do cross streams they should do so perpendicularly so as to minimise stream disturbance and impact on floodplains.

Residential Land Use

The slope stability concerns for land north of Warkworth will likely preclude infiltration for stormwater management of residential lots in this area. However retention requirements may be able to be met using rain tanks since residential lots will have water reuse opportunities.

The proposed large lot zones are generally located on ridgelines and areas that contain steep slopes. The steep slopes may preclude the use of stormwater infiltration devices, especially for the large lot zone to the north.

The potential slope stability risk associated with the Northland Allochthon to the north of the Warkworth Structure Plan Area may dictate what sort of development and densities are achievable. A separate specialist memo for geotechnical considerations addresses this.

Small Centres

The proposed small centres (Neighbourhood and Local) generally are located alongside green corridors and esplanade reserve areas, which will work well with the function of the green corridors as potential transport routes for cycling and walking, in addition to their stormwater management functions.

The small centres to the west (Neighbourhood) and south (Local) of the Warkworth Structure Plan Area are located in areas where the underlying geology may be more conducive to infiltration. This will likely allow implementation of stormwater devices that are well suited to public open spaces such as raingardens. However, the Neighbourhood centre to the north

is underlain by Northern Allochthon soil type that is susceptible to slope instability and this will likely preclude infiltration. Rainwater storage tanks are likely to provide the necessary hydrological mitigation and rainwater harvesting is recommended where there is re-use demand.

Parks / Open Space Areas

The proposed 'Protection Areas' generally appear to be well located to keep development out of the 100 year floodplain and provide recognition of permanent and intermittent stream areas in the land development process. However, it is recommended that the protection areas be further consolidated i.e. if there are isolated islands of unprotected land surrounded by protected land, then include the unprotected islands as 'protected land' so that the isolated development that may result in adverse effects on protected areas cannot occur.

The proposed Sports Park in the south is well positioned to be utilised as a communal detention facility for large flood events if site constraints allow.

This will be further investigated as part of the Final Stormwater Management Plan for the Warkworth Structure Plan Area.

4 Conclusion

Overall it is considered that generally the land uses identified in the structure plan for the Warkworth Future Urban Area respond well to the site-specific constraints and opportunities identified in the Stage 1B - Preliminary Stormwater Management Plan dated February 2019. However, Healthy Waters considers that some further, specific consideration of stormwater requirements in relation to particular land uses and locations will be required in order to ensure that an integrated stormwater management approach is achieved throughout the structure plan area. These detailed matters can be worked through as land is live zoned for development or when Stormwater Management Plans are produced in support of developments.

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