Project Number: 5-G3626.00

Residential Growth Plan Change - Brightwater

Background Report – Technical Reference Document

25 July 2022

Contact Details

Nicole White

WSP
Morrison Square
Level 1
77 Selwyn Place
Private Bag 36, Nelson Mail Centre
Nelson 7010
+64 3 548 1099
+64 27 547 7980
nicole.white@wsp.com

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Prepared by
Nicole White

Reviewed by
Reuben Peterson

Approved for release by
Reuben Peterson

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Revision Details

Revision	Details
0	Initial draft for comment
1	Amended as per client review, added additional information and refined growth area boundaries.
2	Amended as per position papers and internal infrastructure meetings.
3	Amended, as per internal review, and additional comments from internal infrastructure staff.
4	Report finalised with minor amendments.

Contents

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1 Introduction

This document comprises technical background material, obtained from Tasman District Council (Council) staff and external infrastructure and service providers, iwi, and key third parties, to inform the Brightwater Residential Growth Plan Change (including Waimea West Rezoning).

2 Cultural and Heritage

There are no known cultural or heritage sites within the identified residential growth area (NZ Archaeological Association). 366 Waimea West Road contains a heritage building (H21).

In a hui on 17th November 2021, iwi raised the general aspiration of creating communities with a heart, implementation of Te Mana O Te Wai, iwi placenames, having guiding development principles, and allowing for larger families/ multi-units when providing for housing. No specific concerns or issues were raised regarding the Brightwater growth area or Waimea West Road site.

3 Ecology

The growth area is bordered to the north-west by Pitfure Stream. The adjacent section of Pitfure Stream is considered to have relatively low ecological values, given that it is dry for a large portion of the year, affecting fish passage to areas upstream of Wakefield which have a greater length of permanent flow and higher ecological values (Trevor James, Senior Resource Scientist Freshwater and Estuarine Ecology, email 28 January 2022). However, despite the relatively low ecological values of the adjacent section of Pitfure Stream, the discharges of sediment and nutrients still need to be managed well because they will end up in sensitive areas e.g. Waimea Inlet and Waimea River (Trevor James, Senior Resource Scientist Freshwater and Estuarine Ecology, email 28 January 2022).

There is a need for more wetlands within the wider catchment (Trevor James, Senior Resource Scientist Freshwater and Estuarine Ecology, email 28 January 2022). Opportunities exist to improve the ecological outcomes through planting of the stream margins.

There are no Significant Natural Areas or wetlands within the growth area or on the Waimea West Road site. However, there are two wetlands located to the northwest of the Waimea West Road site. These are on the opposite side of the road and are therefore unlikely to be affected (Matt Moss, Ecologist, email 1 February 2022).

4 Reverse Sensitivity

4.1 Waimea West Road

There are no reverse sensitivity considerations for Waimea West Road, as this plan change is aligning the zone boundaries with the current property boundaries and land use activities.

4.2 Rural and Residential Land Use Activities

The growth area is separated from the surrounding farmland by Pitfure Stream, its riparian margins as established through the Indicative Reserves, and the required setbacks of buildings from the Rural Zone which applies within the Residential Zone.

4.3 State Highway

The growth area is bordered by State Highway 6 to the south. Waka Kotahi NZ Transport Agency (Waka Kotahi) have developed a Reverse Sensitivity Guideline[1] to mitigate the effects of noise and other disturbances from the state highway network on the habitants of any new dwelling. As part of this, Waka Kotahi have developed a reverse sensitivity 'buffer' and 'effects' area. The excerpt below explains the function of these areas.

'The approach is based around buffer and effects areas, which are determined in the same way for both rural and urban state highways, but the applicable reverse sensitivity controls within each area vary depending on the environment. To achieve a reasonable level of acoustic amenity, all noise sensitive activities in rural areas should be located outside of a buffer area, providing a setback from state highways. The buffer area will be partly or sometimes fully within the state highway designation, particularly for more recent designations. However, in other cases where an existing state highway has a narrow designation, the buffer will need to be accommodated outside the designation, and for example might take the form of local roading, stormwater treatment or reserve land within a new residential development, or may be accommodated by building setbacks within larger sections. Beyond the buffer area buildings containing new noise sensitive activities within a wider 'effects area' may be allowed but need to be designed and constructed to achieve reasonable indoor acoustic amenity. In urban areas noise sensitive activities may be allowed in the buffer area, subject to additional vibration controls.'[2]

The Waka Kotahi buffer and effects areas (provided by Waka Kotahi, email 14 March 2022) are depicted below for the growth area. The Reverse Sensitivity Guideline includes a recommended set of standard district plan objectives, policies, and rules for development within the buffer and effects areas.

[1] Waka Kotahi's Reverse Sensitivity Guideline: https://www.nzta.govt.nz/resources/effects-on-noise-sensitive-land/
[2] Waka Kotahi's Reverse Sensitivity Guideline, Page 7: https://www.nzta.govt.nz/resources/effects-on-noise-sensitive-land/

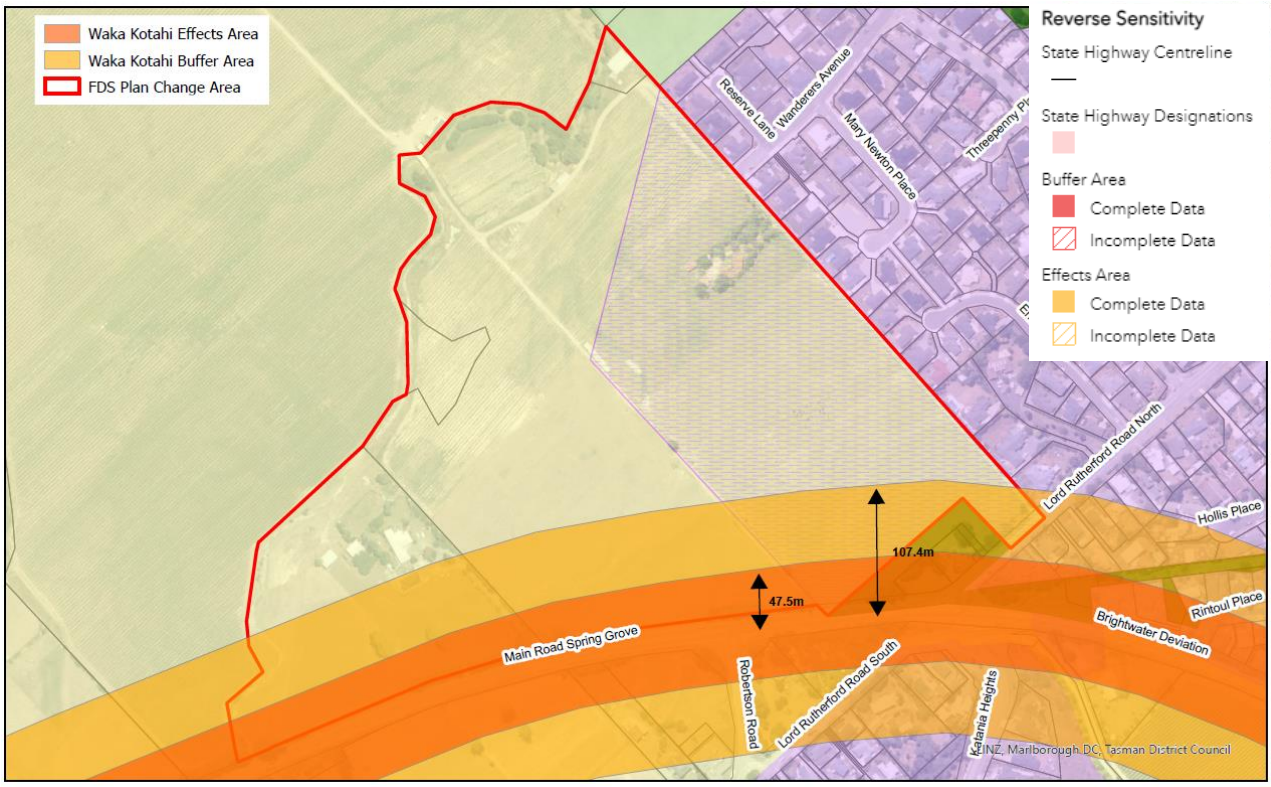

Figure 1: Brightwater Growth Area Reverse Sensitivity Map

5 Infrastructure

5.1 Reticulated Stormwater

Top of the South Maps shows that the growth area is not currently connected to Council's reticulated stormwater system, as depicted in Figure 2 below.

Figure 2: Existing Stormwater Infrastructure (Top of the South Maps)

T&T have modelled flooding of a 1% AEP rainfall event for present day (Figure 3) and the year 2090 (Figure 4). The models show the accumulation of rainfall in and around Pitfure Stream, and through the middle of the growth area. This situation is shown to become worse, with a greater depth of water in the middle of the site, in the 2090 year scenario.

Council is not planning to install any stormwater infrastructure, however, it is considered possible for the flood hazard to be mitigated by the developer (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022; Wouter Woortman, Team Leader – Infrastructure Planning, email 4 May 2022). The zoning will need to be deferred for this reason.

Runoff from the catchment to the south of the growth area will need to be conveyed across the site to the Pitfure Stream and Wai-iti River. This can be achieved through the design of the development and the provision a suitable flow path (such as an indicative road, walkways or other open space) (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022). The developer will need to provide for this overland flow (Council Internal Infrastructure Meeting, 9 February 2022).

Note: The growth area boundaries shown on the maps below are those originally consulted on in Round 1 Engagement and are not the same as the proposed Plan Change site boundaries.

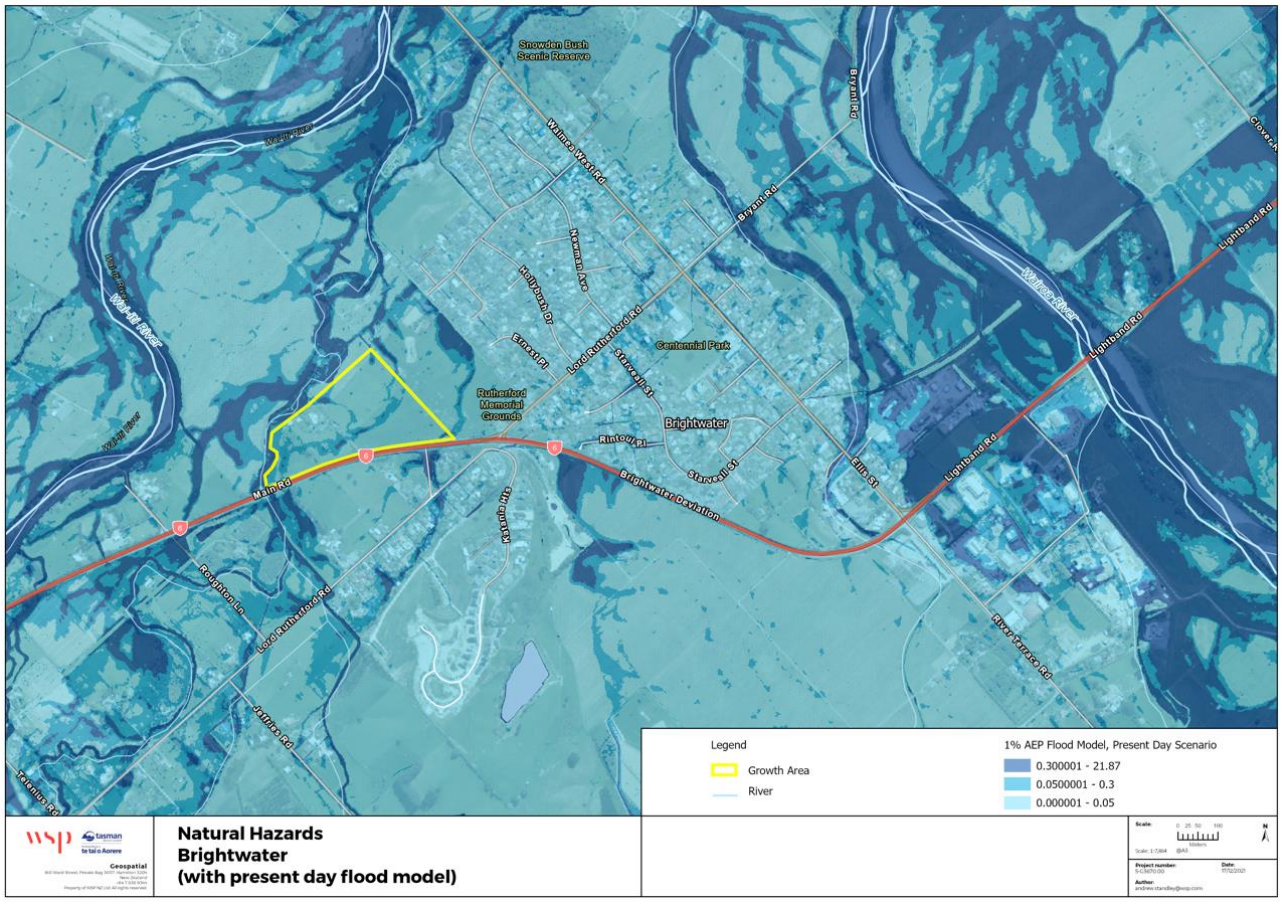

Figure 3: 1% AEP Flood Model 2021, Present Day Scenario (T&T Model)

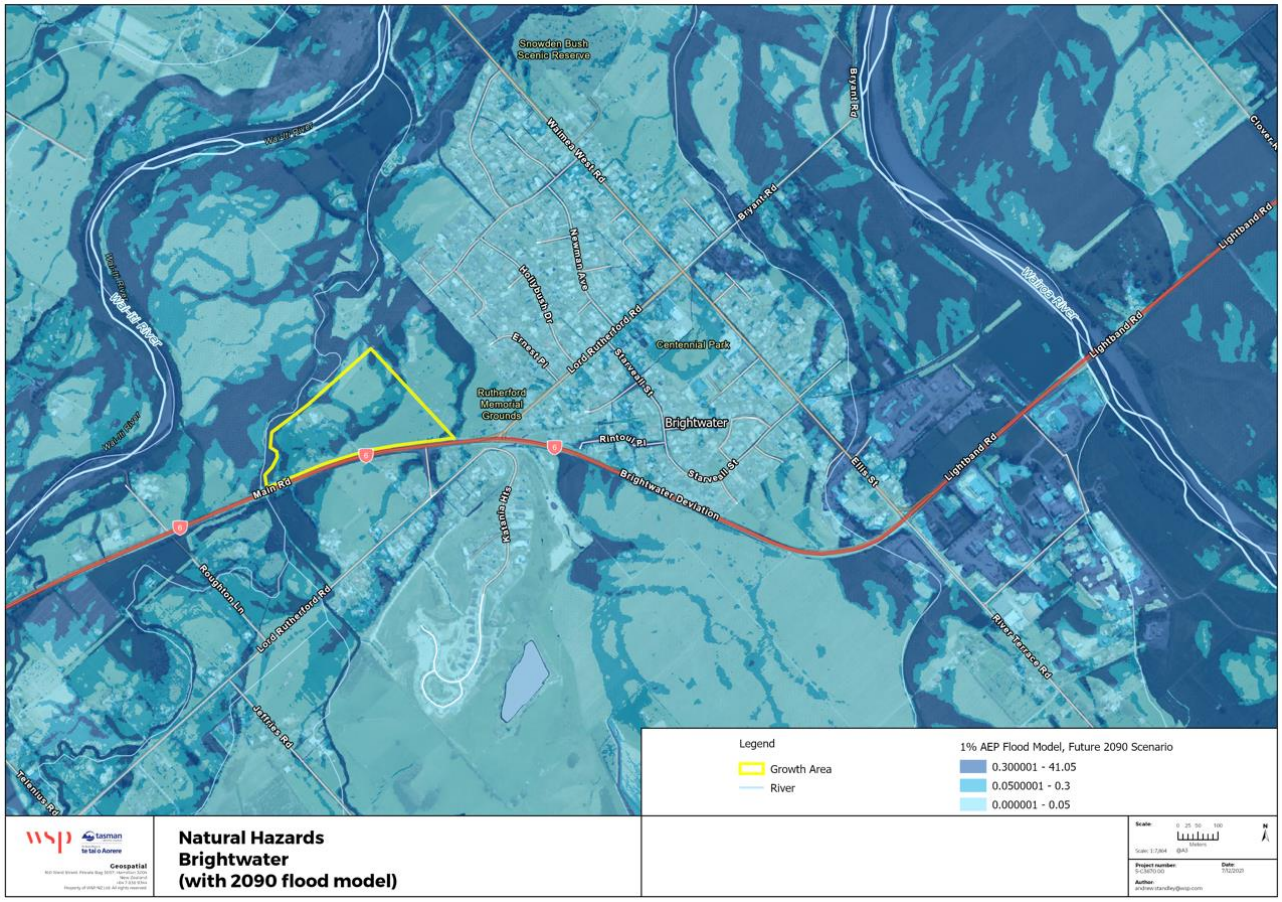

Figure 4: 1% AEP Flood Model 2021, 2090 Scenario (T&T Model)

5.2 Wastewater

The provision of infrastructure for wastewater management can be achieved for this site but does require a deferral of the zoning until this is resolved (Council Internal Infrastructure Meeting, 9 February 2022).

5.2.1 Treatment of Wastewater

Brightwater currently has limited wastewater treatment capacity due to the current downstream capacity issues with the Nelson Regional Sewerage Business Unit (NRSBU). NRSBU is progressing with an extensive capital work programme that will provide more capacity for Council to discharge wastewater from the Māpua, Richmond, Hope, Brightwater and Wakefield settlements (Helen Lane, Infrastructure Planning Advisor, 23 February 2022).

5.2.2 Conveyance of Wastewater

Brightwater also has limited capacity to take additional wastewater and inject it into the trunk main running parallel to State Highway 6. There is a major programme of work, outlined in Council's Long Term Plan 2021-2031, to address this challenge and increase trunk main capacity.

5.3 Potable Water

Potable water can be provided for this site but does require a deferral of the zoning until this is achieved (Council Internal Infrastructure Meeting, 9 February 2022).

The Long Term Plan 2021-2031 includes the implementation of the Waimea Water Strategy, over the 2024-2031 period. This includes plans for new and upgraded infrastructure for source, treatment and reticulation of water supply to improve the level of service and growth capacity in Brightwater and Wakefield.

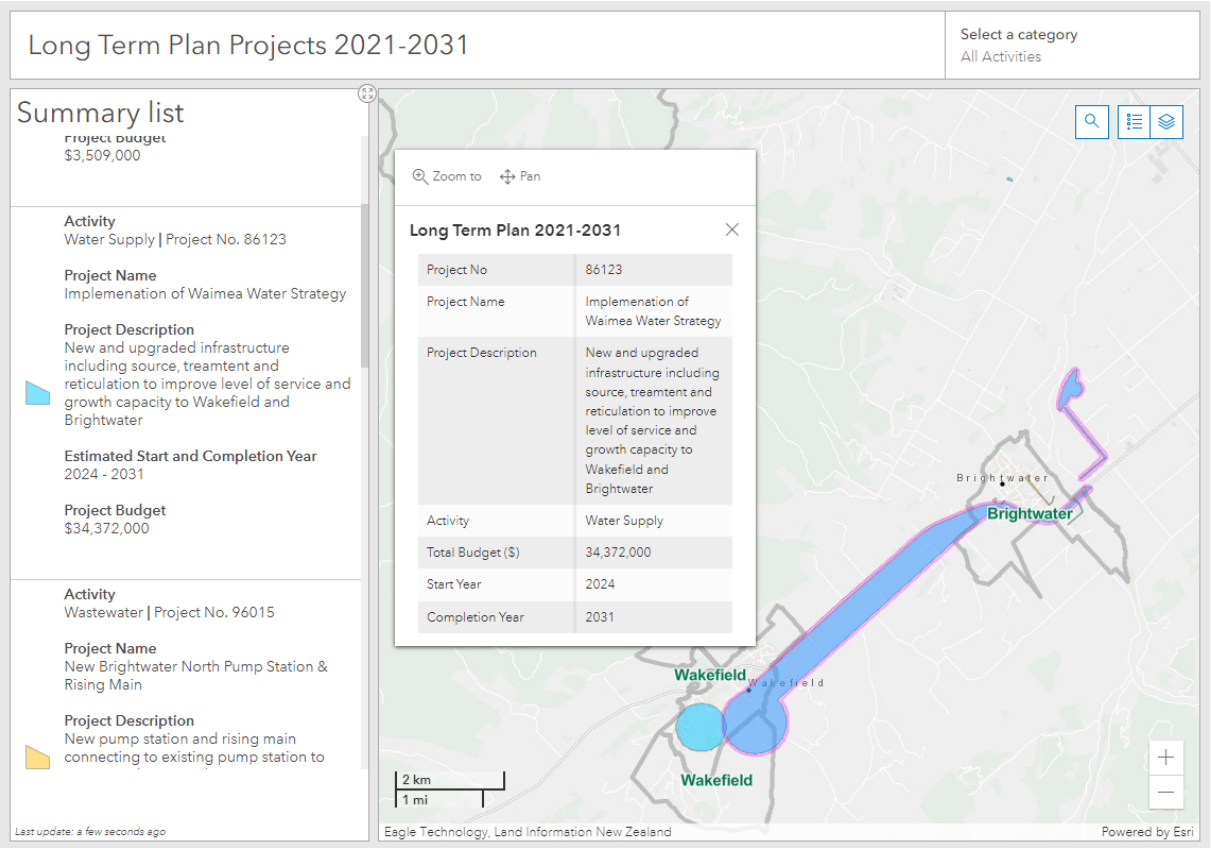

Figure 5: Planned Water Supply Works - LTP Extract (https://www.tasman.govt.nz/my-council/key-documents/long-term-plan/long-term-plan-2021-2031/projects/)

5.4 Transport

5.4.1 Vehicle Access

Council is considering improvements to the Main Road Spring Grove (State Highway 6)/ Robertson Road intersection opposite the growth area to provide for an identified Future Development Strategy (FDS) 2022 site. Consideration could be given to making this a four-way intersection that provides for the growth area, however, this would need to be discussed with Waka Kotahi (Council Infrastructure Meeting, 9 February 2022), who have already advised that they are not supportive of direct state highway access to the growth area (Waka Kotahi Transport Meeting, 1 November 2021). The proposed Plan Change relies on indicative road connections to Lord Rutherford Road and Wanderers Avenue with no new access to the state highway.

There is an existing indicative road on the north-eastern side of the growth area at 77 Lord Rutherford Lord which connects from Wanderers Avenue through to Lord Rutherford Road. This indicative road should be extended to the southwest to the boundary of 34 Main Road Spring Grove to serve all properties in the growth area (Council Internal Infrastructure Meeting, 9 February 2022).

5.4.2 Public and Active Transport

There is a proposed new bus route, intended to be introduced in two years, which will go past the Brightwater growth area, as depicted in Figure 6 below. A bus stop on Lord Rutherford Road is proposed (Drew Bryant, TDC Senior Infrastructure Planning Advisor, Council Infrastructure Meeting, 8 October 2021).

Walking and cycling connections will need to be considered from the bus stop to the growth area (Drew Bryant, TDC Senior Infrastructure Planning Advisor, Council Infrastructure Meeting, 8 October 2021). Council transport staff have advised that a new indicative walkway is required,

going from the southern end of the growth area to Lord Rutherford Road (near the bus stop and the state highway pedestrian underpass). The bus route is indicated by the pink line in the figure below (Council Infrastructure Meeting, 9 February 2022). An indicative walkway in this location is not considered to be necessary from the planning perspective as the proposed indicative road, other walkways and potentially the Lord Rutherford Memorial Reserve will provide a connection.

Note: The growth area boundaries shown on the map below are those originally consulted on in Round 1 Engagement and are not the same as the proposed Plan Change site boundaries.

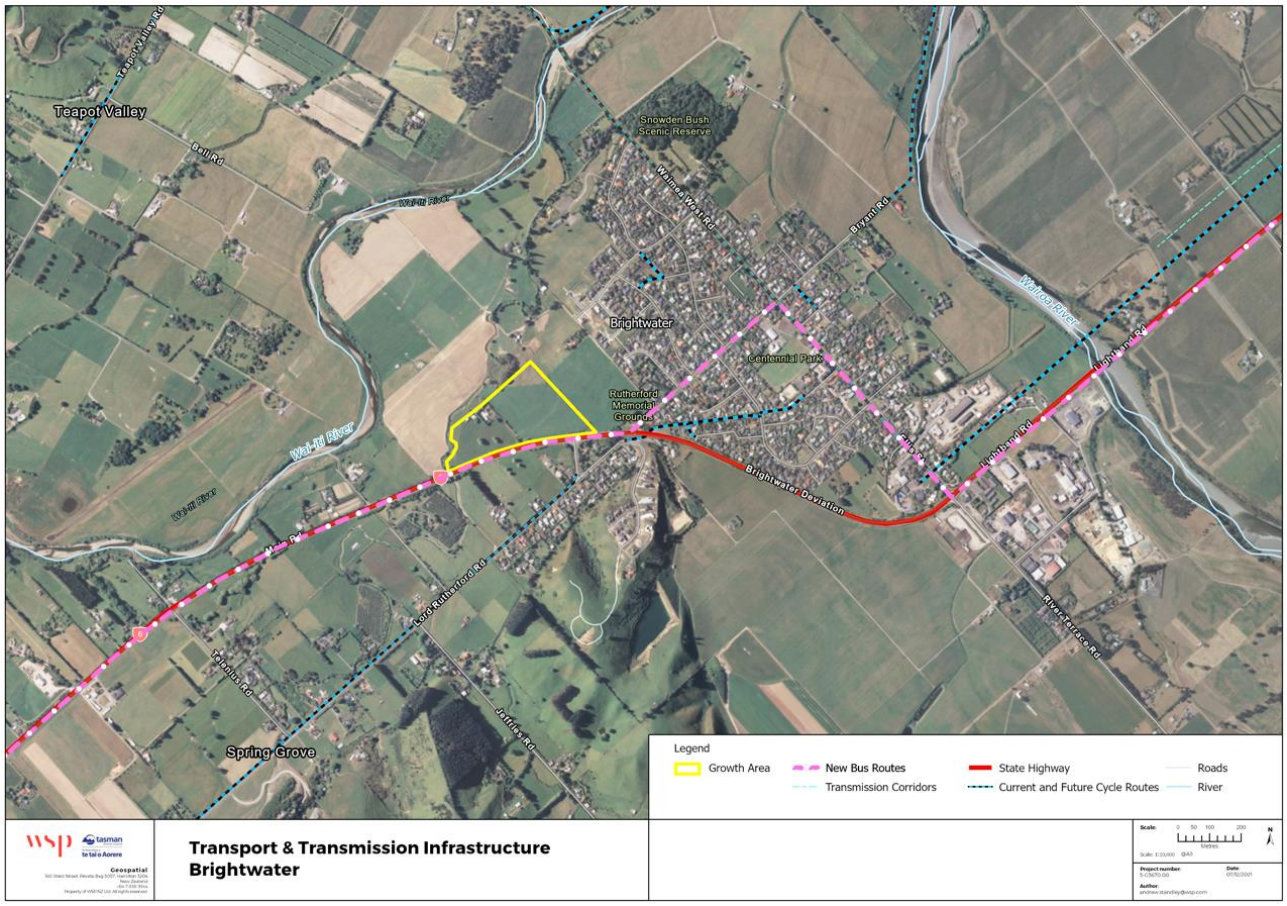

Figure 6: Transport and Transmissions Infrastructure Constraints Map .

The Walking and Cycling Strategy 2022-2052 includes a separate cycle lane along Lord Rutherford Road and Waimea West Road. This adjoins the north-eastern end of the growth area.

The Walking and Cycling Strategy 2022-2052 outlines a plan to create slow speed residential streets (less than 30kph), with the use of traffic calming treatment, where all road users and residents feel safe. A number of potential slow speed zones have been identified in the existing residential area of Brightwater. It is intended that the residential streets in the growth area are also greenways (Drew Bryant, TDC Senior Infrastructure Planning Advisor, 1 February 2022).

Figure 7: Proposed Walking and Cycling Improvements (Walking and Cycling Strategy 2022-2052)

5.5 Power and Internet

Network Tasman have advised that they support the growth area from a network planning and development perspective (Network Tasman, email 21 March 2022).

Chorus have advised that Brightwater has Next Generation Access; an Ultrafast Broadband internet product which provides broadband to the home. Additional infrastructure (fibre cable) would need to be installed by the developer to service the growth area (Chorus, email 26 October 2021).

6 Services and Facilities

6.1 Parks and Reserves

The Brightwater Community Association have advised that reserves and walkways are of importance to the community and need to be considered for this growth area (Brightwater Community Association Meeting, 1 November 2021).

There are no existing or indicative reserves currently within the growth area. However, the growth area does adjoin the Lord Rutherford Memorial Reserve. Council's Reserves Team would like this

reserve to be expanded to include the surrounding strip of existing open space zoning and also extend further to the northwest (Reserves Meeting, 11 November 2021). Their preference was to also extend this further towards the existing indicative road however limited space restricts this outcome. The Reserves Team have also asked for the indicative road network to adjoin this reserve (Rosalind Squire, Contract Reserves Planner, email 10 March 2022).

In the wider area, Lord Rutherford Park is located to the north of the growth area, and the Brightwater Recreation Reserve further to the east, as depicted in Figure 8 below. There is the potential for the Lord Rutherford Park reserve to be expanded to include land to the north of the growth area and to the west of the current reserve. This is independent of the growth plan change and is in the Long Term Plan 2021-2031 (Reserves Meeting, 11 November 2021).

Figure 8: Existing Reserves (Council Recreation Map)

The Reserves Team have advised that there should be an indicative walkway added from any indicative road to Pitfure Stream (Reserves Meeting, 11 November 2021). A Local Purpose (Esplanade) Reserve is also recommended adjoining the true right bank of the Pitfure Stream, extending along the entire growth area to provide public access, ecological restoration opportunities, flood mitigation and direct walking / cycling access to Lord Rutherford Park. This is as a minimum – consideration could also be given to a reserve vesting on the true left bank for stormwater management and enhancement of in-stream values (Rosalind Squire, Contract Reserves Planner, 7 February 2022).

An indicative reserve running through the site, from the state highway to Pitfure Stream, is also proposed to accommodate a stormwater flow path. The Parks and Reserves Team recommend a ~2,500m^2 indicative reserve adjoining this Local Purpose (Utility) Reserve (and ideally fronting the roading network as well) within any future development (Rosalind Squire, Contract Reserves

Planner, 7 February 2022). This reserve is to accommodate the needs of future residents in the area, particularly as medium density housing is enabled which increases the potential population in the growth area.

6.2 Community Facilities

The Brightwater Community Association have expressed concern over the need to ensure that servicing and facilities are in place to provide for additional residential development, including capacity in the Brightwater School roll (a primary school located at 106 Ellis Street), capacity at Nelson Hospital, and the need for local commercial space.

Information on the proposed re-zoning has been sent to the Ministry of Education and the Nelson Marlborough District Health Board. The Ministry of Education are interested in the estimated yield for the growth area, however, have not raised any concerns. The Nelson Marlborough District Health Board have not responded.

The need for additional commercial space within Brightwater is being considered as part of the development of the Future Development Strategy 2022 and is outside of the scope of this plan change.

7 Natural Hazards

7.1 Flooding

The growth area is adjacent to Pitfure Stream and is on the wider flood plain of the Wai-iti River. Discussions with the community association and landowners have highlighted that the area is known to flood in high rainfall events.

The owner of 34 Main Road Spring Grove advised via email on 29 November 2021 that:

- They have lived on the property since 2001 and have observed a number of flood events over this time, the worst of which was around 2004 when the floodwater ran through the bottom section of their driveway.
- MWH planned an upgrade of the creek in 2006 and ever since then the creek has never gone through the paddocks. However, flooding still occurred around the barn.
- A curving 300m section of Pitfure Stream was re-aligned to a straight 100m line in 2016. This mitigated flooding issues around the barn, however, this has caused erosion of the riverbed.
- There is a video from the last big flood. '*This is as high as I have seen it in years and it only just flows over the grass at the main road side just after the bridge about 100mm deep.*'[3]
- *'If the creek was widened to suit the same conditions that MWH did in 2006 (Stage 1), then the creek from the bridge to the Wai-iti river would no longer be much of an issue and it would possibly draw water through faster so that Lord Rutherford Road South and that area wouldn't have as many flooding issues either.'*

The property owner has provided a series of photos and video footage of flood events, spanning the 2016 – 2021 period[4]; a selection of the most recent photos is included below.

[3] email dated 29 November 2021

[4] Flood Photos: https://tasmandc.sharepoint.com/:f:/r/sites/ChangesTRMP/PlanChanges/2021%20Growth%20Plan%20Change/01%20Scoping/Consultation/Engagement%20Emails/Brightwater/Prendergast%20Flood%20Photos?csf=1&web=1&e=W1ft2O

Figure 9: Flooding at 34 Main Road Spring Grove, 26 July 2021

Figure 10: Flooding at 34 Main Road Spring Grove, 26 July 2021

Figure 11: Flooding at 34 Main Road Spring Grove, 26 July 2021

Figure 12 depicts the modelled extent of flooding for Brightwater (SKM model). The model shows flooding in a present-day 1% annual exceedance probability event in both the Pitfure Stream and Wai-iti River impacting the proposed growth area (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022). The flood hazard will need to be mitigated to allow this growth area to be developed. This mitigation is considered to be feasible (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022).

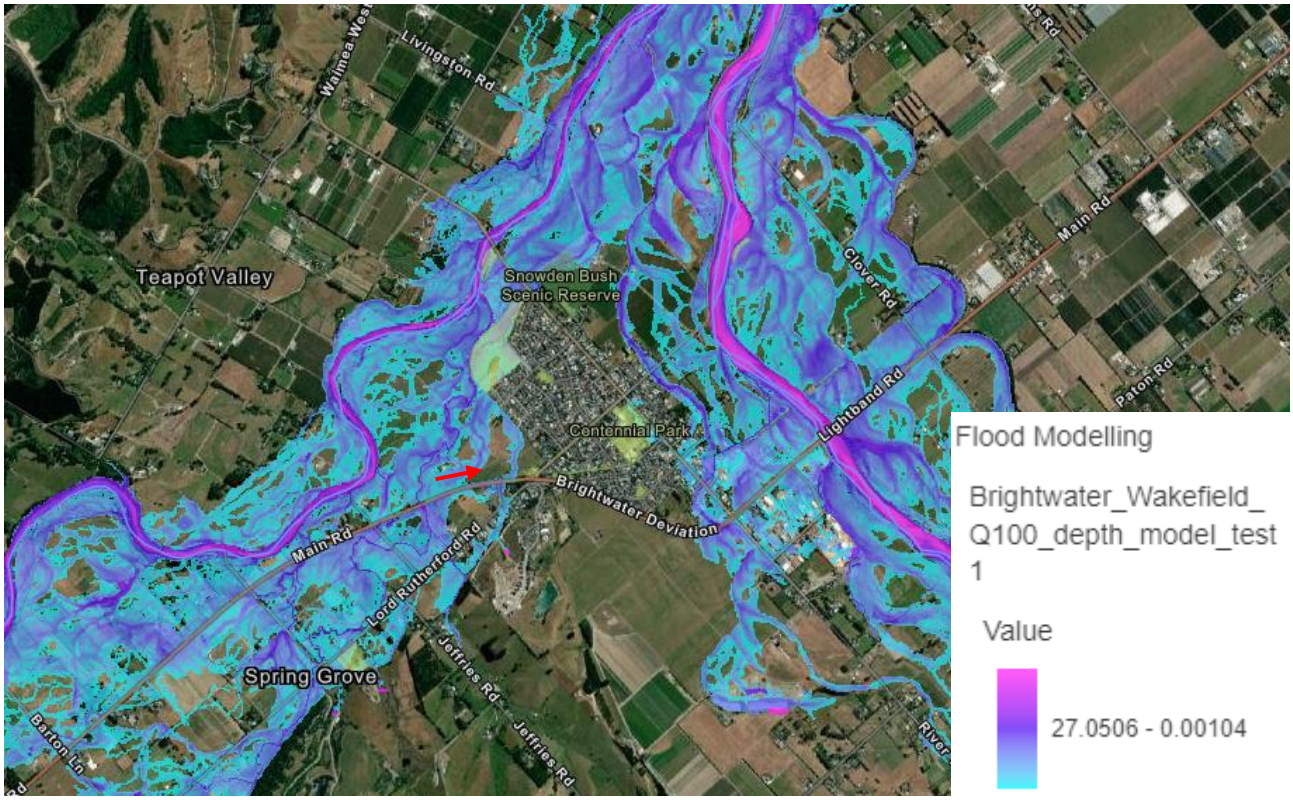

Figure 12: Brightwater Wakefield Flood Model Q100, site indicated by red arrow (FDS 2022 Mapping)

A potential solution to the flood hazard is the construction of a stopbank along the growth area side of Pitfure Stream (true right). Indicative flood modelling shows that this will result in an increase in flood depths in the order of 0.5 metres on parts of the neighbouring property to the northwest. These impacts could be reduced with further mitigation measures (such as channel improvements) to the affected areas. The neighbouring land to the northwest is currently under the same ownership as a large portion of the growth area (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022).

The north-western boundary of the growth area is controlled by the presence of the Pitfure Stream channel. Development and flood protection works should be setback from the channel to allow access for amenity and river maintenance purposes (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022). Some allowance for the meandering nature of the Pitfure Stream at this location would be appropriate to achieve a smoother growth area boundary (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022).

Runoff from the small catchment to the south of the growth area will still need to be conveyed across the site to the Pitfure Stream and ultimately to the Wai-iti River. This can be achieved through the design of the development and the provision a suitable flow path (such as an indicative road, walkways or other open space) (Glenn Stevens, Senior Resource Scientist – Hazards, 19 January 2022).

7.2 Coastal Inundation

Brightwater has ground levels greater than 20 metres above current sea levels and is located approximately 14km inland from the Waimea Estuary (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022). The site is therefore not subject to coastal hazards, as shown in Figure 13 (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022).

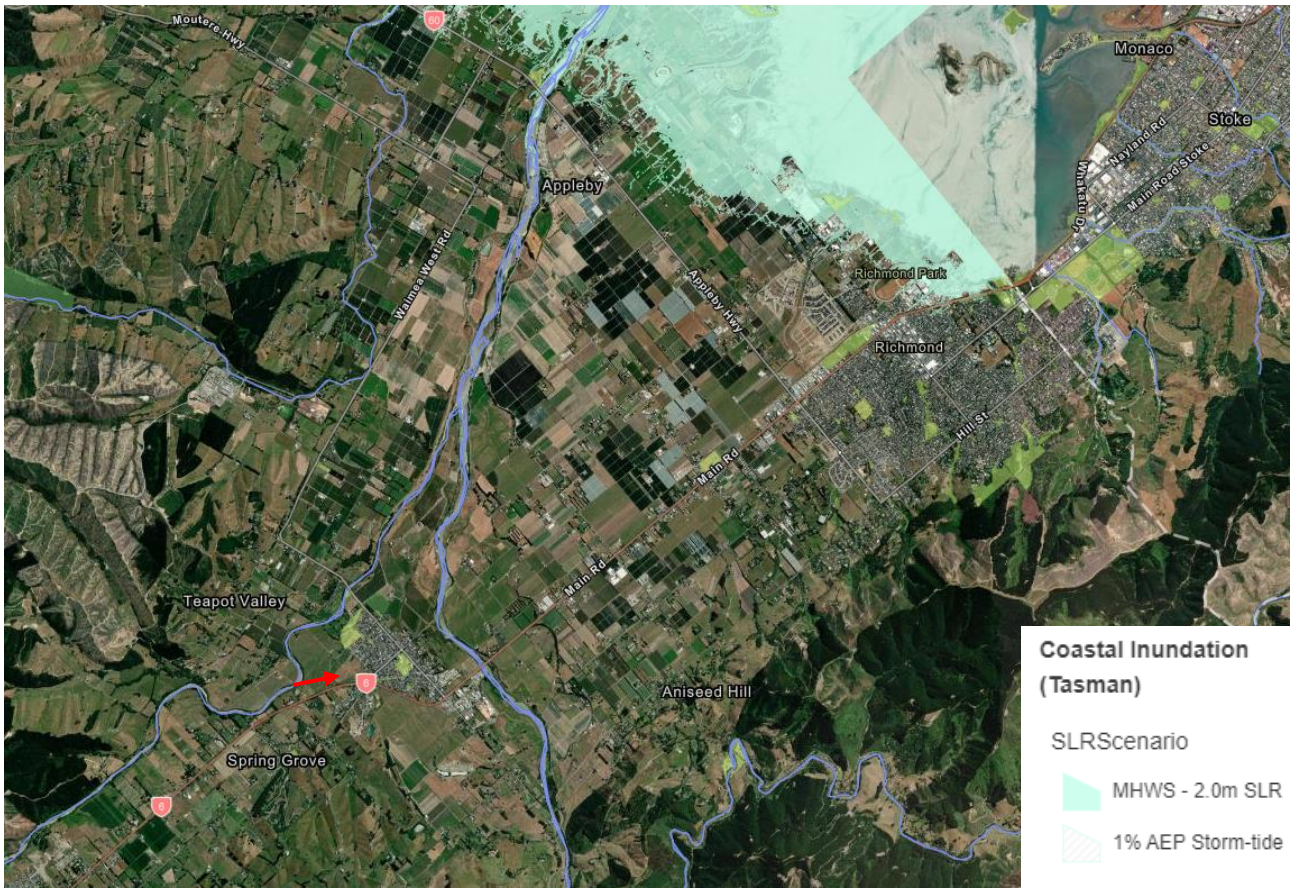

Figure 13: Coastal Inundation, site indicated by red arrow (FDS 2022 Mapping)

7.3 Seismic Risk

The nearest active fault is the Waimea Flaxmore Fault System located along the foothills to the south-east of Brightwater, approximately 2.5km away from the identified growth area (Glenn Stevens, Senior Resource Scientist – Hazards, 26 January 2022). No risk above that experienced generally in Brightwater is evident on this site.

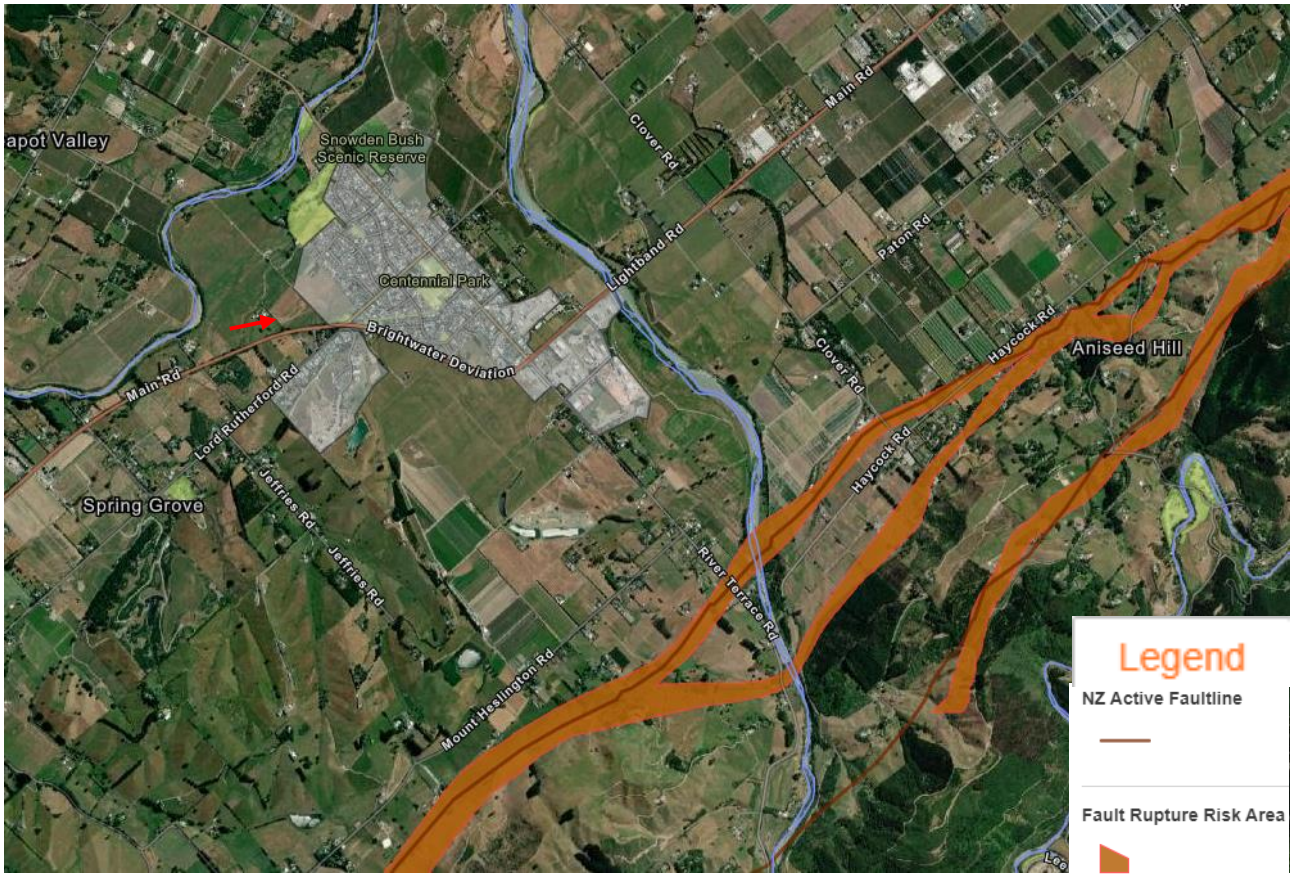

Figure 14: Seismic Features, site indicated by red arrow (FDS 2022 Maps)

7.4 Other

The growth area has been discussed with Nelson Tasman Civil Defence Emergency Management (meeting, 7 April 2022) who have not raised any issues with the site.

8 Fire Ban/ Sensitive Areas

The Tasman Resource Management Plan includes existing provisions to manage potential adverse amenity effects from the discharge of contaminants from outdoor burning. This is managed through rules that apply to the Fire Sensitive Area overlay, which generally aligns with Residential zoning in the district.

The growth area is not within Council's Fire Ban/ Fire Sensitive Areas (Local Maps). The 'Rural 1 deferred Residential' portion of 77 Lord Rutherford Road, in the north-eastern portion of the growth area, is in a Deferred Fire Sensitive Area (Local Maps). The existing residentially zoned part of Brightwater is in the Fire Sensitive Area (Local Maps). It is proposed to extend the Fire Sensitive Area across the growth area.

Figure 15: Fire Sensitive Areas (Local Maps)

9 Topography and Land Productivity

9.1 Topography

The identified growth area sits approximately at the 30m contour (Top of the South Maps) and is relatively flat.

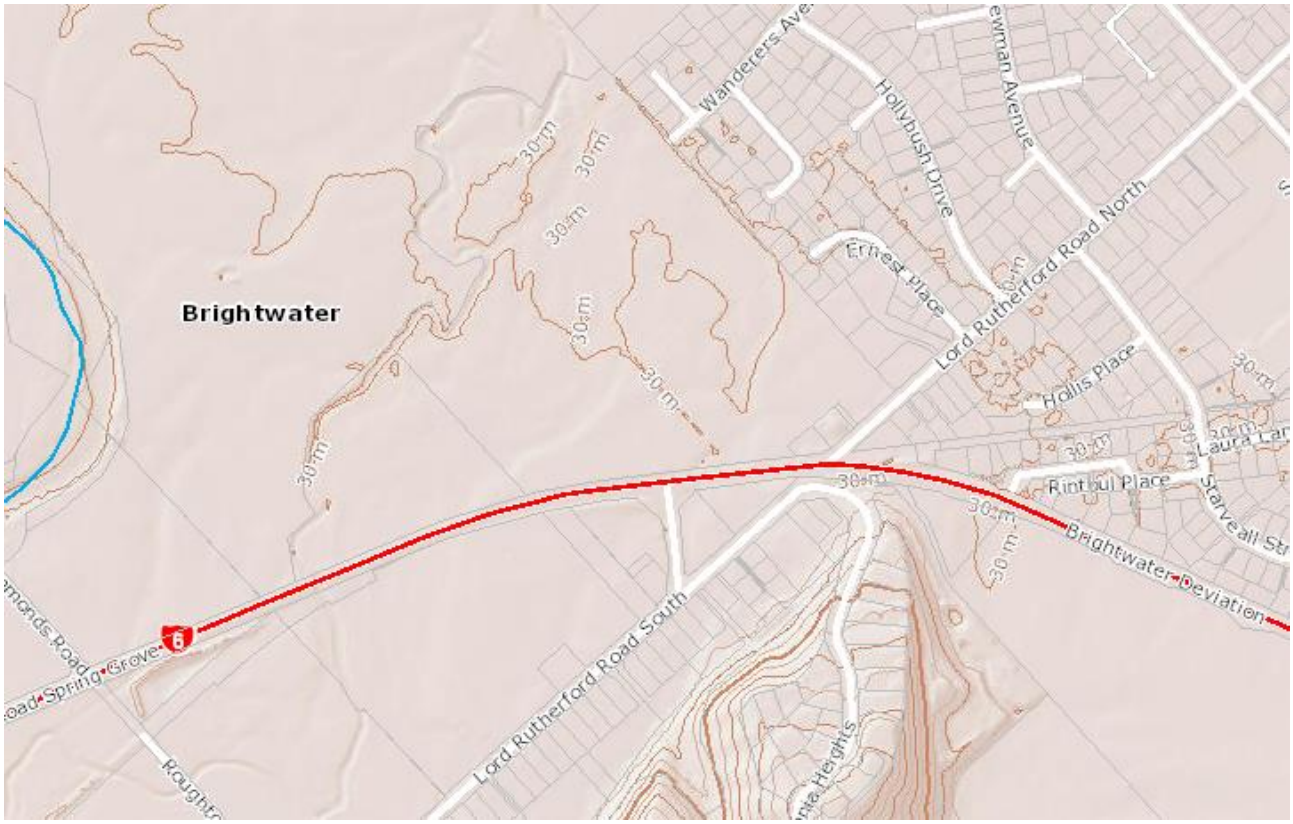

Figure 16: Topo Map (Top of the South Maps)

9.2 Land Productivity

Council uses three productive land classification systems. These are:

- Land Use Capability (LUC):

  The Land Use Capability (LUC) classification system is a measure of the versatility of the land, and includes eight soil classifications, LUC 1 being the most versatile with the least limitations, and LUC 8 being the least versatile with the greatest limitations, as illustrated in Figure 17 below.

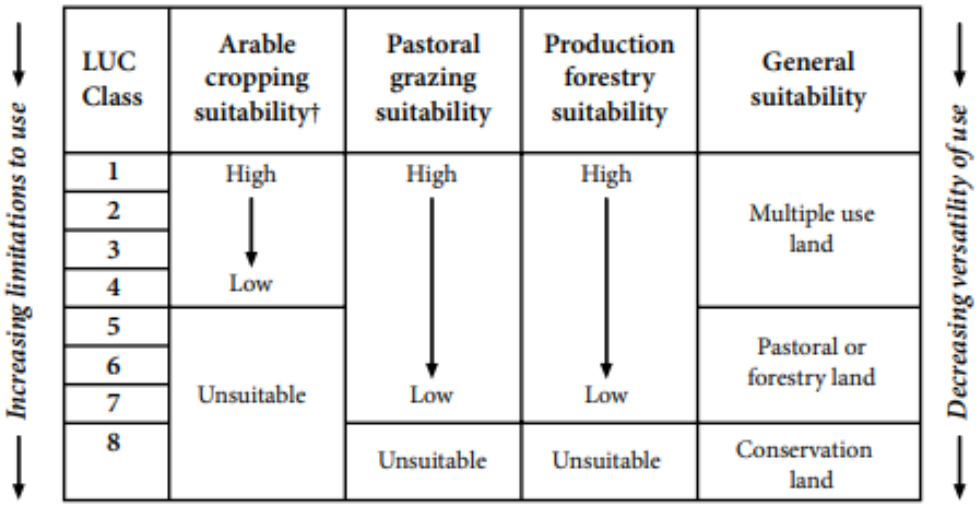

Figure 17: LUC Classification Classes

The LUC system is based on five attributes (rock type, soil, slope angle, erosion type and severity, and vegetation cover), and does not consider economic input for improvements (e.g. drainage, fertiliser, irrigation) (Mirka Langford, Senior Resource Scientist – Land and Soil, meeting 19 January 2022). LUC is a national classification system, meaning that it can be used to compare land in the Tasman region to other land in other parts of the country (Mirka Langford, Senior Resource Scientist – Land and Soil, meeting 19 January 2022).

This classification system has an emphasis on conservation rather than production, and focuses on forestry to pastoral to arable land, meaning that it is not reliable for ranking horticultural land types (Mirka Langford, Senior Resource Scientist – Land and Soil, meeting 19 January 2022). Horticulture is a significant land use in the Tasman region. The Productive Land Classification system is also being used for this reason (Mirka Langford, Senior Resource Scientist – Land and Soil, meeting 19 January 2022).

- Productive Land Classification (PLC) 1994:

  The PLC system was developed by Agriculture New Zealand for Tasman District Council in 1994, when it was found that the LUC system consistently undervalued some types of soils and climatic areas in the region (Highly Productive Land – Tasman District Council Submission to the Ministry for the Environment, October 2019). The system groups land units into similar classes using a range of topographical, soil, climate, and past use criteria (Mirka Langford, Senior Resource Scientist – Land and Soil, meeting 19 January 2022).

  The classification system ranges from 'A – Very Intensive Horticulture', being the most productive, to 'H – Non-Productive', being the least productive (refer to Figure 18). The classification indicates the potential land use. Each classification is suitable for the specified land use, and all land uses assigned to categories below itself (Mirka Langford, Senior

Resource Scientist – Land and Soil, meeting 19 January 2022). For example, soil classified as 'D – Cropping' could be used for cropping, as well as intensive pastoral, extensive pastoral, productive forestry, and non-productive use.

Range of enterprises that could be sustained on a land unit	TDC Class							
	Very Flexible ——— Inflexible							
	A	B	C	D	E	F	G	H
Very Intensive Horticulture								
Semi-IntensiveHorticulture								
Intensive Cropping								
Cropping								
Intensive Pastoral								
Extensive Pastoral								
Production Forestry								
Non Productive								

Figure 17: PLC Classification Classes

- Productive Land Classification (PLC) 2021:

  The PLC classification was re-assessed in 2021 using a new set of criteria. This system is currently being ground truthed to ensure accuracy. Some discrepancies have been found between the PLC 2021 classification and field observations (Mirka Langford, Senior Resource Scientist – Land and Soil, meeting 19 January 2022).

Productive land has been assessed for the Brightwater growth area based on all three productive land classification systems.

Using the LUC classification system, the growth area is classified as LUC3, as depicted in Figure 19 below, which means that the land is identified as highly productive and is suitable for arable cropping, horticulture and pastoral grazing. Note that the LUC map does not include classification of land which is already zoned Residential (or deferred residential), or include LUC classes 4-8. All areas within the current Plan Change boundaries have the same LUC3 soil classification, or are not classified due to existing deferred residential zoning.

Note: The growth area boundaries shown on the maps below are those originally consulted on in Round 1 Engagement and are not the same as the proposed Plan Change site boundaries.

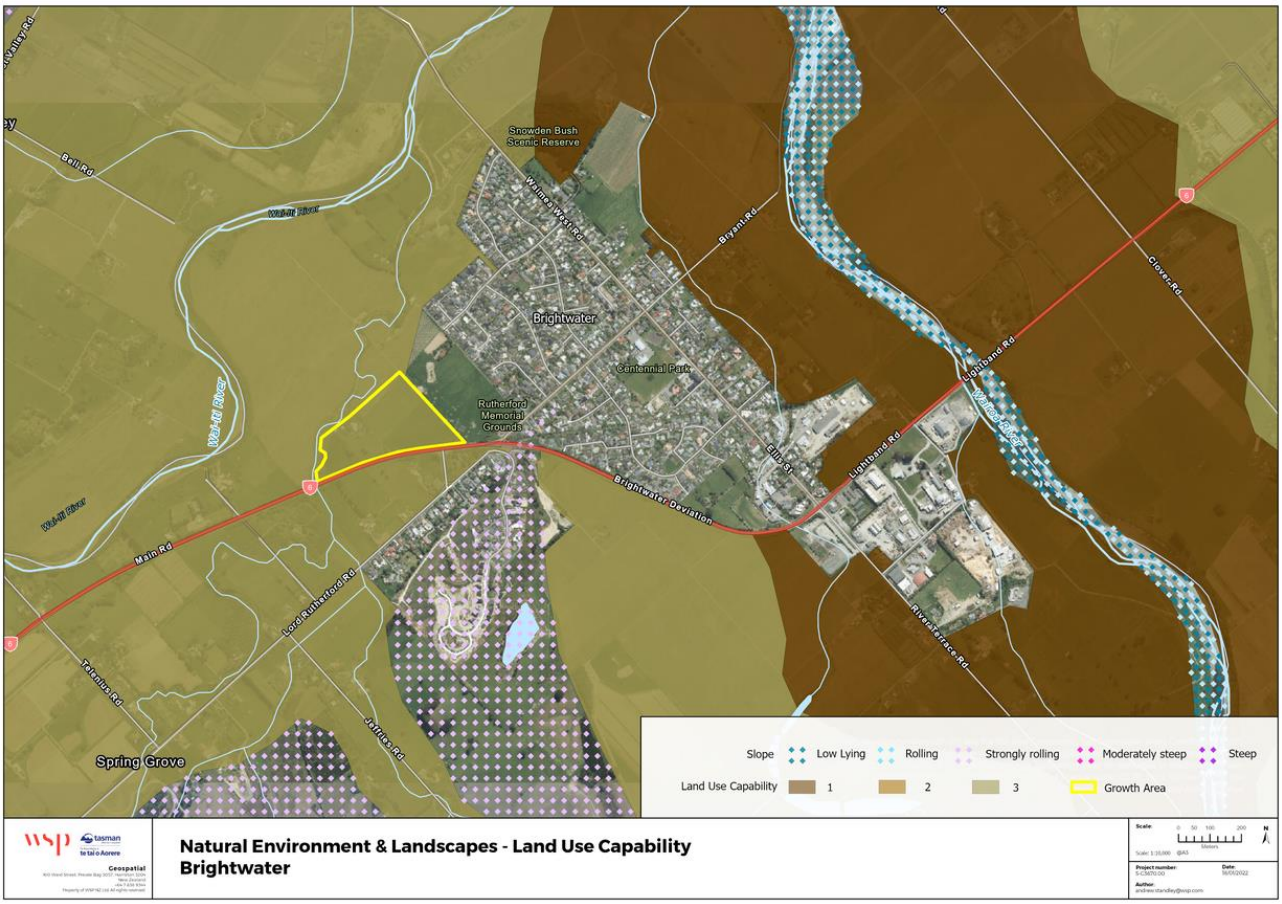

Figure 18: Land Use Capability (FDS 2022 Mapping)

This site's soil is classified as 'A' under the Productive Land Classification 2021, and as 'B1' under the Productive Land Classification 2021. This indicates that it the soil has high productive land value.

Figure 19: Land Productivity Classification 1994

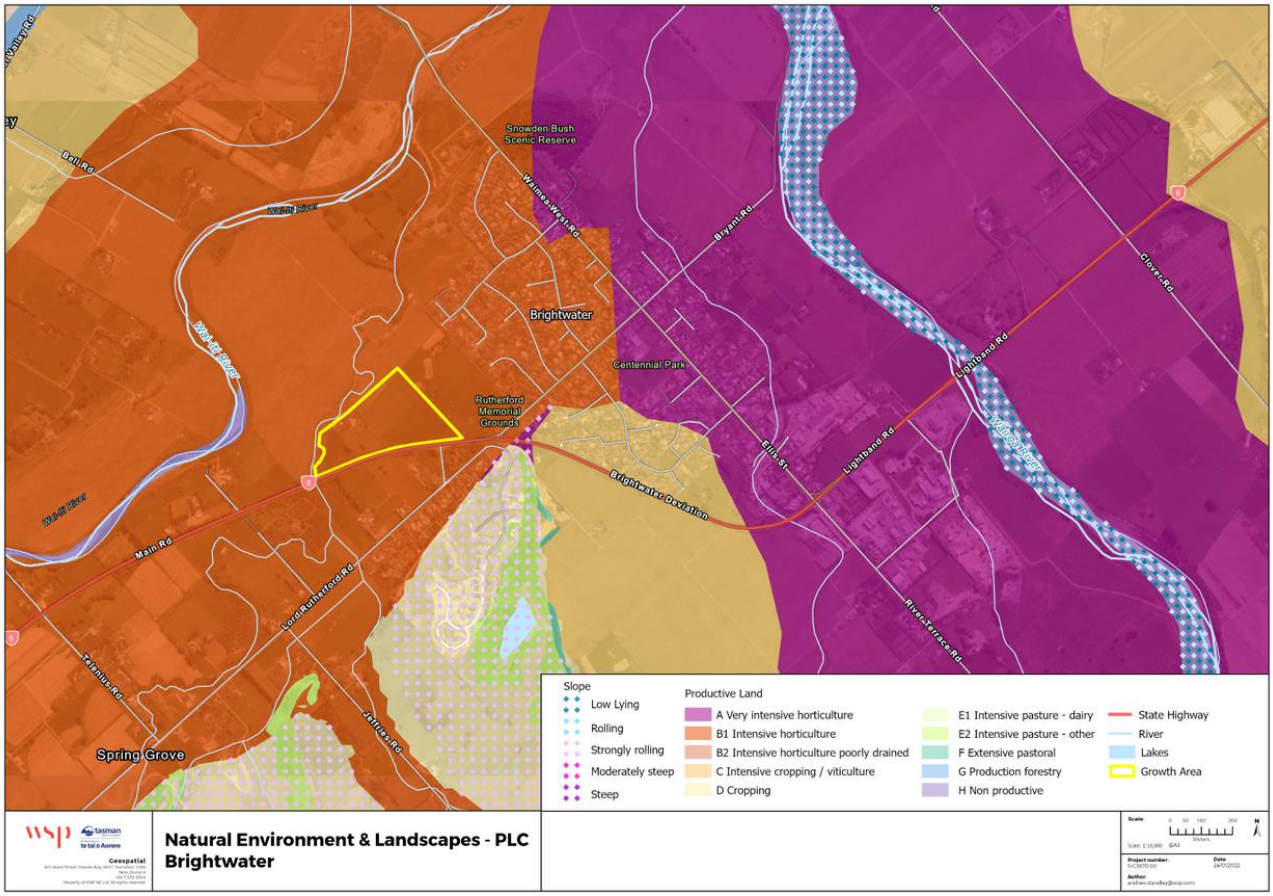

Figure 20: Land Productivity Classification 2021 (Draft Mapping – Yet to be Finalised)

Despite the high productive land classification, the productive capability of the growth area is limited due to land fragmentation and physical constraints as it is situated between Pitfure Stream, the State Highway, and an existing residential area (Mirka Langford, Senior Resource Scientist – Land and Soil, meeting 19 January 2022).

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