

FORECASTING ASSUMPTIONS

ASSUMPTIONS FOR THE TASMAN 10-YEAR PLAN 2021–2031

Tasman's 10-Year Plan 2021 – 2031 is required to contain information on the significant forecasting assumptions underlying the information contained in the document. These assumptions include assessments of a number of factors that might impact on Council and the community, including the future course of the Covid-19 pandemic, consideration of anticipated changes in the population over the next 30 years, the economic and financial environment, how Council will provide services over the next 30 years, and external factors such as climate change and Government legislation.

The assumptions are based on current information, but actual results might differ and these differences could potentially be significant. Therefore, an assessment of how likely the actual results are to vary from the assumptions and the impact the variances would have on Council is included.

These are the overarching assumptions relating to Tasman's 10-Year Plan 2021 – 2031. In addition to these assumptions activity specific assumptions can be found in each of the activity sections and Council's Activity Management Plans (which are available as separate documents).

POPULATION CHANGES AND GROWTH ASSUMPTIONS

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Population growth</p> <p>The overall population of Tasman is expected to increase by 7,700 residents between 2021 and 2031, to reach 64,300. The District will experience ongoing population growth over the next 30 years but the rate of growth will slow over time⁵. Population growth will be distributed across 15 settlements and 5 Ward Remainder areas based on the direction from the Nelson Tasman Future Development Strategy and on demographic and development trends for each Ward.</p> <p>The growth assumption also considers non-resident demand for holiday home properties and assumes the current proportion of dwellings which are used as holiday homes.</p> <p>Based on these assumptions, Council is planning a further 4,300 dwellings and 160 new commercial or industrial buildings⁶ will be required by 2031.</p> <p>The number of new dwellings expected to meet Tasman's population growth assumes that Nelson City Council will provide adequately for Nelson's expected population growth over the next 10 years, despite their assumption of relatively low growth in the first three years. As discussed in the assumption on Urban Development, Council planning assumes and allows for additional capacity in Tasman's urban environment, as required by the National Policy Statement on Urban Development 2020.</p>	<p>That population growth and development are higher or lower, due to a range of factors, including migration patterns, housing demand, and landowner/developer decisions.</p> <p>Positive net migration is the major contributor to the District's population growth and increasingly offsets natural decrease (more births than deaths). Migration patterns could be affected by:</p> <ul style="list-style-type: none"> • International border restrictions • An increase in the number of returning New Zealanders • House prices and incomes relative to other regions and countries • Housing supply in other regions, particularly Nelson City. <p>The demand and supply of new commercial and industrial buildings are influenced by a range of factors, including the economic and employment trends.</p>

5. Tasman District Population Projections, Natalie Jackson Demographics, November 2019, using the medium scenario.

6. Estimated using Property Economics business land forecasting model, using the medium population scenario.



FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Medium

Council will continue to monitor growth and demand.

If population growth is higher than assumed, debt incurred by Council to fund the growth related portion of infrastructure will be repaid more quickly than assumed. Higher growth than planned could also result in an insufficient amount of serviced land (including infrastructure) for development and a worsening of housing affordability. Council may be required to undertake further changes to the Tasman Resource Management Plan and/or increase its investment in infrastructure to make more land for development available. Some infrastructure may need to come forward if actual growth rates are higher than forecast for the next few years – in Richmond south for example.

If population growth is lower than assumed it may take longer for Development Contributions to pay off debt incurred to fund growth related infrastructure. Council may need to revise its capital programme for growth related infrastructure. The forecast increases in rates and development contributions may be smaller than anticipated.

FORECASTING ASSUMPTIONS

POPULATION CHANGES AND GROWTH ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Ageing population</p> <p>The proportion of the population aged 65 years and over is projected to increase from 21% in 2018 to 29% by 2031 (medium scenario).</p> <p>This increase, known as structural ageing, means that total population growth rates are projected to slow down over time. The population in some parts of the District is projected to start to decrease from 2038.</p> <p>The increasing age of the population is also likely to mean a reduction in average household size, as more people live alone or as couples without children. This would result in an increased demand for housing, particularly smaller, accessible housing.</p> <p>The ageing population is also likely to mean more residents on limited incomes, and more residents with disabilities and health issues. An increase in the number of residents with disabilities and health issues is likely to increase demand for more accessible footpaths, seating and toilets, and a need to adapt the way information and services are provided.</p>	<p>Once a population has more than 20 per cent aged 65+ years it is usually approaching the end of natural increase. This is forecast to be the case for Tasman even under the high growth population scenario.</p> <p>The age structure of Tasman's population is also affected by migration patterns, which have historically included a net loss of 15-24 year olds. There is potential for the Covid-19 pandemic and border restrictions to reduce the number of young residents leaving the region. There is also potential for an increase in the number of relatively younger expatriates returning to New Zealand.</p>
<p>Urban Development</p> <p>That as a Regional Council and Territorial Authority, Council meets ss.30 and 31 of the Resource Management Act to ensure there is sufficient development capacity in relation to housing and business land to meet the expected demands of the region.</p> <p>This requires sufficient housing and business land capacity (including the competitiveness margin) to be appropriately zoned and serviced by the required timeframes. Necessary infrastructure development features in the Activity Management Plans.</p> <p>That Council meets its obligations as a Tier 2 urban environment under the National Policy Statement (NPS) on Urban Development, including encouraging intensification, preparing a new Future Development Strategy, preparing a housing and business capacity assessment and making required alterations to the District and Regional Plan by set timeframes.</p> <p>In encouraging intensification, Council's adopted intensification action plan has a number of items that are included in Tasman's 10-Year Plan 2021 – 2031 such as – funding of infrastructure for water supply, wastewater, stormwater and transport (private, public and active), creation of "greenways", further exemptions from development contributions.</p>	<p>There is a risk that the housing and business needs of the region are different to those we have assumed, due to factors relating to the population growth, housing preferences and economic situation assumptions. There is a risk that the growth infrastructure projects are not completed in time to provide the sufficient housing and business capacity required by the NPS Urban Development. There is a risk that landowners won't choose to develop land that is zoned and serviced.</p> <p>By July 2021 we need to complete a Housing and Business Assessment, so far as it relates to housing, which will examine this in detail. The main risk is that we do not have the right type of capacity according to need. Based on this Plan's growth projections and infrastructure programme, Tasman District Council has sufficient development capacity for housing, including the competitiveness margin.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Low

If the population ages faster than assumed, Council may reduce levels of service and/or future investment in infrastructure and facilities in order to reduce future rates increases. Due to an associated reduction in the average household size, it may also be necessary to consider servicing additional land for development to meet the increased demand for housing. This could require increased borrowing. Council may also need to reconsider the mix of services, facilities and infrastructure it provides to meet the needs of the older population structure.

If the population ages more slowly than assumed, Council may consider selective increases in levels of service and/or future investment in infrastructure and facilities with the likely consequence of increased future rates rises. Due to an associated lower demand for housing, Council may also reduce its investment in infrastructure to support the growth in land for development (which would reduce debt) and may need to reconsider the mix of services, facilities and infrastructure it provides to meet the needs of the younger population structure.

Low in Years 1-3,
Medium in Years 4-10

If there is insufficient capacity of the right type, Council will need to immediately notify the Minister for Environment.

Council would likely need to bring forward infrastructure to service further areas for development. This could increase Council borrowing and/or impact Development Contribution levels.

FORECASTING ASSUMPTIONS

POPULATION CHANGES AND GROWTH ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Rates Affordability</p> <p>Council assumes that the number of ratepayers for whom rates affordability is a significant issue will increase as our population ages.</p> <p>As noted in the Ageing Population section the proportion of residents aged 65 years and over is expected to increase over the next 20 years. Some older residents who are no longer in employment will be less able to fund increases in rates for new services/infrastructure. Relatively high number (41.1%) of Tasman District workers are employed in low-skill occupations compared to national figures (35.6%). As a result of the economic impact of the Covid-19 pandemic and the impact on household incomes the payment of rates by some households and businesses is expected to become more difficult, especially during the first few years of Tasman's 10-Year Plan 2021 – 2031.</p>	<p>That rates become more unaffordable than expected as a result of either an increasing proportion of older people, higher numbers of low-skilled workers in the District or the economic downturn is more severe or prolonged than assumed.</p> <p>There is a slight risk that household incomes are higher than assumed and rates become more affordable.</p>
<p>Development Contributions (DC's)</p> <p>Assumptions on the development contributions are included in our Development and Financial Contributions Policy – copies are available on Council's website. Council expects to collect \$76 million in Development Contributions over the next 10 years.</p>	<p>That Council receives development contributions more slowly than assumed.</p>
<p>Reserve Financial Contributions (RFC's)</p> <p>Assumptions on the Reserve Financial Contributions are included in our Development and Financial Contributions Policy – copies are available on Council's website. The Council expects to collect \$34 million in RFC's over the next 10 years.</p>	<p>That Council receives development contributions more slowly than assumed.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Low

If rates become more unaffordable, Council may choose to reduce levels of service and/or future investment in infrastructure and facilities in order to reduce future rates increases.

If rates become more affordable, Council may selectively increase levels of service and/or future investment in infrastructure and facilities.

Low in Years 1-3,
Medium in Years 4-10

If development contributions are received more slowly, Council will hold debt for growth related infrastructure investment for longer. This may put pressure on Council's net debt limit in its Financial Strategy. It will also raise the cost of future development contributions as interest accumulates. Council may have to consider either reducing other debt, or revising the debt limit in its Financial Strategy.

Low in Years 1-3,
Medium in Years 4-10

If development contributions are received more slowly, Council will hold debt for growth related infrastructure investment for longer. This may put pressure on Council's net debt limit in its Financial Strategy. It will also raise the cost of future development contributions as interest accumulates. Council may have to consider either reducing other debt, or revising the debt limit in its Financial Strategy.

FORECASTING ASSUMPTIONS

OPERATIONAL ASSUMPTIONS

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Amalgamation and Shared services</p> <p>That Council will continue through the term of Tasman's 10-Year Plan 2021 – 2031 as a separate unitary authority. Council will continue to work with other entities to develop shared services where this provides economic and social benefits to our communities.</p>	<p>That the Nelson and Tasman Councils amalgamate to form one combined Council for the wider region or the Council does not continue in its current form.</p> <p>That some shared services arrangements are discontinued during Tasman's 10-Year Plan 2021 – 2031 period.</p>
<p>Council's Resource Consents</p> <p>That the resource consents held by Council will not be significantly altered, and any that are due to expire during the next 10 years will be replaced with similar consents if required.</p>	<p>That the resource consents held by Council are significantly altered, or the rules significantly changed increasing the consent condition requirements and cost.</p> <p>That the resource consents held by Council cannot be replaced.</p>
<p>Availability of contractors and materials</p> <p>Contractors and materials will be available to undertake the work required to agreed standards, deadlines and to budget.</p>	<p>That contractors and/or materials are not available to undertake the planned works.</p>
<p>Delivery of Council's Capital Programme</p> <p>Capital budgets have been prepared assuming that they will be delivered. However, Council also appreciates that issues occur that mean that all projects will not be delivered on time. As a result, a capital lag of 10% of the following activities capital spend has been built into the plan:</p> <ul style="list-style-type: none"> • Stormwater • Water • Property • Reserves spend funded by Reserve Financial Contributions • Wastewater <p>This recognises that certain projects will not be completed on time but acknowledges that Council is unsure which project or projects this will relate to.</p>	<p>That there are delays in the delivery of projects in the capital programme greater than the 10% lag assumed.</p> <p>Alternatively, that more of the delivery of projects in the capital programme is delivered on time than assumed through the 10% lag.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY	POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES
Low	<p>Amalgamation of the two Councils or Council's organisational form changing in another way would involve a fundamental reconsideration of the levels of service, capital programme, and finances under a new amalgamated Council.</p> <p>Shared services are in place because there are financial, co-ordination or other benefits to the parties involved. If some of these are discontinued, there could be increased costs for Council and/or lower levels of service.</p>
Low	<p>If consent conditions or planning rules are significantly altered, increased compliance costs are expected. Council may need to consider changing the way it provides the consented activity, or review the fees, charges and/or rates charged in order to cover the additional costs of compliance.</p> <p>If new resource consents for an activity are not approved or are approved for a shorter term, Council will need to consider the implications in terms of cost and level of service.</p>
Low to Medium	<p>Council competes with Central Government and the private sector for the available contractor resources.</p> <p>If contractors or materials are not available, Council's programme of work would have to be reduced and/or amended. This would impact the levels of service for a number of activities and the cost of providing them, as well as potentially slowing growth.</p>
Medium	<p>Most Council capital expenditure is funded through borrowing. The risk of not spending the forecast level of capital is that Council does not reach its projected net debt figure in the Financial Strategy. In addition, delays in delivering capital projects will result in lower than planned operational costs associated with the creation of these assets being later. These then flow on into the Profit and Loss account as a surplus because interest and operational costs are lower than planned. As a result, Council will collect more in rates than necessary.</p> <p>If more projects are delivered on time than anticipated, Council's debt will be higher than forecast with an associated increase in interest costs.</p> <p>\$1 million more or less in debt equates to a rating impact of plus or minus \$80,000 per annum.</p>

FORECASTING ASSUMPTIONS

OPERATIONAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Staff numbers and accommodation</p> <p>That the Council's staff numbers increase from 307 full time equivalent in 2019/2020 to 473 by end of 2030/2031. This growth in staff numbers is associated with population growth, changing local government responsibilities and increasing customer expectations.</p> <p>That the Council's office building in Richmond is not adequate to meet the need for the existing staff to operate productively and the future growth in staff numbers. A strategic study will be carried out in 2021/2022 to consider options to either move to a new site or demolish and rebuild on the existing site. No budget provision has been made in Tasman's 10-Year Plan 2021 – 2031 for a substantial change in the Richmond office. Budget has been provided for basic and affordable changes to the Richmond office to maintain its functionality in the meantime.</p> <p>That Council will not occupy the Richmond office building by 2031 and therefore does not expect to incur additional earthquake-strengthening costs (estimated at \$4 million). We have not budgeted for these earthquake strengthening costs in Tasman's 10-Year Plan 2021 – 2031. The reasons for making this assumption are that based on known earthquake strengthening cost information, we anticipate developing a new building on the current site or moving to an alternative site and disposing of the current site.</p>	<p>Council's staffing requirement grows to a lesser extent or more slowly as a result of efficiencies, improved information technology or changes to Council's functions.</p> <p>Council's staffing requirement grows to a greater extent or more rapidly than assumed.</p> <p>There becomes an urgent need to relocate from the Richmond office more quickly than anticipated or supplement the existing capacity through additional office accommodation.</p> <p>Council continues to occupy the Richmond office building and has to carry out the necessary additional earthquake strengthening work.</p>
<p>Demand for digital services</p> <p>Council will be required to invest in the upgrade of some Information Technology systems and the replacement of others to ensure that Council work can continue without an unacceptable level of risk of failure. Many residents will expect to be able to communicate and carry out transactions with Council through digital means.</p> <p>The availability of broadband connectivity is now widespread across the region, with coverage expected to be extended to all community centres within the next three years.</p>	<p>That funding is not available to invest to the extent required for this activity.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Medium

Council carried out workforce planning to inform Tasman's 10-Year Plan 2021 – 2031. We decided to scale back the increases in staff numbers forecast through this planning in Tasman's 10-Year Plan 2021 – 2031 budget. This is in anticipation of Information Technology and other efficiencies. There are also likely to be changes to the range of services Council will provide in the next few years.

If the number of staff employed increases less than anticipated, Council may be able to reduce rates or fees and charges revenue or consider increasing discretionary levels of service.

If the number of staff employed increases more than anticipated, Council may need to increase rates or fees and charges revenue to fund these or consider reducing discretionary levels of service.

If Council has to relocate from the Richmond office earlier than assumed, it could be necessary to increase borrowing (if Council owns the replacement building) and/or rates (to either lease a building or service the debt).

If Council has to carry out the additional earthquake strengthening work on the Richmond office building it may need to increase debt levels and/or reprioritise other capital projects.

Low

The investment in technology over the last Long Term Plan 2018 – 2028 period was insufficient to modernise the Council's core technology. The spend required going forward is substantial compared with the Information Technology investment of previous years.

If Council is not able to invest adequately in digital services, there will be a heightened possibility that Council information may be lost or corrupted, and that the age of our core systems will preclude them underpinning greater electronic processing of activity and more relevant on-line engagement with residents. In addition, operating efficiencies may not be realised resulting in higher staff numbers and costs.

More general access to high bandwidth broadband facilities will result in increasing numbers of residents wanting to conduct their business on-line. Residents will demand more information and more feature rich electronic services from Council.

FORECASTING ASSUMPTIONS

OPERATIONAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Three Waters activities</p> <p>The Taumata Arowai – Water Services Regulator Act 2020 was passed in late July 2020. This new Crown entity is currently being established and will become responsible for drinking water regulation once a separate Water Services Regulator Bill is passed (anticipated to be mid-late 2021).</p> <p>The Government’s starting intention is for publicly-owned multi-regional models for water service delivery (with a preference for local authority ownership). However final decisions on a service delivery model are yet to be determined.</p> <p>Council has signed a MOU with Central Government and is participating in the exploration of future service delivery options.</p> <p>In all eventualities the community will continue to need three waters services (whether Council delivers them or not) and the continued provision of these activities are included in Tasman’s 10-Year Plan 2021 – 2031 financial forecasts.</p>	<p>The management of the three waters networks in Tasman is transferred to another entity, such as a new water company or a council controlled organisation.</p>
<p>Reform/Repeal of Resource Management Act</p> <p>That there will continue to be obligations on Council to develop, implement and maintain resource management plans. Council will continue to have regulatory authorising environment and monitoring and compliance functions.</p>	<p>Central government has signalled its intention to reform environmental/ planning legislation. Whilst some very high level directions for this legislative change have been signalled, the details and implications for Council are not yet known.</p> <p>The final form of the legislation could have substantial impacts on Council’s organisation and resourcing.</p>

7. 2019/2020 figures.

8. 2019/2020 figures.

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

High

Transfer of Council's three waters assets and activities to another entity will have significant impact on Council's finances and operations.

The three waters services make up a substantial portion of Council's assets, costs and revenues, as follows⁷:

- Operating revenue \$31.6 million
- Direct costs of running the activities \$20 million
- Internal charges and overheads \$3.7 million
- Value of three water assets \$476.5 million.
- Value of any debt incurred to fund the activities \$112.3 million

Low for Years 1-3,
High for Years 4-10

Until the legislative changes are further developed it is difficult to estimate the likely impact on Council.

The environmental management activity makes up a substantial portion of Council's costs and revenues, as follows⁸:

- Operating revenue \$12.9 million
- Direct costs of running the activities \$7.6 million
- Internal charges and overheads \$4.9 million

Value of any debt incurred to fund the activities \$0.6 million

FORECASTING ASSUMPTIONS

OPERATIONAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Future for local Government</p> <p>Unless specifically stated otherwise, the Council has prepared the Tasman's 10-Year Plan 2021 – 2031 on the assumption its existing role and functions will continue for the life of the Plan.</p>	<p>On 24 April 2021 the Minister of Local Government announced that she had established a Ministerial Inquiry into the Future for Local Government.</p> <p>The review includes, but is not limited to, the following:</p> <ul style="list-style-type: none"> • roles, functions, and partnerships • representation and governance, and • funding and financing. <p>While the review could recommend significant change to what local government is and does, there is no information available on the likely direction for the review at this time.</p> <p>The Council considers it unlikely that any recommendations could take effect before 1 July 2024 – particularly for changes to roles or functions.</p>
<p>Freshwater Regulatory Changes</p> <p>That the resources budgeted for implementation of the Resource Management Act Freshwater amendments, National Policy Statement (NPS) Freshwater, National Environmental Standard (NES) for Freshwater (various) and Stock Exclusion regulations will be adequate.</p> <p>These Freshwater changes have reduced the implementation timeframes from 10 years to four years while imposing additional requirements. Resourcing has been provided in Tasman's 10-Year Plan 2021 – 2031 budget at the minimum level considered adequate.</p>	<p>That the resourcing provided in Tasman's 10-Year Plan 2021 – 2031 proves inadequate to meet the expectations of the community and Council's partners, resulting in further costs.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Low for Years 1-3, High
for Years 4-10.

Until the review is complete and the Government has made its intentions clear it is difficult to estimate the likely impact on Council.

Any changes that are made will be incorporated in Tasman's 10 Year Plan 2024–2034.

Medium

These are recent instruments and Council is still determining the full implications of them and the associated costs/resourcing implications.

If there are additional costs these could result in the need to increase rates or consider reducing discretionary levels of service.

FORECASTING ASSUMPTIONS

OPERATIONAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Resourcing for Proposed National Policy Statements and National Environmental Standards</p> <p>That the resources budgeted for implementation of the regulatory changes noted below will be adequate.</p> <p>Council has provided resourcing in Tasman's 10-Year Plan 2021 – 2031 for the following:</p> <ul style="list-style-type: none"> • proposed NPS Indigenous Biodiversity • proposed NPS Highly Productive Land • proposed amendments to NES Air Quality and proposed amendments to the NES for Sources of Human Drinking Water • proposed NES for Wastewater Discharges and Overflows, and • NES for the Outdoor Storage of Tyres. <p>These regulatory changes are under development but have not been finalised.</p> <p>Council has provided resourcing in Tasman's 10-Year Plan 2021 – 2031 to cover policy, information, consenting, monitoring and compliance functions.</p>	<p>The final form and obligations required through the new instruments require additional resourcing than provided for in Tasman's 10-Year Plan 2021 – 2031.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Medium

If Council is unable to adequately administer the new obligations, there is the potential for legal challenge and risk of intervention by the Minister for the Environment under S24 of the Resource Management Act 1991.

As these regulatory instruments were not finalised at the time of developing Tasman's 10-Year Plan 2021 – 2031, the full requirements and implications for Council is not known.

If there are additional costs these could result in the need to increase rates or consider reducing discretionary levels or service.

FORECASTING ASSUMPTIONS

EXTERNAL ASSUMPTIONS

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Covid-19</p> <p>New Zealand avoids a widespread outbreak of Covid-19 and is at alert Level 1 through 2021⁹. Stringent boarder restrictions remain in place until the end of 2021¹⁰ and a vaccine is widely available in 2021.</p>	<p>The future course of the Covid-19 pandemic is hard to predict. Risks include:</p> <ul style="list-style-type: none"> • a recurrent resurgence of the Covid-19 virus in New Zealand • unknown timing and efficacy of a vaccine • unknown length of border restrictions
<p>Economic Environment</p> <p>The Tasman economy is expected to experience a downturn in 2021 and 2022, due to the impact of the Covid-19 pandemic¹¹. While the economy is forecast to start gradually recovering from the September quarter 2020¹², unemployment is expected to slowly recover to between 3.5%¹³ and about 5%¹⁴ by around 2030.</p> <p>Around a third of Tasman's economy is focused on agriculture and manufacturing which is at lesser risk of restrictions, but may still feel the impact of any ongoing global downturn. The productivity of the agricultural sector in particular is likely to be negatively affected by limited access to seasonal workers from overseas due to border restrictions.</p> <p>Tourism accounts for around 11% of Tasman's economy and will be significantly impacted for the next few years by New Zealand's international border restrictions and reduced visitor numbers.</p>	<p>The timing and extent of the economic downturn or recovery may be lower or higher than forecast due to:</p> <ul style="list-style-type: none"> • the level of central government support provided to individuals, businesses, and other organisations • the timing and availability of a Covid-19 vaccine • central government policy, including border restrictions • the global economic situation and other national or international factors

9. Local Government Cost Adjustor Forecasts: Three Scenarios. Mahuru 2020. BERL

10. Local Government Cost Adjustor Forecasts: Three Scenarios. Mahuru 2020. BERL

11. Infometrics April 2020 forecast.

12. Local Government Cost Adjustor Forecasts: Three Scenarios. Mahuru 2020. BERL

13. Deloitte Covid-19 scenario modelling tools for local authorities, October 2020. Note forecast numbers are for the Westcoast/Nelson-Tasman/Marlborough region

14. Local Government Cost Adjustor Forecasts: Three Scenarios. Mahuru 2020. BERL

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Medium

Further periods of restrictions at Level 3 or 4 may have negative impacts on the Tasman community and economy. In this scenario Council will continue to provide essential services and continue some discretionary services by remote working. Many discretionary services will be curtailed. Completing capital works programmes may become more difficult to achieve due to social distancing measures. The economic impact will increase pressures for Council to limit rates increases, potentially at the expense of lower levels of service.

At the same time Council will have two important roles: to support the local economy as a significant consumer of goods and services; and to invest in economic and community infrastructure to maintain confidence generally. At the same time many of Council's services which might be considered discretionary, e.g. providing public places will become more important in enabling community members to remain connected.

Medium

The demand for various Council services and several sources of Council revenue are dependent on the incomes of residents and businesses.

There is a risk that the economic downturn is worse or longer than expected, having a negative impact on rates affordability and various parts of Council's business and revenue streams, including rates, fees and charges, dividends, and revenue from commercial activities. Council may be called upon to deliver higher levels of service in areas such as community support and working with central government to deliver economic stimulus packages which could require a need to re-direct Council resources or to increase borrowing.

There is a risk that the economic situation recovers faster than expected and Council may have reduced budgets more than necessary.

FORECASTING ASSUMPTIONS

EXTERNAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Climate Change</p> <p>We have based our climate change assumptions on the NIWA-modelled climate change projections for Tasman District (see separate table at the end of this document). The scenarios our assumptions are based on are expressed as a range, from higher emissions to lower emissions, for a number of climate-related parameters.</p> <p>Council assumes that it is not possible to reduce the mid-century warming, due to the amount of carbon dioxide already accumulated in the atmosphere – i.e. that the projections for mid-century are already ‘locked in’.</p> <p>As a consequence of climate change, natural disasters will occur with increasing frequency and intensity. The weather-related and wildfire events the District has experienced in recent years are consistent with predictions of climate change impacts. For low lying coastal land there will be increasing inundation and erosion from sea level rise and storm surge. Adaptation can help reduce our vulnerability and increase our resilience to natural hazards.</p> <p>We assume that sea levels will continue to rise and are likely to rise at an accelerated rate over time.</p> <p>Our plans assume a sea level rise (SLR) of up to 0.3m by 2045, 0.9m by 2090 and 1.9m to 2150 (metres above 1986-2005 baseline), in line with the Ministry for the Environment’s Coastal Hazards and Climate Change Guidance (2017). For coastal subdivisions, greenfield developments and major new infrastructure, we are planning for 1.9m SLR by 2150. All sea-level rise assumptions are based on the RCP8.5H+ scenario set out in the MfE guidance (2017).</p>	<p>There is an overall risk that the effects of climate change are more severe than the scenarios Council’s assumptions are based on and/or sea level rise is higher than the Ministry for the Environment (MfE) predicted advice levels.</p>
<p>Natural Hazards</p> <p>There will be some localised natural hazard events during the term of Tasman’s 10-Year Plan 2021 – 2031. For example, localised flooding, landslips or wildfires, but with impacts that are limited.</p> <p>There remains a modest chance of a medium sized event occurring in the next 10 years.</p> <p>Council assumes that 60% of the repairs to underground assets will be funded by central government and 51% of roading assets by Waka Kotahi/New Zealand Transport Agency (NZTA).</p>	<p>That there is a modest or larger event during the period of Tasman’s 10-Year Plan 2021 – 2031. The effects of climate change increases the likelihood of many types of larger natural hazard events.</p> <p>The Nelson Tasman Civil Defence Emergency Management (CDEM) Plan states that the natural hazards with the highest residual risk (i.e. risk that remain after treatment) for Nelson Tasman are: earthquakes (infrequent but significant impact), plant and animal pests/ diseases, high winds, large scale slope failure and drought.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

High

There will be social, cultural, economic and environmental implications of climate change for individuals, landowners, businesses, iwi, and the wider community, in addition to the broader implications for the District. Examples of types of impacts include: damage to/loss of assets, property, infrastructure and facilities from coastal storm inundation events, sea level rise, flooding and/or wildfire; issues with water supply security; increased wastewater overflows; inadequate flood protection structures; increased biosecurity incursions and impacts on biodiversity.

The separate table at the end of this document details the impacts and implications of the specific climate change scenarios our assumptions are based on. The financial cost to Council of responding to these impacts has not been quantified, but is likely to be significant. If the impacts are more severe than anticipated, the financial costs will be even higher. A wide range of Council's services and planned infrastructure provision may be affected, particularly in coastal areas.

Council will need to monitor the effects of climate change and sea level rise over time and review its budgets, programme of work and levels of service accordingly.

Medium

Council has sufficient borrowing capacity above its self-imposed debt cap to be able to use in the case of a natural hazard event.

Following an extreme natural hazard event Council may have to review its levels of service, financial limits and its investment in facilities and infrastructure to support the response and recovery of the District.

FORECASTING ASSUMPTIONS

EXTERNAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Emissions Trading Scheme (ETS)</p> <p>Council assumes that ETS costs will rise as a result of the Climate Change Response (Emissions Trading Reform) Amendment Act 2020.</p> <p>Council has assumed that the cost of carbon will be:</p> <ul style="list-style-type: none"> • \$37.50 per NZU for 2021/2022 • \$42.50 per NZU for 2022/2023 • \$47.50 per NZU for 2023/2024 • \$50 per NZU from 2024/2025 to 2030/2031. <p>The potential ETS liability from the Nelson Tasman Regional Landfill Business Unit is combined with that of Nelson City Council. The Business Unit is proposing to mitigate the increase by improving landfill gas collection and destruction and to pass the remaining cost to consumers through landfill charges.</p> <p>Council also continues to participate in the scheme, as owner of several commercial forests.</p>	<p>That ETS costs are higher than assumed, costing Council more than forecast through the Regional Landfill Business Unit and increasing revenue through Forestry.</p>
<p>Government legislation</p> <p>Council assumes that it will be affected by changes to Government legislation. However, as the nature of these changes is not known, no financial provision has been made for them except where noted elsewhere in these forecasting assumptions. It is assumed that the Council will have the opportunity to submit on legislation likely to affect it and that Government will work with councils to ensure that any legislative changes are managed appropriately.</p>	<p>That Government legislation increases Council costs or reduces its ability to raise revenue.</p>

FINANCIAL ASSUMPTIONS

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Transition to funding depreciation</p> <p>As part of its approach to funding infrastructure renewals, Council began funding depreciation from 2015/2016. It is assumed that after a further four years Council's share of depreciation will be fully funded (for an explanation of the term 'Council's share of depreciation', refer to Council's Financial Strategy).</p>	<p>That the Council's share of depreciation is not fully funded by the end of the 2024/2025 year requiring Council to fund a larger portion of the renewal of assets from external borrowing beyond 2024/2025.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Medium

If the increase in ETS costs are materially higher than assumed, Council may need to increase waste management fees and charges further or increase rates to fund these costs.

If carbon costs are higher than assumed Council will benefit from increased revenue through its forestry activities.

Medium

If the increase costs from changes in legislation are material, Council may need to increase rates or fees and charges to fund these or consider reducing discretionary levels of service.

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Low

Council will have to increase its borrowing to fund the portion of depreciation not funded through rates beyond 2024/2025. This may reduce Council's capacity to borrow for other purposes within its debt cap in the Financial Strategy. Council may need to review its programme of investment in facilities and infrastructure.

The level of funding for depreciation directly impacts on Council rates and other fees and charges.

FORECASTING ASSUMPTIONS

FINANCIAL ASSUMPTIONS (CONT.)

ASSUMPTION

Waimea Community Dam

The Waimea Community Dam (Dam) is on track to meet the May 2022 completion date, will be ready for the planned 2022/2023 irrigation season, and will be completed within the budgetary provision made in Tasman's 10-Year Plan 2021 – 2031.

Recognising there is residual uncertainty in Covid-19 costs and geology, the risk range of costs is between \$148 million and \$164 million. The forecast cost to completion provided by the Waimea Water Limited Board of \$158.5 million, and, in addition, the costs to enable future hydro power of \$350,000 have been included in the Tasman's 10-Year Plan 2021 – 2031 budget. This is the Company's best estimate and takes into account that the risk of uncertainty is now reduced due to the Dam being 50% complete, with its foundations mostly exposed and adapting the design to the conditions largely complete.

Council understands these estimates were prepared by the Company management (including reviews by internal Chartered Professional Engineers and external peer reviewers), and reviewed and approved by the Company's Board for issue to Shareholders.

The original cost is \$104.5 million, and the new cost is \$158.5 million excluding hydro, therefore the assumed cost overrun is \$54 million.

The funding of the \$54 million cost overrun is split as follows:

- Share of first \$3 million Council: \$1.5 million
- Share of first \$3 million Irrigator: \$1.5 million
- Irrigator extractive capacity advance: \$24.8 million
- Advance Council capacity: \$11.6 million
- Equity contribution Council: \$14.3 million
- Calculation interest adjustment (already funded by Council): \$0.3 million.

The accounting for our investment in Waimea Water Limited, requires us to calculate what Council's 'accounting interest' is in the assets, liabilities, revenue and expenses of Waimea Irrigators Limited. This was a new Accounting Standard (first effective June 2020) and there is limited application guidance. Therefore, we needed to determine whether the payments above impact Council's accounting interest.

We have assessed the accounting treatment of this funding for Tasman's 10 Year plan as follows:

First \$3 million

The first \$3.0 million will be shared 50:50 between the Council and Waimea Irrigators Limited. This payment will not result in voting shares in either party, therefore is excluded from the accounting interest. However, this payment results in an increase in the net assets of Waimea Water Limited, which have the impact of increasing the Council's Property, Plant and Equipment.

Irrigator extractive capacity advance \$24.8 million

This shareholder advance \$24.8 million is drawn by the Council through Crown Irrigation Investments Limited and the Local Government Funding Agency. These funds are then to be passed to Waimea Water Limited.

This is a back-to-back drawing. Waimea Irrigators Limited is effectively servicing this debt indefinitely, except for a portion in the first 5 years. The reason for Waimea Irrigators Limited servicing the debt, is that this advance relates to irrigator extractive capacity.

It is primarily for this reason that we have assessed that the substance of this arrangement is that the Council is acting as an agent for Waimea Irrigators Limited in respect to this loan. We have therefore not included this in Council's accounting interest, nor have we recognised a liability for the loan.

(Continued on the following page)

FORECASTING ASSUMPTIONS

BRIEF DESCRIPTION OF RISK	LEVEL OF UNCERTAINTY	POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES
<p>That the Dam construction is not complete by May 2022. Those reliant on Council water supply on the Waimea Plains and surrounds including the urban water supplies will be exposed to drought risk for longer than expected.</p> <p>Costs exceed the risk range upper level of \$164 million, requiring additional funding from Council and ratepayers.</p> <p>The Council will have an increased level of exposure in the event of a default by Waimea Irrigators Limited in paying its water charges to Waimea Water Limited, as these water charges are now funding some of the interest costs on the Shareholder Advance for irrigator capacity in the Dam.</p>	<p>Medium</p>	<p>Summer time restrictions may impact businesses, residents and Council's ability to service growth until the Dam is complete.</p> <p>If the Dam costs are more than budgeted, Council would negotiate with the Government for additional funding. Increased costs could impact on Council's financial position and debt level. Rates levels may have to be reconsidered and other projects and programmes may need to be delayed, and/or levels of service standards lowered to accommodate the additional costs.</p> <p>The risk of Waimea Irrigators Limited defaulting on its water charges is managed through the existing default provisions in the water augmentation agreement signed in 2018.</p>

FORECASTING ASSUMPTIONS

FINANCIAL ASSUMPTIONS (CONT.)

ASSUMPTION

Waimea Community Dam (cont.)

Further detail regarding the arrangement

For the first five years of the Tasman 10 Year Plan the interest costs on \$10.14 million of this advance will be funded through the Council's General Rate. After the five-year period, this debt is serviced by Waimea Irrigators Limited. The interest on the remaining \$14.64 million of shareholder advances will be funded by Waimea Water Limited water charges paid by Waimea Irrigators Limited. The full advance is secured over Waimea Water Limited assets. In addition interest, on the full advance, is also secured over Waimea Irrigators Limited assets (both through a second ranking security after Crown Irrigation Investments Limited loans).

After 40 years, according to the Shareholder Advance Agreement, Waimea Water Limited must seek to refinance this advance on commercial terms, subject to Council agreement. If the refinancing is agreed on commercial terms, the loan will be directly between Waimea Water Limited and a commercial entity. The decision related to the refinancing of the loan in 40 years, will be a shareholder reserve matter (requires agreement of Waimea Water Limited, Waimea Irrigators Limited and the Council).

If Waimea Water Limited does not succeed with this, or agreement between Council and Waimea Irrigators Limited is not reached, Council has a contractual option to roll over this loan, in five year terms. It is quite possible that irrigator capacity shareholder advances will be rolled over in perpetuity.

In either of the scenarios above, the Council will require Waimea Irrigators Limited to continue to be responsible for servicing this loan. If Waimea Irrigators Limited disagrees then there is a provision in the Council's Revenue and Financing Policy for a targeted rate to be charged to Waimea Irrigators Limited, therefore either way Waimea Irrigators Limited shall service the debt. This is because it is related to irrigator extractive capacity.

The Council could also decide to fund the repayment of the loan, which would result in the Council receiving ordinary shares with voting rights, so long as the Council still has less than 75% of voting rights, otherwise some shares would be non-voting. We have assumed that the Council will not take this option, as this would create interest costs in the Council, which contractually sit with Waimea Irrigators Limited. It is for this reason that the Council deems the accounting interest in this advance to sit with Waimea Irrigators Limited, not the Council. This assumption would be revisited if it became probable that the Council may convert the loan to equity. The likely accounting impact would be an increase to debt and property, plant and equipment. Although, this is not deemed likely.

Another possibility, which would need further agreement, is that the Council may allow Waimea Irrigators Limited to pay off the loan in return for ordinary shares with voting rights. This is deemed a possibility, given Waimea Irrigators Limited will be servicing the debt, without the benefit of obtaining future voting rights. In the unlikely event of a liquidation, the ordinary shares which have voting rights, give the right to the net assets of Waimea Water Limited.

Council capacity advance \$11.6 million

The interest costs of the Council's portion of the shareholder advances (\$11.6 million) and its additional equity contribution will be funded through the Council's Urban Water account for extractive capacity and through the Zone of Benefit rate and District-wide fixed charge for the environmental and public benefits. This loan is the Council's responsibility, and can be converted to voting shares, this is included in the Council's accounting interest.

Equity contribution Council: \$14.3 million

This equity payment results in voting shares to the Council, and is included in the Council's accounting interest, and there are no significant complexities.



FORECASTING ASSUMPTIONS

FINANCIAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Marine farms not liable for rates</p> <p>Marine farms operating in the sea space within Council's boundary will not be liable to pay rates. This is the case under existing rating legislation and Council assumes no change for the duration of Tasman's 10-Year Plan 2021 – 2031.</p> <p>These industries currently make use of Council infrastructure on land, but are not required to contribute to their costs through a contribution to rates.</p>	<p>Central Government changes legislation to enable Council to rate marine farming industries.</p>
<p>Revaluation</p> <p>Council re-values fixed assets on a three yearly cycle. It is assumed that the following types of fixed assets will increase in value in Year 2 by the Business and Economic Research Ltd (BERL) Capital index (and every three years thereafter): Stormwater, Solid Waste, Roding, Water Supply, Wastewater, Rivers, Coastal, For Land, and Buildings by the BERL capital index from Year 3 and every 3 years thereafter. Commercial property will be revalued each and every year using the BERL capital index.</p>	<p>The revaluation of Council assets is higher than assumed, meaning that the costs of funding depreciation increase.</p>
<p>Inflation/Price changes</p> <p>Council has generally used the inflation figures provided by BERL. Variable annual rates have been applied to six cost groups across the model. Council has used BERL's overall average operating and capital local government cost indices, apart from salaries which it has adjusted to reflect Council's expected future costs. The non-rates revenue inflation factor is calculated as an average of the operating and salary adjustor.</p> <p>In Year 1, 2021/2022 Council has used the adjustors from 2020/2021 which is a slightly higher rate of inflation than recommended by BERL.</p> <p>In preparing Tasman's 10-Year Plan 2021 – 2031 Council has used the inflation factors as set out in the table below.</p>	<p>Inflation is higher than assumed resulting in budgets being inadequate to deliver the programme of investment in facilities and infrastructure, and to deliver the levels of service in Tasman's 10-Year Plan 2021 – 2031.</p>

	JUNE 2022	JUNE 2023	JUNE 2024	JUNE 2025	JUNE 2026	JUNE 2027	JUNE 2028	JUNE 2029	JUNE 2030	JUNE 2031	TEN YEAR AVERAGE
Revenue	2.6%	3.2%	2.5%	2.6%	2.8%	2.9%	3.0%	3.1%	3.2%	3.2%	2.9%
Salaries	2.8%	3.4%	2.5%	2.7%	3.0%	3.2%	3.3%	3.4%	3.6%	3.7%	3.2%
Maintenance	2.3%	2.9%	2.5%	2.5%	2.5%	2.5%	2.6%	2.7%	2.7%	2.6%	2.6%
Energy	2.3%	2.9%	2.5%	2.5%	2.5%	2.5%	2.6%	2.7%	2.7%	2.6%	2.6%
Other*	2.3%	2.9%	2.5%	2.5%	2.5%	2.5%	2.6%	2.7%	2.7%	2.6%	2.6%
Capital	2.3%	3.0%	2.6%	2.6%	2.7%	2.6%	2.8%	2.8%	2.9%	2.7%	2.7%

* Other Operating Expenses

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Low

Council cannot currently rate marine farmers to use the coastal marine area. Any rates revenue from this activity would help to generate additional revenue for the Council to fund related infrastructure and services (e.g. roading and Port Tarakohe). This contribution would ease the level of rates incidence across the District and/or allow for increased levels of service.

Low

These assumptions affect the depreciation charges contained within Council's proposed budgets. The detail for each asset category and Council's asset depreciation rates are in the Statement of Accounting Policies.

If the revaluation of assets is higher/lower than assumed, Council may need to consider increasing/decreasing fees and charges and/or rates to pay for the different cost of funding depreciation and/or increasing/decreasing capital expenditure for renewals.

Medium

If inflation for the goods and services Council purchases is higher than assumed, Council will be required to consider increasing rates and charges, reducing its programme of investment in facilities and infrastructure, increasing debt and/or reducing levels of service.

If inflation for the goods and services Council purchases is lower than assumed, Council costs will be lower and Council will consider reducing rates and/or fees and charges or selectively increasing levels of service.

If movements in the consumer price index (CPI) are substantially lower inflation for the goods and services Council purchases, then there will be increasing pressure on Council to reduce any planned rates or fees and charges increases.

FORECASTING ASSUMPTIONS

FINANCIAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Credit availability</p> <p>Credit can be obtained from financial markets on competitive terms and conditions.</p>	<p>That credit is not available on competitive terms and conditions resulting in Council's cost of borrowing being higher than anticipated.</p>
<p>Useful lives of significant assets</p> <p>We are assuming standard useful lives for Council assets except where we have good quality information that contradicts this. In Tasman's 10-Year Plan 2021 – 2031, the Council has made a number of assumptions about the useful life of its assets (refer Infrastructure Strategy in Tasman's 10-Year Plan 2021 – 2031 Volume 2). These assumptions affect the depreciation charges contained within Council's proposed budgets. Council has an ongoing programme to obtain improved information on the age and condition of its utilities assets.</p>	<p>That the lives of assets are materially shorter than assumed, necessitating renewal or replacement at an earlier date.</p>
<p>Interest rates</p> <p>In preparing Tasman's 10-Year Plan 2021 – 2031, Council has assumed lending interest rates for each year based on forecasts from Price Waterhouse Cooper.</p> <p>These interest rates include the cost of both funds already borrowed and anticipated new debt at anticipated future interest rates.</p>	<p>That borrowing interest rates are higher than assumed, resulting in Council's cost of borrowing being higher than anticipated.</p>

	JUNE 2022	JUNE 2023	JUNE 2024	JUNE 2025	JUNE 2026	JUNE 2027	JUNE 2028	JUNE 2029	JUNE 2030	JUNE 2031	TEN YEAR AVERAGE
Interest Rate	3.60%	3.41%	3.13%	2.93%	2.89%	2.67%	2.49%	2.39%	2.45%	2.40%	2.84%

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY	POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES
Low	<p>In recent years credit has been available from the financial markets at competitive rates and conditions. Should this change dramatically there are likely to be impacts on the cost of borrowing or in extreme circumstances the ability of the Council to borrow at all.</p> <p>Council may have to increase rates to pay for the increased costs of borrowing. Council may have to reduce its investment in infrastructure and facilities and consider reducing levels of service.</p>
Low	<p>If the life of assets are materially shorter than those contained within the Plan, Council may need to increase borrowing with a consequential impact on increasing rates.</p>
Medium/High	<p>If actual interest rates are higher than the assumed rate, this cost would be met by increasing rates or adjusting future borrowing requirements.</p> <p>A 1% increase in interest rates increases interest costs by approximately \$10,000 per annum per \$1 million of borrowing.</p> <p>A degree of protection against fluctuating interest rates has been provided through the use of interest rate swaps.</p> <p>Council is also a member of the Local Government Funding Agency which provides access to loans at a lower rate than Council could obtain directly from banks.</p> <p>Council is exposed to deposit interest rates through its prefunding activities. These interest rates are impacted by the Government's monetary policy settings in particular the OCR (Official Cash Rate).</p>

FORECASTING ASSUMPTIONS

FINANCIAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Waka Kotahi/New Zealand Transport Agency funding</p> <p>An underlying assumption of the budget figures contained in the Transportation Activity is that the Government financial assistance through Waka Kotahi Co-investment Rate will remain unchanged during Tasman's 10-Year Plan 2021 – 2031. Funding rates used for the preparation of Tasman's 10-Year Plan 2021 – 2031 are based on information from the Waka Kotahi and are set at 51%.</p> <p>Council applied to the National Land Transport Fund (NLTF) 2021-2024 for a total continuous programme for local road maintenance of \$54.6 million. Waka Kotahi advised on 31 May 2021 that the Waka Kotahi Board endorsed indicative investment in the continuous programme of \$45.4 million. This is the total programme value, Waka Kotahi indicates it will fund 51% of the \$45.4 million. Allowing for Council's share of the local road programme, this indicates that there will be a funding shortfall of \$4,705,260 over the next three years.</p> <p>The Council has decided to delay until Year 4 the implementation of the increase in the performance target for the level of service relating to "<i>the percentage of sealed local road that is resurfaced each year</i>".</p> <p>The Council has decided that the target will be 5-7% in 2021/2022, 2022/2023 and 2023/2024. The Council assumes that it will be able to achieve this target on the reduced budgets available.</p> <p>Between 2024/2025 and 2030/2031, the performance target will increase to 6-8%. It is assumed that Waka Kotahi will fund Council's full request made in to the NLTF from 2024/2025 to 2030/2031.</p>	<p>Risk 2021/2022 to 2023/2024</p> <p>That the Council is unable to meet its level of service for local road resurfacing with the reduced budget.</p> <p>Risk 2024/2025 to 2030/2031</p> <p>That Waka Kotahi financial assistance rates are lower than assumed, and/ or that Waka Kotahi does not fund the full NLTF request thereby increasing Council's costs for transportation related activities in Years 4 to 10.</p>
<p>Return on investments</p> <p>It is assumed that the return on investments, including dividends from Council Controlled Trading Organisations and retained earnings on subsidiaries will continue at current levels plus inflation or in line with the relevant organisation's Statement of Intent.</p>	<p>That returns are lower than assumed reducing the revenue from this source.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Medium

Years 2021/2022 to 2023/2024

If there is a realistic risk that the Council will not achieve its level of service for local road resurfacing it may need to either:

- Increase debt, and/or
- Reprioritise other work through an Annual Plan process, and/or
- Seek additional top up funding from Waka Kotahi.

Years 2024/2025 to 2030/2031

If Waka Kotahi financial assistance rates are lower than assumed, and/or Waka Kotahi does not fund the full NLTF request Council may need to consider increasing rates and/or reducing its programme of transport infrastructure investment. This may result in levels of service being reduced.

Council can choose to commit its full share of funding accepting that the total funding available will be reduced. As a consequence, Council will need to prioritise work available within available funds and this may negatively impact the condition of the roading network.

Low/Medium

There is increased uncertainty about the ongoing economic impact of the Covid-19 pandemic which could negatively affect the return on Council's investments.

If revenue from the return on investments is lower than assumed, Council may need to consider increasing rates and/or reducing levels of service.

FORECASTING ASSUMPTIONS

FINANCIAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Central Government Funding</p> <p>Following the Covid-19 restrictions Council has applied for government funding through a range of funds to help stimulate the local economy and provide jobs. In most cases there is a requirement that Council also contributes funding towards the projects, there are specific timeframes for completion and at times there are project management and accountability costs not covered by the external funding. A number of applications are still pending.</p> <p>With the exception of Waka Kotahi funding, Council has only included government funding in its revenue forecasts where a formal funding agreement has been entered into. Council negotiates project management costs to be covered by the funding received wherever possible. Any further project management and accountability costs have been provided for where a formal funding agreement has been entered into.</p>	<p>That Council is successful in accessing further government funding for programmes and projects with specific timelines for completion.</p>
<p>Insurance costs</p> <p>Council has assumed that insurance cover for Council assets will be available throughout the life of Tasman's 10-Year Plan 2021 – 2031 and that premiums will rise faster than the rate of inflation for the first 4 years. Council expects insurance to rise by 7% plus inflation in those years.</p>	<p>Due to the physical risks to climate-exposed assets (e.g. infrastructure at risk from sea level rise), insurance premiums will substantially increase or insurance cover will not be available for assets in locations known to be vulnerable. These trends are already happening throughout New Zealand.</p> <p>That insurance cover will not be available for some or all Council assets for at least a period during the life of Tasman's 10-Year Plan 2021 – 2031. This is particularly likely for coastal and port assets.</p> <p>That insurance premiums will increase beyond the anticipated level due to increasing material damage from natural hazard and weather related events driving increasing claim levels to insurance companies.</p> <p>Council is facing a hardening insurance market that will drive increases in deductibles and reduction in cover limits.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY

POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES

Medium

If Council receives funding for specific programmes or projects, it may be necessary to change the timing of some work to access the government funding available and change when Council's contribution will be required. This could lead to changes in the timing of other projects to accommodate those attracting government funding.

Receiving additional central government funding could impact operating expenditure, operating revenue, levels of service and debt levels.

Medium

If insurance cover is either not available or premiums are above tolerable limits, Council may have to self-insure. This requires sufficient borrowing capacity to be able to replace damaged Council assets following a disaster event or similar. Maintaining this increased level of available borrowing capacity may mean Council has to reduce other borrowing by reviewing its investment in facilities and infrastructure, reviewing its levels of service and/or revising its debt limit in the Financial Strategy.

FORECASTING ASSUMPTIONS

FINANCIAL ASSUMPTIONS (CONT.)

ASSUMPTION	BRIEF DESCRIPTION OF RISK
<p>Major Industrial Water Users (IWU) and provision of water to some Nelson South properties</p> <p>It is assumed that the volume of water supplied to the residential and industrial properties in the Nelson City Council area will remain relatively static over a 10-year period. Charges will be levied in accordance with the 2021 Engineering Services Agreement between Nelson City Council and Tasman District Council, and will approximate the daily and volumetric charges levied in Richmond.</p>	<p>That Council's revenue from providing water to major industrial water users and/or residential properties in Nelson South is lower than assumed.</p>
<p>Port Tarakohe Redevelopment not proceeding</p> <p>Council has assumed that the proposed \$26 million upgrade of Port Tarakohe will not proceed and has not made budget provision for this.</p>	<p>That following further negotiations with central government grant funding is available from that source and Council decides to proceed with the redevelopment.</p>
<p>Collection of Levies via Rates for Central Government</p> <p>Council will not incur costs from collecting additional rates or levies to fund central government functions.</p> <p>The Urban Development Act 2020 and the Infrastructure Funding and Financing Act 2020 provide for central government to set rates or levies for local authorities to collect on its behalf. In addition, the Fire and Emergency New Zealand (FENZ) Funding Review Consultation Document suggested the possibility of local authorities collecting levies for FENZ.</p>	<p>That Council will be required to collect one or more rates or levies on behalf of central government and the costs are not fully recovered. In this scenario additional Council rates would be required to fund the outstanding costs.</p>
<p>Non-Rateable land and Trees</p> <p>There is no change to legislation meaning that a significant proportion of the District remains as non-rateable land.</p> <p>Similarly, there is no change to legislation meaning that rates cannot be charged on the capital value of trees in commercial forests.</p>	<p>Legislation is enacted that increases the categories for non-rateable land (including changes to the rateability of Māori freehold land).</p> <p>Legislation is enacted that enables the value of trees to be included in the capital value of commercial forests for rating purposes.</p>
<p>Holding Company Proposal</p> <p>The Council and Nelson City Council have decided to form a new company as a funding vehicle for the Nelson Airport Limited (NAL) and Port Nelson Limited (PNL).</p> <p>Due to the uncertainty about the extent and timing of financial benefits from forming the new company, no provision has been made in Tasman's 10-Year Plan 2021 – 2031 financial estimates for any increase in dividends or release of equity from these companies.</p>	<p>Dividends may be higher or lower than forecast in Tasman's 10-Year Plan 2021 – 2031.</p> <p>The Council could choose to release equity at some point in the future.</p>

FORECASTING ASSUMPTIONS

LEVEL OF UNCERTAINTY	POTENTIAL EFFECTS OF UNCERTAINTY ON FINANCIAL ESTIMATES
Low	<p>If the amount of water required decreases significantly Council will need to reassess the water storage and conveyance needs for the urban water supply system. A large reduction in the volume provided might also affect the cost of water provided to other urban water supply users, including Tasman residential properties. The reason for this is that most of the costs of supplying water are fixed, and a change in the volume provided would also change the average cost per cubic metre. If there is a large reduction in the volume of water provided, Council may need to consider increasing rates and/or reducing levels of service.</p>
Low	<p>If Council decides to proceed with the Port Tarakohe redevelopment it is likely to increase debt and rates levels as capital and operating costs increase.</p>
Medium	<p>If Council is required to collect rates on central government's behalf for one or more of these purposes, changes will be required to Council's rating systems and significant administration costs will be incurred on an annual basis to collect and account for this revenue.</p> <p>If the community generally considers the increase in rates to fund the central government functions are attributable to Council, it is likely that those concerned about rates affordability will become more vocal and public pressure on rates levels could further limit Council's scope to increase rates to pay for the services it delivers. This could lead to reduced levels of service and/or delays in the provision of infrastructure or other capital projects.</p>
Low	<p>Approximately 66 % of the land area in Tasman is currently non-rateable. This includes at least 60% Department of Conservation land – mostly the national parks. If more land becomes unrateable, this will have implications for Council's rate take, meaning the rates would need to increase on the remaining ratepayers to offset this loss.</p> <p>If more land becomes rateable there would be an effect of increasing the incidence of rates on the owners of this land and reducing the incidence of rates on other rate payers. Similarly, if rates could be charged on the value of trees in commercial forest, the effect would be that commercial forest rate payers would pay a larger proportion of rates and other rate payers a lower proportion.</p>
Medium	<p>If revenue from dividends is lower than assumed, Council may need to consider increasing rates and/or reducing levels of service.</p> <p>If revenue from dividends is higher than assumed, Council may choose to reduce rates, pay down debt or invest further to improve levels of services.</p> <p>Any equity release from the restructure could be used to reduce debt under the Council's current Treasury Risk Management Policy.</p>

FORECASTING ASSUMPTIONS

IMPACTS AND IMPLICATIONS OF A CHANGING CLIMATE FOR TASMAN DISTRICT

Two climate scenarios are used across the 2015 and 2019 NIWA reports, and are referred below.

1. RCP 8.5: "business as usual", where greenhouse gas emissions continue at current rate.
2. RCP 4.5: scenario where global action is taken towards mitigating climate change (e.g. Paris climate change agreement).

	CHANGES TO CLIMATE IN TASMAN	IMPACTS AND IMPLICATIONS
CHANGING TEMPERATURES AND SEASONALITY	Average temperature will rise <ul style="list-style-type: none"> • 0.9°C to 1.0°C by 2040 • 1.4°C to 3.0°C hotter by 2090 	<ul style="list-style-type: none"> • Increased risk of wildfire – longer spells of extreme fire hazard. • Risk of heat stress negatively affecting the health of people, animals and plants.
	More very hot days (greater than 25°C)* <ul style="list-style-type: none"> • +8 to +9 more 25°C+ days per year by 2040* • +14 to +43 more 25°C+ days for Tasman by 2090 <p>*Calculated for areas <500m altitude</p>	<ul style="list-style-type: none"> • Reduced workplace productivity. • Lower heating costs in winter, higher cooling costs in summer.
	More heatwave days (≥ three consecutive days with maximum temperatures > 25°C) <ul style="list-style-type: none"> • +20 more heatwave days per year by 2040 • +25 and +60 more heatwave days per year by 2090 (RCP 4.5 and RCP 8.5) 	<ul style="list-style-type: none"> • Extended summer leisure and tourism seasons, but shorter ski season. • Damage to transport infrastructure, e.g. melting of road surfaces. • Improved efficiency of wastewater treatment plants.
	Fewer frosts per year <ul style="list-style-type: none"> • Average of 13 fewer frosts per year by 2040 • Average of 28 fewer frosts per year by 2090 • 90+ fewer frosts per year in southeast part of District by 2090 (RCP 8.5) 	<ul style="list-style-type: none"> • Higher demand for drinking water at times when water is likely to be scarcer. • Negative impacts on water quality. • Stress on ecosystems and associated impacts on health and economy.
	More growing degree days (GDD = sum of daily average temps above a 10°C base) <ul style="list-style-type: none"> • +250 sum GDD per year by 2040 • +300 and +900 sum GDD per year by 2090 (RCP 4.5 and RCP 8.5) 	<ul style="list-style-type: none"> • Risk to agriculture and horticulture-drought and limited water for irrigation. • Range and habitat of native plants and animals will change-extinction of some species. • Favourable conditions for some/different pests and diseases.
	Seasonal change in temperature <ul style="list-style-type: none"> • Temperature will change the most in summer and autumn • least in spring 	<ul style="list-style-type: none"> • Higher temperatures may allow for different crops to be grown. • Timing of seasonal activities such as flowering, breeding and migration will change.
	Increased evapotranspiration from soils <ul style="list-style-type: none"> • Up to 140 mm moisture deficit in areas of Tasman by 2040 • 140 mm and 200 mm deficit by 2090 (RCP 4.5 and 8.5) 	

FORECASTING ASSUMPTIONS

IMPACTS AND IMPLICATIONS OF A CHANGING CLIMATE FOR TASMAN DISTRICT (CONT.)

	CHANGES TO CLIMATE IN TASMAN	IMPACTS AND IMPLICATIONS
CHANGING RAINFALL PATTERNS AND INTENSITY	<p>Seasonal change in rainfall patterns</p> <ul style="list-style-type: none"> • More rainfall in all seasons (except spring, for coastal areas) by 2040 • Slightly less (-5%) rainfall in western parts of Tasman for all seasons, except winter (up to 40% increase; RCP 8.5) by 2090. 	<ul style="list-style-type: none"> • Issues with water availability for drinking, irrigation, agriculture and horticulture during drought. • More frequent, more intense river flooding and direct rainfall flash flooding of communities and businesses, with knock-on consequences to people and economy.
	<p>Rainfall patterns within seasons will change:</p> <ul style="list-style-type: none"> • Longer dry periods: more intense, more frequent drought. • Extreme rainfall: more frequent and more extreme rainfall events 	<ul style="list-style-type: none"> • The capacity of storm water infrastructure could be stretched. • Flood damage to bridges, roads and other infrastructure and lifelines. • There could be changes to cost and availability of insurance. • Health risks from contamination of drinking water in flood events. • Parks and recreation grounds negatively affected by both drought and flooding. • Drought and/or fire leads to loss of vegetation on hills, which leads to landslides and rapid erosion of soils by intense rainfall and strong winds. There could be permanent loss of soils, preventing revegetation. • Increased erosion leads to more sediment in waterways, causing poorer water quality, issues with stream capacity and issues with treatment for drinking water. • Higher stress on indigenous ecosystems, plants and animals, especially with drought. • Drought will increase wildfire risk – especially when temperatures are high.

FORECASTING ASSUMPTIONS

IMPACTS AND IMPLICATIONS OF A CHANGING CLIMATE FOR TASMAN DISTRICT (CONT.)

	CHANGES TO CLIMATE IN TASMAN	IMPACTS AND IMPLICATIONS
CHANGES TO SEA LEVEL AND COASTAL HAZARDS	<p>Permanent Sea level rise:</p> <p>Sea levels will continue to rise and are likely to rise at an accelerated rate over time. Our planning for sea level rise (SLR) is based on the RCP8.5H+ scenario outlined in the Ministry for the Environment’s Coastal Hazards and Climate Change Guidance (2017), i.e.:</p> <ul style="list-style-type: none"> • up to 0.3m SLR by 2045 • up to 0.9m SLR by 2090 • up to 1.9m SLR by 2150 <p>(metres above 1986-2005 baseline sea levels).</p> <p>Note that for coastal subdivisions, greenfield developments and major new infrastructure, we are planning for 1.9m SLR by 2150.</p>	<p>Some of the high-level impacts of sea level rise and coastal hazards may include:</p> <ul style="list-style-type: none"> • More frequent, more severe coastal flooding of coastal communities, infrastructure and businesses and knock-on consequences for health, wellbeing and economy. • Saltwater incursion into freshwater habitats. • Killing of plant species that are intolerant to salt water. • Coastal squeeze for species where there is no room for them to migrate inland. • Shallow, salty groundwater will damage buried pipes and foundations of roads and buildings. It can result in cold, damp homes.
	<p>Permanent Groundwater rise:</p> <ul style="list-style-type: none"> • Shallowing of groundwater in coastal areas in response to sea level rise. 	<ul style="list-style-type: none"> • Shallowing of groundwater can lead to long-term standing surface water. • Our coastline may switch from accretion to erosion.
	<p>More frequent storm surge (temporary raising of sea level during storms)</p> <ul style="list-style-type: none"> • Storm surges will become more frequent and increase in height. 	<ul style="list-style-type: none"> • Coastal erosion can result in loss of road access to isolated coastal communities. • There could be changes in the cost and availability of insurance. • There may be migration of people inland from coastal and low-lying communities.
	<p>Saltwater intrusion into coastal groundwater, and further upstream in rivers</p>	<ul style="list-style-type: none"> • There could also be population growth due to climate refugees from other countries. <p>Council has recently prepared a ‘first-pass’ risk assessment to understand our vulnerability to coastal storm inundation and sea level rise. This assessment identifies representative assets, property, infrastructure and facilities (referred to as ‘elements at risk’) that we value and that may be exposed to a present day 1% annual exceedance probability (AEP) coastal storm inundation event and a range of sea level rise scenarios up to 2m. It identifies and broadly quantifies elements at risk that may be vulnerable to coastal hazards (e.g. number of buildings or length of road exposed), but does not attempt to measure the severity of the hazard or associated costs of repairing or replacing infrastructure.</p> <p><i>(Continued on the following page)</i></p>

FORECASTING ASSUMPTIONS

IMPACTS AND IMPLICATIONS OF A CHANGING CLIMATE FOR TASMAN DISTRICT (CONT.)

CHANGES TO SEA LEVEL AND COASTAL HAZARDS	CHANGES TO CLIMATE IN TASMAN	IMPACTS AND IMPLICATIONS
	<p>Saltwater intrusion into coastal groundwater, and further upstream in rivers (cont.)</p>	<p>There will be social, cultural, economic and environmental implications for individuals, landowners, businesses, iwi, and the wider community, in addition to the broader implications for the District. For example:</p> <ul style="list-style-type: none"> • Approximately 11% of urban land (941 ha), 44% of grassland (3,650 ha), 25% of coastal indigenous vegetation (2,106 ha), 10% of exotic forestry (857 ha) and 9% of horticultural land (760 ha) is vulnerable to coastal storm inundation and rising sea levels. • An estimated population of 8,400 people are located in low-lying coastal areas that are vulnerable to coastal storm inundation and sea level rise. Approximately 60% of people are located in the Motueka – Riwaka coastal area (4,970 people), followed by 12% of people in the Māpua – Ruby Bay coastal area (990 people). • Motueka is the largest town that will be affected by coastal storm inundation and sea level rise. The cost to either repair damages, replace or relocate over the longer term will be significant. There are an extensive number of vulnerable elements at risk including people, homes, tourism accommodation, businesses and industry, Port Motueka, community facilities, and infrastructure. Any damage or inability to use roads (particularly SH60) as a result of inundation will impact not only to Motueka and Riwaka, but access to Golden Bay/Mohua. Low-lying horticultural and pastoral land around Motueka and Riwaka is also vulnerable. • Māpua and Ruby Bay's exposure to coastal hazards is well known. It is the second largest residential area with associated services (e.g. businesses, community facilities, and infrastructure) vulnerable to coastal hazards and sea level rise. • Land adjacent to the Waimea Inlet and on the inlet islands is vulnerable, including a large area of business and industrial land; recreation, conservation and forestry land uses and three waters pipe infrastructure on Moturoa/Rabbit Island; Bell Island wastewater treatment plant; recreation and conservation values in and around the inlet and islands; and horticulture and pastoral farming on the Waimea Plains. <p><i>(Continued on the following page)</i></p>

FORECASTING ASSUMPTIONS

IMPACTS AND IMPLICATIONS OF A CHANGING CLIMATE FOR TASMAN DISTRICT (CONT.)

CHANGES TO CLIMATE IN TASMAN	IMPACTS AND IMPLICATIONS
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">CHANGES TO SEA LEVEL AND COASTAL HAZARDS</p> <p>Saltwater intrusion into coastal groundwater, and further upstream in rivers (cont.)</p>	<ul style="list-style-type: none"> • Vulnerable elements at risk in smaller coastal towns such as Mārahau – Kaiteriteri, Western Golden Bay and Eastern Golden Bay include a mix of homes, tourism accommodation, businesses and industry, Port Tarkohe, and some community facilities. Low-lying three-waters infrastructure is vulnerable, in locations where this is provided. The road network is critical to access these coastal communities, and there are sections of roads which are either presently vulnerable or will be in the future due to rising sea levels. • Coastal storm inundation and sea level rise will have a significant impact on many existing coastal assets (e.g. wharves, jetties, boat ramps, coastal protection structures, ports) simply because of the nature of their design, purpose and location. Over time, rising sea levels will cause coastal assets to be overtopped by waves or high tides more regularly as the location of 'every day tides' (mean high water spring mark) moves inland. • There are eight closed landfills, in addition to other potentially contaminated land sites, located at or near the coast which could pose an environmental risk if exposed by coastal storm inundation and sea level rise. • 350 cultural heritage (archaeological) sites are vulnerable to coastal storm inundation and sea level rise (based on NZAA's Archsite records), in addition to other sites that are not captured within this assessment. • Of the District's total open space and reserve zoned land, 51% (717 hectares) is vulnerable to coastal storm inundation and rising sea levels. • Within Abel Tasman National Park, a large area of indigenous vegetation land cover is vulnerable, as well as some houses/holiday homes and Department of Conservation assets (e.g. Abel Tasman Coast Track, huts, etc.) located in low lying areas. Road access to the National Park via the road to Mārahau will also be affected by rising sea levels.

FORECASTING ASSUMPTIONS

IMPACTS AND IMPLICATIONS OF A CHANGING CLIMATE FOR TASMAN DISTRICT (CONT.)

	CHANGES TO CLIMATE IN TASMAN	IMPACTS AND IMPLICATIONS
OCEANIC CHANGES	<p>Oceanic changes</p> <ul style="list-style-type: none"> • Acidification of the ocean • General temperature rise of sea water. • Marine heatwaves 	<ul style="list-style-type: none"> • Altered marine ecosystems, particularly affecting hard shelled species. • Extinction of some species. • Changes to the range of species, location and abundance of fish and sea birds around NZ. • Impacts on aquaculture and fishing industries. • Reduced recreational benefits.
WIND	<p>Extreme daily winds</p> <ul style="list-style-type: none"> • Winds are expected to increase in winter and decrease in summer 	<ul style="list-style-type: none"> • More frequent damage to trees, buildings and power lines. • Will make cycling more dangerous. • Will increase fire risk during hot, dry periods. • More opportunities for wind generation of electricity.
PRIMARY PRODUCTION	<p>Changes to the climate in which we farm</p> <ul style="list-style-type: none"> • We will see increasing day and night-time temperatures, a longer duration of high temperature periods, and a reduction in the number of frosts. • There will be more frequent and longer periods without rain in summer. • There will be more frequent heavy rainfall events in winter • Evapotranspiration and plant uptake of water from soil will be acute in some areas. 	<ul style="list-style-type: none"> • Animal heat stress in pastoral farming systems, with implications for animal welfare and performance. • Changes to plant phenological development (e.g. early ripening of grapes due to high temperatures), or plant productivity (e.g. poor flavour in winter vegetables due to a lack of frosts). • Changes to the potential land uses and crop types in areas most affected by climate change (implications for land use versatility). • Increased growth rates for <i>Pinus radiata</i> at higher elevations, but increased fire risk. • Increased need for water storage and irrigation for plant survival during drought or heatwaves. • Increased risk from pests and diseases with a warmer climate. • Greater incidence of slips and slope failures, soil pugging and waterlogging from heavy and frequent rainfall events.

References:

- Chappell, P., Mullan, B., Paul, V., Bell, R., & Law, C. (2015). *Climate Change and Variability – Tasman District*. NIWA Client Report AKL2015-021.
- Ministry for the Environment. (2017). *Coastal Hazards and Climate Change: Guidance for Local Government*. Wellington: Ministry for the Environment.
- Ministry for the Environment. (2020). *National Climate Change Risk Assessment for Aotearoa New Zealand: Main report – Arotakenga Tūraru mō te Huringa Āhuarangi o Aotearoa Pūrongo whakatōpū*. Wellington: Ministry for the Environment.
- Pearce, P., Woolley, J-M., & Sood, A. (2019). *Climate change projections for Tasman and impacts on agricultural systems*. NIWA Client Report 2019309AK.