

**Notice of the ordinary meeting of the**

**Regional Sewerage Business Unit**  
***Tira ā-Rohe mō te Parakaingaki o Whakatū,***  
***o Te Tai o Aorere***

Date:	Friday 11 September 2020
Time:	1.30p.m.
Location:	Council Chamber Floor 2A, Civic House 110 Trafalgar Street, Nelson

## **Agenda**

### ***Rārangi take***

Chair	Tasman District Cr Kit Maling
Deputy Chair	Nelson City Cr Tim Skinner
Members	Tasman District Cr Trevor Tuffnell Nelson City Cr Brian McGurk Brendon Silcock (Independent Member) Frank Hippolite (Iwi Representative) Philip Wilson (Industry Representative)

Quorum: 3

Pat Dougherty  
Chief Executive

Nelson City Council Disclaimer

Please note that the contents of these Council and Committee Agendas have yet to be considered by Council and officer recommendations may be altered or changed by the Council in the process of making the formal Council decision.

## ***Nelson Regional Sewerage Business Unit – Delegations***

The Nelson Regional Sewerage Business Unit (NRSBU) is a joint committee of Nelson City and Tasman District Councils. Operation of the NRSBU is governed by a Board, as established by a Memorandum of Understanding (A1983271).

### Areas of Responsibility

- To manage and operate the wastewater treatment facilities at Bells Island and the associated reticulation network efficiently and in accordance with resource consent conditions to meet the needs of its customers.

### Powers to Decide:

- The Councils are agreed that the responsibility for all management and administrative matters associated with the NRSBU operation shall be with the Board, and in particular the Board shall without the need to seek any further authority from the Councils:
  - Operate a bank account for the Business Unit;
  - Comply with the Procurement Policy of the Administering Council;
  - Enter into all contracts necessary for the operation and management of the Business Unit in accordance with the approved budgets and intent of the Business Plan;
  - Authorise all payments necessary for the operation and management of the Business Unit within the approved budgets and intent of the Business Plan;
  - Do all other things, other than those things explicitly prohibited by this Memorandum of Understanding or relevant statutes, that are necessary to achieve the objectives as stated in the Strategic Plan, Asset Management Plan or Business Plan approved by the Councils;
  - Comply with the Health and Safety Policy and requirements of the administering Council
- Contribute to the sanitary services assessment process of the Councils
- Contribute to and comply with the waste management plans of the Councils
- **Contribute to the development of the Councils' Development and Financial Contribution policies**
- **Contribute to the Councils' Regional Policy Statement and Regional Plan Reviews**
- Develop and keep under review an appropriate contract for the delivery of waste collection and disposal services with each of its customers
- Follow generally accepted accounting practices
- Follow good employment practices

### Powers to Recommend to Councils:

- Any other matters under the areas of responsibility of the Business Unit and detailed in the Memorandum of Understanding.
- All recommendations to Council will be subject to adoption of an equivalent resolution by the other Council, unless it is a matter specific to one Council only.

### Quorum:

- The Memorandum of Understanding governing the NRSBU allows for either six or seven members to be appointed. The quorum at a meeting is either three (if six members are appointed), or four (if seven members are appointed), including at least one from each local authority.

### Procedure:

- The Standing Orders of the Council providing administration to the committee will be applied at each meeting.
- The Chairperson will not have a casting vote.
- Copies of minutes of meetings of the Joint Committee will be retained by each Council for record keeping purposes

1. Apologies  
Nil
2. Confirmation of Order of Business
3. Interests
  - 3.1 Updates to the Interests Register
  - 3.2 Identify any conflicts of interest in the agenda
4. Public Forum
5. Confirmation of Minutes
  - 5.1 12 June 2020 6 - 8  
Document number M10936  
Recommendation  

*That the Nelson Regional Sewerage Business Unit*

    1. Confirms the minutes of the meeting of the Nelson Regional Sewerage Business Unit, held on 12 June 2020, as a true and correct record.
6. Nelson Regional Sewerage Business Unit Chairperson's Report
7. Nelson Regional Sewerage Business Unit - Draft Business Plan 2021/22 and Draft Activity Management Plan 2021 - 2031 9 - 150  
Document number R20296  
Recommendation

*That the Nelson Regional Sewerage Business Unit*

1. Receives the report Nelson Regional Sewerage Business Unit - Draft Business Plan 2021/22 and Draft Activity Management Plan 2021 - 2031 (R20296) and its attachments (A2458264 and A2458266); and
2. Approves the Draft Nelson Regional Sewerage Business Unit Draft Business Plan 2021/22 (A2458266) for presentation to the Nelson City Council and Tasman District Council, with delegation of all minor amendments to the Nelson Regional Sewerage Business Unit Chair; and
3. Approves the Draft Nelson Regional Sewerage Business Unit Activity Management Plan 2021-2031 (A2458264) for presentation to the Nelson City Council and Tasman District Council, with delegation of all minor amendments to the Nelson Regional Sewerage Business Unit Chairperson.

Recommendation to Nelson City Council and Tasman District Council

*That the Nelson City Council and Tasman District Councils*

1. Receive the 2021/2022 Draft Nelson Regional Sewerage Business Unit Business Plan (A2458266) for review, and provide feedback to the Nelson Regional Sewerage Business Unit if required; and
2. Receive the Draft Nelson Regional Sewerage Business Unit Activity Management Plan 2021-2031 (A2458264) for review, and provide feedback to the Nelson Regional Sewerage Business Unit if required.

8. Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report 151 - 199

Document number R20278

Recommendation

*That the Nelson Regional Sewerage Business Unit*

1. Receives the Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report (R20278) and its attachments (A2458265 and A2458077); and

2. Approves the Nelson Regional Sewerage Business Unit 2019/20 Annual Report (A2458265) and Draft Nelson Regional Sewerage Business Unit – Annual Financial Statements 2019-20 (A2458267) for presentation to the Nelson City Council and Tasman District Council, with delegation of all minor amendments to the Nelson Regional Sewerage Business Unit Chairperson.

Recommendation to Nelson City Council and Tasman District Council

*That the Nelson City Council and Tasman District Councils*

1. Receive the Nelson Regional Sewerage Business Unit 2019/20 Annual report (A2458265) and Nelson Regional Sewerage Business Unit – Annual Financial Statements 2019-20 (Draft) (A2458267).



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## Minutes of a meeting of the Nelson Regional Sewerage Business Unit

**Held in the Nelson City Council Chamber, Level 2A, Civic House, 110 Trafalgar Street, Nelson**

**On Friday 12 June 2020, commencing at 1.32p.m.**

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Present: Nelson City Councillors T Skinner (Deputy Chairperson), and B McGurk, Tasman District Councillor T Tuffnell, Mr B Silcock, Mr P Wilson, and Mr F Hippolite (via audio-visual link)

In Attendance: Nelson City Council Group Manager Infrastructure (A Louverdis), Tasman District Council Engineering Services Manager (R Kirby), General Manager Regional Sewerage and Landfill (N Clarke), and Governance Adviser (E-J Ruthven)

Apology: Tasman District Councillor K Maling (Chairperson)

### Apologies

Resolved NRSBU/2020/007

*That the Nelson Regional Sewerage Business Unit*

- 1. Receives and accepts the apology from Councillor Maling.*

Tuffnell/McGurk

Carried

### 1. Confirmation of Order of Business

There was no change to the order of business.

### 2. Interests

There were no updates to the Interests Register, and no interests with items on the agenda were declared.

3. Public Forum

There was no public forum.

4. Confirmation of Minute

4.1 6 March 2020

Document number M7750, agenda pages 5 - 9 refer.

Resolved NRSBU/2020/008

*That the Nelson Regional Sewerage Business Unit*

1. *Confirms the minutes of the meeting of the Nelson Regional Sewerage Business Unit, held on 6 March 2020, as a true and correct record.*

McGurk/Tuffnell

Carried

5. NRSBU General Manager Update

Document number R18048, agenda pages 10 - 20 refer.

General Manager Regional Sewerage and Landfill, Nathan Clarke, presented the report.

He answered questions regarding health and safety risks at Bell Island, odour-related issues and the proposed desludging later in 2020, issues relating to Bell Island land irrigation, the lease to Raine Farms Limited, and potential alternative land uses for Bell and Best Islands.

Mr Clarke answered further questions regarding the Moturoa/Rabbit Island cycleway Provincial Growth Fund funding, and the amount sought annually by Tasman District Council-owned forestry in relation to biosolids application at Moturoa/Rabbit Island.

Resolved NRSBU/2020/009

*That the Nelson Regional Sewerage Business Unit*

1. *Receives the report NRSBU General Manager Update (R18048) and its attachment (A2395971).*

McGurk/Tuffnell

Carried

6. Adoption of the Nelson Regional Sewerage Business Unit 2020/2021 Business Plan

Document number R18049, agenda pages 21 - 45 refer.

General Manager Regional Sewerage and Landfill, Nathan Clarke, presented the report, and noted that minor wording changes had been **incorporated into the Business Plan as a result of Nelson City Council's** feedback.

Resolved NRSBU/2020/010

*That the Nelson Regional Sewerage Business Unit*

1. *Receives the report Adoption of the Nelson Regional Sewerage Business Unit 2020/2021 Business Plan (R18049) and its attachment (A2396455); and*
2. *Approves the NRSBU Business Plan 2020-2021 (A2396455) subject to minor changes approved by the Chairperson; and*
3. *Recommends the NRSBU Business Plan 2020/21 be presented to the Tasman District Council and Nelson City Council.*

Tuffnell/McGurk

Carried

Karakia Whakamutunga

Mr Hippolite gave a karakia whakamutunga.

There being no further business the meeting ended at 1.58p.m.

Confirmed as a correct record of proceedings:

\_\_\_\_\_ Chairperson \_\_\_\_\_ Date



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## **Nelson Regional Sewerage Business Unit - Draft Business Plan 2021/22 and Draft Activity Management Plan 2021 - 2031**

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1. Purpose of Report
  - 1.1 This report provides a summary of the Nelson Regional Sewerage Business Unit (NRSBU) Draft Business Plan 2021/22 and the Draft NTRLBU Activity Management Plan 2021 – 2031, and seeks approval of these documents for circulation to Nelson City Council and Tasman District Council for review and feedback.
2. Summary
  - 2.1 The Draft NRSBU Activity Management Plan 2021-2031 (AMP) (A2458264) is attached for approval at this meeting. The AMP has developed based on the workshop held in March 2020, and on feedback from questionnaires e-mailed to the board members and based on feedback from a discussion document submitted to board members.
  - 2.2 The AMP uses the work undertaken to date on the 50 year Master Plan. This work has allowed the two plans to link together, however it would have been significantly better to have had the strategic plan completed in advance of the AMP.
  - 2.3 The preparation of the AMP has been a significant piece of work to bring together.
  - 2.4 The AMP has been bought together to the best of NRSBU staff knowledge. It focusses on reducing operating risks, resolving capacity constraints and improving systems to allow improved performance.
  - 2.5 The program has been developed to try to reflect the priorities and timing while spreading out the expenditure. At present the programme of works is still ambitious and will be very difficult for NRSBU staff to deliver.
  - 2.6 The Draft NRSBU Business Plan 2021/2022 (A2458266) is attached for discussion and approval.

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- 2.7 The Draft NRSBU Business Plan generally follows the works as outlined for 2021/22 in the 2020/2021 plan.
- 2.8 The capital expenditure requested is significant. The programme of works is ambitious and will be difficult for the Regional Services staff to deliver without additional resources.

3. Recommendation

*That the Nelson Regional Sewerage Business Unit*

1. Receives the report Nelson Regional Sewerage Business Unit - Draft Business Plan 2021/22 and Draft Activity Management Plan 2021 - 2031 (R20296) and its attachments (A2458264 and A2458266); and
2. Approves the Draft Nelson Regional Sewerage Business Unit Draft Business Plan 2021/22 (A2458266) for presentation to the Nelson City Council and Tasman District Council, with delegation of all minor amendments to the Nelson Regional Sewerage Business Unit Chairperson; and
3. Approves the Draft Nelson Regional Sewerage Business Unit Activity Management Plan 2021-2031 (A2458264) for presentation to the Nelson City Council and Tasman District Council, with delegation of all minor amendments to the Nelson Regional Sewerage Business Unit Chairperson.

Recommendation to Nelson City Council and Tasman District Council

*That the Nelson City Council and Tasman District Councils*

1. Receive the 2021/2022 Draft Nelson Regional Sewerage Business Unit Business Plan (A2458266) for review, and provide feedback to the Nelson Regional Sewerage Business Unit if required; and
2. Receive the Draft Nelson Regional Sewerage Business Unit Activity Management Plan 2021-2031 (A2458264) for review, and provide feedback to the Nelson Regional Sewerage Business Unit if required.

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and Draft Activity Management Plan 2021 - 2031

4. Background

- 4.1 The NRSBU Memorandum of Understanding outlines a number of activities required by the NTRLBU along with specified timing for these activities.
- 4.2 The NRSBU is required to prepare a Strategic Plan (referred to by Regional Services staff as the Master Plan) in relations to its operation in advance of the development of the drafting of the Asset Management Plan. Due to time constraints, staff changes, and COVID 19 this has not been formally undertaken and the Master Plan still needs to be completed.
- 4.3 NRSBU has focussed on developing the Draft Activity Management Plan (AMP) for the next 10 years, and has held a number of workshops to discuss the future goals and targets for NTRLBU.
- 4.4 It is noted therefore that despite the Master Plan not having been updated, the AMP incorporates the long term objective and goals for the NTRLBU as they are understood at present.
- 4.5 The MOU requires that the AMP is updated every three years, and NRSBU has focussed on the AMP because this plan has an influence on both the Nelson City Council, and Tasman District Council AMPs, that are currently being updated.
- 4.6 The MOU also requires that the NRSBU prepare a Draft Business Plan and that this be presented to the councils by 31 December each year.
- 4.7 A Draft Business Plan has been drafted to reflect the activities proposed in the first year of the Draft NRSBU AMP.

5. Discussion

- 5.1 The AMP includes a significant amount of capital expenditure throughout the 10 year period, and the work undertaken on the Master Plan shows that further spending will be required in the decades following this 10 year plan also.
- 5.2 This capital expenditure is required implement a number of improvements to the capacity of the regional pumping and pipework network. The plan includes additional feature to allow improved maintenance, and resilience to avoid overflows from the network.
- 5.3 Additional capital costs are required to
- implement the land application systems,
  - for acquiring land to allow adaption and managed retreat resulting from sea level rise,
  - for treatment plant changes to increase capacity,

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- to reduce adverse effects on the community and,
  - to improve the resilience of our systems and facilities.
- 5.4 This additional expenditure will increase the debt held by NRSBU and will result in an increased debt funding cost.
- 5.5 The AMP includes an allowance for the changes to levels of service related to redundancy and resilience.
- 5.6 NRSBU propose to move to an N+1 redundancy policy. This means that we will have sufficient capacity to allow our facilities and systems to operate while one unit is maintained or replaced.
- 5.7 At present a number of our assets have no redundant capacity which prevents effective maintenance, and also means that when they fail NRSBU immediate has a loss of service.
- 5.8 There are some significant changes likely to occur during the term of the AMP, including the likelihood that the national water reforms will result in significant change to the way the NRSBU operates. At this time no allowance for this has been made, and it has been assumed that NRSBU will continue its business as usual.
- 5.9 No allowance has been made for the implementation of national standards should this occur which would result in significant additional capital expenditure being required.
6. Operational Costs
- 6.1 The costs to run the NRSBU will increase significantly over the next 10 year. These cost increases are largely related to;
- Increase reticulation capacity resulting in increased storm reaching Bell Island and needing treatment.
  - Diverting waste discharges away from the estuarine environment and applying it to land, or reusing it for beneficial purposes.
  - Increased debt servicing costs.
  - Increased capacity associated with increase growth.
  - Increase monitoring and operational costs associated with New Resource Consents.
- 6.2 The rate of cost increase will depend on the speed at which we implement the programme of capital expenditure activities.
- 6.3 The AMP is based on assumptions, which are based on the best judgement of the NTRLBU staff. We have not received detailed assessment of growth profiles from either NCC OR TDC which has

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created confusion regarding what Allowance need to be made for future growth, and what levers NRSBU have in order to influence the level of capital expenditure expected by the contributors.

- 6.4 It is particularly difficult when a contributor has a number of different point where they discharge into the NRSBU system, but they have a single aggregated capacity in their tradewaste contract. NRSBU is unable to effectively manage the specific assets as the customers have not provided their demand requirements for each of their discharge points. NRSBU is having to make assumptions on what growth will occur and where it will occur. Therefore there is a risk that our projections are not as accurate as desired.
- 6.5 NRSBU have used the AMP as the basis to developing the Draft NRSBU Business Plan 2021/22.
- 6.6 The Draft NRSBU Business Plan 2021/22 includes a significant capital expenditure programme.
- 6.7 Regional Services staff may not have capacity to carry out the amount of work required in the capital budgets for NRSBU, and additional resources may be required.

### 7. Conclusion

- 7.1 The AMP has been prepared to the best of the ability of the NRSBU staff based on feedback from the NRSBU board, and incorporating the foreseeable changes to the inputs to the NRSBU business.
- 7.2 It has been based on the revised Master Plan as far as possible, however it is noted that the Master Plan has not been finalised.
- 7.3 There continues to be significant uncertainty in a number of areas which may affect the accuracy of the AMP, particularly in areas related to central government water reforms.
- 7.4 The Draft NRSBU Business Plan 2021/22 has been prepared based on the AMP.
- 7.5 The Draft NRSBU Business Plan 2021/22 therefore includes significant capital expenditure.
- 7.6 NRSBU may need to obtain additional resources to deliver the Programme of works required by the AMP and Business Plan.

### 8. Next Steps

- 8.1 The Draft NRSBU Activity Management plan 2021-2031 and the Draft NTRLBU Business Plan 2021/22 need to be circulated to Nelson City Council and Tasman District Council for their review and feedback.

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and Draft Activity Management Plan 2021 - 2031

8.2 Following receipt of any comments NRSBU will update the document as  
required for approval at the 11 December 2020 NRSBU Board meeting

Author: Nathan Clarke, General Manager Regional Sewerage and  
Landfill

#### Attachments

Attachment 1: A2458264 - NRSBU AMP 2021 -2031 [↓](#)

Attachment 2: A2458266 - NRSBU Business Plan 2021 - 2022 Draft V1 [↓](#)

## **Important considerations for decision making**

### **1. Fit with Purpose of Local Government**

The NRSBU is a joint committee constituted pursuant to the provisions of Schedule 7 to the Local Government Act 2002 and contributes to the four Local Government well-beings of social, economic, environmental and cultural.

### **2. Consistency with Community Outcomes and Council Policy**

The NRSBU Business Plan and Activity Management Plan feeds into Council's 2021/22 Annual Plan and Councils Wastewater Activity Management Plans 2021 - 2031.

### **3. Risk**

This report includes a draft NRSBU Business Plan and a Draft Activity management Plan for review by the NRSBU Board and following consideration by the Joint Committee submission to NCC and TDC for review and feedback. The risk of not approving the Business Plan and AMP is that this could delay the NCC and TDC preparing their Activity Management Plans.

### **4. Financial impact**

The NRSBU 2021/22 Business Plan and AMP 2021 – 2031 reflects an increase in essential renewals expenditure and the commencement of the regional pipeline upgrade, and an outline of the development of the NRSBU assets over the next 10 years. These report form the basis for review of the financial impact on the Councils.

### **5. Degree of significance and level of engagement**

The NRSBU is a Joint Committee of the two Councils and its activities are included in the Long-term Plans and Annual Plans of each Council. Consultation is undertaken by both Councils in the preparation and adoption of these plans.

### **6. Climate Impact**

A key feature of the Business Plan and the Activity Management Plan is the inclusion of a long-term objective of greenhouse gas emissions with the commitment to measure and reduce greenhouse gas emissions from the facility and consideration about site location and retreat for vulnerable sites.

## **7. Inclusion of Māori in the decision making process**

No engagement with Māori has been undertaken in preparing this report but iwi have representation on the Board.

## **8. Delegations**

The Infrastructure Committee has the following delegations to consider the Nelson Regional Sewerage Business Plan:

*Relevant Areas of responsibility:*

- *Wastewater, including Bell Island Wastewater Treatment Plant*

5.6.2 *Delegations:*

*The exercise of Council's responsibilities, powers, functions and duties in relation to governance matters includes*

- *Developing, approving, monitoring and reviewing policies and plans, including activity management plans and the Infrastructure Strategy*



**Nelson Regional Sewerage Business Unit**



Wastewater  
Activity Management Plan  
2021 – 2031  
Mahere Waipara 2021 – 2031

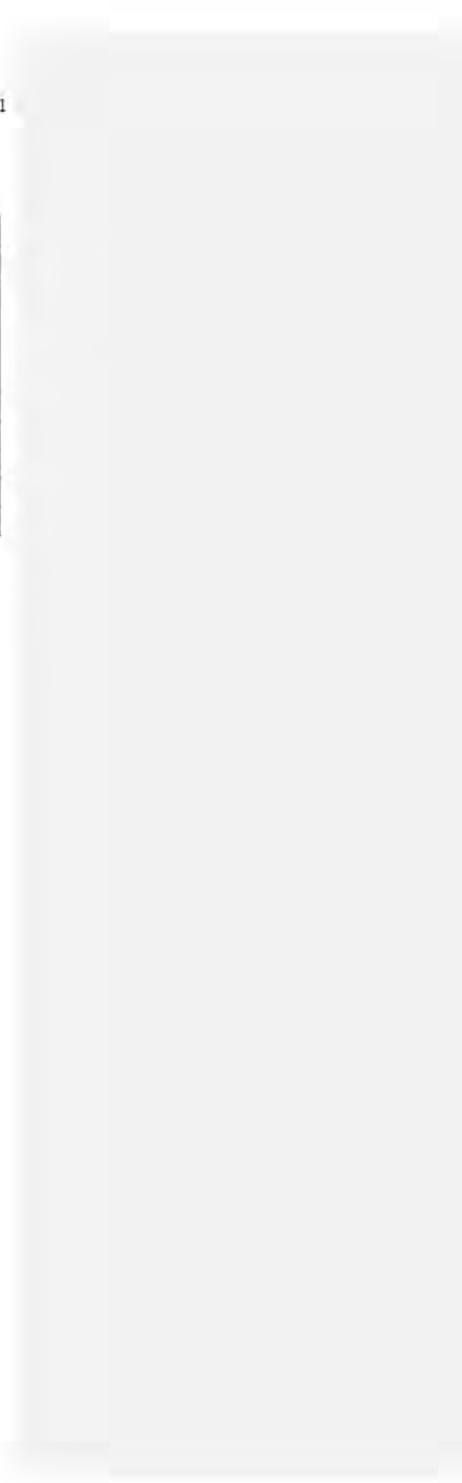


**Document Control**

Title:					
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by:
6/9/20	V6	Draft for NRSBU Board Meeting	Emma McFarlane, Beca Consultants	Iain Satterthwaite, Activity Engineer NRSBU	Nathan Clarke, General Manager NRSBU

Cover Photo:

Bell Island Wastewater Treatment Plant



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# Overview

Nelson Regional Sewerage Business Unit





## 1 Executive Summary

### 1.1 Our context

The Nelson Regional Sewerage Business Unit (NRSBU) is a joint committee of Nelson City Council (NCC) and Tasman District Council (TDC). It was established to look after the owners' interests in the Nelson Regional Sewerage Scheme (NRSS) and has been delegated authority to act on the owners' behalf. NRSBU provides wastewater services to NCC and TDC. It also services three major industrial operators as well as several minor customers (liquid waste operators).

Reflecting on the last three years and looking ahead to the next ten years, the key aspects of our context are:

- NCC and TDC are continuing to see incremental growth in their peak and average discharge volumes.
- There is uncertainty around one industrial contributor, which may substantially change its business over the next 12-18 months. The flows and loads from the other industrial contributors have been relatively stable.
- Longstanding concerns held by local iwi are being given increased priority.
- Network resilience has been identified as a strategic issue.
- A new operations contract is being prepared, which will introduce a collaborative, outcomes driven focus with the contractor.
- An application is underway for renewal of the resource consent for the biosolids reuse on Moturooa/Rabbit Island.
- Understanding and managing the emissions from NRSBU's facilities has become a strategic issue.
- Central government is developing plans to increase regulation and aggregate service delivery in the three waters sector.
- NRSBU is beginning to recognise the long-term vulnerability of its sites to sea level rise.

### 1.2 What we plan to do

NRSBU plans to provide operation, maintenance, renewal and upgrades of the assets within the NRSS to meet the required levels of service and to be consistent with its annual budgets and long-term plans.

**Better planning:** The key element of this is a 50-year master plan, with adaptive staging that has triggers for key decisions. Actions to support this plan include:

- Securing our future by identifying, purchasing, designating land.
- Continue investigating high-value end uses for treated wastewater and biosolids.
- Improve our working relationship with iwi and the community.
- Facilitate regional conversations to improve integration/coordination/synergies.
- Respond to industry changes as these develop.
- Monitoring of emissions and investigation of energy efficient solutions.

**Capital works:** to upgrade the resilience and capacity of the network and treatment plant. Works include:

- Adding capacity to accommodate foreseeable storm flows and future growth, i.e. duplicate key pipelines, increase pump station capacity and provide emergency storage.

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- Installation of overflow screening and monitoring.
- Implementation of pilot plant for wastewater reuse.
- Implement and maintain redundancy for mechanical equipment. Components (N) have at least one independent backup component (+1).
- Implement and maintain emergency power generation at pump stations and wastewater treatment plant (WWTP). Install ring main for generators at WWTP.
- Increase seismic resistance of our facilities.
- Increase capacity through the treatment plant processes, e.g. additional screening, grit removal, aeration capacity, duplicate pipelines, odour control.

### 1.3 What we cannot do

NRSBU cannot provide increased levels of service that its owners may desire without a significant impact on the costs of providing the services.

We cannot do everything we or our owners and community would like. This is primarily due to the financial implications that this would have on our contributors. Key elements that we cannot do within the ten-year timeframe of this plan are:

- Deliver significant changes to our presence in the Waimea estuary or address other iwi concerns. The size of the capital investment required for this means we will need to make these changes over a long timeframe.
- Address some resilience issues with the network and treatment plant. This primarily relates to adding additional storage in the network to reduce the risk of overflows and provide better maintainability.

### 1.4 Managing the risks

Key risks for NRSBU have been identified as follows:

- Limited knowledge of our assets.
- Ageing infrastructure.
- Poor contract management.
- Extreme natural disasters.
- Lack of active business continuity plans.
- Inconsistent strategic documents.
- Overflows from our system.
- Blockages/bursts in our system.
- Faster growth and higher flows than forecast.

Managing the risks includes:

- Ensuring the systems NRSBU utilises are fit for purpose.
- Maintaining accurate data and continuously updating information on NRSBU assets.
- Implementing a programme of condition assessments and being proactive in carrying out works to prevent failures from occurring.
- Providing strong contract management and ensuring, where applicable, there are clear delineations between contracts.
- Allowing for climate change when designing new works and upgrading existing infrastructure.

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- Having operation manuals and emergency procedures in place and maintaining business continuity plans.
- Forward planning that includes adequate consultation with landowners and acquisition of land where necessary.
- Maintaining communication between contributors to ensure documents e.g. AMPs, LTP and Strategies are 'in sync'.
- Proactive maintenance of infrastructure, ensuring failures are minimised.

Risks are discussed further in Section 13.

**1.5 What does it cost?**

Our high-level capital and operational forecasts are shown in the figures below (Figure 1-1 and Figure 1-2).

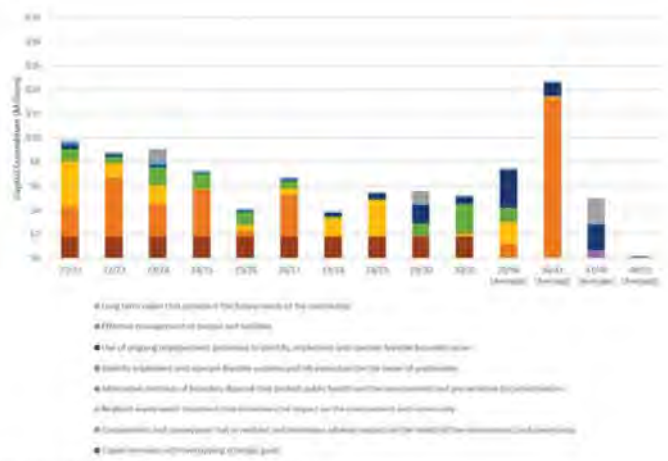


Figure 1-1 Capital expenditure for the next 30 years

Nelson Regional Sewerage Business Unit



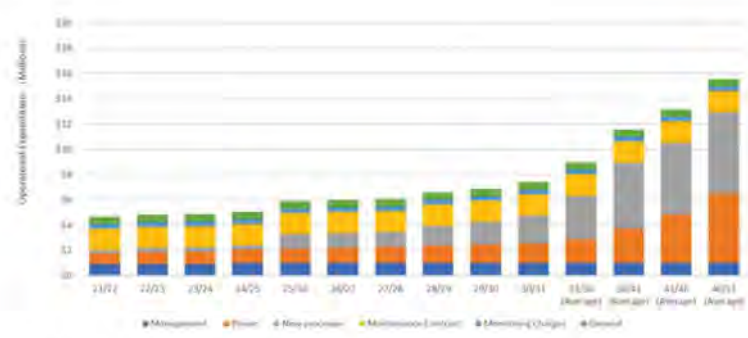


Figure 1-2: Operational expenditure for the next 30 years (excluding depreciation)

Our operational expenditure is expected to increase due to the implementation of new processes and infrastructure. Overall, our proposed capital programme will result in an increase from current debt levels (Figure 1-3).

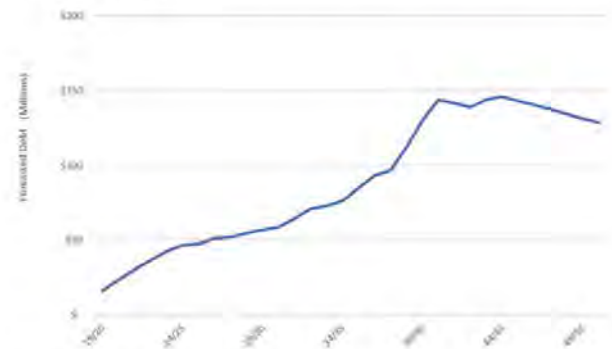


Figure 1-3: Forecast debt levels for the planned works

**1.6 The next steps**

The projects identified for the next three years (excluding renewals) are included in Table 1-1 while the planned renewals budget is included in Table 1-2.

Table 1-1: Planned capital projects for the next three years (excluding renewals)

Year	Description of Project	Estimated Cost (\$)
2021/22	Pumping station overflow screens	300,000
	Regional pipeline capacity upgrades	1,750,000
	Flood protection of facilities	350,000
	Storage at pumping stations	100,000

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2022/23	Additional screening at WWTP	500,000
	Desludging ponds	200,000
	Power supply (undergrounding) and ring main (generators)	3,500,000
	Odour upgrade at Rabbit Island	200,000
	Best Island irrigation	350,000
	Regional pipeline capacity upgrades	1,750,000
	Saxton pump and discharge pipe upgrade	2,000,000
	Pump station storage	1,000,000
	Additional screening at WWTP	1,000,000
	Biosolids pilot plant	150,000
2023/24	Best Island irrigation	500,000
	Regional pipeline upgrades	2,000,000
	Capacity upgrades (WWTP pipelines)	2,000,000
	Rabbit Island equipment	150,000
	Best Island irrigation	1,500,000

Table 1-2: Planned renewals for the next three years

Year	Description of Project	Estimated Cost (\$)
2021/22	Pump Stations and Rising Mains	385,000
	Inlet, Aeration Basin, Clarifier and Ponds	1,159,000
	Solids Handling	381,000
	Rabbit Island	78,000
	General	191,000
2022/23	Pump Stations and Rising Mains	537,000
	Inlet, Aeration Basin, Clarifier and Ponds	41,000
	Solids Handling	254,000
	Rabbit Island	49,000
	Facilities	135,000
2023/24	General	130,000
	Pump Stations and Rising Mains	168,000
	Solids Handling	1,704,000
	Facilities	11,000
	General	41,000

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## 2 Purpose of the Plan

This Activity Management Plan (AMP) is intended to demonstrate how NRSBU will achieve its required strategic goals and objectives. This plan focusses on the activities, outcomes and services NRSBU is delivering and the assets needed to deliver them.

The relationship of this plan with the other documents in the NRSBU's planning framework is shown in Figure 2-1 below.



Figure 2-1 Relationship with other documents

## 3 AMP structure

Following this Overview, the AMP is structured in three parts:

- **Part A: Our strategic context.** This outlines our existing business, what is driving change as we look to the future and how we plan to respond to this.
- **Part B: Where we want to be.** This section describes our reticulation, pump station and treatment/disposal assets and outlines the issues, options, and preferred future state of these assets. This section also includes our financial projections for the next 30-year timeframe.
- **Part C: How we manage what we have.** This outlines our existing management approaches for our people, assets, risks, and systems. It also documents where we consider there to be gaps in our management practices and what plans we have to reduce those gaps.

Through the AMP, we wish to demonstrate that we:

- Understand the needs of our contributors.
- Understand our asset and non-asset requirements to provide our strategic levels of service into the future.
- Improve our knowledge of our assets on a proactive and ongoing basis.
- Are transparent about the processes in place for managing, operating, maintaining, renewing, and extending our assets in ways that consider risk, quality and cost.

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- Consider what is the appropriate level of sophistication for managing our assets and have plans in place to address gaps between actual and target maturity.
- Consider adequately the class of risks this activity faces and have systematic processes in place to mitigate identified risks.
- Plan for adequate funding of asset operations, maintenance, renewals, and upgrades.
- Have processes that continually improve the outcomes delivered by the assets as measured against the requirements of the contributors and to other internally and externally imposed standards.



# Part A: Our strategic context

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**4 Where are we now**

**4.1 Nelson Regional Sewerage Business Unit**

The role of NRSBU is to manage and operate the wastewater facilities at Bell Island and the associated reticulation network efficiently and in accordance with the required resource consent conditions to meet the needs of its contributors. NRSBU shall plan for future needs of the community in a cost-efficient manner rather than focus on making a financial return. A Memorandum of Understanding, signed by the two Mayors and CEO's of NCC and TDC in May 2019, governs the operation of NRSBU.

**4.2 Services provided**

NRSBU treats municipal wastewater from the following contributors (Figure 4-1):

- Nelson City - Stoke and Tahunanui areas.
- Tasman District - Richmond, Wakefield, Brightwater (the Waimea Basin) and Mapua.
- Industrial wastewater from the Alliance Group, Turners and Growers (ENZA), Nelson Pine Industries.

Minor customers such as fish/chicken waste, trade waste, stock effluent and septage users disposing into the septage disposal facility.

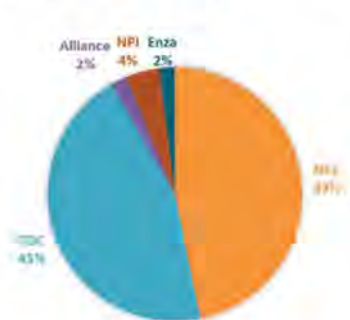


Figure 4-1: Extent of area covered by NRSBU

Nelson Regional Sewerage Business Unit

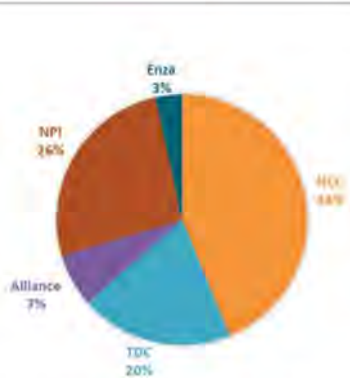


The following figure (Figure 4-2) outlines the proportion of average daily flow and average BOD load per contributor for the year 2019.



**Average daily flow per contributor**

Most wastewater flows to the treatment plant are from the two councils. The remaining flows are split between the industry contributors.



**Average daily load (BOD) per contributor**

The differences between the two councils can be contributed to the Whakatū and Saxton Catchments which include significant industrial flows. Both these catchments are part of NCC contracted flows.

Figure 4-2: Load and flow volumes per contributor as a proportion of total volumes at Bell Island WWTP

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**4.3 Asset description**

NRSS includes:

- 16.8 km of rising mains
- Five pump stations
- Wastewater Treatment Plant (WWTP)
- 688 m outfall
- Biosolids Application Facility (BAF)

A schematic of NRSS, with the pump stations and the WWTP is shown in Figure 4-3 below.



Figure 4-3 Schematic of the NRSS

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**4.4 Key relationships**

**4.4.1 NRSBU's owners**

NRSBU is jointly owned by NCC and TDC. NRSBU has relationships with the two councils at multiple levels including strategic, management and business relationships. The strategic outcome for the two councils as owners and service providers is to meet the current and future needs of their customers in way that is cost-effective and environmentally sustainable. NRSBU's Long Term Plan (LTP) and ultimately this AMP feed directly into the LTPs of each of the councils.

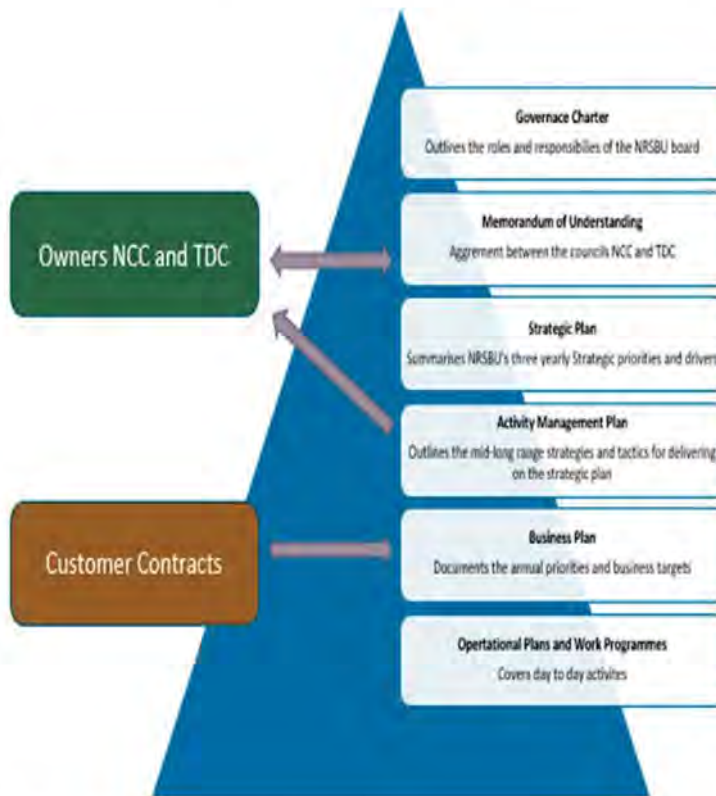


Figure 4-4: Linkages with owners and customers

Nelson Regional Sewerage Business Unit



**4.4.2 Contributors**

NRSBU’s contributors include the two councils and significant waste producing industries in the region (Nelson Pine, ENZA Foods and Alliance Group). These contributors each have individual Disposal of Trade Waste Agreements with NRSBU, which outline their flow and demand requirements. The following table (Table 4-1) summarises what we believe are the desired outcomes for our contributors.

**Table 4-1: Contributors’ desired outcomes**

Contributors	Desired Outcome
NCC and TDC as contributors	Long Term Strategy and Business plan, and delivery of strategic outcomes as per the memorandum of understanding
Industrial contributors	Ability to dispose of effluent in a sustainable manner

**4.4.3 General stakeholders**

In addition to the owners and customers outlined above there are key external stakeholders who have specific involvement with the assets and/or the service facilitated by the assets. Table 4-2 describes their main interests.

**Table 4-2: General stakeholders’ outcomes**

Stakeholder	Desired Stakeholder Outcome
TDC and NCC as unitary authorities	Adhering to relevant resource consents and regional plans.
Local Government New Zealand or Central Government	Ensure that Local Government Act is complied with (via Auditor-General).
Government departments and agencies, including Ministry for the Environment, Ministry of Health, Audit NZ	Treated water quality is suitable, consistently assured, and does not spread diseases. Enhance conservation value of natural waterways.
Tangata Whenua comprising of eight Iwi. Ngāti Apa ki te Rā Tō, Ngāti Kua, Rangitāne o Wairau, Ngāti Koata, Ngāti Rārua, Ngāti Tama ki Te Tau Ihu, Te Ātiawa o Te Waka-a-Maui, and Ngāti Toa Rangitira.	Enhance and maintain the water quality of waterways and Te Waihora for mahinga kai, and cultural/spiritual values and minimise discharge impacts on coastal waters.
Contractors and Consultants	Fair contracts, good relationships, and efficient and reliable service.
Wider Community	Dispose of waste safely and sustainably.

**4.5 NRSBU outcomes**

NRSBU’s mission statement is: “Resilient, reliable, and effective infrastructure that supports and protects our community and environment”.

This mission statement plays out in three key areas: public health, cultural sensitivity, and sustainability. The implications of each of these is summarised below.

**4.5.1 Public health**

Public health is important to aiding and prolonging life. A well-managed, resilient wastewater collection, conveyance, treatment, and disposal system benefits public health, reducing the risk of

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spreading chronic diseases and protecting the environment, thereby enabling communities to enjoy active and healthy lifestyles.

NRSBU's Master Plan and Programme of Works is directed at making improvements to its sewerage, increasing the level of treatment of wastewater such that the by-products of the treatment processes are suitable for reuse rather than being disposed of to land or water.

#### 4.5.2 Cultural sensitivity

NRSBU is cognisant of iwi concerns regarding discharge of treated wastewater effluent to water and is planning on increasing the amount it discharges to land. Land was purchased at Best Island at the end of the 2019/20 financial year and planning is underway to develop and implement an irrigation system to augment the existing irrigation system at Bell Island. In addition, implementation of a pilot ultrafiltration plant is ongoing to treat wastewater to an acceptable quality for reuse, for example as a dust suppressant or use in manufacturing processes. NRSBU is increasingly engaging with iwi and has plans to adapt a dwelling it acquired with its Best Island land purchase, to hold an annual hui.

#### 4.5.3 Sustainability

Sustainability is a widely used term which has a variety of meanings depending on the context in which it is used.

The [Brundtland Commission of the United Nations](#) on 20 March 1987 defined sustainable as *"meeting the needs of today's generation without compromising the ability of future generations to meet their own needs."*

In a similar manner, the Resource Management Act 1991, which provides the guiding principles behind sustainable management in NZ, defines sustainable management as:

*"managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while:*

- Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- Safeguarding the life-supporting capacity of air, water soil and ecosystems; and
- Avoiding, remedying, or mitigating any adverse effects of activities on the environment."

Within New Zealand, local authorities are entrusted with ensuring the health and wellbeing of their communities are protected by providing the necessary infrastructure, as such, it is becoming increasingly important for public entities to work and think in ways that take account of long-term sustainability. For local authorities, taking a sustainable development approach is a requirement of the Local Government Act 2002.

NRSBU does not have its own Sustainable Strategy or policy but works in general accordance with NCC's policy and recognises the importance of incorporating economic, environmental, and social/cultural concerns into its activities. NRSBU has a programme of works which is directed at adopting technologies which promote sustainability, investigating treatment of wastewater and biosolids for reuse and upgrading infrastructure to be resilience to the impacts of climate change.

#### Key challenges for NRSBU

There are a diverse range of challenges that NRSBU will need to navigate as they work towards achieving their strategic objectives and implementing their programme of works.

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Key challenges include:

- **Affordability-** NRSBU is investigating measures to increase the efficiency and therefore the affordability of its operations and is also investigating methods for reuse and creating additional value of the by-products of its processes, with the intention of generating revenue streams to offset operational costs. Actions include conducting energy audits to identify areas where power savings can be made, setting emissions reduction targets, and investigating/implementing operational changes for water recycling and biosolids reuse.
- **Ageing infrastructure/Asset Management Data-** NRSBU is updating the information stored in its asset information system (Infor), which it has failed to regularly update in the past and is investigating procurement of a system to record assets in the field to obtain physical details, condition and so forth. This will better enable NRSBU to plan renewals, reactive and routine maintenance, review useful lives etc.
- **Growth-** NRSBU plans for growth using data from its contributors to programme capital works such that growth can be accommodated within its network. Specific measures include acquiring land, upgrading/duplicating assets and providing buffer storage capacity. This also aids preparations for climate change and network resilience.
- **Climate Change-** NRSBU is protecting its assets from sea level rise and erosion by monitoring and understanding the impacts, developing sea level rise defences (up to 1.0m SLR), implementing drainage, dewatering and stormwater/seawater pumping and landscape planning and planting with saline tolerant species.
- **Resilience of infrastructure-** NRSBU is duplicating/providing redundancy and storage of critical assets.

#### 4.6 Strategic goals

The strategic goals as detailed below take due regard to the mission statement above, with its three areas of focus, and the objectives detailed in the Memorandum of Understanding between NCC and TDC. These goals have been summarised into three categories:

**Our Approach:** Implement and operate infrastructure considering the needs of our community. Our priorities for this are the protection of public health, the environment and cultural values.

**Our Aspiration:** We will work toward the beneficial reuse of resources.

**Our Conduct:** We will undertake our activities transparently, fairly, respectfully, in a timely manner and we will encourage co-ordinated regional infrastructure development.

#### 4.7 Strategic objectives

To achieve these goals, ten objectives have been developed and are displayed in Figure 4-5. These objectives are used throughout this AMP to categorise the planned works and future capital budgets. The programme of works for the next ten years, showing projects greater than \$0.5M, is included in Appendix D.

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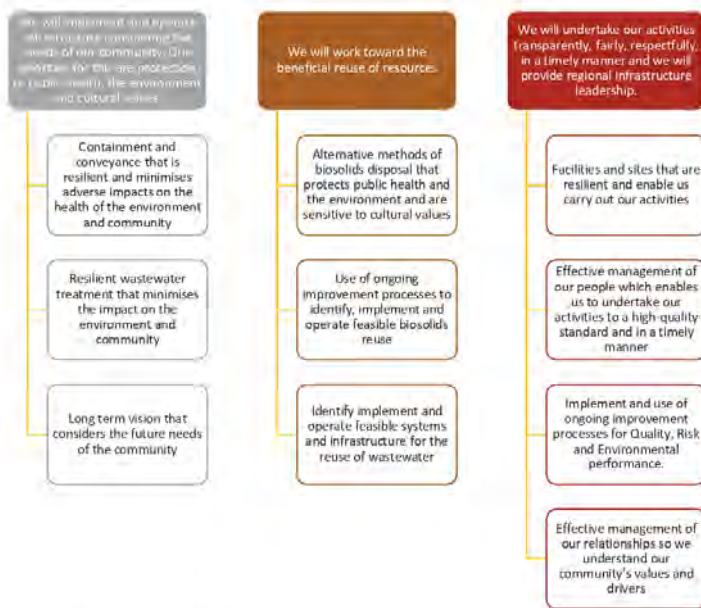


Figure 4-5 Objectives categorised by each strategic goal

NRSBU is conscious of the impacts of its budgets and actions on its Contributors. Therefore, the following framework shown in Table 4-3 has been developed to classify the urgency and importance of projects and the timeframe in which they should be implemented. This framework has been used to prioritise the capital expenditure over the next 10 years.

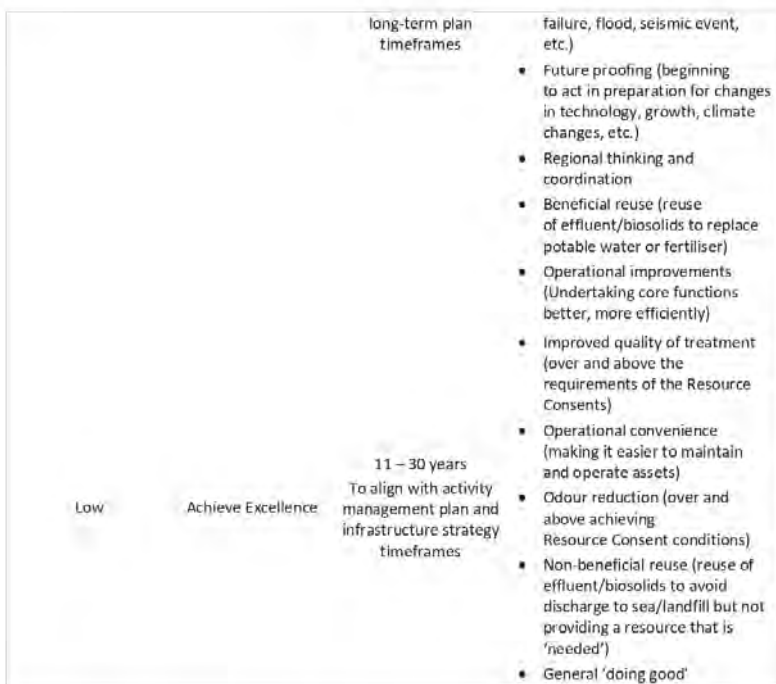
Table 4-3: Importance level framework

Importance	Purpose	Timeframe	Category of activity
High	Core function	1 – 3 years To align with annual plan and long-term plan timeframes	<ul style="list-style-type: none"> <li>Capital works to avoid overflows</li> <li>Capital works to avoid breaches of Resource Consents (due to effluent quality, odour, discharge volume, etc.)</li> <li>Capital works to convey contracted flows</li> <li>Health and safety improvements</li> <li>Future planning to continue core functions</li> </ul>
Medium	Do better	4 – 10 years To align with activity management plan and	<ul style="list-style-type: none"> <li>Resilience (ability to maintain 'core functions' if something goes wrong, e.g. mechanical</li> </ul>

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**5 What is driving change?**

The section provides information on areas of change that we anticipate will impact on the levels of service we can provide and our response to those issues.

**5.1 Overview**

The key issues for our services and the impact this could have on our service levels are summarised in Table 5-1 below.

**Table 5-1 Drivers for change**

Driver	Summary of expected/possible impacts
Inflow and infiltration	Inflow and infiltration (I&I), primarily into our contributors' networks, is the main source of the large wet weather flows which currently overwhelm parts of our system. I&I is expected to increase over time as our contributors' assets get older. This will impact our levels of service for untreated wastewater overflows and treatment stability (odours).
Climate change and sea level rise	Climate change will likely increase the frequency/severity of storm and drought events.

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	<p>Increased rainfall will drive additional I&amp;I, further exacerbating I&amp;I impacts on levels of service over time.</p> <p>More droughts will increase the volatility of our income from volumetric charging.</p> <p>Sea level rise could threaten the long-term viability of our treatment and disposal sites, as well as our pump stations.</p>
Growth	<p>Population growth increases wastewater volumes. High quality construction of new residential networks can reduce peak flow factors from the catchment, however if poorly constructed and not maintained an extension of the network may increase I&amp;I.</p>
Contributor changes	<p>A contributor leaving could impact cost sharing for the other contributors. A contributor adding additional flow or load could impact our ability to avoid overflows or treat waste adequately without upgrades.</p>
Disposal Perceptions	<p>Increase community and cultural concern regarding disposal to the environment will put pressure to move away from marine disposal and eliminate overflows in the system.</p>
Legislation Changes	<p>Legislation is likely to require a higher quality of treatment before disposal and more stringent monitoring and quality processes.</p>

**5.2 Inflow and infiltration**

The local authority demands are the most influential on the overall system. The ingress of stormwater into the sewer system through direct inflow and infiltration (known as I&I) is the largest contributor to wet weather flows. These peak flows can overwhelm the network and require the implementation and maintenance of over-sized infrastructure.

There is a need for NRSBU contributors to control their I&I, as ingress of stormwater can exceed the NRSBU system capacity very quickly and the "do nothing" option is not appropriate. Monitoring of flows during rain events has shown peak flows from both local authorities exceeding agreed peak discharge levels, resulting in overflows.

NRSBU has begun investing in additional capacity to mitigate overflow risk, however NRSBU needs to have systems, communication and processes that incentivise its contributor to ensure that they maintain focus on reducing I&I. It will be difficult and expensive for NRSBU to achieve our strategic goal of implementing and operating infrastructure that protects public health, the environment and respects cultural values, if our contributor do not maintain effective control of their I&I.

I&I is expected to increase over time due to ongoing aging of the network, increased severity of storm events and the potential extension of the residential network. NRSBU relies on its contributors to supply accurate forecasts in order to plan and size infrastructure accordingly. Errors in forecasting are possible and due to the setup of NRSBU the costs of these errors will ultimately be borne by the contributors.

NRSBU will manage I&I by encouraging and assisting contributors to achieve less than five times peaking within each of their catchments. NRSBU will regularly supply data to the contributor that highlights where I&I issues may be occurring and will communicate with its contributor to ensure that they are aware of the issues. Commitment to I&I reduction can be inferred through financial commitment reflected in:

- Upgrades within existing reticulation;
- Sewer renewal programmes (dependant on age profile); and
- Specific I&I reduction programmes.

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Though we can limit flows from our contributors' points of discharge (as per our agreements) this causes wastewater discharges from an upstream point on our contributors' networks, which is neither constructive nor helpful and does not reflect our strategic goals.

Ongoing assessment of NRSBU charges and process will be undertaken to encourage proactive I&I reduction. Should these processes not result in ongoing maintenance or improvement of I&I, then NRSBU may need to consider implementing the financial incentives available in the contributor contracts to encourage contributor that exceed agreed peak discharge levels.

### 5.3 Climate change

The Tasman/Nelson Region is likely to experience more extreme weather events which will both directly and indirectly impact our assets in the long term. The following table (Table 5-2) summarises the impact upon NRSBU's ability to convey and treat wastewater and achieve our strategic goals.

Table 5-2 Impacts on system due to climate change

Climate Change	Direct Adverse Impact	Indirect Impact
Heavy Rainfall	Pump stations inundated by surface flooding. Reduced pond storage volume.	Increase in wastewater flows from inflow and infiltration.
Drought	None	Reduced wastewater flows which results in reduced revenue for NRSBU. Declining water resources will make wastewater reuse more necessary. Reduced volumes of discharge due to increase evaporation at the ponds.
Rising Sea Levels	Access to the WWTP is cut off. Land for biosolids disposal is reduced. Increased erosion to Rabbit, Bell, and Best Islands. Pump stations are inundated from storm surge.	Relocation of communities may result in increase/decrease of wastewater volume at each pump station and overall. Likely increase in infiltration, due to elevated groundwater levels.
Severe temperature changes	Impact on the biological reactions to treat the wastewater. Strain on existing infrastructure.	Increase in fire risk, which could impact on biosolids disposal to pine forest on Moturoa/Rabbit Island. Increase corrosion in pipes and pump stations due to increased speed of reactions of wastewater in sewers.

We have not completed our own climate change related projections and currently rely on hazard mapping completed by NCC and TDC to understand the infrastructure at risk. The rate of sea level rise is uncertain and depends on the representative concentration pathways (RCPs) which predict how future global warming may contribute to climate change and sea level rise.

Currently, it is thought that sea level increase is in the range of 3 – 6 mm per year and this could increase. *Figure 5-1*, taken from the TDC website, shows that Bell, Best and Moturoa/Rabbit Islands are susceptible to sea level rise. Moturoa/Rabbit Island is not only used for wastewater disposal but also shelters Bell Island from further erosion. The current WWTP location is thought to be able to be used for a long period (at least to 2080) and therefore it is appropriate to continue to invest in activities on the Bell Island site. We do recognise that taking a "do nothing" approach is not appropriate if we want to continue providing wastewater conveyance, treatment and disposal in the

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long-term future. We will therefore take an adaptive management planning approach and work towards the following:

- complete a vulnerability study by 2025; and
- secure a site and required designations by 2030 for future relocation of the WWTP.

The projects that we are planning to manage the impacts of climate change are discussed in Section 7 (Pump stations), Section 8 (Treatment and Disposal) and Section 13 (Risk).

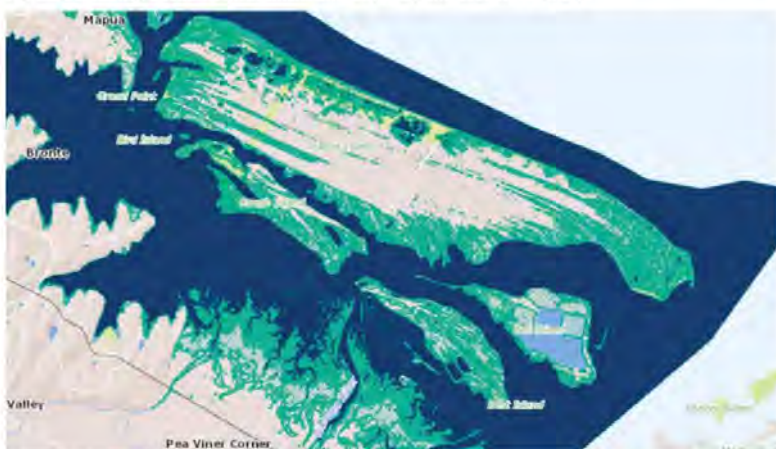


Figure 5-1: Extent of inundation from 1.0 m sea level rise shown in green (sourced from TDC website)

It is NRSBU’s responsibility to monitor and manage its emissions. The following table (Table 5-3) summarises the improvement programme planned for 2021-2022, which will work towards our goal of implementing and operating infrastructure considering the needs of our community.

Table 5-3: Emissions improvement works

Level of Service	Task	Sub task
<b>Have systems in place</b>	Have systems in place for the ongoing monitoring and reporting of emissions	Undertake audit of current emissions, identify target areas for improvement
		Setup framework for ongoing monitoring and reporting
<b>Reduction in emissions</b>	Ongoing reduction in carbon emissions and diesel consumption to follow regulations and align with government targets	Formally include emissions & energy consumption as criteria in all NRSBU decision making
		Set targets for reduction over time (scaled with increase in influent over time)

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#### 5.4 Population growth

The total population across the districts is expected to increase significantly, which will increase the total flow and load coming to our network from the council contributors.

There is a need to size and plan upgrades to accommodate future population growth as increases in total flows and loads are likely to exceed the existing system capacity and result in overflows. The “do nothing option is not appropriate” as we will be unable to achieve our strategic goal of providing for the needs of our community if our infrastructure is undersized. Additionally, in order to achieve our goal of beneficial reuse of wastewater we must identify reuse opportunities, and we may need to secure and purchase land as appropriate land will likely become further constrained as the population grows.

We have undertaken rudimentary reviews of future populations of some catchments using the councils’ Future Development Strategies where information from contributors has not been readily available. However, independent population forecasts are not NRSBU responsibility. We are required to provide capacity to meet the current and foreseeable needs of our contributor and as such we rely strongly on our contributors supplying accurate forecasts for their individual needs. We expect our contributors to estimate their demand for the next 30 years, as well as undertaking an annual review of their load and flow demands.

NCC and TDC maintain Future Development Strategies (FDS) which inform their long-term plans. The expected areas for growth are shown in Figure 5-2: Potential growth areas. The FDS provides for approximately 14,000 houses by 2048, including expansion in the Kaka Valley, Saxton and Richmond South areas.



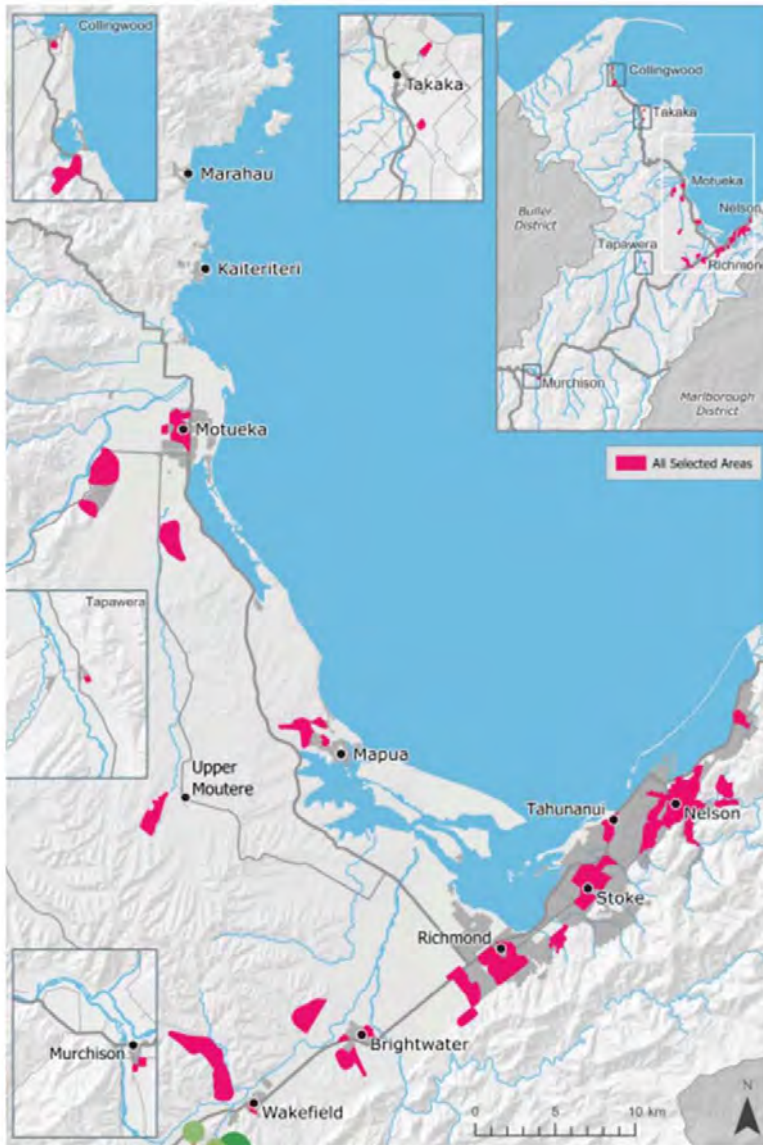


Figure 5-2: Potential growth areas (from Nelson Tasman Future Development Strategy 2019)

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We expect that this growth will result in increased flow and load demands in the near future and that this will be incorporated into the Agreement for Disposal of Trade Waste with NCC and TDC. The projects that we are planning to address these impacts are discussed in Section 7 (Pump Stations) and Section 8 (Treatment and Disposal).

**5.5 Major changes by contributors**

Major changes to discharges by the current contributors are possible and is a risk that NRSBU are aware of. This risk is partly offset by the return on capital charge included in NRSBU contributors' trade waste contracts.

**5.5.1 Changes in volume**

Major changes to the volume of wastewater from NCC and TDC would require significant additional investment and infrastructure that is currently not included in NRSBU's long term plan and budget. Future scenarios could include, but are not limited to:

- TDC decommissions Motueka WWTP and directs flows to Bell Island for treatment.
- NCC decommissions Nelson North WWTP and directs flows to Bell Island for treatment.
- Wastewater flows from Wakefield and Brightwater are no longer treated at Bells Island.
- A significant industry leaving our district or ceasing to trade, resulting in reduced load and flow.

The estimated change in wastewater volume at the Bell Island WWTP for these scenarios is included in Figure 5-3.

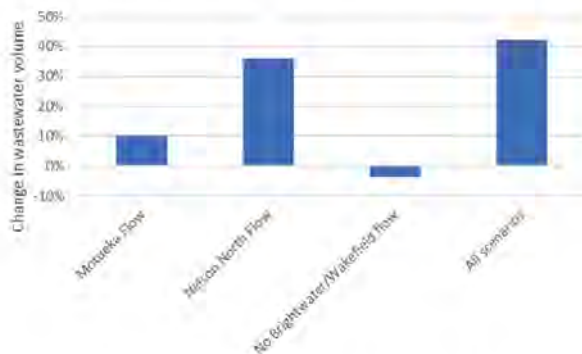


Figure 5-3 Indicative change in wastewater volume at the treatment plant

Any of the above scenarios involving a local authority would be a major change for the relevant council and we have assumed that these would be signalled well in advance with at least 10 years notice. Where an industry ceases to trade or relocates its operations this is likely to happen at short notice and will have consequences to the NRSBU revenue base. The future projections used in 'Part B: Where we want to be' have assumed no changes to the current contributor configuration, although we are aware that the ENZA Foods NZ's activities are potentially going to cease in our region.

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**5.5.2 Changes in load**

The industrial contributors are not major contributors of wastewater by volume, but they do have a material impact on treatment load at the WWTP. Based on their advice, we do not anticipate any increase in load from the industrial contributors in the long-term. The most likely scenario is that one or more of the contributors leaves, which would decrease treatment loads and NRSBU's revenue. An example of the likely reduction in BOD load from each of the contributors leaving impact is demonstrated below (Figure 5-4).

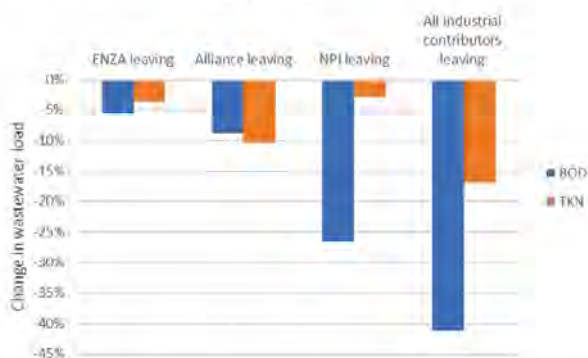


Figure 5-4 Indicative impact on wastewater loads (Biochemical Oxygen Demand and Total Kjeldahl Nitrogen)

NRSBU believes that industrial load changes will likely be offset by an increase in residential loads from TDC and NCC and therefore, while there may be a period of load reduction, we do not think the risk is significant, and we are not yet planning to manage these changes until they occur.

ENZA (purchased by Cedenco in 2018) announced in March 2020 that it will relocate their apple processing from Nelson to its existing Hastings sites at the end of the 2020 Season. ENZA operates on the Turners and Growers Site and is the main contributor to the waste discharged under the Turners and Growers Discharge Agreement. Communication with Turners and Growers has not identified whether Turners and Growers wishes to maintain its discharge license or not. In the event that it was to leave, then this would occur at the end of June 2021. ENZA is a minor contributor and therefore the adverse effect of them leaving is not expected to be significant. NRSBU is likely to offer its capacity to an existing contributor should Turners and Growers choose to significantly reduce its capacity or cease to be a contributor.

**5.6 Disposal drivers**

**5.6.1 Land disposal**

The disposal of human waste to waterways is unacceptable to Māori and undesirable to the community. The Waimea inlet is not only a key source of kai moana (food) but a recreational area for residents and tourists, as shown in Figure 5.5. Therefore, there is pressure from the community to move towards land-based disposal options.

The "do nothing" option will not enable us to work towards increased land disposal or the beneficial reuse of resources. Therefore, to move towards land-based disposal we will need:

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- Additional land for disposal;
- Infrastructure to transport treated wastewater to the disposal area;
- Changes to the treatment plant to accommodate additional treatment, as required for land-based disposal; and
- Changes to biosolids treatment and disposal due to the increased treatment of wastewater that may be required.

NRSBU is focussing on options that enable us to work towards the beneficial reuse of resources. The projects that we are planning to address changes in disposal drivers and move towards land-based disposal are discussed in Section 8 (Treatment and Disposal).



Figure 5-5: Recreational areas (Bell Island WWTP Application and AEE 2017)

### 5.6.2 Pathogenic contaminants

Cawthron Institute, in partnership with the University of Tokyo, the Prefectural University of Toyama and colleagues at ESR (Institute of Environmental Science and Research), is studying the efficiency of virus removal and the impacts on the environment at various WWTPs, including Bell Island. NRSBU proposes to work with a range of providers with expertise in these fields to increase our knowledge regarding these contaminants and their risks within our system.

Once we receive the findings of this study, we will have a better understanding of our pathogen removal process and the works required to improve these. This is expected to be undertaken over the next three years.

### 5.6.3 Emerging pollutants

There is increasing concern regarding the impact of residual drugs and chemicals on our ecosystem. Emerging contaminants include chemicals in pharmaceuticals, personal care products and preservatives. NRSBU, as part of its ongoing monitoring, will be maintaining awareness of the

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emerging trends in this area and will implement monitoring of the relevant chemicals as they become known as a potential issue. This will include not only chemicals within the influent wastewater (including assessments of drug use), but also contaminants that could contribute to land contamination within our biosolids reuse facility.

### 5.7 Legislation

The government is reviewing how to improve the regulation and supply of three waters services (water, stormwater and wastewater). Future changes to legislation are likely to put more onerous restrictions on NRSBU.

These changes are intended to enable smaller communities to increase the level of service, improve service delivery and improve asset maintenance and management, which will better protect the health of the community and the environment and are therefore likely to align with our strategic goals.

The following changes in legislation are expected to occur within the next few years:

- The establishment of Taumata Arowai (as agreed by Cabinet on 30 September 2019) – the water services regulator, which would provide oversight of and advice on, the regulation, management, and environmental performance of wastewater networks. This will likely lead to improved and stricter monitoring of water, wastewater and stormwater consents.
- Stronger central oversight of wastewater regulation.
- National environmental standard for wastewater discharge and overflows which will be progressed alongside the Ministry for the Environment's Essential Freshwater programme.
- Amalgamation of some (or all) water and wastewater providers into larger corporate models, (similar to Watercare).

It is likely that these changes will require better processes and documentation of quality, risk and environmental performance, which are discussed in Part C: How we manage what we have.

To understand the potential implications of these changes, the Department of Internal Affairs commissioned a report titled "The Three Waters Review: Cost estimates for upgrading wastewater treatment plants that discharge to the ocean", which reviewed and developed minimum discharge standards. We do not currently meet the proposed quality targets to discharge into an area with poor dilution (e.g. into estuaries or shelter bays). Significant changes to our infrastructure and processes would need to occur to meet these standards. To reduce this risk and pre-empt any future changes, we believe that we must progress towards land disposal while we maintain a clear understanding of our environmental and economic drivers. The projects that we are planning to achieve this are discussed in Section 8 (Treatment and Disposal).

Further, there is an unclassified cabinet paper released by the current government "Three Waters Delivery and Funding Arrangements: Approaches to Reform, Office of the Minister of Local Government". Discussion in the paper around service delivery, ranges from the status quo (which Councils may not like to lose as it would affect their "powers" and financial compensation), to regional and multi-regional bodies. The cabinet paper summarised that three waters infrastructure and services are lifeline utilities that provide essential services to communities. A lack of regulatory oversight, infrastructure underinvestment and capability constraints have meant that in many parts of the country, consumers cannot be certain that their water is safe to drink, or that the three waters system is contributing to good environmental or regional development outcomes.

Three potential models for service delivery outlined in the paper are:

- one national, publicly-owned water provider delivering water services across New Zealand;

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- three to five multi-regional, publicly-owned water providers delivering water services across multiple regions; and
- regional, publicly-owned providers delivering water services within regional boundaries.

Initially, service delivery reform is to focus on water supply and wastewater services with local councils continuing to provide stormwater services. Government officials have been directed to concentrate on the multi-regional and regional models. No further work is being undertaken on the national model for now. Government officials are working with local government on voluntary reform with a deadline of the end of 2020 established to determine whether the local government sector is committed to progressing voluntary change to service delivery arrangements by initiating work to investigate either within regions or in partnership with other regions.

As there is no clear direction as to which model will be adopted (if any), the future of service delivery has not been included in the risk analysis of this AMP.



# Part B: Where we want to be

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## **6 Reticulation**

### **6.1 Issues**

#### **6.1.1 Condition**

The condition of the rising mains is unknown. The lack of storage or bypass facilities make it difficult to conduct CCTV inspections or remove sections of pipe for detailed inspection without significant expense and risk of overflow.

To mitigate the risk of failure of the rising main within the estuary, a duplicate PE pipeline was installed from Monaco to Bell Island in 2012. With the duplicate pipeline in place, further work is now required to assess the condition of the concrete sections of the original rising main. These inspections are scheduled for 2020/21.

#### **6.1.2 Hydraulic capacity**

To date staff knowledge and experience has been used to determine which sections of the reticulation have inadequate hydraulic capacity. No detailed future demand projections have been made by NRSBU as we rely on our contributors to forecast their future demand. Our contributors are responsible for providing these forecast demands, based on their own plans for the future. Therefore, NRSBU is unable to accurately state that the network has capacity to accept future wet weather flows.

If we do not assess and address the condition and hydraulic capacity of the reticulation, our risk of breakages and overflows will increase and work will be carried out on an entirely reactive basis. Although we can develop a renewals programme and a hydraulic model of the network, without the construction of duplicate lines and/or sufficient storage we will be unable to inspect, or proactively maintain, the entire network.

Incoming flows from our contributors are likely to increase and therefore the capacity of the reticulation needs to increase to suit. We need to develop a good understanding of the hydraulic capacity of our reticulation in order to plan and implement specific hydraulic upgrades of rising mains and pump stations in a timely manner.

### **6.2 Preferred future state**

Our strategic goal is to deliver conveyance (reticulation) that is resilient and minimises adverse impacts on the health of the environment and community. To achieve this goal, we must have a network which has sufficient capacity to cope with peak flows and is readily maintained and has resilience to overcome issues that can foreseeably occur. This will be achieved by:

- Development of a detailed network hydraulic model to assess capacity for current and future demands.
- Construction of duplicate pipelines so there are two pipelines from each pump station. This will enable inspections and maintenance of the network and increase the capacity to cope with demand.
- Development and implementation an inspection program for the reticulation network.



## 7 Pump stations

### 7.1 Summary

To implement and operate infrastructure considering the needs of the community we must have pump stations which:

- Have sufficient capacity to cope with peak wet weather flows
- Are resilient to mechanical and electrical failures (have emergency storage and backup power) and natural hazards
- Can be readily maintained

NRSBU operates five pump stations which receive flows from the five contributors (councils and industry). Table 7-1 summarises whether each pump station currently meets the desired levels of service. The issues and planned projects for each pump station, to bring them up to the required standard and enable us to achieve our strategic goals, are discussed in the following sections.

**Table 7-1 Summary of existing pump stations**

Pump station	Capacity for current and future PWWF	Emergency storage and power generation for PWWF	Ease of maintenance (either storage or duplicate pipe system)	In good condition	Protection against predicted sea level rise	Overflow screening and capacity are being implemented
Beach Road	No	No	No	Yes	No	No
Whakatū	Yes	Yes+	Yes	Yes	No	Yes
Saxton Road	No	No	No	Yes	No	Yes
Songer Street	Yes	No	No	Yes	No	Yes
Airport	Yes	No*	No	Further work required	No	Yes

\*Storage is available but not owned by NRSBU

+ Future requirements need to be confirmed by contributors.

Estimated current and future flows in the following sections have been derived from a very limited data set using a very high-level approach. These flow values are to be used as placeholders only, until the NRSBU contributors provide updated contracted flow values. Due to limitations in the data, these placeholder values should not be used for sizing infrastructure without further investigation and analysis.

In particular, NRSBU’s contributors should be able to comment on the effect of their own planned future works on future flows whereas even very detailed analysis of NRSBU’s own flow data can only ever be retrospective and limited to an unknown degree by contributors’ network capacity and operating regime.

### 7.2 Beach Road (Richmond) Pump Station

#### 7.2.1 Description

The Beach Road Pump Station receives flows from the Tasman District sewage network (Richmond, Brightwater, Wakefield and Hope communities), plus a smaller quantity from NPI (approximately 23

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l/s). Flows from this pump station are pumped via a 500 mm OD PE rising main to Saxton pump station.

**Pump capacity:** The pump station consists of one duty pump with a pump capacity of 176 l/s and two storm pumps with a combined capacity of 430 l/s.

**Overflows:** The contracted peak flows from TDC have been exceeded on occasion in previous years. These high flows have generally occurred during rainfall events and have resulted in overflows.

**Condition:** From visual inspections the pump station is in a good condition.

**Resilience:** There is no emergency storage or power generation for the storm pumps at this pump station. The pump station is located on low lying land near the estuary and was inundated in 2018 during cyclone Gita. The inundation resulted in the electrical system failing in the pump station and a loss of service for around 12 hours.

**Septage Reception Facility:**

Also located at the Beach Road Pump Station is the Septage Reception Facility, which receives septic tank waste and other tanked wastes for discharge to the pump station. The facility was installed in 2009 and has a reception unit, controls, washdown facilities and solids disposal. The facility is rated in good condition.



Figure 7-1 Photograph of the Beach Road Pump Station site

**7.2.2 Issues and options**

The contracted peak flows from TDC have been exceeded throughout the years; it is expected that the updated contracted flows to be supplied by TDC will reflect this increase in flows. Additionally, the flows are expected to continue to increase due to intensification within the catchment. Options to address these capacity concerns include 'do nothing' or upgrading duty pumps to deal with current contracted flows.

The pump station is currently not very resilient to electrical faults/power outages or natural hazards such as flooding. Options to increase the resilience of the pump station include the construction of emergency storage, sufficiently sized generators and flood protection works. The site, however, has

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existing space constraints, so improvements are likely to involve the purchase of additional land. The programme of works includes the purchase of land and relocation of the pump station.

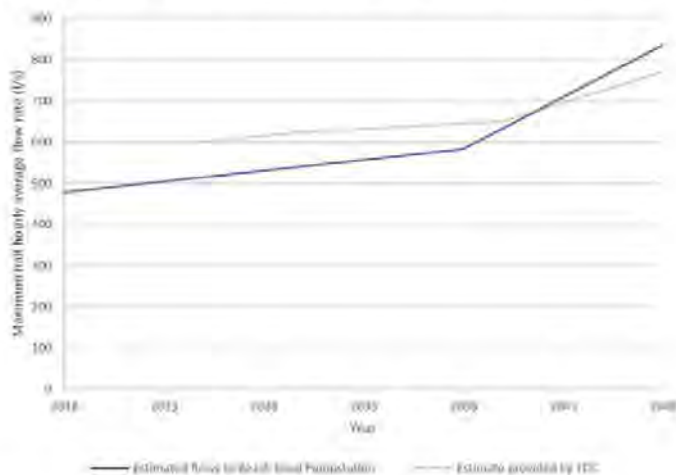


Figure 7-2 Estimated maximum half hourly average flow rate to Beach Road Pump Station

### 7.2.3 Preferred future state

To achieve NRSBU's long term strategic goals and level of service targets, the following work at the Beach Road Pump Station is programmed:

- Install and maintain emergency power generation to duty and storm pumps (2020/21).
- Overflow screen and monitoring systems (2020/21).
- Construct additional rising main from Beach Road Pump Station to Saxton Road Pump Station to accommodate 2050-year foreseeable storm flows (by 2024/25).
- Seismic resilience improvements at the pump station (2024/25).
- Construct flood protection bund around the pump station perimeter (2020/21).
- Purchase additional land in an alternative location to allow managed retreat in future from the current Beach Road site (2023/24).
- Purchase additional land for emergency storage and install emergency storage to hold 6 hours of ADWF (2025/2026), noting that this could be at the future site.

## 7.3 Whakatū Pump Station

### 7.3.1 Description

Whakatū Pump Station receives flows from the Whakatū Industrial area (NCC is the sole contributor) and injects into the Beach Road to Saxton Road rising main.

**Pump capacity:** The pump station consists of two pumps in a duty/standby pump arrangement. The pump capacity is currently 40 l/s and can be increased to 80 l/s by installing larger pumps.

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**Overflows:** There have been no overflows at this site. It is understood that that current capacity of this site does not create overflows, however low points in the upstream council network have not been surveyed relative to the pump station. The installation of an overflow screen is a requirement of the resource consent for emergency discharge.

**Resilience:** The pump station has emergency storage to hold about 140m<sup>3</sup>. The pump station currently has no backup power supply and backup power generation for the existing pumps needs to be installed.

**Condition:** From visual inspections the pump station is in a good condition.



Figure 7-3 Photograph of the Whakatū Pump Station site

### 7.3.2 Issues and options

There is ongoing development in the local catchment (Hill Street) and further growth planned (see Figure 7-4). This will likely increase the flows into the pump station and the size of the pumps will need to be upgraded accordingly. Additionally, the storage available may not be sufficient in the future to provide 6 hrs ADWF. Options to address these capacity concerns and maintain good

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performance of the pump station include increasing the capacity of the pumps, installing back up power supply, and installing overflow screening equipment.

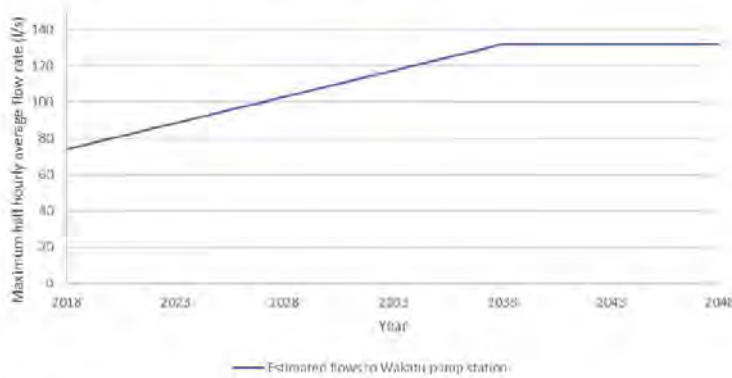


Figure 7-4 Estimated maximum half hourly average flow rate to Whakatū pump station

### 7.3.3 Preferred future state

To achieve NRSBU’s long term strategic goals and level of service targets, the following work is programmed at Whakatū Pump Station:

- Overflow screen and monitoring systems (2020/21).
- Capacity to accommodate future average and storm flows (2024/25).
- N+1 redundancy for critical mechanical equipment (2023/24).
- Cross-connection into the dual Beach Road to Saxton Road rising mains (2023/24).
- Seismic resilience improvements at the pump station (2024/25).
- Flood protection up to a 1% AEP event and 1.0 m SLR (2027/28).
- Security fences.

## 7.4 Saxton Road Pump Station

### 7.4.1 Description

The Saxton Road Pump Station receives flows from NCC’s network, Alliance Group, ENZA, Whakatū Pump Station and Beach Road Pump Station. Wastewater flows from this pump station are then pumped via a 710 mm OD diameter PE rising main towards the WWTP.

**Pump capacity:** The pump station consists of one duty pump with a pump capacity of 192 l/s and two storm pumps with a combined capacity of 580 l/s.

**Overflows:** There have been no overflows at this pump station site and NRSBU is not aware of any overflows upstream in the NCC network. However, NRSBU has a resource consent (RM165114) for this pump station which allows “aberrational” discharges to the estuary. This has occurred due to mechanical failure in the past. Overflow screening and monitoring is required on this pump station.

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**Resilience:** This pump station is the only one in the network which receives flows from another NRSBU pump station (Beach Road). It is therefore a critical component in the network and must be resilient to power failure and natural hazards. Currently, there is no emergency storage or power generation for the storm pumps at this pump station. The pump station has not flooded or been damaged in recent storms; however, it is likely at risk of inundation from predicted sea level rise.

**Condition:** From visual inspections the pump station is in good condition.



Figure 7-5 Photograph of the Saxton Road Pump Station site

#### 7.4.2 Issues and options

The largest flow into the pump station is from the Beach Road Pump Station and any work to upgrade this upstream pump station will need to be planned carefully to tie into works at Saxton Road Pump Station. Although no overflows have occurred it is known that the pumps are undersized for recent growth in the catchment and for increased flows from the Beach Road Pump Station. As discussed in the previous section, the flows from Beach Road are likely to substantially increase within the next 30 years, leading to an increase in flows at Saxton Road Pump Station, as shown in Figure 7-6.

Overflow screening and monitoring systems are required to meet our consent conditions (resource consent number RM165114). These screens will be installed next year (2021/2022). Backup generation will also be installed this year (2020/2021), adequate to run the full capacity of the existing pumps and the future pumps following the projected capacity increase.

A detailed condition assessment has not been undertaken, however from visual assessments the pump station appears to be in good condition. There is no emergency storage at the pump station

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and limited space on the existing site on which storage could be located. It is likely that additional land will need to be acquired to install a storage facility.

This pump station does not have interlocks with Beach Road Pump Station and until this is in place there is a significant risk of overflow at Saxton Road if a failure occurs. Even with these interlocks, until emergency storage is constructed (2038/39) there is a risk that overflows could occur from high inflows from the local catchment.

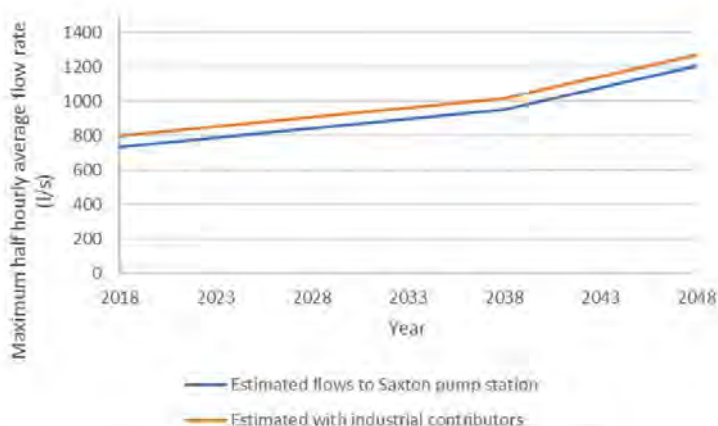


Figure 7-6 Estimate maximum half hourly average flow rate to Saxton Road Pump Station

**7.4.3 Preferred future state**

To achieve NRSBU’s long term strategic goals and level of service targets, the following work is programmed at Saxton Road Pump Station:

- Overflow screening and monitoring system (2021/22).
- Emergency power generation to run the pumps at full capacity (2020/21).
- Pump capacity to accommodate future average and storm flows (2026/27).
- N+1 redundancy for critical mechanical equipment (2022/23).
- Dual rising main to Monaco (by 2022/23).
- Seismic resilience improvements at the pump station (2024/25).
- Security fencing.

**7.5 Songer Street Pump Station**

**7.5.1 Description**

Songer Street Pump Station receives flows from the NCC network and injects into the Saxton Road to Bell Island WWTP rising main.

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**Pump capacity:** The pump station consists of one duty pump with a pump capacity of 119 l/s and two storm pumps with a combined capacity of 217 l/s.

**Overflows:** There have been no overflows in the last two years (2018-2020). NRSBU has a resource consent (RM165114) for this pump station which allows “aberrational” discharges to the estuary. This consent has a number of specific requirements. NRSBU is not currently compliant with some of these.

**Resilience:** There is no emergency storage or power generation for the storm pumps at this pump station. The pump station is located near the coast on low lying land and while it has been flooded (seawater ingress to network) it has not been damaged in recent storms.

**Condition:** From visual inspections the pump station is in good condition.



Figure 7-7 Photograph of Songer Street Pump Station site

### 7.5.2 Issues and options

Songer Street Pump Station receives flows from the NCC network and injects into the Saxton Road to Bell Island WWTP rising main. The current contracted flows are greater than the duty pump capacity but less than the storm capacity (Figure 7.4). Some growth is expected in this catchment and the pumps may need to be upgraded.

A detailed condition assessment has not been undertaken, however from visual assessments the pump station appears to be in an acceptable condition. To improve the maintainability of this pump station an additional rising main to Monaco could be installed or the out of service 300 mm OD PE line to the airport could be rehabilitated to provide two rising mains from the pump station.

There is a small volume (50 m<sup>3</sup>) of emergency storage at this pump station. More emergency storage could be achieved by retrofitting the existing site with additional storage capacity. Backup power generation for the storm pumps will be installed this year (2020).

The pump station is located on low lying land which is susceptible to coastal inundation. The pump station has not been damaged by recent storms; however, as the frequency and severity of these storms is likely to increase, works will be required to seal the pump station and protect it from

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future sea level rise. NRSBU is in the process of applying for a resource consent to raise the height of the cycleway running alongside the pump station. This cycleway will be raised by approximately 1 m and will form an interim bund to protect against sea level rise and storm surges.

The location and longevity of Songer Street Pump Station needs to be assessed regarding sea level rise, including consideration of managed retreat.

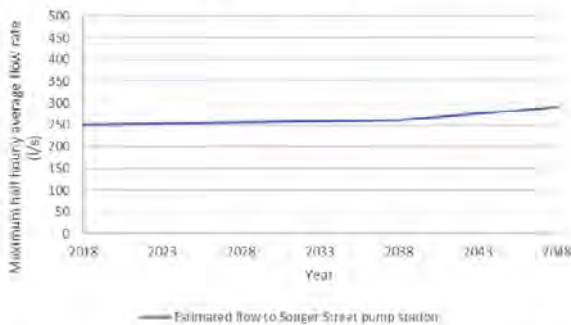


Figure 7-8: Estimated maximum half hourly average flow rate to Songer Street Pump Station

### 7.5.3 Preferred future state

To achieve NRSBU's long term strategic goals and level of service targets, the following work is programmed at Songer Street Pump Station:

- Overflow screening and monitoring system (2020/21).
- Emergency generation to run the pumps at full capacity (2020/21).
- Seismic resilience improvements at the pump station (2024/25).
- Flood bunds and sealed system (2021/22).
- Storage for 6 hours ADWF (2031/32).
- Inter-pump station automation system.
- Security/ Health & Safety fencing.
- Site beautification.

## 7.6 Airport Pump Station

### 7.6.1 Description

The Airport Pump Station receives flows from NCC (Tahunanui Catchment) and injects into the Saxton Road to Bell Island rising main. Prior to 2012, the Songer Street Pump Station pumped directly to the Airport Pump Station; however, this configuration has since changed resulting in a reduction in wastewater flows to the Airport Pump Station.

**Pump capacity:** The pump station consists of two duty pumps with a combined pump capacity of 183 l/s and one storm pump with a capacity of 410 l/s.

**Overflows:** There has been one overflow at this pump station within the last two years (2018 to 2020) due to electrical/mechanical failures. NRSBU has a resource consent (RM 165114) for this

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pump station which allows “aberrational” discharges to the estuary. This consent has a number of specific requirements. NRSBU is not currently compliant with some of these.

**Resilience:** There is no emergency storage or power generation for the storm pumps at this pump station. The pump station is located near the coast on low lying land but has not flooded or been damaged in recent storms.

**Condition:** From visual inspections the pump station is in a good condition, however there are known issues with the condition of the pipework upstream of the pump station.



Figure 7-9 Photograph of Airport Pump Station site

### 7.6.2 Issues and options

The Airport Pump Station receives flows from NCC (Tahunanui Catchment) and injects into the Saxton Road to Bell Island rising main. The flows at the pump station have decreased since 2012 due to a change in network configuration (Songer Street no longer pumps directly to the Airport Pump Station). The Airport Pump Station only has one storm pump, but the projected future flows are less than the current storm pump capacity.

A detailed condition assessment of the pump station has not been undertaken however from visual assessments the pump station is in a good condition and from what can be visually inspected, the pipework leading to the pump station is in poor condition.

There is no emergency storage at this pump station, however there is storage on the site in the form of an old digester and clarifier (currently owned by NCC). NRSBU plans to acquire this infrastructure and convert it into a storage facility that is easily usable by NRSBU.

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An overflow occurred in July 2019 due to an electrical fault. There is a discharge consent which requires overflows screening and monitoring systems to be in place. These screens are being installed (2020/21).

The accessway to the pump station is located on low lying land, which is susceptible to coastal inundation. The pump station itself did not suffer damage in the 2018 storms, however the access to the facility was cut off during the event. It is anticipated that with sea level rise, further works will be required to seal the pump station, improve flood resilience, and improve access.

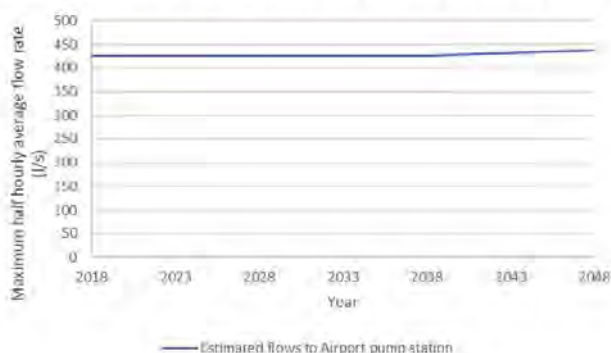


Figure 7-10: Estimated maximum half hourly average flow rate to Airport Pump Station

**7.6.3 Preferred future state**

To achieve NRSBU’s long term strategic goals and level of service targets, the following work is programmed at Airport Pump Station:

- Overflow screening and monitoring system (2020/21).
- Emergency power generation to run the pumps at full capacity (2020/21).
- N+1 redundancy for critical mechanical equipment (2020/21).
- Seismic resilience improvements at the pump station (2024/25).
- Wet well cover replacement (2021/22.)
- NRSBU owned and operated storage (2022/23).
- Inter-pump station automation system.
- Security fencing.

**8 Wastewater treatment and disposal**

**8.1 Overview**

In general terms, the wastewater treatment process at the plant consists of:

- Flow entering the WWTP through an inlet screen and grit chamber. Flow in excess of the capacity of the screens is bypassed directly to one facultative pond;
  - Solids from both the screen and grit chamber are sent for disposal at York Valley landfill.

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- After the grit chamber, flow in excess of the capacity of the Activated Sludge (AS) treatment stream is bypassed directly to the facultative ponds. The AS treatment stream comprises of:
  - a primary clarifier,
  - an activated sludge aeration basin,
  - and a secondary clarifier.
- A bypass line is provided to the facultative ponds after the primary clarifier to convey flow in excess of the capacity of the activated sludge aeration basin;
- All flow which passes through the grit chamber and any subsequent processes is split between the three facultative ponds in parallel;
- Flow exiting the facultative ponds passes through two maturation ponds in series, then on to the outfall discharge, which operates during the outgoing tide (with a proportion discharged to land when conditions allow);
- Sludge from the primary clarifier passes either through a belt thickener or is discharged directly to the sludge holding tanks;
- Activated sludge from the secondary clarifier is split into Return Activated Sludge (RAS), returned to the aeration basin, and Waste Activated Sludge (WAS);
- WAS is thickened by the DAF system and combined with the primary sludge in the sludge holding tanks;
- Sludge is fed from the holding tanks to the ATADs (Autothermal Thermophilic Aerobic Digesters) and then into the biosolids storage tank at Bell Island; and
- The biosolids are then pumped to storage tanks at Moturoa/Rabbit Island for subsequent disposal by application to land composed of forestry blocks.



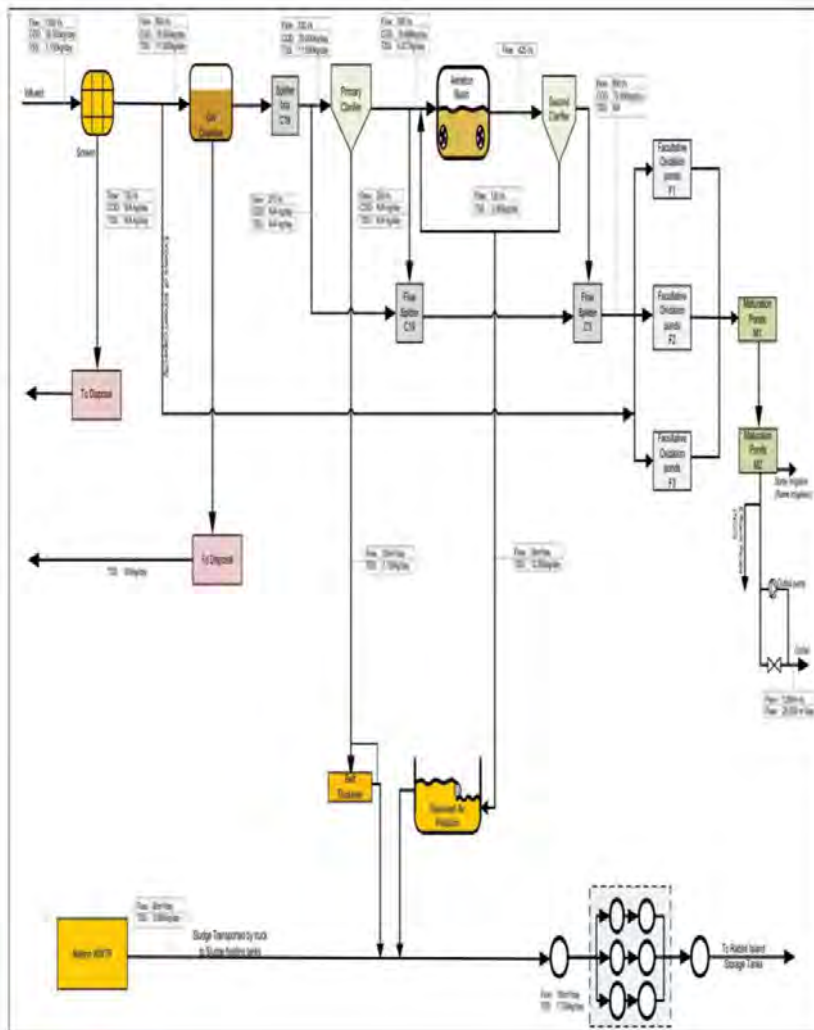


Figure B-1: Schematic of WWTP

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Figure 8-2: Main components of the WWTP (from Bell Island WWTP Application and AEE 2017)

### 8.2 Wastewater treatment plant headworks

The treatment plant consists of an inlet equipped with two grit removal milliscreens. The inlet has capacity to accept up to 1,508 l/s, however the screens have no redundancy at peak flow and the grit chamber only has a capacity of 800 l/s. Flows greater than this are bypassed directly to Facultative Oxidation Pond F1. This can result in excess oxygen demand in the pond and serious odour and treatment issues.

The preferred future state is to increase the capacity at the inlet to have redundancy for peak wet weather flows. Works include installing additional screens (2022/23), revision of the screening technology and duplication of the grit trap (2025/26). This will protect downstream infrastructure from unscreened flows, provide redundancy during peak dry weather flow, and increase maintainability at the inlet. Additionally, the bypass configuration should be changed to reduce the possibility of odour issues and increase the resilience of the ponds (2023/24).

### 8.3 Effluent treatment

After passing through the primary clarifier, flows can be:

- Passed through the aeration sludge basin and secondary clarifier to the oxidation ponds.
- Passed directly to the oxidation pond.
- Spilt between the aeration basin and the oxidation ponds.

The hydraulic capacity of these units is given in the table below, Table 8-1:

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**Table 8-1 Existing hydraulic capacity (as per Bell Island WWTP Capacity Assessment Report 2014)**

Process	Peak Flow (l/s)
Primary Clarifier	530
Aeration Basin	300 (Primary clarifier online)
	500 (Primary clarifier offline)
Secondary Clarifier	300 (Primary clarifier online)
	500 (Primary clarifier offline)

The current peak dry weather flows exceed the capacity listed above and result in wastewater flow being discharged directly to the ponds. The consequence of this is that plant performance is at risk and the ponds are at risk of creating odour issues and may exceed our consent condition.

The preferred option to deal with these issues is to install a complete second treatment stream (aeration basin and secondary clarifier 2028/29). This would increase the capacity to accommodate current and future diurnal flows and increase maintainability as flows could be diverted through one stream without being bypassed to the oxidation ponds.

The capacity of the WWTP is largely governed by the pond system, which comprises of three ten hectare facultative oxidation ponds (FOP) in parallel and two ten hectare maturation ponds in series. The typical retention time for wastewater through these ponds is greater than 30 days. The WWTP has traditionally been operated to meet the target biochemical oxygen demand (BOD) loading rate for the FOPs. This rate varies through the year, with lower rates in winter months. The FOPs have no spare capacity during the winter months but have additional organic load capacity during other times of the year. The current consent conditions for the quality of treated wastewater discharged to the Waimea Inlet are provided in RM171238. These consent conditions have the effect of reducing the capacity of the ponds.

Options to ensure that we have capacity in the ponds throughout the year to meet these conditions include:

- Desludging of the ponds.
- Renewal of pond mixers.
- Installation of electrically power recirculation and seeding pumps.
- Improved scum removal.
- Improved flow distribution system.
- Increase pipework capacity to allow distribution of storm flows to all three ponds.
- Investigation of suspended solids removal options, including small onsite trials of different options.

## 8.4 Effluent disposal

### 8.4.1 To Waimea Inlet

Treated wastewater is discharged to the Waimea Inlet on the first three hours of an outgoing tide. The outfall system consists of a 1200 mm diameter concrete pipeline (500 m long) with two HDPE diffuser strings (70 m long and 94 m long) and outlet riser pipes (100 mm diameter) spaced 1.7 m apart along the diffuser. This pipeline is attached to a tidal storage basin at the WWTP. As per the resource consent (RM171238) the average daily discharge of treated wastewater to the inlet shall not exceed 20,000 m<sup>3</sup>/day, while the maximum volume of treated wastewater over any 24-hour period shall not exceed 25,000 m<sup>3</sup>. Figure 8-3 displays the average inflow into the WWTP compared

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to the discharge rate. The differences in inflow and discharge are due to evaporation from the ponds and removal of biosolids volume. It is likely that the volume of wastewater entering the WWTP will continue to increase in the future.

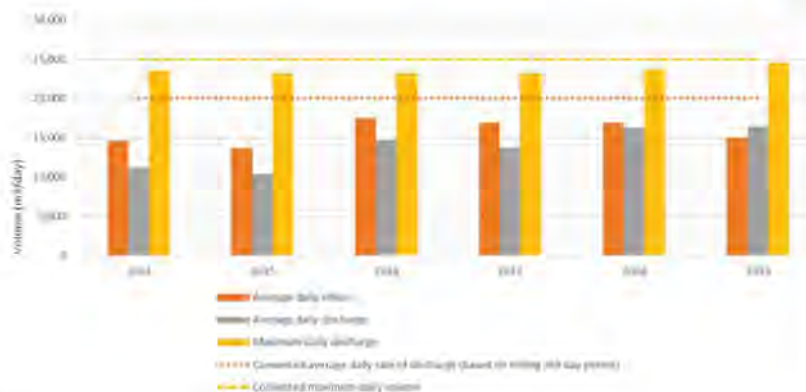


Figure 8-3 Bell Island WWTP inflow and outflow per year

Extended wet weather flows can result in very high flow into the WWTP; therefore the ponds are important in providing storage during wet weather events to ensure that we do not exceed our daily discharge consent conditions. An assessment of the ponds volume at certain water levels has not been completed and is required to provide an understanding of the necessary storage volume to comply with consent conditions. Additionally, during lower summer flow rates there have been non-compliances of BOD and TSS concentrations. Options under consideration to address meeting our consent requirements include 'do nothing' (not a viable option), reduce peak wet weather flows, increase the pond storage volume, and/or reduce the proportion of effluent discharged to the estuary, as well as increasing the suspended solids treatment of effluent. The preferred option is to develop an upgrade plan and implement partial treatment to meet consent requirements while developing land disposal systems to reduce the amount of effluent discharged to the estuary.

**8.4.2 To land**

NRSBU has a resource consent (RM171256) to discharge treated wastewater onto land via irrigation. Up to 1,040 m³/day may be irrigated to an area of approximately 20.5 ha. This provides NRSBU with an alternative discharge to the Waimea Inlet. Further, NRSBU purchased a 64-hectare block of farmland on Best Island (adjacent to Bell Island) in December 2019. This land was purchased with the strategic goal of exploring alternatives to discharging to the Waimea inlet. Although still in the feasibility stage, it is intended that this land will provide an additional land disposal area for wastewater.

As NRSBU moves away from discharging treated wastewater into the estuary, further land purchase will be required. Alternatively, treatment to a higher standard may be required to provide non-potable water for use by water-intensive industries and/or for use to irrigate land not owned by NRSBU.

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### 8.5 Biosolids treatment and disposal

#### 8.5.1 Overview

Biosolids is sewage sludge, which has been treated and/or stabilised. Biosolids disposal is via spray irrigation over 850 ha of plantation forestry on Moturoa/Rabbit Island. The land is administered by TDC. NRSBU holds a permit for discharge of biosolids to land (NN940379V3), which expires in November 2020. An application for renewal of the consent has been lodged and NRSBU is able to continue to operate while the new resource consent is obtained. Ongoing research into the biosolids application on the Pinus Radiata plantation has shown increased tree growth (due to the plantation growing on low fertility sandy soil) of approximately 30% and increased economic return from the forest (by approximately \$480/hectare). The application of biosolids on Moturoa/Rabbit Island is a beneficial reuse of an end-product and enables NRSBU to have an economically sustainable wastewater system.

#### 8.5.2 Biosolids Application Facility (BAF)

The Biosolids Application Facility (BAF) on the island consists of a compound covering approximately 2,000 m<sup>2</sup> and containing four biosolids holding tanks (combined capacity of 1.04 million litres). On site there are also two portacoms and an equipment shed, which are owned by the biosolids application contractor (Figure 8-4). Proposed improvement works for the site include:

- Increase the height of the holding tanks by 50% to accommodate increasing biosolids volumes (2020/21).
- Covers on the holding tanks to minimise odour (2021/22).
- Collection and reuse of stormwater for cleaning holding tanks (2020/21).
- Dedicated washdown area where washdown water is collected and pumped to holding tanks (2020/21).



Figure 8-4: Biosolids Application Facility on Moturoa/Rabbit Island (March 2020)

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### 8.5.3 Disposal effects

The Moturoa/Rabbit Island facility has been researched extensively and monitoring has shown less than minor adverse effects on soil, groundwater, coastal environment and water quality. The only adverse effect currently known over 24 years of operation is occasional nuisance odour issues. We believe that a 'do-nothing' approach is not a viable option to reduce odour complaints and meet our levels of service. Therefore, our preferred option is to develop a system to increase the quality of biosolids produced and improve identification and management of conditions where odour complaints are likely in order to avoid discharge in vulnerable areas during these conditions.

Currently, an application (app) that assists the biosolids operations staff to select an effective site is being developed. This app is intended to not only assist with selecting the best site each day, but will also record the decision so that a clear track record is available electronically.

### 8.5.4 Natural hazards

Moturoa/Rabbit Island is a plantation forest and is therefore at risk of forest fires. At present there is no other alternative biosolids disposal method. By doing nothing we are at risk of being unable to dispose of biosolids, which would have consequential issues for the operation of the Bell Island WWTP. Furthermore, Moturoa/Rabbit Island is vulnerable to sea level rise. The continued use of a 50m buffer from mean high water springs (MHWS), as per the consent conditions, is likely to impact the amount of land available for disposal of biosolids due to any future sea level rise. Ultimately, there is a risk that the disposal area will be insufficient and/or unavailable in the future. Options to mitigate these risks include:

- carry out hazard assessment to understand risk and timeframes,
- purchase additional land for biosolids disposal,
- change treatment process and identify way to create a product from biosolids sold and/or used in different application.

## 9 Financial projections

### 9.1 Capital budgets

The forecast capital expenditure over the next 30 years have been provided in Figure 9-1. These works have been categorised by strategic objective to make clear the budgets required to achieve our vision.

The capital budgets beyond the decade (from 2031/32-2050/51) have been averaged over 5-year timeframes. A large amount of spending in the five-year period 2036-41 is for projects which will increase conveyance capacity to cater for future growth. This includes upgrading the Beach Road Pump Station and the design and construction of a pipeline from Beach Road clockwise to the WWTP.

It should be noted that no money has been allocated for the purchase and designation of land for a future WWTP. The relocation of the WWTP is likely to be required within the next century due to discharge requirements and sea level rise. Finding and designating an appropriate site in the future may be more difficult and expensive if not purchased now.



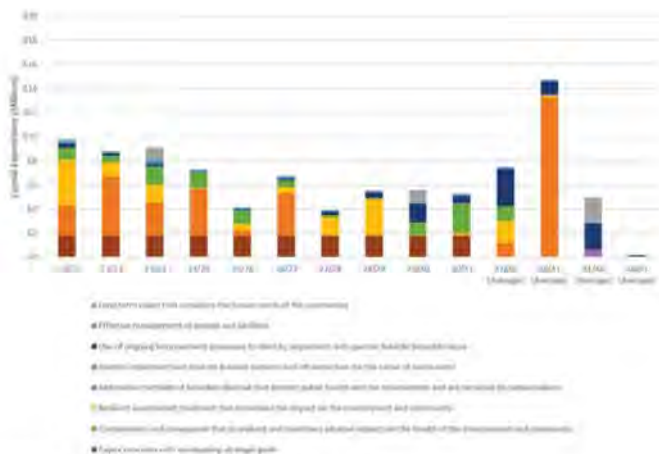


Figure 9-1: Capital budget forecast for the next 30 years

The capital expenditure has also been categorised by renewals, level of service and growth and is provided in Appendix D. Over the next 10 years our spending is driven by meeting our level of service, while infrastructure driven by growth becomes significant after 2030.

**9.2 Operating budgets**

NRSBU’s operational expenditure forecast (excluding inflation, depreciation and interest) over the next 30 years is shown in Figure 9-3. Activities have been split into management, power, new processes, maintenance, monitoring and general. Over the next 10-year period the operational costs are approximately \$55 million, with the split between these categories shown in Figure 9-2.

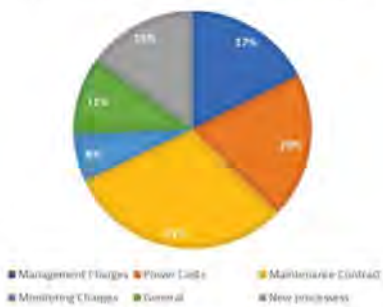


Figure 9-2: Operational budget for the next 10 years per category

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Operational costs are consistent over the next five years as they are largely fixed by contractual and staff commitments. Operational costs begin to increase with the implementation of duplicate infrastructure at the WWTP and higher quality treatment processes to enable the reuse of wastewater (UV disinfection, ultrafiltration and nutrient removal). An increase in power costs driven by an increase in flows is also expected to occur.

Constant general, management, maintenance, and monitoring costs have been assumed in the operating budget, however in reality these are likely to increase.



Figure 9-3: Operational budget forecast for the next 30 years

### 9.3 Funding sources

NRSBU has Trade Waste Agreements with its five major contributors and recoups its expenditure through fixed and variable charges as follows:

- Fixed charges based on flows and loads quota, which account for return on investment and depreciation.
- Variable charges for operational expenditure. This is an interim charge based on the previous month's recorded flows and loads and unit prices. The unit prices are determined from NRSBU's current year's budget and last year's flows and loads. At the end of the financial year there is a calculation to reconcile costs based on the current year's flows and loads and the actual expenditure.

There are ten cost centres in the model for recovery of costs, with an agreed allocation of flows or loads for sharing the costs across each of the centres. There are penalty provisions for breaching the flow or load quotas. The cost centres are:

- Pumps, pipes and biofilters
- Septage receiving facility
- Screens
- Primary clarifier
- Aeration basin
- Secondary clarifier
- Ponds and outfall
- Biosolids

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- Nutrient removal
- General

As shown in Figure 9-4, the charges for the main contributors have remained similar over the last five years. Changes to the funding model may be required to ensure that the programme of works can be achieved in a cost-sustainable way.

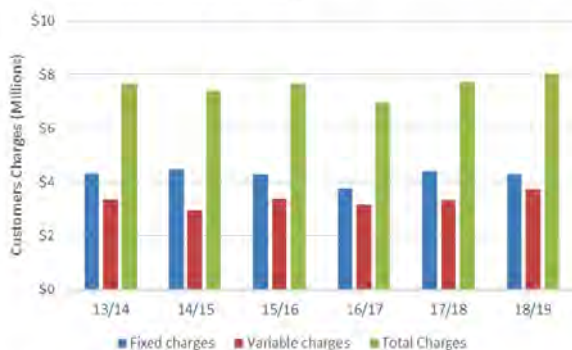


Figure 9-4: Total charges for the five main contributors

#### 9.4 Debt forecasts

Debt and depreciation forecasts are provided in Figure 9-5 and Figure 9-6 respectively. After 30 years, interest and depreciation (as operating costs) are estimated at approximately \$9M pa. As depreciation is currently the only payment against principal, there could be options in the future to increase the principal repayment to reduce the amount of interest.

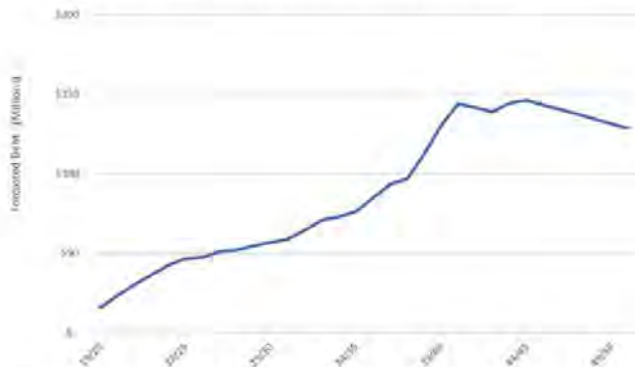


Figure 9-5: Forecast debt over the next 30-year timeframe

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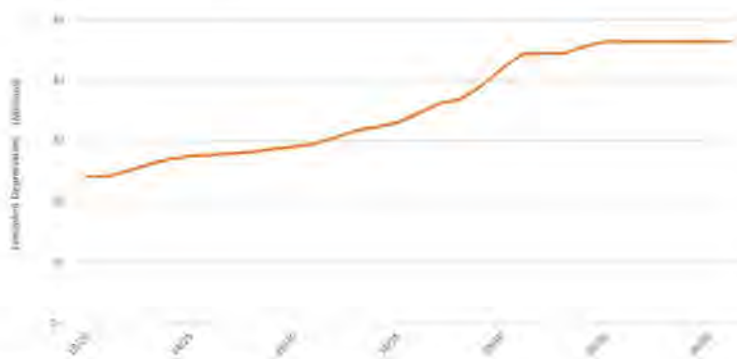


Figure 9-6: Forecast depreciation over the next 30-year timeframe

**9.5 Assumptions and confidence in the forecasts**

Key assumptions with these forecasts and the associated risks are provided in Table 9-1. These expenditure forecasts are based on very high-level cost estimates and significant assumptions about future contracted flows, therefore there is high uncertainty about the accuracy of these estimates. The confidence level of these forecasts will be improved once full business cases for the proposed projects have been completed.

Table 9-1: Key assumptions and risks

Assumption	Risk
All contributors remain	One or more contributors leave, and any shortfall is not made up by others.
Growth will occur at the rates and in the areas predicted	If growth occurs faster and is more than predicted there is a risk that the programme of works will have to be fast tracked and will be difficult to deliver on time. If growth is less than predicted, infrastructure may not be required.
Renewals are like-for like and do not change the replacement cost of the asset portfolio	Significant changes in cost will result in budget constraints and difficulties in delivering the programme of works.
No significant emergency event occurs	Unable to deliver programme of works due to disruptions and costs from an emergency event.
Assets will be replaced at the end of their predicted life	Overestimation of remaining asset lives and underestimation of renewal budgets.
Interest rates will be similar to the predicted rates used in these forecasts	A significant increase would impact our delivery of the programme of works within the forecasted budgets.



# Part C: How we manage what we have

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**10 Our people**

**10.1 Governance structure**

NRSBU is a joint committee of NCC and TDC and is comprised of:

- Two NCC representatives (one must be an elected member of council);
- Two TDC representatives (one must be an elected member of council);
- One Independent Member appointed by the two councils;
- One Iwi Representative; and
- One Industrial Contributor' representative appointed by the Major Industrial Contributors (does not have voting privileges).

Appointment of both the independent member and iwi member is timed to provide continuity across changes from local government elections.

**10.2 Organisational structure**

NRSBU's organisational structure is detailed below in Figure 10-1 and is considered appropriate for the scale of the operation.

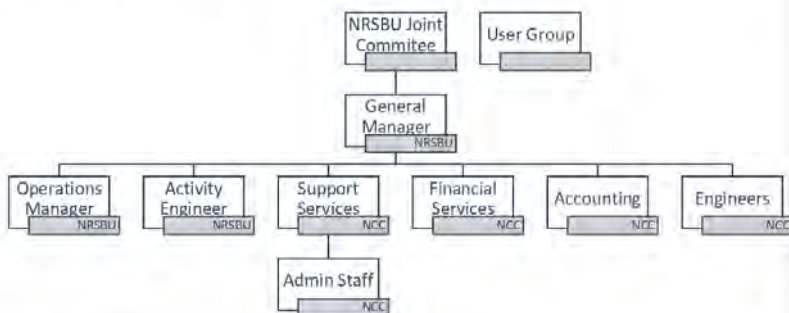


Figure 10-1: NRSBU's organisational structure

NRSBU employs a minimum number of staff required to manage the business, via NCC as the administering authority. The number of employees is kept small, as NRSBU continues to use NCC's HR and administration support to facilitate operational efficiencies.

The remainder of the staff required to operate the assets are procured using a long-term operations contract, currently held by Nelmac. The operations contractor's staff have multiple points of contact with NRSBU staff. Additional specialist maintenance and consulting services are procured as required.

Staffing capacity for NRSBU is reviewed annually and it is anticipated that additional NRSBU staffing capacity will be required to support the delivery of the significant capital and renewal works programme contained within this AMP.

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### 10.3 Employees

Our objective is to effectively manage our people so that we can undertake our activities to a high-quality standard and in a timely manner. NRSBU will have the appropriate staff to undertake its organisational, asset and operational management activities internally.

Currently, we do not have a formal skill register or a resourcing plan for our staff. This creates a risk that we do not proactively fill any gaps within our business as they arise. Additionally, as we rely largely on external contractors there is a risk that we do not have control over their resourcing and training.

To manage staffing capabilities and levels more effectively, our intention is to have:

- People with the required skills and knowledge.
- A skill register which details the gaps in our business, and knowledge.
- A forward works programme with an estimate of the staffing capacity required by NRSBU to deliver the programme of works.
- A training and development plan.
- A succession plan.
- An internal training programme.

### 10.4 Health and safety

NRSBU is committed to ensuring that everyone gets home safely and that there is ongoing improvement in our current practices. NRSBU H&S functional activities are managed using NCC's systems and policies and NRSBU fully subscribes to the vision for a Zero Harm Culture.

Day to day health and safety is primarily managed by the operations and maintenance contractors. Monthly meetings are held between NRSBU and the two main contractors: Nelmac and Nelson Marlborough Waste where health and safety is the first item on the meeting agendas. NRSBU undertakes six-monthly health and safety site audits and periodically commissions external health and safety audits. Issues that are identified by these audits become improvement projects. Additionally, there is an active health and safety improvement register, which is frequently revised and updated.

NRSBU's intention is to maintain the current system for managing health and safety. It is considered appropriate as it utilizes the expertise of the operational staff at each of the sites while enabling independent audits and continuous improvement.

## 11 Our community

A successful approach to working with our community is one which creates engaging and meaningful conversations, so we understand the needs and wants of our community.

Currently we manage our relationship with iwi by having an iwi representative on the board. We consult the community during consent applications. Members of the public can find information about our activities and future projects on our website.

The gaps with our current approach mean that we have not had ongoing dialogue with iwi and have relied on the resource consent process to initiate these conversations which makes it difficult to address their concerns on an ongoing level. From 2020 an annual Hui will be hosted in November each year by NRSBU to encourage dialogue between NRSBU and iwi.

We do not actively promote our activities and achievements to the general public (we have a website which is intermittently updated) and therefore there is a risk that the public are only

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exposed to negative activities such as odour complaints and sewage overflows that are reported in the media and do not understand our mitigation practices. Additionally, as we have not engaged proactively with iwi and the wider community there is a risk that our vision and strategic goals do not reflect the communities' wants and values.

To effectively manage our relationship with our community we must be transparent and increase the public's knowledge of our day to day activities and future goals. To achieve this, we will:

- Hold an annual Hui and public open days.
- Have a current and informative website, which NRSBU staff can update.
- Publish articles in council publications.
- Develop a regional infrastructure plan for wastewater services.
- Hold two monthly management meetings with council asset managers.
- Have an NRSBU staff member sit within NCC and TDC offices at least one day per week to facilitate regional conversations and foster ongoing communication.
- Hold quarterly meetings with our contributor in advance of the quarterly board meetings.

One of the challenges to achieving the above tasks is the lack of appropriate facilities to host meetings. Our programme of works includes the development of the house on Bell Island (part of the 2019 land purchase) so it is suitable to hold meetings and the NRSBU annual Hui.

## 12 Assets

This section outlines how we manage our assets – how we monitor their current state, how we approach operating them, how we maintain them and how we plan to replace and upgrade them.

### 12.1 Understanding our assets

This section outlines the systems we have in place to understand our assets. Having an accurate understanding of the state of our assets is the foundation to the managing them into the future.

#### 12.1.1 Asset performance

Successful performance monitoring will provide an accurate and detailed understanding of the performance of the system and inform maintenance and renewal programmes. The preferred system would involve integrated systems which notify us of any issues and enable us to visually see trends in monitoring data.

Our key performance areas for our trunk mains and pump stations are detailed in Table 12-1 while the performance measurements for our treatment and disposal facilities are detailed in Table 12-2.

**Table 12-1: Reticulation and pump station performance**

Key performance area	Performance measurement (for all PS)
Overflow occurrence	High level alarms alert the duty operator immediately if wet well levels are nearing overflow. Level sensors indicate if overflow levels were reached.
Pump failure	Pump failure alarms alert duty operator immediately.
Meter accuracy/trunk main integrity	Flow mass balances calculated in spreadsheets.
Pump efficiency	Manually logged on maintenance sheets: <ul style="list-style-type: none"> <li>• daily check of instantaneous flow and power consumptions</li> </ul>

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Key performance area	Performance measurement (for all PS)
	<ul style="list-style-type: none"> <li>weekly pump run test</li> </ul>
Average and peak flow handling	Flow meters on all inlet pipes and PS discharge.
Trunk main blockage	<p>The Bell Island to Moturoa/Rabbit Island biosolids transfer pipe is monitored daily for pressure, to indicate when pigging is required. Pigging is undertaken three times per week.</p> <p>The primary sludge lines at the WWTP are monitored daily and pigged.</p> <p>Other pipes not monitored specifically.</p>

**Table 12-2: Treatment and disposal performance**

Key performance area	Performance measurement
Quality of discharged effluent and biosolids	Weekly sampling.
Flow handling	Flow meters on outlet pipe. Daily outflow graphs calculating annual rolling mean.
Aerators efficiency	Dissolved Oxygen monitoring. Current draw by the motor.
Odour	Odour complaints monitoring.

The challenge with our current performance monitoring is that the data collected is not held by NRSBU in single system, which makes it challenging to visually see trends in the data and create automated reports. Additionally, as the data is generally not inputted into the system on site by the operator, there is a risk that the data has been interpreted incorrectly.

We plan to improve our performance monitoring by implementing the following works:

- Developing our use of Infor and ensuring that data is entered into the system seamlessly and intuitively.
- Creation of dashboards to give visibility to real-time and trending information.

**12.1.2 Asset condition**

The preferred approach to understanding our asset condition would involve the completion of a detailed asset condition survey of our critical assets and the ongoing management of an asset condition register which would be updated incremental by staff during routine visual inspections.

Currently, we take a risk-based approach to condition monitoring as we are unable to conduct CCTV assessments as our assets cannot be easily drained. NRSBU considers the recently installed trunk mains (i.e. HDPE) to be in a good condition whereas, the condition of the concrete pipeline from Monaco to Bell Island and Bell Island to Moturoa/Rabbit Island is unknown. Additionally, where possible, visual assessment of the assets is conducted including:

- Routine visual assessments of the pump station chambers conducted by Nelmac staff.
- Visual assessment of the storage tanks at Moturoa/Rabbit Island when they are emptied and washed down by Nelson Marlborough Waste Management.
- Visual assessment of the assets at the WWTP during day to day operations.
- Annual emptying of the primary clarifier and aeration basin and secondary clarifier to inspect the condition of the structure and to allow visual inspection of the aerators and mixers, and scraper mechanisms.

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The risks with this approach to condition monitoring mean that we do not have an accurate baseline condition of our assets and must be prepared to replace the assets quickly if they no longer perform as required.

Our intention is to continue to with a risk-based approach to condition assessment and complete CCTV assessments of only the critical assets where the condition is unknown. The programme of works for the next 30-year timeframe will increase redundancy, which should enable assets to be replaced with less impact on the system.

## 12.2 Operating our assets

NRSBU's intention is to operate our assets in a way that is sustainable with minimal social and environmental impact. We strive to have the right people and operation systems in place so that our processes are always compliant with resource consents and continuously improve to ensure optimisation.

NRSBU has two main operational contracts; one for biosolids disposal and another for the remaining activities. Table 12-3 summarises the NRSBU maintenance and renewal contracts and the contractor's responsibilities.

Nelmac has a maintenance and operations contract with NRSBU. The contract outlines the activities required by the contractor and includes operations of both the treatment plant and the pump stations and a range of minor maintenance activities. Nelmac provides five staff on Bell Island, comprising three operational staff and two maintenance staff. The staff who operate the pump stations are part of a separate team provided by Nelmac. The maintenance and operations contractor must also nominate a wastewater treatment plant specialist to provide expertise in process management (supplied by Stantec). The specialist also oversees the data collected by the contractor and must inspect and approve any outliers. The specialist will therefore confirm the accuracy and quality of data used to operate and manage the NRSBU assets. It should be noted there is no contractual relationship between the wastewater specialist and NRSBU.

The risks with the current way we operate our assets is that there can be resourcing conflicts in large storm events as staff are also part of other Nelmac contracts with NCC and TDC as the current operation contract does not specify the number of staff that must be required exclusively for NRSBU operations. There are unique processes at the Bell Island and Moturoa/Rabbit Island facility and as this knowledge of the plant is developed over time; there is a risk that this expertise is lost with a change of staff and/or contractor. Additionally, as the wastewater specialist is engaged by the operations contractor the advice received from the specialist cannot be considered unbiased and NRSBU need to be careful relying on it.

NRSBU intends to address these risks when the Operations and Maintenance contract comes up for review. Possible changes to the contract are as followed:

- Specified minimum number of staff on site.
- Specified staff structure and responsibilities to ensure no boundary between conveyance and treatment operations.
- Ensure operations teams have a holistic understanding of the scheme.
- Technical expert will be engaged directly by NRSBU.
- Contract framework that focuses on outcomes and more effective share of responsibility.
- Collaborative approach to budgets and work programmes with the contractor.
- Adaptive approach to delivering the service using a pain-share/gain-share approach.

Nelson Marlborough Waste has the current biosolids disposal contract and has been operating the Moturoa/Rabbit Island disposal since 1996 (previous contract was held by Astro Environmental,

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which is now part of Nelson Marlborough Waste). As the process is a niche skill, it is normally the sole tenderer when the contract is up for renewal. The contractor owns the mobile operations equipment and is responsible for its maintenance. The major risk with this contract is the loss of skills and expertise that could result with a change of contractor; however, we do not believe any significant changes are required to this contract.

**Table 12-3 Maintenance and renewal contracts**

Service Area	Contractor	Endire Date	Contract Number	Responsibilities
<b>Reticulation (truck mains and outfalls)</b>	Nelmac	30 September 2020 (extended to March 2021)	3458	Operation and maintenance of all equipment and facilities at the WWTP.
<b>Pump Stations</b>				Disposal of all wastes generated including screening residuals.
<b>Treatment Plant</b>				Disposal of treated biosolids to holding tanks on Moturoa/Rabbit Island. Operation, maintenance and management of all equipment and facilities upstream of WWTP including: <ul style="list-style-type: none"> <li>• NRSBU pump stations</li> <li>• NRSBU pipelines.</li> </ul>
<b>Biosolids Disposal</b>	Nelson Marlborough Waste	30 June 2020 (extended to June 2021)	3619	Spraying of biosolids Operation of biosolids storage tanks

**12.3 Maintaining our assets**

A risk profile approach to maintaining assets is preferred. Having a prioritised maintenance schedule, which is based on the condition (age), repair time and criticality of the asset results in a maintenance programme, which is cost effective. Ideally maintenance contracts will be structured in a way, which encourages staff to be proactive in maintaining assets to the required quality.

The current contract has a requirement to maintain assets. However, the contract is prescriptive and there are gaps in the scheduled requirements. For the most part maintenance is reactive and occurs when issues are spotted. The maintenance and operation contractor is responsible for the maintenance of the rising mains, pump stations and treatment plant, however NRSBU is responsible for the cost of reactive maintenance and larger programmed maintenance items.

NRSBU does not currently have a defined maintenance programme and/or a schedule of minimum spares. However, there are a small number of asset classes that have preventive maintenance schedules including the air compressors, backflow preventers and aerators at the treatment plant and ongoing pigging of the biosolids pipeline. Spares (stored at Bell Island Treatment plant) are carried to support reactive response to failures for certain items at the treatment plant and large pumps. The operation and maintenance contractor is responsible for maintaining the inventory, however, this may not be up to date.

There is the potential for large costs to be incurred with reactive maintenance and loss of plant efficiency. As there is a reliance on the expertise of the contractors to spot issues there is a risk that some issues are not spotted during routine operational inspections. With the current approach to

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maintenance, critical assets are not prioritised and there is a risk that if an asset requires major work and is not able to be repaired/replaced in an appropriate timeframe it could impact our contributors. Additionally, as the inventory of spare assets is not maintained there is a risk of replacement spare not being ordered to maintain the inventory.

We plan to accept the risk of unplanned failures occurring as we believe this is an efficient approach for the system. However, we will minimise the impact of these failures by ensure that critical assets have N+1 redundancy. The general approach to maintenance will remain reactive, however we will take a critically approach and identity prevention maintenance schedules for critical assets.

As we currently lack formal maintenance systems and documentation, we plan to address this risk by ensure that maintenance scheduling and reporting is done in Infor and is able to be updated by the field staff in real time in the form of a mobile app. Our intention is to have these systems and programmes established before the new maintenance contract. The new contract will take a general approach using a time and disbursement funding and provide incentives for efficiently maintaining assets.

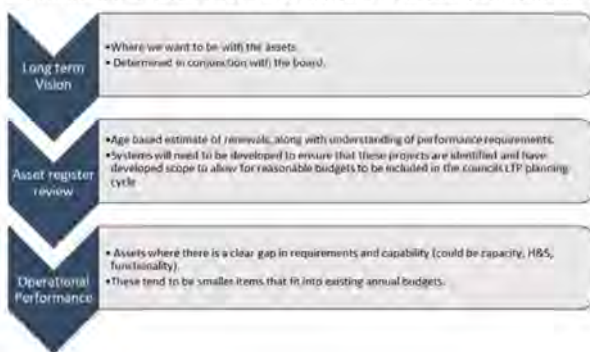
Recently NRSBU has started to order new large pumps with vibration sensors built in, to support proactive maintenance. Work has yet to be undertaken to establish the processes and systems for analysing the vibration data, defining the intervention specification, and seeing that through to actioning.

#### 12.4 Replacing our assets

A good approach to asset renewal is one which is risk based and considers the likelihood and consequence of failure, the asset condition and performance and the overall life cycle costs of the asset. As discussed in the previous operations and maintenance section, the critically of assets will inform renewals.

Currently, renewals occur in an ad-hoc basis. The identification of assets that require replacement is generally triggered by the failure of the assets or an issue that is likely to result in imminent failure. With the current arrangement inspections generally only occur for operational purposes. There is a risk that as the intention for these inspections is not for renewal planning the performance and condition of the system is not considered as a whole and issues may be missed. Therefore, with the current approach for renewal planning there is a risk of avoidable maintenance expenditure, unforeseen budget surprises, premature failure and reliability impacts where not covered by N+1 (e.g. screening chamber).

Our intention is to have a three-tiered approach to renewal planning which could include:



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To effectively manage our assets, there is a need to develop a dashboard and/or use Infor to inform asset renewals, which will be the responsibility of the Activity Engineer. Maintenance inspections reports and condition assessment schedules (which are yet to be developed) will also be incorporated into one system so that a lack of inspection will also alert a risk of failure. A traffic light system will be developed to visually see which assets are at risk of failure including intentional and unplanned deferred replacement and pending replacements.

Renewals projects may be constrained by budgets as historically annual renewals have been low. NRSBU can modify project timeframes to smooth expenditure within this budget cap and ensure that prioritised projects have adequate budgets. NRSBU will continue to focus on a planning process that identifies projects and develops scope sufficiently to allow reasonable budgets to be developed, covering at least the three-yearly council LTP planning cycle.

**12.5 Upgrading our assets**

The preferred approach to upgrading our assets is one which identifies and prioritises projects that align with our strategic goals. Upgrades to ensure that levels of service continue to be met and those required to accommodate growth, need to be clearly identified.

Historically upgrades are driven by either the customer requiring more capacity or changes in consent conditions. The strategic approach informing upgrades is usually discussed with the board in advance and these projects general require higher level of justification. Large projects (e.g. Best Island land purchase) must be signed off by the councillors of each council. Any changes in capital and operational costs are handled through the cost allocation model.

The risk with the current approach is projects, due to the cost allocation model are driven by the contributors' capacity requirements and/or achieving compliance. There is a risk that if our contributors are not on board with our strategic goals and where we want to be in the future, projects will not be approved and funded. We intend to address this risk by ensuring that the board is behind our vision and level of services and is clear which projects are required to achieve them. Additionally, we will have a staged approach that develops concepts and engineering estimates to inform budgets with adequate lead time.

**13 Risks**

**13.1 Our key risks**

We have a number of key risks that we do not have an appetite to accept at their current level. We are actively managing these risks through projects that are either underway or proposed. These projects are expected to reduce the risk to an acceptable level, although for some risks this may take a long time to achieve. These key risks are summarised in Table 13-1 below. Our overall approach to managing risk is discussed in the following section.

**Table 13-1 Key NRSBU Risks**

Risk	Cause	Current Mitigation	Future Mitigation
Disruption to treatment processes in the ponds, creating odour issues.	Concurrent excess load from industries	Contributor contracts with penalty clauses Online monitoring and regular contributor sampling	
Break/leak in network	Unreliable asset attribute	Operations manual hardcopy with	As-built plans of high quality and all asset locations known.

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Risk	Cause	Current Mitigation	Future Mitigation
Making an incorrect assumption about the presence or absence of an asset, based on faulty data. Significant inefficiencies for operations and maintenance staff finding information.	information in Infor Poor asset information in GIS	information, staff/contractors experience Flow meters at pump station, mass balance (5%)	Plan to improve the GIS system. Use of Infor and other asset management tools, to streamline the use of asset data.
Unable to treat wastewater due to ageing and under capacity power supply	Lack of resilient power supply to Bell Island.	Bell Island can cope a few hours without power. Generator at inlet (3 x emergency generators for resource consent)	Install larger generators that could power the plant. Look at alternative power supply options, including alternative alignment to the current estuary location.
Breaks in the network causing overflows Increased maintenance cost, increased "down time" Compliance liabilities, due to avoidable non-compliance event	Deteriorating condition of aging infrastructure.	Weekly flowmeter mass balance checks by contract supervisor and asset engineer to show signs of leaks	New duplicate rising main installed across estuary to Bell Island. Additional duplication of pipelines proposed to allow improved ability operate system while inspecting and maintaining assets. A programme developed for risk-based condition assessments of the pipeline, especially the old line from Monaco to Bell Island (currently planned for July 2021).
Overflows Decrease revenue due to drought and lack of flow volume Moturoa/Rabbit island closed or restricted discharge due to fire risk Damage to infrastructure	Extreme weather.	Washup Pump more than contracted flows There are two application vehicles at either end of Moturoa/Rabbit Island if one cannot be accessed due to fire risk. These are owned by the contractor by NRSBU covered the costs of setting up the second system. Temp bunds at Beach Rd to seal openings at building	Rising main capacity upgrade Redundant storm pumps for all pump stations (work in progress). Development of emergency storage on the mainland at the terminal pump station(s), to improve maintainability and attenuate some peak flow. Increased bunding Bell Island. Works at Songer Street and Beach Road to protect from flooding, storm surge and costal inundation.
Overflows from pump stations	insufficient power generation.	Standby generators for duty pumps	Standby generators to run full storm capacity are planned.

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Risk	Cause	Current Mitigation	Future Mitigation
The aeration ponds have to be used for emergency storage of biosolids, with an odour issues and removal costs. Alternate disposal options have to be sourced under duress	Disruption to land disposal sites (both at Rabbit and Bell Island).	Storage tanks at Moturoa/Rabbit Island	Begin process to source other land or alternate acceptable disposal options (including required plant upgrades).
Risk to the public and environment from overflows	Insufficient capacity in the network for actual wet weather flows.	Overflows upstream in the contributor network	The planned improvements to trunk main and pump capacity. Improved communications between NRSBU and contributors.
Avoidable non-compliance through staff inaction or inappropriate action.	Insufficient staff continuity, training, and retention.	Additional resources provided through Secondment and/or external contractors	Engagement of NRSBU direct staff. Revising the operations and maintenance contract to include specific requirements around staffing and to increase collaborative management of the system.

### 13.2 Our risk management approach

NRSBU aspires to manage risks in a rationale, systematic way that ensures the right effort is put against the right risks. An appropriate risk management approach should provide:

- A way for people to have visibility of the risks that are relevant to them.
- Identification of risks that are deemed unacceptably high and progress against reducing those risks to an acceptable level.
- Visibility of those risks that will not be mitigated further but are still significant.
- A scalable process that works at the project, operational, and organisational levels.
- A live process that remains up to date.
- An iterative approach that supports continuous improvement.
- Communication and consultation with people from different areas of expertise to define and evaluate risks.
- Consideration of emerging risks, the limitations of information and the biases of those involved.

Aligning to the ISO risk standard (31000) is a means of achieving this.

NRSBU has a Risk Management Plan (RMP), which includes a very comprehensive risk register. The plan is based on ISO 31000 principles, but it exists as a static document that is not incorporated into the operation of the business. For example, the register states that risks which are scored as extreme or high should be reported to the board, however currently this is not captured in structured way. NRSBU plans to update the RMP and incorporate it formally into reporting procedures.

The current approaches for communicating risk within the organisation include:

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- Management conversations with the board when discussing strategic projects.
- Informal conversations with the board regarding meeting agenda items such as health and safety, quality, environmental performance and operational issues and constraints.
- Monthly management conversations with the operations and maintenance contractor.

The risk conversations that happen in the board and operational meetings become part of the meeting minutes under their relevant headings. These are then tracked until they have been addressed.

NRSBU has identified the following risks from its current approach:

- That an important risk item could fall through the cracks if it is not covered by an existing agenda heading.
- That without linkages between the risk register and an improvement programme, work items may struggle for planning or budget and not be resolved in a timely manner.
- That projects that address an important risk for a moderate budget may not be given the attention they deserve compared to higher profile risks, as structured risk workshops are not currently held.

These risks will be addressed by developing a new risk management plan that is aligned to ISO and integrating that into the business. In the interim a draft risk management plan has been developed, based on the legacy risk register from the previous AMP. This will become part of the risk management plan once developed.

As well as the overall risk management plan, detailed risk management plans for specific aspects of the business will be developed, including:

- Business risk management plan – this to consider income variability and the influence on overall budgets particularly from industrial clients.
- Odour risk management plan – existing but needs to be developed further.
- Sea level rise and climate change risk management plan – consider the implications from sea level rise and change in weather patterns on operations and site viability.

### 13.3 Critical assets

Understanding asset criticality is foundational to a risk-based approach for managing assets. The preferred approach for asset criticality provides a clear framework for describing the consequence of asset failure, from low to extremely high and applies that framework at an appropriate level of detail. This framework would give balanced weighting to different kinds of consequences such as environmental, public health, and financial. It would also scale to describe whole sites down to individual assets and components within those sites, as required. The criticality of a site and its assets would then be incorporated into operation, maintenance and renewals planning.

Currently, our approach to determining the criticality of our assets is based on staff experience about the consequences of failure. The assets identified as most critical are:

- Trunk mains.
- Pump stations.
- Power supplies (both onsite generation capacity and supply from the mainland).

NRSBU's planning for resilience, described in the following sections, is focused on these critical assets.

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The main gap between our current approach and the preferred approach is the lack of documentation. This makes it difficult to take a systematic approach to anticipating failure, especially in critical control and electrical systems. Additionally, the lack of documentation and a consistent approach in assessing critically makes it harder to communicate critically across our maintenance and operation contractors and members of the board.

There is a risk that critically is not incorporated in our decision making for prioritising maintenance work and capital projects.

Our intention is to develop our approach to criticality as part of improving our risk management processes. We plan to reduce the criticality of certain assets by ensuring redundancy in the system through duplication and bypass facilities. We accept that though some of our assets will remain at a high level of criticality (e.g. civil infrastructure) the overall risk of failure of these assets is low.

### 13.4 Resilience

Resilience has increasingly become a focus at all levels of governance. Resilience requires consideration to be given to how infrastructure, natural systems or social fabric will respond to both incremental change and infrequent shocks in a manner, which enables disruption to be minimised. This is becoming increasingly important as communities respond to climate change and we become more aware of our vulnerability to natural disasters such as extreme storms, earthquakes and volcanic eruptions.

From IIMM 2015, resilience is defined as follows (New Zealand Treasury, National Infrastructure Unit, 2011):

*“the concept of resilience is wider than natural disasters and covers the capacity of public, private and civic sectors to withstand disruption, absorb disturbance, act effectively in a crisis, adapting to changing conditions, including climate change, and grow over time.”*

Resilience of a system can be defined as the:

*“the ability of systems (including infrastructure, government, business and communities to proactively resist, absorb, recover from, or adapt to, disruption within a timeframe, which is tolerable from a social, economic, cultural and environmental perspective.”* (Money et al, 2017).

The NRSBU aspires to a risk-based approach for resilience. This involves assessing the hazards the scheme is exposed to and how vulnerable the scheme is to them, along with the criticality of the assets involved. Improving resilience goes hand in hand with detailed risk assessments, which evolve over time.

A cornerstone philosophy of our approach to resilience is ensure that all highly critical assets have appropriate redundancy or alternate backup. Future projects to support this include duplication of our rising mains and ensuring N+1 redundancy for pump station storm pumps and WWTP headworks assets.

The perceived criticality of an asset is incorporated into our operations and maintenance planning informally, and into the design of our major capital upgrades, however this is not documented. Resilience considerations were also built into the design of the treatment plant at the time of construction, but these have not been subject to review since.

Even after these projects, some parts of the process will still have a degree of exposure and vulnerability. A criticality review with the board of NRSBU on a bi-annual basis is advised to determine if any of these risks are unacceptable. Improvements in our approach to risk management will support this.

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We currently have an existing business continuity plan, which describes how to respond to an emergency event that presents immediate threats to life, critical physical assets or a sewage spill into the environment. It also details how to restore services to normal operations following an emergency event of disruption of services. This plan was last updated in July 2016.

As described above, the main gap in the current practice is the informal consideration of resilience rather than through a structured approach. Sources for progressing this include the 2015 guidance on developing levels of service for wastewater seismic resilience, the Building Importance Levels defined in the Building Regulations 1992 and recent work for NCC on natural hazard infrastructure loss modelling by Aon/Tonkin and Taylor.

This would facilitate discussion for moderately (but not highly) critical assets such as the large diameter concrete pipes used within the WWTP site, which have not been considered for seismic or other resilience issues so far.

### 13.5 Lifelines

NRSBU provides a lifeline utility service, as defined under the Civil Defence Emergency Management Act 2002.

NRSBU relies on the relevant NCC staff to make it aware of any civil defence or lifelines planning requirements over and above its current approach.

### 13.6 Covid 19

The new coronavirus Covid-19, which has led to the declaration of a worldwide pandemic, could impact on the programme for reform of three waters management and the capital works programmes. NSRB is unable to factor in the risks of three waters management reform until more is known, but capital works programmes shall be reviewed against councils' intentions to limit rates rises.

## 14 Systems

### 14.1 Asset management systems

Asset Management Information Systems provide an understanding of assets to optimise lifecycle costs, identify required work, record completed work and cost of work. It benefits general management, long-term planning and data analysis. NCC has a number of information systems that the Business Unit uses including Infor IPS, GIS and SCADA. The systems are described in more detail below.

#### 14.1.1 Current system

NCC has the Infor IPS Asset Management System (formally known as Hansen), to which NSRB has access. Similar to the GIS system, the IPS system is used to store data on all infrastructural assets (with the exception of land transport) but in a non-spatial manner. All asset information is stored in Infor and linked with GIS.

It provides a single platform for the optimization of assets and has been implemented to improve the efficiency, flexibility, and accuracy with which we currently plan for our assets. IPS is an SQL driven web-based product capable of integrating with most of Council's existing information systems.

The IPS system assists to:

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- conduct asset condition analysis,
- carry-out replacement cost valuations and calculate changes in asset book values,
- carryout optimized decision making on renewal programmes and
- plan and schedule effective maintenance programmes.

The asset database in IPS gets updated from various activities:

- Operations & Maintenance works.
- CCTV inspections.
- Capital projects.

NSRBUS has failed to regularly update the information in Infor as assets are rehabilitated, renewed/replaced or new assets are constructed. This issue is being addressed by the appointment of the Activity Engineer, who will assume management of the database.

The use of the Infor system has enabled the following:

- Customer enquiries being logged directly and sent immediately to the contractor for action.
- Contractor directly enters resolution confirmation at completion of job.
- Tracking of expenditure on assets to allow assets that have a disproportionately high maintenance cost to be identified - upgrade or renewal can then be prioritised.

NSRBUS's contractor Nelmac has a live interface with Infor. Any work associated with unscheduled maintenance is entered into Infor work order by the contractor. Completed work orders forms the basis of the contractors' payment.

#### 14.1.2 Preferred asset management system

The main gap between our current approach and the preferred approach are the multiple different management systems and lack of processes. Currently, data collected from our operational and maintenance contractors is held separately to our system so there is risk regarding ownership of collected data. There are limited specifications regarding which data should be collected and processes to audit this information resulting in uncertainty of the completeness and reliability of this data.

To address these issues and risks NRSBU plans to work through a stepped process which includes:

- 1 Fix the GIS system to show NRSBU assets irrespective of their location (inside NCC or TDC Territories. Add dummy nodes for all sites, with index numbers for as-built plans.
- 2 Improve dashboarding for operations and maintenance data, and asset condition and renewal data (read-only visualisation).
- 3 Define integration requirements for asset management system.
- 4 Develop 3D model of the site(s), and assets into a BIM model.
- 5 Implement real time data entry from field.

#### 14.2 Environmental management systems

The preferred environmental management system (EMS) for our business would:

- Connect the existing processes and tools we use to track progress towards our strategic goals and manage compliance with our statutory and voluntary obligations.
- Enable us to better identify and track opportunities for us to continually improve our performance as well as opportunities to make positive environmental impacts.

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- Ensure the environmental concerns or expectations of our stakeholder (employees, contributors, iwi, communities, and shareholders) are considered in our decision-making processes.
- Help us to be better prepared for environmental incidents by ensuring we know the environmental context of each of our assets and all of the environmental receptors at risk in the event of an incident.
- Increase awareness of environmental obligations and opportunities within our organisation and ensure we have the right resources and competent people to manage these.
- Improve how we communicate our environmental performance both within and outside of our organisation.

Currently, our environmental system is the framework created by our resource consents. The process to get the consents considered the environmental impacts we have that are covered by the RMA, set some limitations on our activities, put in place a monitoring programme and provides feedback on performance. As an environmental system, this approach provides some basic safeguards but does not encourage continuous improvement beyond compliance minimums. In addition, our current approach only captures some of our regulatory compliance obligations (not those in permitted activity rules, or legislation other than the RMA) and it does not assist us in managing our other compliance obligations (e.g. expectations of our contributors, neighbours, local iwi and wider community, or voluntary commitments). It is ineffective in identifying environmental, social or legislative changes that may impact our business in the future.

The risks of the gaps between our current and preferred approach are that we are currently only managing some of our regulatory compliance obligations, however, failing to meet voluntary or community commitments may also represent a significant risk for us in terms of reputation or a social licence to operate. Our preferred approach would allow us to capitalise on opportunities and be better prepared for abnormal operating conditions, planned operational changes, or legislative shifts that may impact how we manage environmental impacts (e.g. changes affecting or increasing our ability to reuse treated wastewater).

We plan to undertake the EMS improvement projects detailed in Section 9 that will address the following risks:

- Follow the principles of ISO14001:2015 Environmental Management Systems and ISO14064-1:2018 Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals.
- Undertake an audit of the current emissions and have systems in place for the ongoing monitoring and reporting of emissions (20/21).
- Formally include emissions and energy consumption as criteria in all NRSBU decision making and set reduction targets (21/22).

At this stage, we plan to accept the remainder of the risks outlined above.

### 14.3 Quality systems

NRSBU aspires to a quality system that over time, delivers improved efficiency and less mistakes, and an improved client experience. This quality system will:

- Follow the principles of ISO9001:2015 Quality Management Systems.
- Provides the tools, systems and processes we need to deliver a great job to our clients.
- Ensures our documentation is properly controlled so that our procedures, policies, etc. are the "one source of truth", and that this can be readily accessible for all users (such as on the intranet or a central server).

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- Allows for the review of new processes and content before they are added into our source of truth.
- Uses the Plan-Do-Check-Act cycle (the tool used in ISO9001:2015- Quality Management Systems, shown in Figure 14-1 below) to foster continuous improvement and lift our business performance over time.
- Includes a risk-based approach, to avoid us over-documenting our low risk processes.
- Over time, delivers improved efficiency and less mistakes, and an improved client experience.



Figure 14-1: The Plan-Do-Check-Act cycle

Currently, NRSBU has the following systems that provide quality control:

- An O&M plan that includes operator checklists.
- A near miss system for operational misses as part of the operational contract with Nelmac. This involves a monthly agenda item on the operational meeting, covering quality (reporting/admin etc.), environmental, and health and safety. Once raised, these become agreed action items in the meeting minutes, and this is then tracked via the actions list until it is resolved. A significant event will trigger a specific review meeting and detailed follow-up reporting.
- The works order system which is used to record improvement opportunities that are agreed for actioning at the Operations Management meeting.
- The NCC document management system, which is used for storing some information, while other datasets are stored locally.

The biggest risk from the gaps between our current and preferred system is the intellectual property staying with the operational contractor because there is no consolidated place for saving all process and operational information (e.g. an intranet) that works for all parties. These risks will be addressed with the development of an integrated asset management system with maintenance checklists and operating procedures linked to each assets and process.

#### 14.4 Financial systems

This section describes NRSBU's financial systems under the headings of treasury and budgeting, valuation, insurance, and procurement.

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#### 14.4.1 Treasury and budgeting

Important background to the treasury and budgeting approach is NRSBU's financial strategy, which can be summarised as:

- Contributors should be charged to recover the operational costs that they generate.
- Contributors should be charged the funding costs of the Capital employed to support their quota.
- Asset renewals should be primarily funded through annual depreciation charges.
- Capital costs for new assets, and any renewals costs that exceed depreciation charges, are funded through debt.
- Loans are repaid through depreciation funds.
- The long-term capital debt forecast is taken as the indicator of financial sustainability, as the cumulative balance of operational costs does not need to be considered.

In addition to supporting the strategy above, NRSBU has the following requirements for its treasury and budgeting approach:

- Financial reporting requirements of relevant legislation and standards are met.
- Actual income and expenditure for the current financial year can be managed easily.
- Predictable charging can be provided to contributors.
- Budget planning for the short to mid-term future (1-10 years) is supported.
- Financial sustainability of the activity (at least 30 years) can be assessed through long term forecasting.

The treasury and budgeting systems that NRSBU has in place to meet these requirements are outlined below.

##### 14.4.1.1 Financial reporting and actuals

Accounting is carried out to generally Accepted Accounting Principles to comply with the Local Government Act 2002 and Public Benefit Entity International Public Sector Accounting Standards (PBE IPSAS).

NRSBU uses NCC's financial systems to manage actual income and expenses, undertake invoicing and to track financial performance against current year budgets. Utilising these existing services is more efficient than maintaining separate financial systems and allows for easy integration with NCC's financial auditing. NCC uses integrated computer software supplied by MagiQ. The General Ledger is linked to packages that run Debtors, Creditors, Banking, Rates, Fixed Assets, Invoicing, Water Billing, Job Costing and Payroll. Internal monthly financial reports are generated by Council significant activity and sub-activity categories although real time data is available at any time. External financial reports by significant activity are published in the annual report.

##### 14.4.1.2 Predictable charging for contributors

NRSBU has a comprehensive charging model that relates the components of the contributors' flows and loads to the actual costs incurred by the business. This model is documented in the contract and provides transparency to the contributors.

Each contributor is advised of its capital charge for its committed quota and the operational unit charges estimated from their historic loads and the forecast budget. The actual annual operational charge will vary based on flows and loads observed. The primary cause of large variations between estimated and actual are changes to flows and loads by the contributors. Where large variations in



flows and loads occur, the charging agreement provides for an annual washup based on actual loads and flows and the actual operational costs.

Forecasting of changes to client charges in light of the long-term budget is not carried out.

#### 14.4.1.3 Short term budget planning

NRSBU annually updates a detailed rolling three-year budget as part of its business plan process. The plan is developed by NRSBU management and then approved by the board. The two owning councils then each adopt the plan.

The three-year budget sits inside a high level 10-year budget that is developed as part of the AMP preparation. The 10-year budget is updated every three years.

#### 14.4.1.4 Financial sustainability

NRSBU primarily evaluates its long-term financial sustainability by modelling its future debt levels. Debt is used as the metric because operational costs are balanced annually and do not have a cumulative financial impact.

NRSBU is reliant on NCC to develop the long-term debt forecasts, which are updated every three years after the AMP budget is submitted to the NCC finance team. This forecast consolidates debt from improvement, growth and renewals capex into a single account.

NRSBU's overall debt position is split evenly between TDC and NCC, with each council incorporating that debt within its organisational debt caps. The limitation imposed from these debt caps is considered as part of NRSBU planning, being understood qualitatively through the Councils' representatives on the board and informal discussions between NRSBU and council staff.

One of the challenges with incorporating financial sustainability into the long-term budgeting is that the long-term debt forecasts are not available until some months after the AMP budget has been prepared and adopted. Due to this limitation, the AMP budgets are tested for sustainability based on staff experience to judge how the last forecast would be impacted by changes in the new budget.

NRSBU management discusses the debt forecasts with the board when they come available.

#### 14.4.2 Valuation

NRSBU requires that its asset valuation system provides the following:

- replacement costs to inform insurance amounts and planning for renewals project budgets;
- annual depreciation calculations to support allocation of intergenerational equity and appropriate funding for renewals projects; and
- depreciated asset values as an indication of asset value/life consumed.

Currently, the results of the valuation process are not updated into the asset register.

NRSBU's current valuation approach is:

- NCC maintain a fixed asset register.
- An independent valuer uses the fixed asset register to prepare a new valuation every two years.

Part of the existing valuation methodology includes consideration of recent contract costs and this will be considered again in the next valuation.

The risks from the gaps between our current and preferred system are:

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- NRSBU has not undertaken a first principles valuation for some time and therefore, there is a risk that the valuation is not as accurate as it could be. The consequence is that we may have under-insured out assets, which would increase our financial risk.
- We may have under-forecast the cost of our renewals programme (only if the asset register is being used to forecast costs though), resulting in inadequate budgets for planned renewal projects.
- We may not be charging the right amount for depreciation, which risks requiring additional loan funding for works.
- We may not have the timing of our renewals programme right, resulting in projects being required sooner than was budgeted or reduced system reliability from deferred renewals.

We plan to make the following improvements to our valuation process:

- Improve the integration between the valuation process, the financial asset register and Infor.
- Review the confidence in the historic valuation information, particularly for large value assets where legacy values have been incremented because there have not been relevant capital projects to benchmark the values against and get an independent valuation developed based on the as-built plans.

#### 14.4.3 Insurance

NCC purchases insurance on behalf of NRSBU. The Nelson City Council and NRSBU assets are managed as a larger package of South Island Territorial Authorities for catastrophe insurance and the Top of the South Collective for material damage and liability insurance.

NRSBU also has liability insurance level of fire cover for Moturoa/Rabbit Island forest that is specified by TDC because it is the forest owner. This currently sits at \$1,000,000, as this is amount required under the contract.

The insurance purchase to cover the loss or damage of assets provides for the following:

- Additional increased cost of working (e.g. additional staff to support emergency response);
- Consents for new alignments or other matters arising;
- Additional operational costs during recovery (e.g. to cover alternate disposal solutions if Rabbit/Bell Islands forests catch lost to fire; and
- Post event cost surcharging.

With the current insurance cover there is a risk that there is a lack of reserves for covering "excess" and that that the implications of not being able to use the Moturoa/Rabbit Island forest for biosolids disposal is not adequately covered.

A review is needed of the amount and types of cover held, in relation to the third part liability (e.g. Moturoa/Rabbit Island forest), and the operational impacts (e.g. additional disposal costs if Moturoa/Rabbit Island is not available).

#### 14.4.4 Procurement

NRSBU operates under NCC's procurement policy and uses its purchasing systems.

NRSBU directly procures capital projects and professional consulting. Plant consumables (chemical, power) and specialist maintenance services (e.g. electricians) are generally procured through the operations contract.

The way the current operations contract is structured creates some potential risks:

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- The contractor is not required to have dedicated staff, which could result in periods of understaffing.
- The contract does not emphasise having the right people responsible for delivering the required outcomes.
- The contract may not be cost efficient as large amount of contract administration is required.
- The current focus on performing a fixed schedule of works may not foster innovation and efficacy.
- The current contractual arrangements with subcontractors may mean that guarantees between equipment suppliers and installation contractors may not pass through to the NRBSU.
- It is difficult to audit the contract performance at the interface between different disciplines.

We intend to address these risks by ensuring that any new operations and maintenance contracts are structured in a way to promote a collaborate approach ensure that staff are fully focused on NRBSU objectives.





## Appendix A: History of NRSBU

### A1 Inception of NRSBU

In the early 1970's poor water quality in the Waimea Inlet meant there was a need to move towards better treatment of the waste streams in the area. Several of the major industries, along with the Councils, discharged partially treated effluent direct to the Waimea Inlet.

After five years of investigation Bell Island was chosen as the best site for a regional treatment facility and the Nelson Regional Sewerage Authority was set up to administer the Joint committee. The NRSBA sewerage system, comprising pump stations, rising mains, aeration basin and oxidation ponds, was commissioned in 1983. The treatment plant was upgraded in 1996, 2006 and 2009/10.

In the early 1990's the plant exhibited sludge treatment capacity constraints resulting in the construction of a secondary clarifier and ATADs to take the sludge loads off the facultative ponds.

In 1998 a review of the structure and operating principles was undertaken on the NRSBA, and it was renamed NRSBU.

Following severe odour issues a new aeration basin was constructed in 2004.

In 2006 several components of the plant began to exhibit capacity constraints at peak flows and loads and a review of the treatment capacity in November 2006 highlighted the need to further upgrade the plant. The plant was upgraded in 2009/10 to increase the plant capacity by pre-treating the peak loads at the front end of the plant and installing flow bypass facilities, which allow the flows and loads going through the plant to be treated within the existing capacity of the downstream components.

The 2009/10 upgrade was designed to increase the capacity in terms of flow, Chemical Oxygen Demand (COD) and Total Suspended Solids (TSS), and included:

- Installation of a new inlet chamber system and screen.
- A primary clarifier for pre-treatment of the load prior to the existing facilities.
- Installation of a thickening system for primary sludge.

Since the completion of the upgrade in July 2010 it has been demonstrated that the treatment plant has significant capacity to cater for future growth.

Over time the rising mains from Beach Road to Bell Island have been renewed to PE material. The renewal and upgrade of the rising mains and pump stations completed in 2013 have created capacity in the network for at least the next eight to 10 years. Additional security has been built into the rising main network with the completion of a second pipeline crossing from Monaco to Bell Island in 2012.

Effluent quality has decreased over time and is associated with the build-up of sludge in the facultative and maturation ponds. Future initiatives are programmed to improve the management of sludge in the ponds, and to improve the quality of effluent through the modification of the ponds.

### A2 Contributing councils

#### A2.1 Nelson City Council

Nelson City Council and its forebears have been responsible for sewage disposal in the city since the first piped disposal system was put in place in approximately 1907. The city has expanded by

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amalgamation of adjoining areas. Tahuna Town Board joined the city in 1953 and Stoke was transferred from Waimea County Council in 1960.

#### **A2.2 Tasman District Council**

Tasman District Council and its forebears have been responsible for sewage disposal in the area since the first piped disposal system was put in place in the late 1940's and early 1950's. Tasman District was formed by the amalgamation of adjoining Boroughs and Districts in 1989. Before amalgamation Richmond Borough and Waimea County, along with Nelson City Council, were the major stakeholders in the Regional Scheme.

#### **A3 Previous AMPS**

The first AMP was completed in June 1999 and further refined in 2003, 2007, 2012, 2014 and 2017 to meet minimum requirements. The Asset Management changes between 1999 and 2017 include:

- NRSBU established
- Significant Asset Management awareness at governance level
- Increased understanding and implementation of risk management
- Asset register implemented
- Upgrade of the treatment plant
- Rising main upgrade through the Waimea Estuary from Monaco to Bell Island
- Dedicated website for NRSBU
- Upgrade of Saxton and Richmond pump stations
- Construction of Songer Street regional pump station
- Moturoa/Rabbit Island biosolids resource consent – and amendments to resource consent
- Centre pivot irrigation joint venture with Julian Raine on Bell Island for the irrigation of pastoral land
- Installation of booster pump on outfall. This improves the capacity to achieve consented discharge flows and allows NRSBU to optimise the buffer capacity of the ponds to manage wet weather flows
- Development of a long-term strategy for pipeline routes
- Review sludge treatment at Bell Island
- Construction of an irrigation supply pipeline from Bell Island to Monaco with Nelson City Council. (Irrigation pipeline is owned by Nelson City Council)
- Installation of wind generated mixers on one of the facultative ponds

#### **A4 Bell Island Wastewater Treatment Plant**

##### **A4.1 History**

**1983:** The Bell Island Wastewater Treatment Plant (WWTP) was commissioned in 1983. The original design population for the WWTP was 33,000 and the plant consisted of a fully mixed aeration basin, three facultative oxidation ponds (in parallel), two maturation ponds (in series) and a tidal discharge. The original concept allowed for expansion by the addition of one extra aeration basin (alongside the original aeration basin), and extra maturation ponds as required. (BOD design capacity of ponds = 4,257kg per day = 149kg per Ha per day and a minimum of 30 days retention.)

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The WWTP operated successfully until overloading of the facultative oxidation ponds (FOPs) was noticed in the late 1980s. The overloading caused malodour. Investigations into the issues concluded that the cause of the overloading was a combination of stratification and organic load build-up in the ponds in excess of treatment capacities. Because of the high organic load the available oxygen in the ponds were quickly assimilated, causing anaerobic and putrefactive conditions and noticeable malodour production. Mechanical mixers and aerators were installed in the facultative ponds to address these issues.

**1992:** A review of the WWTP in 1992 confirmed that sludge build-up was a primary factor causing the overloading and it was recommended that desludging of the oxidation ponds should be commenced and also recommended the installation of a clarifier and sludge processing plant (Autothermal Thermophilic Aerobic Digestion - ATAD) to improve the management of loads to the oxidation ponds.

These upgrades were completed in 1996. Over time further issues were observed and investigated:

- Overloading of the aeration basin caused malodours
- A fungal parasite infected the ponds, reducing the algal population for short periods with consequential generation of malodours
- Improved solids capture through recycling of sludge was desirable in the clarifiers to reduce load on the FOPs
- High nitrogen levels in the biosolids processed by the ATAD plant led to a requirement for additional land to maintain biosolids application rates within consent limits for nitrogen
- The operation of the ATAD and sludge processing plant needed improvements to the aeration and mixing equipment
- There were reported high hydrogen sulphide levels around the inlet basin which needed to be addressed.

**2003:** In 2003 NRSBU tendered the design, construction and operation of a retrofit at the WWTP that included the installation of a Dissolved Air Flotation System (DAF). This upgrade was implemented during 2004 and 2005.

After the acceptance of the tender, but prior to the construction, it became apparent that the influent parameters to the Bell Island facility could, at times, exceed the design parameters used for the upgrade. However, NRSBU decided to continue with the tender and to review the situation after the installation of the 2004-2005 upgrade.

**2006:** In 2006 several components of the plant began to exhibit capacity constraints at peak flows and loads, and a review of the treatment capacity in November 2006 highlighted the need to further upgrade the plant. It was agreed that the upgrade would increase the plant capacity by pre-treating the peak loads at the front of the plant and installing flow bypass facilities, which would then allow the flows and loads going through the plant to be treated within the existing capacity of the downstream components.

This strategy optimised the use of the existing assets and allowed the components to be better matched than previously in terms of treatment capacity. The main issues to be addressed in the upgrade were:

- The existing inlet screen which was undersized for future loads
- Screening was not sufficient to protect downstream equipment
- The existing treatment systems did not have the capacity to treat future loads
- Moturoa/Rabbit Island was running out of capacity to dispose of sludge with high levels of nitrogen.

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**2007 – 2010:** The 2007-2010 upgrades were designed to increase the capacity in terms of flow, COD and TSS, and included:

- Installation of a new inlet chamber system and screen
- A new primary clarifier for pre-treatment of the load prior to the existing facilities
- Installation of a thickening system for primary sludge
- Installation of a pump at the outfall to maximise the discharge rate.

Although the design of the biosolids thickening/dewatering process was completed, the actual construction of the facility did not proceed because NRSBU had applied for, and was subsequently granted, a revised consent which allowed application of higher nitrogen levels at Moturoa/Rabbit Island. This removed the need for the capital investment. The physical works of the upgrade were completed in July 2010.

NRSBU agreed that it would be uneconomic to treat peak flows through the clarifier and aeration basin, and a series of flow splits were included in the design of the upgrade.

The bypass philosophy used for the upgrade provides for the efficient use of assets and reduced the capital costs of the upgrade, but at the same time it carries a slight increase in operational risk. This is because the performance of the overall plant could be affected during high rainfall periods due to the large amount of bypass flow that would pass to the facultative ponds.

During the development of the upgrade methodology, it was identified that the loading profile was not expected to change significantly over time due to the contractual agreements in place, and therefore while flows would increase as a result of proposed pumping increases, it was unlikely that the average daily flows would increase to above 300 l/s in the next 10 years. Therefore, the risks of the bypasses will be confined to heavy rainfall events. (Daily average 2016/17 = 198l/s)

In the worst-case scenario, there may be periods where plant performance might deteriorate due to long term high flow periods.

**2011:** The 2011 sludge management review included a tour of facilities in the North Island where sludge was treated anaerobically. It was found that all the treatment plants visited struggled to use the methane to generate electricity. NRSBU's study concluded that maximising the useful life and optimising the ATAD processes currently used at Bell Island to treat sewage sludge provides the best economic outcomes for the Bell Island treatment plant. It is acknowledged that if NRSBU loses access to Moturoa/Rabbit Island and need to dewater sludge that investing in an anaerobic sludge treatment process will need to be considered.



## Appendix B: Industrial Contributors' Background

### B1 Nelson Pine Industries (NPI)

The Nelson Pine Industries medium density fibre board (MDF) factory, near Richmond, opened in October 1986, for manufacturing products comprising of specially engineered wood fibre bonded with synthetic resin adhesive under heat and pressure. The plant has capacity to process 1,000,000 cubic metres annually, making it one of the largest single site MDF producers in the world.

Nelson Pine Industries is a wholly owned subsidiary of the Sumitomo Forestry Company Ltd of Tokyo, Japan.

NPI uses water for washing chips and other processes. Wash water is treated to remove solids before it leaves the site. A flotation clarifier uses tiny dispersed air bubbles to float coagulated solids to the surface of the clarifier where they are skimmed off. The solids are then thickened up in a big screw press. These solids are then burned with other wood waste in the furnaces at NPI. This minimises requirements for landfill disposal. The treated water is then pumped to the Bell Island WWTP for further biological treatment prior to discharge.

Nelson Pine demands on the WWTP can be affected by:

- Importing additional logs into the district (to make up shortfall or increase production);
- Harvesting peaks due to planting sequences (fluctuating production);
- No further land available for planting (cannot increase production);
- Competing land uses (reduction in land for forestry unless owned by NPI);
- Securing logs for processing into MDF (unable to buy logs for processing);
- World prices (influence demand);
- NPI Plant capacity and room for further expansion (influence demand);
- Undertake their own on-site treatment.

The above factors will be considered to validate the future requirements requested or not requested by NPI as part of the continued discussions with all contributors about their future requirements.

NPI has continued to make improvements to their on-site treatment facility. With little growth in production projected, the improvements to the on-site treatment facility are likely to release capacity for the use of other contributors in future.

### B2 ENZAFOODS

ENZAFOODS was established in 1962, with the first processing plant built in Nelson. T&G Global Limited (T&G) manufactures and exports fruit and vegetable juice concentrates, and also has a fruit and vegetable products factory located in Nelson. In 2018 ENZAFoods (subsidiary of T&G) was purchased by Cedenco Foods New Zealand Limited (Cedenco). Cedenco factories are strategically located close to international ports in the two key pipfruit growing regions of Hawkes Bay and Nelson. The contributor contract for this site is held by Turners and Growers Ltd not by Cedenco, despite Cedenco being the largest discharger. It was announced in March 2020 that Cedenco will relocate its apple processing from Nelson to its existing Hasting site by the end of the 2020 season. It is unclear at this time what the future of the site will be. Turners and Growers Ltd has not indicated to NRSBU that it wishes to terminate its contract at this time.



**B3 Alliance**

The Alliance Group Ltd replaced the 1909 plant with a new plant in 2000. It is a comparatively small and efficient, single chain sheep and lamb operation, which also processes bobby calves in the spring.

The plant operates on a shift basis, employing a staff of about 160 over two shifts, one starting in August operating almost all year round with the second shift commencing early November going through to May. The plant is able to add value to a lamb carcass.

Alliance does not present a major risk for Bell Island given the total flow contribution.

**B4 Septage Disposers**

The additional loading requirements from septage disposal (from non-reticulated rural areas septic tanks) have been resolved by the installation of a separate septic disposal facility adjacent to the Richmond pump station. Individual permitted users have limits and are charged accordingly. The main uses are:

- Fish/Mussel Waste
- Chicken Waste
- Trade Waste
- Stock Effluent
- Septage



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## Appendix C: Risk Management Plan

### C1 Background

Risk assessment is used as a strategic decision-making tool assisting with developing and prioritising strategies and work programmes. Risk management is the systematic application of management policies, procedures, and practices to the tasks of:

- Identifying
- Analysing
- Evaluating
- Treating
- Monitoring

It is important to note that risk management is not simply about the downside of events such as financial loss or legal proceedings. It also refers to the upside and opportunities that exist for NRSBU to do things more innovatively, sustainably, and effectively.

### C2 Analysis of risks

The risk management framework is consistent with the joint Australian New Zealand Standard AS/NZS4360:2004 Risk Management and the associated Risk Management Guidelines (SAA/SNZ HB 436:2004), to ensure risks are managed on a consistent basis.

Risk, likelihood and consequence are defined as follows:

- Risk is the combination of the likelihood and consequence of an event occurring.
- Likelihood is a description of the probability or frequency of an event occurring.
- The consequence is the outcome of an event being a loss, injury, disadvantage or gain.

For each event the likelihood score is multiplied by the consequence score for each area of impact (there will be only one likelihood but several consequences for each event) as shown in Table 14.1 below. These multiples are then totalled to produce the risk score for the event.

The risk priority ratings and the risk response of the mitigation strategies are detailed in Table 14.2 below.

Table 14-1: Semi-quantitative measures of consequence and areas of impact

Areas of Impact	Descriptor				
	Negligible	Minor	Moderate	Major	Catastrophic
Health and Safety	10	30	50	70	100
Public Health	10	30	50	70	100
Asset Performance	10	30	50	70	100
Environment and Legal Compliance	10	30	50	70	100
Historical or Cultural	10	30	50	70	100
Financial	10	30	50	70	100
Public Perception	10	30	50	70	100





Table 14-2: Risk priority rating

Risk Score	Level of Risk	Risk Response
>200	Extreme	Awareness of the event to be highlighted to the Board and shareholders
150 - 200	High	Risk mitigation project to be reported to the Board with resolution on management/elimination of risk.
100 - 150	Moderate	Risk mitigation reported to Board quarterly.
0 - 100	Low	Managed by routine procedures



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**C3 Asset Risk Register**

Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Gross Risk	Action Plan Description	(IP) Ref	Residual Risk
1	Operations	Supervisory failure.	Failure to ensure compliance by contractor, resulting in equipment failure, odour generation, or not achieving consent compliance.	Weekly site visits, daily supervision through SCADA.	Med			Low
2	Operations "HAZOP 2"	Documentation.	Skewed maintenance costs on specific asset.	Maintenance cost to capture work separately on all individual assets in the Asset Management System. E.g. each contractor - not all combined. Responsibility of contractor. Contract Supervisor to check monthly. Asset Manager to check annually.	Med			Low
3	Operations "HAZOP 3"	Start up and shut-down.	Power failure - safe shut-down.	Full safe valve positions to be reviewed. Contractor responsible. Contract Supervisor to follow progress during monthly meetings. Operations Manager to follow up in annual report by contractor.	Med			Low
4	Operations "HAZOP 5"	Documentation.	Potential nuisance alarms.	Rationalise alarms vs events logging. Contractor responsibility. Contract Supervisor to monitor changes.	Low			Low
5	Operations "HAZOP 13"	Maintenance.	Blockages.	Water blast sludge lines clarifier to storage tank (Annually). Contractor responsibility. Contract Supervisor to include this in six monthly performance audit.	Med			Low
6	Operations "HAZOP 17"	Quality assurance.	General site aesthetics.	Improve housekeeping. Contractor responsibility.	Low			Low
7	Operations "HAZOP 29"	Quality assurance.	Flow balances incorrect.	Annual calibration of flow devices by NRSBU. Monitor sludge levels in pond and ascertain long term removal and disposal.	Low			Low
8	Treatment Plant	Toxic Discharge to Plant.	Failure of biological process resulting in the treatment plants discharges failing to meet consent conditions.	Current trade waste by-laws for NCC and TDC prohibit certain toxic discharges to the plant. Trade waste sampling and monitoring programme has been implemented. Contributor contracts to fix characteristics of discharge from contributors in place. Automated monitoring equipment.	Low			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Cross Risk	Action Plan Description	IP Ref	Residual Risk
9	Treatment Plant	Equipment/ component failure.	Failure to meet consent conditions.	Processes within treatment plant that have contingencies for failure (duplication of pumps) and alarm systems (SCADA).	Low			Low
10	Treatment Plant	Asset register not linked to design standard.	Replacement by lower level of asset, thereby increasing risk of not performing to peak requirements.	Asset replacement reviewed at time of replacement.	Low			Low
11	Treatment Plant	Power Failure.	Odours and non-compliance with consents.	Fixed generator is available to provide power to inlet area and discharge pump. Ability of ponds to take increased loadings for short periods when WWTP not operating.	Low			Low
12	Treatment Plant "HAZOP 12"	Failure of railings and fencing. Corrosion hazards.	Injury.	Condition assessment of railings and fences. Controlled public access. Responsibility for health and safety lies with the Operation and Maintenance contractor. Part of six monthly performance audit schedule.	Med			Low
13	Treatment Plant	Fine/buildings.	Failure to comply with resource consent conditions. Loss of data.	Fine and smoke alarms in buildings that are linked to the SCADA system. Daily back up of data to secondary off site facility. Responsibility of contractor. Part of six monthly performance audit schedule.	Low			Low
14	Treatment Plant "HAZOP 14 and 32"	Documentation of procedures.	Blockages.	Establish trending trigger levels for pigging/water blasting on all sludge lines. Contractor responsibility. Monitor pressure trends. Advise NRSBU if trending is not adequate/useful. Supplement with site visits, inspection and run-up testing. Record results. Contractor responsibility.	Med			Low
15	Treatment Plant "HAZOP 15"	Management of sludge levels in clarifiers.	Optimisation.	Specialist advice on optimisation to be captured in operations manual. Contractor responsibility. Daily check of pressure trends by project supervisor.	Low			Low
16	Treatment Plant	Operator Error.	Failure to achieve consent conditions.	All operators are suitably qualified. Supervision by full time wastewater treatment plant manager on daily basis. 24/7 operation monitoring. Nonind staff resourcing as contracted. Review contractor controls monthly to ensure procedures are followed and resources are available.	High			Med
17	Treatment Plant	SCADA Failure.	No alarm available.	Backup systems in place and manual operation of facilities.	Low			Low
18	Treatment Plant	Vandalism.	Cost of repairs.	Intrusion alarms are installed.	Low			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Gross Risk	Action Plan Description	(IP) Ref	Residual Risk
19	Treatment Plant	Movement failure caused by earthquake, landslide or settlement.	The consequence for these events is so high that separate planning is required.	Civil Defence Emergency Management Plan. Emergency procedures manual and exercises. Wastewater supply Mutual Aid Plan.	Low	Consolidate natural disaster information and review.	IP-1	Low
20	Treatment Plant	Tidal Wave.	The consequence for these events is so high that separate planning is required.	Civil Defence Emergency Management Plan. Emergency procedures manual and exercises. Wastewater supply Mutual Aid Plan.	Low	Consolidate natural disaster information and review.	IP-1	Low
21	Treatment Plant delegation process	Insufficient documentation of escalating process decision making.	Failure to meet consent conditions.	Currently the WWTP is operated and maintained in a manner that employs best practicable options that includes: - Operating parameters for all major forms and facilities - Operations and Maintenance contract is in place and the risk for achieving consent conditions are the contractor responsibility.	Low			Low
<b>Inlet</b>								
22	Inlet	Failure of screens.	Down-stream equipment failure and increased renewal and operation cost.	Daily standby screens.	Med			Low
23	Inlet	Power failure causing disruption of screening process.	Down-stream equipment failure and increased renewal and operation cost.	Dedicated power generator to ensure continuous operation.	Low			Low
<b>Grit removal</b>								
24	Grit removal	Failure of grit classifier.	Down-stream equipment failure and increased renewal and operation cost.	Daily inspections and reactive maintenance.	Low			Low
25	Grit removal "HAZOP 8"	Mitigation.	Grit retention in C11.	Increase monitoring of grit levels. Daily inspection by operators.	Low			Low
<b>Primary clarifier</b>								

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Gross Risk	Action Plan Description	(IP) Ref	Residual Risk
26	Primary clarifier	Concrete corrosion. Contractor fails to clean and assess condition annually.	Remedial cost and loss of functionality.	Duplication/redundancy/daily inspection. Annual clean out and assessment. Ensure regular clean out and assessment as per contract requirements. Form part of six monthly performance review.	Med			Low
27	Primary clarifier	Scum pumps.	Concrete corrosion and odours.	Duplication/redundancy/daily inspection. Part of six monthly quality audit assessment. Include in six monthly performance audit schedule. Project Supervisor to evaluate remote performance daily.	Med			Low
28	Primary clarifier	Primary sludge transfer failure.	Increase in cost from loading activated sludge area and increased hydraulic load on sludge treatment and disposal facilities.	Duplication/redundancy/daily inspection/daily check of remote monitoring data. Regular flushing and pigging on lines. Project Supervisor to evaluate remote performance data daily.	Med			Low
29	Primary clarifier	Odours. Launderers not kept clean.	Primary sludge becomes anaerobic. Odours.	Daily inspections. Part of six monthly performance audit schedule. Joint inspection during monthly meetings and report condition in minutes.	Med			Low
Activated sludge area								
30	Aeration Basin/ Clarifier	Overloading of components. Treatment Capacity.	Failure to comply with resource consent conditions.	Treatment capacity sufficient. Optimise the integration of primary and secondary treatment. Ensure that all components are operational.	Med			Low
31	Aeration Basin/ Clarifier	Failure to achieve consent conditions. Air.	Customer complaints, and failure to comply with Discharge of Contaminants to Air resource consent conditions.	Currently the WWTP is operated and maintained in a manner that employs best practicable options that includes: - Operating parameters for all major items and facilities - Odour Management Plan has been implemented - Operations contract is in place and the responsibility for achieving consent conditions are transferred to the contractor. Adequate resourcing by contractor. Weekly inspections by supervisory staff. Daily check of flow splits, dissolved oxygen levels and performance indicators in electronic portal.	Low			Low
32	Aeration Basin/ Clarifier "HAZOP 16"	Optimisation.	Aeration maintenance cost escalating.	Investigate cost/benefit of diagnostics, preventative maintenance, holding spares etc. NRSOU responsibility.	Low			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Cross-Risk	Action Plan Description	(IP) Ref	Residual Risk
33	Aeration Basin/ Clarifier "HAZOP 18"	Contractor not adequately resourced and fails to implement strategies in place to mitigate risk.	Drowning.	Railings and work processes to ensure that operators and contractors working in the area are supervised. Install new railing - NRSBU. Contractor resourcing, weekly site inspections by supervisory staff.	Med			Low
34	Dissolved Air Floatation "HAZOP 19"	Optimisation.	No redundancy for DAF.	Investigate use of gravity belt thickener instead of DAF. Review by NRSBU.	Med	Review secondary sludge separation.	IP-6	Low
<b>Nelson North primary sludge reception</b>								
35	Nelson North Sludge reception "HAZOP 23"	Pump failure.	Sludge transferred to primary clarifier. Additional load on primary system.	Redundancy. Duty/standby.	Low			Low
36	Nelson North Sludge reception	Transfer failure due to blocking of transfer pipe work or failure of pumps caused by failure to screen primary sludge.	Sludge transferred to primary clarifier. Additional load on primary system. Additional costs.	Screening of primary sludge discharged. Ensure that contractor is using the facility screen material properly and keep gravel out of the tanks. Clean the tanks annually and do condition assessment.	Med			Low
<b>Secondary clarifier:</b>								
37	Secondary sludge	Failure to remove secondary sludge.	Extended aeration, deterioration of secondary effluent quality. Issues with sludge treatment. Mix of primary and secondary sludge not optimal.	Ensure that ponds are maintained in healthy condition so that they have capacity to treat changing loads.	Med			Low
38	Secondary sludge	WAS pump failure.	Extended aeration, deterioration of secondary effluent quality. Issues with sludge treatment. Mix of primary and secondary sludge not optimal.	Redundancy.	Low			Low

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Item	Risk Location	Risk Event	Consequence on Outcome	Mitigation Strategy	Gross Risk	Action Plan Description	IP Ref	Residual Risk
39	Secondary sludge	RAS pump failure.	Odours and inability to operate activated sludge area effectively managed.	Redundancy.	Low			Low
<b>Sludge Storage</b>								
40	Sludge storage 'THAZOP 21'	Sludge storage tank require renewal works.	Cannot process sludge for extended period.	Bypass primary and secondary processes and take raw effluent directly to ponds (Seasonal).	Med			Low
41	Sludge storage	Sludge transfer pump failure.	Cannot process sludge for extended period.	Redundancy. Weekly supervisory inspection.	Med			Low
42	Sludge storage	Sludge mixer failure. Spare mixer not serviceable.	Cannot process sludge for extended period.	Spare mixers Readiness check during six monthly audit.	Med			Low
43	Sludge storage	Heat exchanger not operational.	Less than optimal sludge treatment.	Bypass heat exchanger.	Low			Low
<b>Sludge storage</b>								
44	ATAD	Corrosion and sulphur attack.	Discharge of biosolids to environment. Failure to comply with resource consents. Customer complaints.	Fibreglass roofs installed/redundancy. Three yearly cleanout and condition assessment.	Low			Low
45	ATAD	Overloading of Components. Treatment Capacity.	Discharge of biosolids to environment. Failure to comply with resource consents. Customer complaints.	Currently the ATAD is operated and maintained in a manner that employs best practicable options to comply with the resource consents. It includes: - Bypass to ponds available - Redundancy within the three ATADs - High level of training - Up to date O & M manuals - Calibration of equipment carried out on regular basis	Low			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Cross-Risk	Action Plan Description	(IP) Ref	Residual Risk
				<ul style="list-style-type: none"> <li>A regular monitoring and sampling programme in place.</li> <li>Contributors are limited to maximum fixed volumes and overflows above these volumes become the responsibility of the contributor.</li> <li>Spare aerator.</li> </ul>				
46	ATAD	Failure to achieve consent conditions. Air: Failure to keep neighbours informed.	Odour - customer complaint Non-compliance of consent conditions.	<ul style="list-style-type: none"> <li>High level of operating and testing practices.</li> <li>Operations contract places responsibility for achieving consent conditions on the contractor.</li> <li>Notification of neighbours when work is performed on ATADs.</li> <li>Weekly inspection by supervisory staff.</li> </ul>	Med			Low
47	ATAD	Sludge transfer pump failure.	Disruption of production.	<ul style="list-style-type: none"> <li>Redundancy.</li> <li>Weekly inspection by supervisory staff.</li> </ul>	Med			Low
48	ATAD	Aerator failure (B and C train).	Disruption of production.	Spare aerator on site. Interconnection between B and C train.	Low			Low
49	ATAD	Component failure A train.	Disruption of production.	Redundancy.	Low			Low
50	ATAD	Failure to achieve class A biosolids.	Odour and additional cost of disposal or rework of biosolids.	Redundancy.	Low			Low
<b>Biosolids transfer</b>								
51	Biosolids transfer	Biosolids storage tank require remedial work.	No storage for treated biosolids available.	Temporary tank, move load to ponds.	Low			Low
52	Biosolids transfer	Pump failure.	Compromise capacity to treat sludge and dispose of biosolids.	Redundancy.	Low			Low
53	Biosolids transfer	Transfer pipeline blockage. Failure by contractor to plug the line.	Compromise capacity to treat sludge and dispose of biosolids. Pipeline break and discharge of	<ul style="list-style-type: none"> <li>Regular pigging of the pipeline.</li> <li>Include a report in monthly biosolids contract minutes reporting the number of pigs received at the Moturoa/Rabbit Island biosolids storage facility.</li> <li>Supervisor to check pressure and flow performance of pipeline daily.</li> </ul>	Med			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Cross-Risk	Action Plan Description	(IP) Ref	Residual Risk
			biosolids to environment.					
54	Biosolids transfer	Biosolids storage tank mixer. Spare mixer not operational.	Compromise capacity to treat sludge and dispose of biosolids. Pipeline break and discharge biosolids to environment.	Spare mixer. Include in readiness inspection at six monthly performance audit.	Low			Low
<b>Ponds</b>								
55	Ponds	Chamber C3 penstocks malfunction.	Requires two people to operate.	Exercise penstocks monthly, inspect weekly.	Low			Low
56	Ponds "HAZOP 6"	Documentation.	Uncaptured knowledge regarding stop log operation based pond level control.	Procedures captured in Pond Management Plan. Pond levels inspected daily by operators. Annual review of Pond Management Plan. Critical review of Pond Management Plan following any pond event where response is considered outside the methodology in Pond Management Plan.	Med			Low
57	Ponds "HAZOP 7"	Optimisation.	Existing manual-stop log based pond level control method could lead to overflows.	Consider automation of F1, F2, F3 and M1 using actuated valves or penstocks and additional controls.	Low			Low
58	Ponds "HAZOP 11"	Odour.	Odour complaints from pond inlet chamber C3.	Investigate covers to C3 and connection to odour control unit at Thickening Building.	Low			Low
59	Ponds	Failure by contractor to implement pond management plan as required under the contract.	Failure to comply with resource consents.	Currently the ponds are operated and maintained in a manner that employs best practicable options that include: - Pond loadings are adjusted for different seasons and conditions. - Loading profile of the ponds are known and operated to these limits - A regular pond monitoring and sampling programme is in place	Med			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Cross-Risk	Action Plan Description	(IP) Ref	Residual Risk
				- Performance based Design Build and Operations contract is in place and the risk for achieving consent conditions lies with the contractor. Monitor sludge levels in pond and ascertain long term removal and disposal. Supervisor to check ponds loadings and DO daily in SCADA and weekly in electronic portal. Check and receive Pond Team meeting report weekly.				
60	Ponds	Overloading of Capacity: Treatment Capacity	Failure to comply with resource consents. Customer complaints.	Monitor sludge levels in pond and ascertain long term removal and disposal. Supervisor to check ponds loadings and DO daily in SCADA and weekly in electronic portal. Check and receive Pond Team meeting report weekly.	Med			Low
61	Ponds	Failure to achieve consent conditions: Estuary	Odour - customer complaint Non-compliance with consent.	Monitor sludge levels in pond and ascertain long term removal and disposal. Supervisor to check ponds loadings and DO daily in SCADA and weekly in electronic portal. Check and receive Pond Team Meeting report weekly.	Med			Low
62	Ponds	Failure by contractor to manage pond levels.	Overflow of ponds.	Set discharge schedule monthly, and signed off by the supervisor. Limit change of outflow to duration of discharge and mode of discharge. Inspect levels in all ponds daily. Include pond level assessment in pond management meeting. Supervisor to check pond levels daily in SCADA. Check and receive Pond Team meeting report weekly. Check pond levels at weekly supervising inspections.	Med			Low
<b>Outfall</b>								
63	Outfall	Failure of discharge pipeline.	Over flow of ponds.	Maintain ponds at optimal operational level. Ensure discharge pump is operational. Inspect pipeline every second year by CCTV.	Med			Low
64	Outfall	Failure of discharge flow meter.	Non-compliance with resource consent conditions.	Redundancy.	Low			Low
65	Outfall	Failure of discharge pump.	Over flow of ponds.	Maintain ponds at optimal operational level. Ensure discharge pump is operational. Supervisor check pond levels daily in SCADA. Check and receive Pond Team meeting report weekly. Check pond levels at weekly supervising inspections.	Med			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Cross-Risk	Action Plan Description	IP Ref	Residual Risk
<b>Biosolids spraying</b>								
66	Biosolids Facility	Odour.	Customer complaints and odours.	The biosolids facility is operated and maintained in a manner that employs best practicable options to comply with the resource consents this includes a high level of training.	Low			Low
67	Biosolids Facility	Forest Fire.	Significantly reduced areas for biosolids disposal.	Extensive fire breaks exist (roads). Easy access to site for firefighting equipment. Other areas outside the Moturoa/Rabbit Island area are available for biosolids disposal.	Low			Low
68	Biosolids Facility	High nutrient levels in biosolids.	Over use of land.	High level of testing carried out.	Low			Low
69	Biosolids Facility	Failure to meet consent conditions.	Over use of land.	High level of testing carried out.	Low			Low
70	Biosolids Facility	Excessive heavy metals.	Excessive heavy metals in environment.	High level of testing carried out.	Low			Low
71	Biosolids Facility	Land ownership / Land use changes.	Increased costs.	Keep land owner informed of consequences of loss of land to apply biosolids.	Low			Low
72	Biosolids Facility	Vandalism.	Loss of equipment and cost implications.	Responsibility for security fencing is contracted to biosolids spraying contractor.	Low			Low
73	Biosolids Facility	Movement failure caused by earthquake, landslide or settlement.	Facility becomes in operable.	Civil Defence Emergency Management Plan. Emergency procedures manual and exercises. Wastewater supply Mutual Aid Plan. Redundant until facility is recommissioned.	Low			Low
74	Biosolids Facility	Tidal Wave.	Facility becomes in operable.	Civil Defence Emergency Management Plan. Emergency procedures manual and exercises. Wastewater supply Mutual Aid Plan. Redundant until facility is recommissioned.	Low			Low
<b>Rising mains</b>								
75	Rising Mains - Concrete	Ensurim environment deterioration and acid attack.	Deterioration and failure of asset resulting in loss of service, health and safety issues and wastewater.	New duplicate rising main installed. Operation and maintenance contractor responsible for monthly inspection of pipeline route during spring tide to check for evidence of leakages on pipeline. A programme of regular pipe inspections of risk areas to be developed and condition assessments of the pipeline.	Med			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Cross-Risk	Action Plan Description	(IP) Ref	Residual Risk
			discharges to the environment having an impact on environmental and cultural values.	Weekly mass balance check by contract supervisor and asset engineer.				
76	Rising mains air valve "HAZOP 31"	Maintenance.	Air valve planning requirements.	Pump out all chambers. Transit traffic management. Gaxton owner permission obtained. Confined space entry. Develop procedure to service air release valves and document. Project supervisor to include activity in six monthly performance audit.	Med			Low
77	Rising Mains	Capacity.	Wastewater discharged to the environment at pump stations having an impact on environmental and cultural values.	Pump stations are designed for the capacity of the rising mains. All pump stations have high level and overflow alarms for advance warning of an overflow event. Contributors are limited to maximum fixed volumes and overflows above these volumes become the responsibility of the contributor.	Low			Low
78	Rising Mains	Inaccurate and/or unknown location of pressure line.	Pipe breakage causing overflows.	As built plans of high quality and all asset locations known.	Low			Low
79	Rising Mains	Estuarine environment deterioration.	Mechanical damage or acid attack on concrete pipes.	High level of resistance to acid and sulphide attack. Buoys showing location of PE diffuser pipes. A programme of regular pipe inspections of risk areas to be developed.	Med			Med
80	Rising Mains	Movement failure caused by, earthquake, landslide or settlement.	The consequence for these events is so high that separate planning is required.	Civil Defence Emergency Management Plan. Emergency procedures manual and exercises. Wastewater supply Mutual Aid Plan.	Low			Low
81	Rising Mains "HAZOP 30"	Inspection/operate.	Rising main junction valves close in opposite direction.	Add direction indicator. Contractor responsibility.	Low			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Cross-Risk	Action Plan Description	(IP) Ref	Residual Risk
82	Pump Stations "HAZOP 2"	Equipment or component failure.	Wastewater discharges to the environment having an impact on environmental and cultural and health issues. Customer complaints.	Processes within pump station that have contingencies for failure (duplication of pumps) and alarm systems (SCADA) installed.	Low			Low
83	Pump Stations "HAZOP 2"	Design/Documentation.	Inefficient use of pump stations.	Investigate level set points. Contractor responsibility. Progress review by project supervisor during six monthly audit. Critical review of events management.	Med			Low
84	Pump Stations	Insufficient wet weather storage capacity.	Insufficient storage or capacity resulting in wastewater discharges to the environment having an impact on environmental and cultural values.	All pump stations have high level and overflow alarms for advance warning of an overflow event and high capacity pumps for peak flow conditions. Contributors are limited to maximum fixed volumes/flows/loadings and are subject to excess discharge costs plus other punitive actions by NRSBU.	Low			Low
85	Pump Stations	Power failure.	Pump station overflow and high level of pollution into the estuary.	Standby generators at four pump stations and six hours storage capacity of Whakatū (standby generator available from NCC).	Low			Low
86	Pump Stations	Corrosion and sulphur attack of electrical/control equipment.	Asset failure.	Testing of effluent on regular basis to ascertain sulphur content.	Low			Low
87	Pump Stations Beach	Insufficient operational pump station capacity.	Overflows.	Redundancy. Duty standby. Storm pump. Duty/Standby/Assist. Part of six monthly performance audit. Daily check of pump station operation by Contract Supervisor. Tasman District Council gravity discharge is fitted with a control valve that is managed by Tasman District Council to limit discharge flow rate to the quota allocation applicable to the Beach Road pump station.	Low			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Crises Risk	Action Plan Description	IP Ref	Residual Risk
88	Pump Stations Whakatu	Insufficient operational pump station capacity.	Overflows.	Redundancy, Duty standby, Emergency storage capacity, Part of six monthly performance audit, Daily check of pump station operation by Contract Supervisor.	Med			Med
89	Pump Stations Saxton	Insufficient operational pump station capacity.	Overflows.	Redundancy, Duty standby, Storm pumps, Duty/Standby/Avoid, Part of six monthly performance audit, Daily check of pump station operation by Contract Supervisor.	Med			Low
90	Pump Stations Sonner	Insufficient operational pump station capacity.	Overflows.	Redundancy, Duty standby, Storm pumps, Duty/Standby/Avoid, Part of six monthly performance audit, Daily check of pump station operation by Contract Supervisor.	Med			Low
91	Pump Stations Airport	Insufficient Operational Pump Station Capacity.	Overflows.	Redundancy, Duty standby, Storm pumps, Duty, Part of six monthly performance audit, Daily check of pump station operation by Contract Supervisor.	Med			Med
92	Pump Stations Beach	Control failure.	Overflows.	Monitoring pump station performance during storm events, Independent review of control systems.	Med			Low
93	Pump Stations Whakatu	Control failure.	Overflows.	Alarm system, emergency storage and contractor response as required in terms of O&M contract.	Med			Low
94	Pump Stations Saxton	Control failure.	Overflows.	Monitoring pump station performance during storm events, Independent review of control systems.	Med			Low
95	Pump Stations Sonner	Control failure.	Overflows.	Monitoring pump station performance during storm events, Independent review of control systems.	Med			Low
96	Pump Stations Airport	Control failure.	Overflows.	Monitoring pump station performance during storm events, Independent review of control systems.	Med			Low
97	Pump Stations	Vandalism.	Asset failure.	Intrusion alarms are installed.	Low			Low
98	Pump Stations	Odours from pump stations.	Odours.	All pump stations have biological filters.	Low			Low

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Item	Risk Location	Risk Event	Consequence or Outcome	Mitigation Strategy	Gross Risk	Action Plan Description	(IP) Ref	Residual Risk
99	Pump Stations	Designs of infrastructure with no innovation and no demand management.	The consequence for these events is so high that separate planning is required.	High level of innovation and demand management incorporated into all design.	Low			Low
100	Pump Stations	Movement failure caused by earthquake, landslide or settlement.	The consequence for these events is so high that separate planning is required.	Civil Defence Emergency Management Plan. Emergency procedures manual and exercises. Wastewater supply Mutual Aid Plan.	Low			Low
101	Pump Stations	Tidal wave inundation.	The consequence for these events is so high that separate planning is required.	Civil Defence Emergency Management Plan. Emergency procedures manual and exercises. Wastewater supply Mutual Aid Plan.	Low			Low

**C4 Business Risk Register**

No	Potential Risk	Consequence or Outcome	Mitigation Strategies	Gross Risk	Improvement Plan (IP) Ref	Residual Risk
<b>1</b>	<b>High Level Policies, Procedures and Controls</b>					
1.1	Board does not have clearly defined documented strategy to guide long-term delivery of activity.	Ad-hoc decision making, waste and unnecessary financial cost.	Long term strategy integrated into the Business Plan.	Med		Low
1.2	Operations manuals not up to date.	Failure to supply service or cause adverse health effects or environmental damage due to poor operation of assets.	Operating manuals are substantially complete and reporting requirements are in place to ensure contractors comply with requirements. Annual review of O&M manuals.	Med		Low
1.3	NRSBU does not have a complete Business Continuity Plan.	Business unable to recover quickly following extreme event.	Annual review of Business Continuity Plan.	Low		Low
1.4	No clear direction on public consultation.	Contributing councils in breach of LGA with respect to public consultation.	High level of public consultation through the five Contributors.	Low		Low

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No	Potential Risk	Consequence or Outcome	Mitigation Strategies	Gross Risk	Improvement Plan (IP) Ref	Residual Risk
1.5	NRSBU does not have an acceptable position on the impact of climate change on service delivery.	Financial loss due to liability for property damage, loss of asset, not able to provide service.	NRSBU has and implements relevant design parameters on climate change.	Low		Low
1.6	The activity management plan is not fully implemented.	The operational, tactical and strategic objectives of the activity are not integrated into the annual/LTP planning cycle and are not aligned to staff work programmes, resulting in delays and poor decision making.	High level of commitment from NRSBU.	Low		Low
1.7	Inaccurate growth information or growth not considered.	Inappropriate decisions made about development.	Contributors' requirements are known...	Med		Low
1.8	Natural disaster (Tsunami).	Plant damaged and could be rendered in-operable for a period of time.	While the resilience of the plant is good the consequence for this event is so high that separate planning is required.	Low	IP 1	Low
1.9	Natural disaster (Earthquake).	Plant damaged and could be rendered in-operable for a period of time.	While the resilience of the plant is good the consequence for this event is so high that separate planning is required.	Low	IP-1	Low
<b>2. Financial</b>						
2.1	Lack of long term financial planning.	Higher than necessary financial costs.	Business Plan and associated long term strategy are reviewed on annual basis.	Low		Low
2.2	Service levels versus funding and works not clear.	Lack of connection between the Levels of Service committed to and the funding and services provided.	Performance targets are defined and monitored/reported on.	Med		Low
2.3	True costs and "whole of life" costs of activity not recorded appropriately.	Financial cost for providing both operations and capital works not reflecting true costs. Decision making not based on true costs.	Improve record keeping in Asset Management System.	Low		Low
2.4	Assumptions for financial forecasting not always understood.	Additional costs incurred because assumptions/uncertainties not accounted for i.e. asset valuations, depreciation.	Manager is aware of assumptions and uncertainties behind financial forecasting information and it is noted in AMP and other relevant documents.	Low		Low
2.5	Unforeseen additional costs.	Reputation of NRSBU detrimentally affected.	AMPs and asset information at the appropriate level.	Low		Low
2.6	Valuations not accurate for asset facilities.	Fixed Asset Register (FAR) not reconciling with existing assets, causing incorrect valuations and affecting true financial requirements.	Asset Management System and FAR reconciled and revaluation is carried out on an annual basis.	Low		Low



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No	Potential Risk	Consequence or Outcome	Mitigation Strategies	Gross Risk	Improvement Plan (IP) Ref	Residual Risk
2.7	All potential sources of Government and other external funding (third party funding) not appreciated or obtained.	Higher cost to the councils than there should have been.	Identify potential availability of third party funding and apply / take advantage of it.	Low		Low
2.8	Consultant fees for design works.	Costs exceed expectations due to spiralling fees and re-work.	Robust professional services contracts and good communications exist between officers and consultants.	Med.		Low
2.9	Contributors find an alternative way of treated wastewater and withdraw from the Disposal of Trade Waste Agreements with NRSBU or improve effluent quality significantly so that they can adjust quota requirements.	Increased cost for existing remaining contributors.	A decrease in demand will provide opportunity to reassess capacity requirements. If the demand is affected significantly then it is likely that there will be significant spare capacity. This should be mitigated through optimised replacement and/or abandoning current assets. Cost of procuring a consent and compliance to discharge final treated effluent probably prohibitive.	Low		Low
2.10	Contributors go out of business due to high waste water charges.	Increased cost for existing remaining contributors.	Same as above. Benchmark of operational costs does not appear to support the idea that NRSBU charges are higher than equivalent operations. Owners compensated of risk through payment of 1.5% risk premium by three industrial contributors.	Low		Low
2.11	Insurance cover needs review.	Insurance not adequate and unnecessary costs may be incurred in the future.	Insurance reviewed and appropriate cover taken.	Low		Low
<b>3 Organisational Management</b>						
3.1	Lack of strategic thinking/ long term planning.	Inefficient use of time and money.	Development of long term strategy.	Low		Low
3.2	Failure to act on identified risk.	Possible legal action against the councils if event occur which councils knew about. Public health adversely affected.	Risk schedules updated on a regular basis and improvements carried out as required.	Med.		Low

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No	Potential Risk	Consequence or Outcome	Mitigation Strategies	Gross Risk	Improvement Plan (IP) Ref	Residual Risk
3.3	Business Plan not up to date or implemented.	Large scale asset failure due to a naturally occurring event resulting in prolonged and substantial loss of service to Nelson and Richmond.	Nelson City Council and Tasman District Council responsibility. NRSBU does not control this activity.	Low		Low
3.4	NRSBU does not have internal audit policy.	Financial loss due to lack of robust internal audit process and/or legislative requirements not being met.	Use of Audit NZ auditors.	Low		Low
3.5	Low standard provision of professional and physical services.	Poor quality or delayed projects. Unnecessary financial cost.	Appropriate penalty or exit clauses in contracts.	Low		Low
3.6	Improvement plan from AMP not undertaken.	Future forecasting not accurate. Decision making not optimised.	Reporting on implement improvement plan required on a six monthly basis.	Low		Low
3.7	Opportunity for corruption of data/operational systems.	Interruption to supply of service. Decision making not robust as data missing/damaged.	Security and administration system implemented.	Med		Low
3.8	Legislative requirements not understood.	The councils face legal action because legal requirements are not met.	High level of understanding by manager of legislative requirements.	Low		Low
<b>4 Human Resources</b>						
4.1	Accountabilities not clear.	Staff not accountable for actions allowing apparent problems to continue.	Performance reporting on a regular basis to NRSBU Board.	Med		Low
4.2	Information in people's heads or inappropriate recording of information.	Organisational knowledge lost with staff leaving.	Ensure managers and contractors document and appropriately file everything that is relevant. The areas of Risk Demand, Asset Management, Renewals, Capital Expenditure, Environmental and Operations are well documented. Review plans annually.	Med		Med
4.3	Inadequate attention to staff succession.	Organisational knowledge lost with staff leaving.	Implement good staff management succession plan and document procedures. Owners are reviewing governance structure.	Med		Med
<b>5 Health and Safety</b>						
5.1	NRSBU does not have a good health and safety culture.	High accident rate.	NRSBU health and safety procedures are implemented and reviewed.	Low		Low

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No	Potential Risk	Consequence or Outcome	Mitigation Strategies	Gross Risk	Improvement Plan (IP) Ref	Residual Risk
5.2	Health and safety risks not identified or managed appropriately.	Council's face legal claims for not meeting health and safety obligations.	Health and safety manuals up to date and are effectively managed.	Low		Low
<b>6</b>	<b>Wastewater Asset Management</b>					
6.1	Deferred renewal and maintenance not recorded.	Deferred maintenance not recorded causing unexpected, additional costs from asset failure.	Record all deferred maintenance and renewals when this occurs.	Low		Low
6.2	Not all easements recorded or obtained.	NRSBU faces legal action or cannot carry out its activities because it does not have the legal right to cross a property.	NRSBU has up to date record of easements and has established policy for processes to be followed when easements are required.	Low		Low
6.3	Wastewater not treated to acceptable standards.	Dissatisfaction of customers from odours and not being able to swim at local beaches.	Long term Strategy integrated into the Business Plan with a high level of acceptance by the Board.	Med		Low
6.4	Performance monitoring of service levels not completed.	Target Service Levels not met, resulting in customer dissatisfaction.	Monitoring programme established and reviewed regularly.	Low		Low
6.5	Security of assets not adequate.	Wastewater assets damaged, causing widespread sickness or environmental damage.	Adequate security systems in place (smoke & intruder).	Low		Low
6.6	Poor standards of constructed assets due to design and/or construction of infrastructure.	Substandard physical works resulting in poor asset performance.	NCC Code of Practice is updated regularly and contractors and consultants are familiar with these. Contractors/consultants take responsibility for work items.	Low		Low
6.7	Excess discharge from contributors exceeds the capacity of treatment plant.	Discharge from treatment plant exceeds consent conditions.	Excess discharge penalty cost as detailed in the individual agreements for disposal are set at a rate that actively discourages excess discharge from contributors.	Low		Low
6.8	Long term viability (20 - 40 years) of the existing plant at the existing site.	Dissatisfaction of customers from odours. Biosolids disposal not sustainable High costs of treatment.	High level of treatment with adequate bio-solids disposal and low environmental impact.	Med		Low
<b>7</b>	<b>Asset Management</b>					
7.1	Network modelling and condition assessments not undertaken.	Capital works programme not optimised. Renewal works not completed due to lack of knowledge causing failure of assets. Future forecasting not accurate.	Asset management system is maintained, up-to-date and accurate. Continue condition assessments of network. Continue to develop robust renewals programme based on sound knowledge.	Med		Low

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No	Potential Risk	Consequence or Outcome	Mitigation Strategies	Gross Risk	Improvement Plan (IP) Ref	Residual Risk
7.2	As-built information can be slow or incorrect coming from contractors and consultants.	Inability to repair assets within reasonable time, Unreliable cost allocation leading to less than optimal decision making.	As-builts are kept up to-date and recorded promptly. Contractor responsible for quality check P&ID against as build plans and asset register.	Med		Low
7.3	Asset data not provided or incorrect from contractor.	Poor asset management decisions made.	Data provided in the appropriate format and with data having a high degree of confidence.	Med		Low
7.4	Criticality assessment not undertaken.	Failure of critical assets resulting in environmental damage or not meeting Service Levels.	Criticality assessment of assets has been carried out.	Med		Low
7.5	Asset Risk Register and Asset Risk Plan not implemented.	The councils face legal action because of asset failure or unnecessary costs incurred due to asset failure.	Maintain Asset Risk Schedules and review annually.	Med		Low
7.6	Asset management systems not up to date or completed.	Failure of wastewater systems because maintenance works not completed or management system not operational.	Asset Management System in place and updated as required.	Low		Low
7.7	Sea level rise.	Asset not functional due to intermittent flooding.	Most of the WWTP assets are located 2.4m above the 1909 high tide mark. Consider constructing seawalls or bunds around the ATAD area at Bell Island or regional pump stations once a sea level rise of 500mm is confirmed.	Low		Low
New	Storm surge					
<b>8 Resource Consents and Designations</b>						
8.1	Review of designations required.	NCC or TDC faces legal action because wastewater assets have not been designated in their resource management plans.	Designations are appropriate.	Low		Low
8.2	Resource consents.	Councils face legal action because resource consents not applied for, or conditions not met. Public dissatisfaction with environmental damage being caused.	Consents that are required are well documented and effects understood. Consents continuously monitored and reporting undertaken.	Med		Low
8.3	Application for resource consents.	Failure to obtain resource consents	Long term consents have been obtained.	Med	IP-2	Low

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Appendix D: Financial Forecasts

Commented [51]:

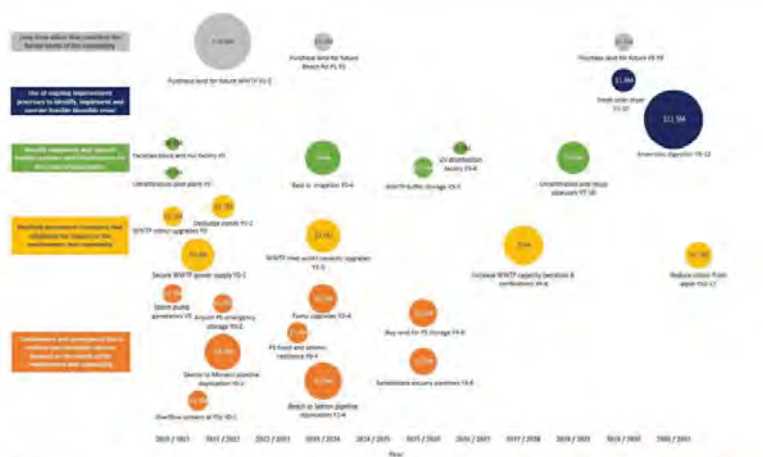


Figure 14-2: Capex expenditure in years 0-10 (only showing projects greater than \$0.5M; NB-purchase of land for future WWTP is excluded from this expenditure)

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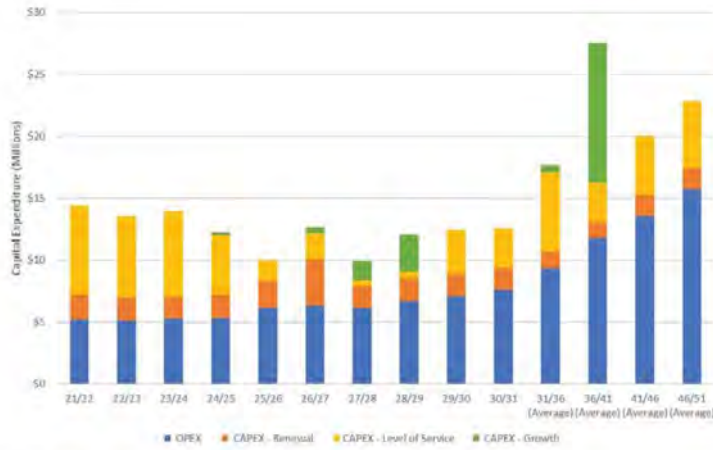


Figure 14-3 Proposed operational and capital costs for the next 30 years

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Table 14-3: Key capex projects 2021-2031 (\$ thousands)

Project	Phase	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Pumping station overflow screens	LoS	300									
Regional pipeline upgrades	LoS	1750	1750	2000	2000						
Capacity upgrades	LoS			2000							
Flood protection of facilities	LoS	350									
Storage at pumping stations	LoS	100	1000								
Additional screening and plant at treatment plant	LoS	500	1000			500					
Desludging ponds	Renewal	200									
Power upgrades	LoS	3500									
Odour upgrade Rabbit Island	LoS	200									
Best Island Irrigation	LoS	350	500	1500	1000						
Saxton pump and discharge upgrade	LoS		2000								
Rabbit Island duplication equipment and pipeline	Renewal			150		350					
Beach Road PS- land purchase replacement and storage	Land			1000	1000						
Whakatū PS capacity increase	Growth				250						
Seismic upgrades	LoS			100	500						
Buffer storage	LoS				200	1000					
Rehabilitate Monaco-WWTP pipeline	Renew						2000				
Saxton Road PS- land purchase	Land						1500				
WWTP capacity upgrade	Growth					500	1500	3000			
UV disinfection	LoS					500					
Biosolids drying	LoS						250	250	1000	200	
Reuse water pipework	LoS						150	100	1000		
Anaerobic digestion	LoS							200	500	500	
Ultrafiltration	LoS								50	2000	

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Project	Class	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Clockwise PS replacement land	Land									1000	
Rabbit Island Irrigation	LoS										500

Nelson Regional Sewerage Business Unit



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**Opex assumptions for AMP**

	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30
<b>Management Charges</b>										
NCC Asset management	100,000	100,000	100,000	100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
General Manager	200,000	200,000	200,000	200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Operations	100,000	100,000	100,000	100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
Contract officer	80,000	80,000	80,000	80,000	\$ 80,000.00	\$ 80,000.00	\$ 80,000.00	\$ 80,000.00	\$ 80,000.00	\$ 80,000.00
Additional staff/secondments	300,000	300,000	300,000	300,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000
Independent member	8,000	8,000	8,000	8,000	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00
Iwi Member	8,000	8,000	8,000	8,000	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00
Administration	14,000	14,000	14,000	14,000	\$ 14,000.00	\$ 14,000.00	\$ 14,000.00	\$ 14,000.00	\$ 14,000.00	\$ 14,000.00
TDC Staff time	4,000	4,000	4,000	4,000	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00
Auditing	25,000	25,000	25,000	25,000	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00
Finance charges	10,000	10,000	10,000	10,000	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00

Nelson Regional Sewerage Business Unit

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Information Management	18,000	18,000	18,000	18,000	\$ 18,000.00	\$ 18,000.00	\$ 18,000.00	\$ 18,000.00	\$ 18,000.00	\$ 18,000.00	\$ 18,000.00
Valuation	5,000	5,000	5,000	5,000	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
NCC Overhead markup	33,174	33,174	33,174	33,174	\$ 33,174.00	\$ 33,174.00	\$ 33,174.00	\$ 33,174.00	\$ 33,174.00	\$ 33,174.00	\$ 33,174.00
<b>Subtotal Management Charges</b>	<b>905,174</b>	<b>905,174</b>	<b>905,174</b>	<b>905,174</b>	<b>1,005,174.00</b>	<b>1,005,174.00</b>	<b>1,005,174</b>	<b>1,005,174</b>	<b>1,005,174</b>	<b>1,005,174</b>	<b>1,005,174</b>
<b>Power Costs</b>											
Pump Stations	215,750	217,350	218,950	220,550	\$ 222,150.00	\$ 223,750.00	\$ 225,350	\$ 226,950	\$ 228,550	\$ 230,150	
Treatment Plant	589,500	636,660	687,593	742,600	\$ 802,008.24	\$ 866,168.90	\$ 935,462.4	\$ 1,010,299.4	\$1,091,123	\$1,178,413	
Rabbit Island	15,100	16,308	17,613	19,022	\$ 20,543.38	\$ 22,186.85	\$ 23,961.80	\$ 25,878.75	\$27,949.05	\$30,184.97	
<b>Subtotal Power Costs</b>	<b>820,350</b>	<b>870,318</b>	<b>924,155</b>	<b>982,172</b>	<b>\$ 1,044,701</b>	<b>\$ 1,112,105</b>	<b>\$ 1,184,774</b>	<b>\$ 1,263,128</b>	<b>\$1,347,622</b>	<b>\$1,438,748</b>	
<b>Allowance for new processes</b>											
Additional inlet screen			100,000	100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	
Duplicate grit trap						\$ 50,000.00	\$ 50,000.00	\$ 50,000.00	\$ 50,000.00	\$ 50,000.00	
Odour upgrades (ATADs, etc)	110,000	110,000	110,000	110,000	\$ 110,000	\$ 110,000.00	\$ 110,000	\$ 110,000	\$ 110,000	\$ 110,000	
Additional aeration basin & clarifier									\$ 450,000	\$ 450,000	
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UV disinfection opex						\$ 740,000	\$ 745,000	\$ 750,000	\$ 755,000	\$ 760,000
Ultrafiltration opex	70,000	140,000	140,000	140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000
Anaerobic digestion										
Nutrient removal										
Backstop biosolids disposal										
Rabbit Is land application										
Biosolids processing for sale										\$ 200,000
<b>Subtotal new processes</b>	<b>180,000</b>	<b>250,000</b>	<b>350,000</b>	<b>350,000</b>	<b>350,000</b>	<b>1,140,000</b>	<b>1,145,000</b>	<b>1,150,000</b>	<b>1,605,000</b>	<b>1,810,000</b>
<b>Maintenance Contract</b>										
PS	283,629	283,629	283,629	283,629	\$ 283,629	\$ 283,629	\$ 283,629	\$ 283,629	\$ 283,629	\$ 283,629
WWTP	1,409,463	1,409,463	1,409,463	1,409,463	\$ 1,409,463	\$ 1,409,463	\$ 1,409,463	\$ 1,409,463	\$ 1,409,463	\$ 1,409,463
<b>Subtotal Maintenance Contract</b>	<b>1,693,092</b>	<b>1,693,092</b>	<b>1,693,092</b>	<b>1,693,092</b>	<b>\$ 1,693,091</b>	<b>\$ 1,693,091</b>	<b>\$ 1,693,091</b>	<b>\$ 1,693,091</b>	<b>\$ 1,693,091</b>	<b>\$ 1,693,091</b>
<b>Monitoring Charges</b>										
Tasman District Council	3,300	3,300	3,300	3,300	\$ 3,300.00	\$ 3,300.00	\$ 3,300.00	\$ 3,300.00	\$ 3,300.00	\$ 3,300.00

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Cawthron	88,408	88,408	88,408	88,408	\$ 88,408	\$ 88,408	\$ 88,408	\$ 88,408	\$ 88,408	\$ 88,408
Coastal Permit	30,000	30,000	30,000	30,000	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00
Bells Island Centre Pivot	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Bells Island Biosolids	15,000	15,000	15,000	15,000	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00
Rabbit Is Biosolids	35,226	35,226	35,226	35,226	\$ 35,226.30	\$ 35,226.30	\$ 35,226.30	\$ 35,226.30	\$ 35,226.30	\$ 35,226.30
Tree Trial Site	21,100	21,100	21,100	21,100	\$ 21,099.59	\$ 21,099.59	\$ 21,099.59	\$ 21,099.59	\$ 21,099.59	\$ 21,099.59
Aberrational Discharge	25,000	25,000	25,000	25,000	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00
Contributors	80,000	80,000	80,000	80,000	\$ 80,000.00	\$ 80,000.00	\$ 80,000.00	\$ 80,000.00	\$ 80,000.00	\$ 80,000.00
Contributor daily testing	35,597	35,597	35,597	35,597	\$ 35,596.74	\$ 35,596.74	\$ 35,596.74	\$ 35,596.74	\$ 35,596.74	\$ 35,596.74
Process	20,000	20,000	20,000	20,000	\$ 20,000.40	\$ 20,000.40	\$ 20,000.40	\$ 20,000.40	\$ 20,000.40	\$ 20,000.40
<b>Subtotal Monitoring Charges</b>	<b>353,631</b>	<b>353,631</b>	<b>353,631</b>	<b>353,631</b>	<b>\$ 353,631</b>	<b>\$ 353,631</b>	<b>\$ 353,631</b>	<b>\$ 353,631</b>	<b>\$ 353,631</b>	<b>\$ 353,631</b>
<b>General</b>										
Consultants Fees	250,000	250,000	250,000	250,000	\$ 250,000	\$ 250,000.00	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000
Insurance	75,000	75,000	75,000	75,000	\$ 75,000.00	\$ 75,000.00	\$ 75,000.00	\$ 75,000.00	\$ 75,000.00	\$ 75,000.00

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Rates	54,000	54,000	54,000	54,000	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00
Water	70,000	70,000	70,000	70,000	\$ 70,000.00	\$ 70,000.00	\$ 70,000.00	\$ 70,000.00	\$ 70,000.00	\$ 70,000.00
Biosolids unprogrammed	5,000	5,000	5,000	5,000	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Biosolids programmed	5,000	5,000	5,000	5,000	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Forestry	20,000	20,000	20,000	20,000	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00
Spit restoration	7,524	7,524	7,524	7,524	\$ 7,524.00	\$ 7,524.00	\$ 7,524.00	\$ 7,524.00	\$ 7,524.00	\$ 7,524.00
Sixton lease	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contingency	50,000	50,000	50,000	50,000	\$ 50,000.00	\$ 50,000.00	\$ 50,000.00	\$ 50,000.00	\$ 50,000.00	\$ 50,000.00
Vehicle	45,000	45,000	45,000	45,000	\$ 45,000.00	\$ 45,000.00	\$ 45,000.00	\$ 45,000.00	\$ 45,000.00	\$ 45,000.00
Telephone/Computers	4,500	4,500	4,500	4,500	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00
<b>Subtotal General</b>	<b>586,024</b>	<b>586,024</b>	<b>586,024</b>	<b>586,024</b>	<b>\$ 586,024</b>	<b>\$ 586,024</b>	<b>\$ 586,024</b>	<b>\$ 586,024</b>	<b>\$ 586,024</b>	<b>\$ 586,024</b>
<b>Grand OPEX total</b>	<b>4,538,271</b>	<b>4,858,239</b>	<b>4,812,076</b>	<b>4,870,092</b>	<b>\$ 5,032,622</b>	<b>\$ 5,890,026</b>	<b>\$ 5,967,695</b>	<b>\$ 6,051,049</b>	<b>\$ 6,590,543</b>	<b>\$ 6,886,868</b>

Figure 14-4: Key Operational Projects 2021-2031

Nelson Regional Sewerage Business Unit

**Nelson Regional Sewerage Business Unit**

**BUSINESS PLAN  
2021/2022**



## NRSBU Business Plan 2021-2022

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Prepared by: Nathan Clarke, GM NRSBU with input from  
Brad Nixon - Operations Manager NRSBU  
Iain Satterthwaite – Activity Engineer NRSBU

Approved by: Nathan Clarke

Approved by: Draft for approval 11 September 2020

Approved

**Cover photograph**      Bell Island

**1. PURPOSE**

The purpose of the Nelson Regional Sewerage Business Unit Business Plan 2021/2022 is to summarise management goals and objectives to deliver wastewater collection and treatment services to the region; and to improve the effectiveness and efficiency in the delivery of those services.

**2. MEMORANDUM OF UNDERSTANDING REQUIREMENTS**

The Memorandum of Understanding states that the NRSBU Board shall by 31 December each year supply to the councils (Nelson City and Tasman District Councils) a copy of its draft Business Plan. The Business Plan outlines the management of the Nelson Regional Sewerage Business Unit and the assets for the ensuing year, together with any variations to the charges proposed for that financial year.

The Memorandum of Understanding (MoU) commenced on 1 July 2015 and shall terminate on 30 June 2025. The MoU was updated in March 2019.

**3. INTRODUCTION**

This Business Plan 2021/22 outlines the projects and initiatives to be implemented during the year. It also outlines the associated funding required and the details of the performance targets and measures.

The Business Plan is aligned with the NRSBU Strategic Plan and the Draft NRSBU Activity Management Plan 2021-2031. It includes business objectives and performance targets (Section 7) and the three-year financial forecasts (Section 8). The following key pieces of information from those other documents are included in the appendices of this business plan:

- Appendix A – Committee Activity Schedule
- Appendix B - Targeted levels of service in the Activity Management Plan
- Appendix C – Internal business improvement plan
- Appendix D – The 10-year financial plan
- Appendix E - Schematic layout of the NRSBU operations
- Appendix F – Reduction of Adverse Environmental Effects

**4. MISSION STATEMENT**

The NRSBU's mission statement is:

**Resilient, reliable, and effective infrastructure that supports and protects our community and environment.**

Area	Goal
Our approach	Implement and operate infrastructure considering the needs of our community. Our priorities for this are protection of public health, the environment and cultural values.
Our Vision/Ambition/Aspiration	We will work towards the beneficial reuse of resources.
Our conduct	We will undertake our activities transparently, fairly, respectfully, in a timely manner and we will provide regional infrastructure leadership.



**5. STRATEGIC GOALS AND PERFORMANCE OBJECTIVES**

The NRSBU aspires to achieve the following goals:

Strategic Goal	Objective (This is what it looks like)	Level of Service (This is how we do it)
We will implement and operate infrastructure considering the needs of our community. Our priorities for this are protection of public health, the environment and cultural values.	Containment and conveyance that is resilient and minimises adverse impacts on the health of the environment and community	We have sufficient capacity in our network to cope with peak flows
		We are resilient to mechanical and electrical failures and natural hazards
		We can readily maintain the network
	Resilient wastewater treatment that minimises the impact on the environment and community	The treatment plant can reliably accept (n+1 for critical assets) all peak flows from the network
		The treatment plant can fully treat all dry weather flows
		The treatment plant does not create odour issues for the community
		Effluent Quality meets or exceeds required discharge requirements.
	Long term vision that considers the future needs of the community	Our ongoing business is safeguarded through engagement with council planning processes
		We have long term plans for our activities and their impacts
		Have systems in place for the ongoing monitoring and reporting of emissions
Alternative methods of biosolids disposal that protect public health and the environment and are sensitive to cultural values	Have a backstop for issues with biosolids disposal	
We will work towards the beneficial reuse of resources	Use of ongoing improvement processes to identify, implement and operate feasible biosolids reuse	Treatment to maintain 100% reuse of biosolids
		Increase reuse value
	Maintain 100% diversion of biosolids from disposal to landfill	
Identified implement and operate feasible systems and infrastructure for the reuse of wastewater	We minimise the amount of effluent we discharge to water	

The NRSBU functional activities are managed by the Nelson City Council and therefore the NRSBU functional activities shall comply with the requirements of the Nelson City Council Health and Safety Policy and fully subscribe to the vision for a Zero Harm Culture.

All strategic goals are important and no one goal will be pursued at the expense of another.

It is important to note that discussion is occurring nationally in regard to the delivery of water services in New Zealand This discussion includes the implementation of national discharge standards for wastewater treatment facilities. This work could have a significant influence on NRSBU, at this time NRSBU is unable to identify the outcome of this work and therefore will continue with Business As Usual.

It is necessary for NRSBU to maintain an understanding of these issues so that an appropriate response can be made if required.

**6. NRSBU STRUCTURE**

The structure of the Nelson Regional Sewerage Business Unit is as follows:



The Nelson Regional Sewerage Business Unit was established in July 2000, replacing the former Nelson Regional Sewerage Authority established in the 1970s.

Following the adoption of a new Strategic Plan in August 2013, the 2017 Wastewater Activity Management Plan was developed and adopted on 15 September 2017. A draft of the long-term financial plan based on the Asset Management Plan, was provided to Tasman District Council and Nelson City Council in July and October 2017 respectively to enable them to consolidate the NRSBU long-term plan into their own strategic documents.

This business plan relates to the first year of the not yet adopted NRSBU Activity Management plan 2021-2031.

**7. BUSINESS OBJECTIVES AND PERFORMANCE MEASURES**

The objectives outlined below describe the long-term aims of the business unit. Performance measure targets and dates (where they are not specified below) are set annually in the Business Plan along with performance measures for projects identified in the Asset Management Plan. Performance will be reported quarterly to the Board and annually to the shareholding councils.

Performance Measure (This is how we know we're doing it)	Target
Number of overflows per year (all networks) due to NRSBU network capacity constraints, or mechanical or electrical failures.	Zero
Number of pump stations with redundant pumps and power supply	All by 2023
Pump stations are to a level 3 importance level standard	All by 2023
Number of pumpstations where able to carry out routine PS maintenance works while managing ADWF	All by 2023
Number of times PWWF flows exceed inlet works capacity	Zero
Number of times diurnal flows bypass the mechanical system annually OR Treatment capacity of mechanical plant	Zero OR 500L/s by 2023
Number of odour complaint events annually	Zero by 2025
Pond free water above sludge layer	>1m in all ponds by 2023
Chemical Parameters comply with consents for discharge to water when discharge occurs.	Ongoing consent compliance for all parameters.
Effluent quality appropriate for safe and sustainable use with land irrigation systems	Pathogens, Nitrogen defined for land application requirements by 2023
Obtain reuse consents for appropriate land areas for Reuse Water.	Demonstrated quality performance and consents in place for reuse for dust suppression by June 2022
We have up to date plans as follows: Master plan ( 50 years focus) Activity Plan ( 10 years Focus) Business plan ( 1 year focus, but also with tentative 3 year actions)	All plans are live and are reviewed annually.
The number of alternate methods/options for biosolids disposal	One by 2035
Increase in quality of biosolids	Biosolids Reuse Development plan Draft by 2022
Percentage of biosolids that is reused	100%
Annual volume of biosolids sold	Biosolids Reuse Development plan Draft by 2022
Proportion of biosolids to land or reuse/ Sale	100%
Number of days effluent is discharged to water in summer period (1 Dec to 31 March)	Draft Wastewater reuse plan developed by 2022, with a goal to reaching zero by 2035
Volume of high-value water-reuse we achieve	Draft Wastewater reuse plan developed by 2022
Amount of total flow we can divert from discharge to water	At least 75 <sup>th</sup> percentile by 2040

**8. THREE YEAR RENEWAL EXPENDITURE FORECAST (\$'000)**

Renewal Plan (\$,000)	Projected 2020/21	2021/22	2022/23	2023/24
Miscellaneous	120	120	120	20
Pump Stations and Rising Mains	50	385	537	168
Inlet, Aeration Basin, Clarifier and Ponds	828	1159	41	
Solids Handling	723	381	254	1704
ATAD rust proofing				
Rabbit Island		78	49	
Biosolids and sludge storage tank refurbishment	75			
Facilities (Operator Buildings)	150		135	11
PLC renewal	100			
General		71	10	21
<b>Total</b>	<b>2121</b>	<b>2194</b>	<b>1146</b>	<b>1924</b>

The renewal programme of the NRSBU assets is developed around lifecycle and condition assessment.

An iterative process is followed whereby the renewal programme is considered annually with inputs from the Operation and Maintenance operator and a review of remaining useful life of assets.

Condition assessment reports may be commissioned where additional information is required to ensure optimal spend on renewals.

Miscellaneous items are at the discretion of the General Manager.

**9. NRSBU Capital Upgrade Plan**

The following table outlines the capital upgrades proposed over the next three years. This is followed by a commentary outlining more detail on each of the proposals.

Capital upgrades:

Year	Description of Project	Estimated Cost \$
2021/22	Pumping station overflow screens	300,000
	Regional pipeline capacity upgrade and Bell Island Power supply (Saxton-Monaco)	5,000,000
	Regional pipeline capacity upgrades (Beach Road-Saxton)	250,000
	Flood protection of facilities	350,000
	Storage at pumping stations	100,000
	Additional screening treatment plant	500,000
	Desludge pond F1	200,000
	Desludge pond F3	200,000
	Odour upgrade Rabbit Island	200,000
	Best Island Irrigation	350,000
	<b>Total CAPEX 21/22</b>	<b>7,450,000</b>
2022/23	Regional pipeline capacity upgrades (Saxton-Monaco)	1,500,000
	Regional pipeline capacity upgrades (Beach Road-Saxton)	250,000
	Saxton pump and discharge pipe upgrade	2,000,000
	Pumping station storage	1,000,000
	Additional screening treatment plant	1,000,000
	Best Island Irrigation	500,000
2023/24	Beach Road to Saxton Pipeline	2,000,000
	Capacity upgrades	2,000,000
	Rabbit Island equipment	150,000
	Best Island Irrigation	1,500,000

**Commentary on Upgrade for 2021/22**

The programme of work for the NRSBU has been significantly altered as a result of the Activity management review.

There is a small amount of desludging work required to dredge the high points from Ponds F1 and F3. This follows the works done in 2020/21 desludging pond F2. The intent is to reduce the depth of sludge in ponds F1 and F3 to improve the available vertical space in those ponds. Pump station upgrades to comply with the conditions of the aberrational discharge consent have been partly completed, the final pump station (Saxton Rd) needs to be completed during the 2021/2022 year.

The rising main Upgrade for Saxtons to Monaco, and Beach Road to Saxtons Road has been shifted over two years to reduce the expenditure profile, and Bell Island Power supply issues have been bought into the 2021/22 year due to the high consequence that a failure of the power supply would have.

**The Capital upgrades for 2021/22 covers items such as:**

- Further develop investigations into the condition of the current power cable, the capacity of the power supply and the option for power supply resilience, as well as the implementation of an alternative power supply option.
- Additional works associate with the Saxtons Road to Monaco pipeline, including pump reconfiguration, MCC upgrades and new pipework.

**Regional Pipeline Upgrade:**

- Regional pump stations consent compliance, plus storm surge defence plan and implementation programme.
- Capacity improvements (in particular, downstream of Beach Road), but this programme of work has been extended into 2022/23 due to concerns that NRSBU staff will not be able to deliver the program of works.

**Emission Management System**

Emission management will be ongoing, however 2021/22 will be used to develop a mitigation plan using the data that NRSBU has gathered from the System installed during 2020/2021.

This Emission Management work is expected to involve an assessment of the emission profile from the Bell Island WWTP, Rabbit Island Biosolids application system, and the Nelson Regional Sewerage system.

It will include a draft model that can be used annually to redo the Carbon Emission Assessment based on the information collected as part of the Operations and Maintenance.

This model should be suitable for use by NRSBU staff to annually assess and report on the emissions from the NRSS and to outline emission reduction opportunities.

**NRSBU Records and data:**

Additionally, we will continue to collating all the NRSBU historic and current information into a single access point electronic storage location.

**10. FINANCIAL PLAN**

Nelson Regional Sewerage Business Unit  
Draft Budget Summary for 2021 to 2024

<b>Draft Budget</b>				
	20/21	21/22	22/23	23/24
<b>Income</b>				
Contributors	8,711	9,051	9,881	10,445
Interest	0	0	0	0
Other Recoveries	158	158	158	158
<b>Total Income</b>	<b>8,870</b>	<b>9,209</b>	<b>10,040</b>	<b>10,604</b>
<b>Expenditure</b>				
Operations & Maintenance	3,785	4,182	4,238	3,977
Management	500	500	500	500
Interest	714	780	1,041	1,266
Insurance	75	98	98	98
Depreciation	2,265	2,389	2,763	3,214
<b>Total Operating Cost</b>	<b>7,339</b>	<b>7,949</b>	<b>8,640</b>	<b>9,055</b>
<b>Surplus/Deficit</b>	<b>1,531</b>	<b>1,260</b>	<b>1,400</b>	<b>1,549</b>
<b>Use of Funds</b>				
Loan Repayment	144	195	1,617	1,290
Renewals	2,121	2,194	1,146	1,924
Owners Distribution	1,531	1,260	1,400	1,549
Upgrades	8,890	7,450	6,250	5,650
	12,686	11,099	10,413	10,413
<b>Sources of Funds</b>				
Surplus/Deficit	1,531	1,260	1,421	1,578
Depreciation	2,265	2,389	2,763	3,214
New Loans	8,890	7,450	6,250	5,650
	12,686	11,099	10,413	10,413

Item 7: Nelson Regional Sewerage Business Unit - Draft Business Plan 2021/22 and Draft Activity Management Plan 2021 - 2031: Attachment 2 – A2458266

**APPENDIX A**

**Nelson Regional Sewerage Business Unit Committee Activity Schedule 2021-2023**

<b>Date</b>	<b>Activity</b>	<b>Papers required</b>
By 31 August 2021	Review draft Annual Report and Financial Statement.	Draft annual report and financial statement.
By 30 September 2021	Deliver annual financial statement to Councils.	Financial Statement.
By 31 December 2021	Review board planning/meeting timetable. Adopt draft business plan for presentation to Tasman District Council and Nelson City Council. Review and update Interests Register. Adopt business continuity plan.	Planning/meeting timetable. Business Plan. Interests Register. Draft business continuity plan.
By 20 March 2022	Present Annual Report and Business Plan to Tasman District Council and Nelson City Council.	Annual Report and Business Plan.
By 30 June 2022	Review board performance Review governance policy Review Demand Management Plan Receive report on Contingency Plan review by customer representatives. Receive report on Risk Management review by customer representatives. Review customer satisfaction survey results Annual review of Strategic Plan Adopt Energy Conservation Plan Review Audit Management Report Annual Carbon Emission Review	Checklist for committee effectiveness. Governance Policy Draft Demand Management Plan. Report on Contingency Plan review by customer representatives. Report on Risk Management review by customer representatives. Customer survey report. Strategic plan. Energy Conservation Programme. Carbon Mission Measurement System development



**Appendix B**

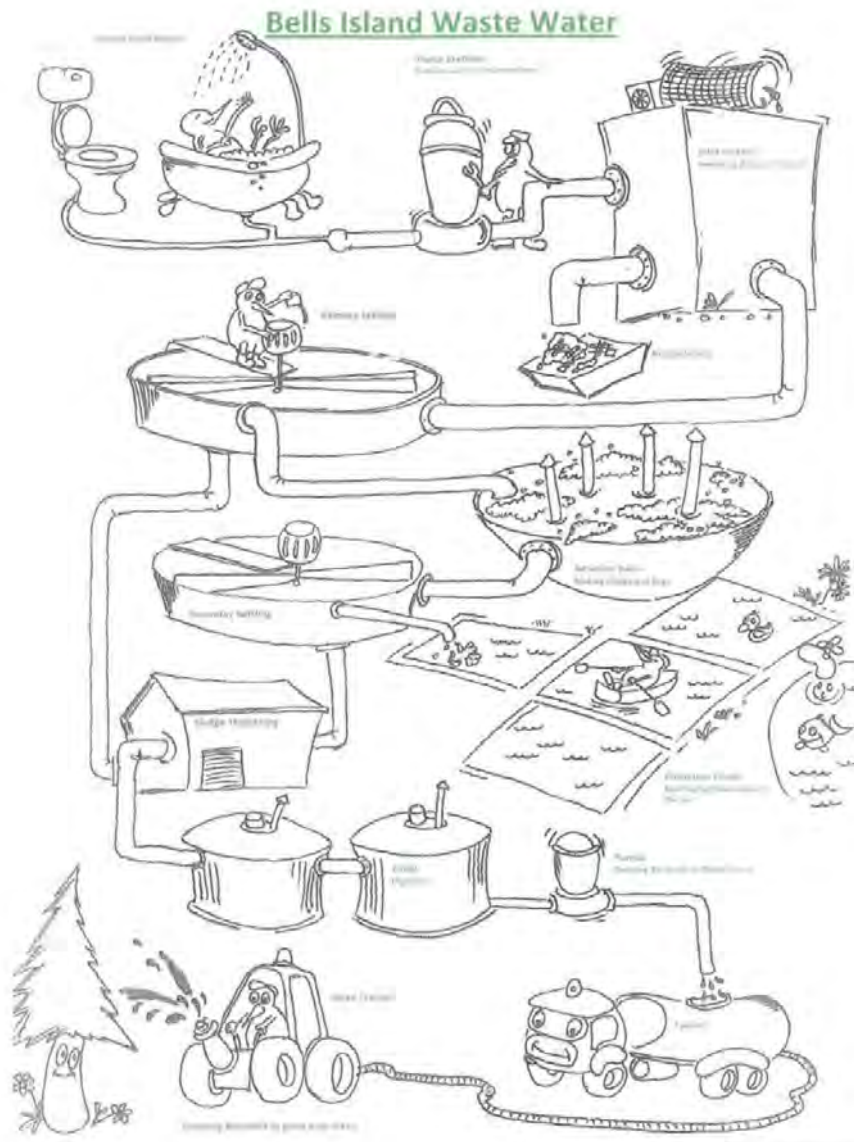
**BUSINESS IMPROVEMENT PLAN**

This section describes initiatives to improve the efficiency and effectiveness of the Business Unit and is based on the Nelson Regional Sewerage Business Unit Strategic Plan and referenced to the 2017 Wastewater Asset Management Plan.

IP	Description	Resource Requirements	Progress
IP-1	Consolidate all data and information; and review ease of access	In-house and consultants	Implementation ongoing for completion by June 2022
IP-2	Continue sludge removal programme.	In-house and Contractor	On-going, Sludge Bund Consent granted 2019/2020 complete Sludge containment area under construction 2019/2020.- complete Desludging to be begin November 2020 – Pond F2 complete. F1 and F3 to be desludged in 2021/22
IP-3	Determine the long-term strategy (Master Plan)	In-house and consultants	Consultant seconded to assist preparation.  Draft to be available by December 2020, and the finalised Master plan to be completed by 30 June 22.
IP-4	Implement Hazardous Gas Management system for Gravity Belt Thickener system	In-house and consultants	This is programmed for early 2022
IP5	Electrical Supply to Bell Island	Inhouse and Consultants.	Investigation and implementation of mitigation measured

**APPENDIX C**

**BELL ISLAND TREATMENT PLANT SCHEMATICS**



## **APPENDIX D**

### **FOCUS ON COMMUNITY AND ENVIRONMENTAL BENEFITS**

The NRSBU intends to:

- have facilities that are robust and resilient,
- reduce overflow into the coastal marine environment and Tasman Bay beyond.
- have a greater focus on the immediate coastal marine environment and impacts on the ecology of Tasman Bay.
- consider water quality, water reuse, and biodiversity and estuary health as priorities over the next two years.
- reduce the volume of wastewater discharged to Waimea Inlet over time
- Increase attention to facilitating cultural and recreational and educational activities where these don't adversely affect core business activities.

To implement this vision, the NRSBU will:

- develop a programme of work to investigate and implement ways to reduce overflows from the sewerage pump stations to the estuary.
- implement the conditions associated with the pump stations Aberrational Discharge resource consent.
- undertake a trial to re-use treated wastewater to clean the inlet screens (reducing the use of potable water and consequently the volume discharged to the estuary).
- further develop investigations into the potential re-use (by others) of treated wastewater.
- investigate potential tree and vegetation planting around the perimeter of Bell Island.
- continue to operate the treatment plant well and achieve high quality effluent.
- commission a high-level report into alternative wastewater treatment systems (that would avoid or significantly reduce the discharge of treated wastewater to the Waimea Inlet).

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## **Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report**

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1. Purpose of Report
  - 1.1 This report updates the activities associated with the Nelson Regional Sewerage Business Unit (NRSBU) over the last three months, and seeks approval of the Draft NRSBU Annual Report 2019/2020.
2. Summary
  - 2.1 Operations are generally running well, albeit a very busy period for the NRSBU and Nelmac staff.
  - 2.2 Operations have been proceeding well, however minor additional costs are still being incurred for PPE and a Portacom shower block to provide improved showering and hygiene facilities as a result of COVID 19
  - 2.3 The new NRSBU Activity Engineer started on 26 June 2020 and he has immediately been immersed in the NRSBU Activity Management Plan, and 50 year Master Plan.
  - 2.4 A number of renewals and capital works project have commenced, including:
    - Containment area for proposed pond desludging commence but was put on hold due to wet weather. This work will recommence over the next few weeks.
    - Reuse water and high pressure pumping system construction is well underway and the water reuse facility is expected to be operational by the end of September.
    - Overflow screening chamber at the airport pumpstation has been installed.
    - Odour control upgrades at the inlet area are underway, with the biofilter being constructed at present.
    - Facilities upgrade investigation works have commenced.

Item 8: Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report

- Rising main duplication investigation works have commenced.
  - Lifting gantry for chamber C3
- 2.5 No odour issues were experienced during this period despite significant issues with very high load entering the facility.
- 2.6 High loads were experience as a result of COVID 19, with the highest load experience being twice the capacity of the plant. This has been a common finding around NZ, and other facilities have experienced similar events.
- 2.7 The ponds experienced high loads which caused significant reductions in algal populations. Additional chemical dosing was frequently added to the ponds during this period to mitigate odour production.
- 2.8 Significant additional operational measures were implemented during this period including hiring an additional generator to allow temporary aeration to be added to the Bell Island aeration basin.
- 2.9 NRSBU is currently constructing the containment beds for the Pond desludging programme. Pond desludging is planned for November/December 2020, and early 2021, it is anticipated that desludging will improve the stability of the ponds.
- 2.10 The Rabbit Island Biosolids Reuse Consent Assessment of Environmental Effects (AEE) has been submitted.
- 2.11 Consultation was undertaken, and a hui over zoom has been undertaken with Te Tau Ihu Iwi. NRSBU was unable to complete the cultural impact assessments prior to submission of the Assessment of Effects document and are still working with Iwi to try to get these completed.
- 2.12 The purchase of the land at Best Island settled on 30 June 2020. Since possession NRSBU staff have locked the gates, and the chain has been cut by people entering the site. Further security measures are being implemented.
- 2.13 Planning is underway to remove the old batch on the site to reduce the likelihood of unwanted squatters, and to prepare for the future use of the land for wastewater application.
- 2.14 A number of groups have asked for permission to hold activities on our land, including:
- 2.14.1 NZ Army – Exercise in Bell Island forest
  - 2.14.2 Land Search and Rescue – Use old batch for exercise
  - 2.14.3 Police AOS – Use old batch for mock forced entry exercises.
  - 2.14.4 NZ Fire Service – Use old batch for firefighting exercise

Item 8: Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report

- 2.14.5 Nelson Grass Cart Club – Requested lease for an area of land at the north eastern corner of Bell Island (as far from public as possible) and a potential area for them to lease is being discussed with them. Discussion with the Grass Cart Representative has identified that they are willing to pay a **“commercial” rate for the land. NRSBU staff have identified** 3 Ha of land as far from residents as possible.
- 2.14.6 Nelson 4WD club – use of rough paddock at south of plant.
- 2.14.7 Radio Yacht Squadron – lease for access to the use of the southern pond as their primary yachting course in Nelson. At this time NRSBU have approved the use for most of these activities, and are developing rules and leases where appropriate. The exception are the 4WD club as these activities have implications on site access to the Bell Island facility.
- 2.15 A key reason for considering the grass cart clubs request is that this can be used to also improve a longstanding Health and Safety issue relating to the ornithological society access to the bird roosting site on the east of Bell Island. Currently the ornithological society have access through the operational area, which is something that NRSBU management wish to stop. The lease to the grass club includes the formation of an access route outside the NRSBU operational area which could also be used by the ornithological society.
3. Recommendation

*That the Nelson Regional Sewerage Business Unit*

- 1. Receives the Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report (R20278) and its attachments (A2458265 and A2458077); and*
- 2. Approves the Nelson Regional Sewerage Business Unit 2019/20 Annual Report (A2458265) and Draft Nelson Regional Sewerage Business Unit – Annual Financial Statements 2019-20 (A2458267) for presentation to the Nelson City Council and Tasman District Council, with delegation of all minor amendments to the Nelson Regional Sewerage Business Unit Chair; and*

District Council

Item 8: Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report

*That the Nelson City Council and Tasman District Councils*

1. *Receive the Nelson Regional Sewerage Business Unit 2019/20 Annual report (A2458265) and Nelson Regional Sewerage Business Unit – Annual Financial Statements 2019-20 (Draft) (A2458267).*

4. Background

- 4.1 Significant effort is being undertaken at present by a range of parties acting for NRSBU. Activities include the development of the Activity Management Plan, physical construction of odour control systems, the lodgement of the Rabbit Island resource consent, water recycling facility, sludge bunds and overflow screens, as well as investigations for the rising main duplication and generator replacement projects. The period has been exceedingly busy and has stretched the regional services staff.
- 4.2 For the new Operations Manager and Activity Engineer it has been an initiation by fire, and it is a testament to them that effective operations have been able to be maintained while delivering the required outputs.

5. Health and Safety

- 5.1 Health and Safety at the site is being managed well.
- 5.2 Over this period there a number of minor incidents and 2 lost time injuries. The following table is a summary of the Health and Safety issues associated with the operations and maintenance of Bell Island wastewater treatment plant.
- 5.3 Summary of Bell Island Health and Safety issues.

Objective	Performance 2019/20
Zero lost time injuries	Not Achieved. Two lost time injuries reported – these were from becoming sick following working in pump station wet well
Zero Incident Frequency Rate towards health and safety.	Not Achieved. 69 incidents/ near misses reported
100% compliance with statutory acts and regulations.	Achieved. There were no breaches of statutory acts or regulations recorded during the year.
Identification, assessment and control of all workplace hazards and risks.	Achieved. The hazard register and job hazard analysis procedures are in place at the NRSS Treatment Plant. Along with developing a comprehensive H&S improvement list for the site.
Continually improve safety and health performance standards of managers, supervision and workplace employees.	Achieved. Health and Safety is the first topic at all site tool box and management meetings.

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	A hazard board is maintained at the site office entrance.
Provision of information & training for personnel at all levels to effectively meet responsibilities.	Achieved.
Continuous improvement of company goals, objectives and methods for safety and health.	Achieved. Nelmac and its subcontractors continue to strive for improvement in all areas of health and safety. New initiatives such as the use of UHF radios and the implementation of a call minder service for lone work have been put in place.

5.4 The NRSBU Health and Safety actions this period included:

5.4.1 Completion of the chamber C3 lifting gantry.

5.4.2 Installation of gas monitoring system on Bell Island inlet.

5.4.3 Refurbishment of the Bell Island inlet building to include wet area shower.

5.4.4 Installation of eye wash and emergency showers at key locations around the site.

5.4.5 Installation of stairs and handrails down wavebands of the ponds

5.4.6 Safe access ways to primary clarifier scum well.

5.4.7 Improve access ways to secondary clarifier scum well.

5.4.8 Safe access to biosolids pigging system.

5.4.9 Mechanical guarding to DAF scraper.

5.4.10 Mechanical guarding design for inlet screens.

5.5 As a consequence of the locking chains being cut at the entry to our Best Island land, and due to damage to the gates at Bell Island entry, NRSBU has commissioned a mobile camera which can be installed at various locations around the site. This will allow us to identify inappropriate actions and those undertaking them. NRSBU can choose to follow up at its discretion.

5.6 As previously mentioned there is work being done to identify improvement to access for the ornithological society

5.7 An ongoing traffic management issue has been identified and is being worked on. The air valves on the NRSBU rising main from Beach Road to Saxton Road are currently located under the cycleway alongside Whakatu Drive. Nelmac are unable to access the air valves with



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machinery to maintain them effectively without significant disruption to cyclists. Options are being considered that will allow effective and safe access for this activity.

### 6. Operations and Maintenance

- 6.1 Operations are generally running well, however high loads have again been experienced on Bell Island, with poor settling sludge creating operational challenges. This is an annual issue that is believed to be related to the type of waste discharged by ENZAfoods NZ Ltd.
- 6.2 NRSBU has been trying to get more certainty from ENZAfoods NZ Ltd (via Cedenco) to understand the future loads and flows from the facility. NRSBU staff have made contact with Turners and Growers Ltd (the holder of the contract), and they have indicated that they will maintain the contract until another lessee on the site leaves in the new year. No clear long term information has been received at the time of this report being prepared.
- 6.3 NRSBU have requested Nelmac continue to operate the facility until next year to avoid issues with international tenderers for the new contract. NRSBU has accepted an offer from Nelmac to undertake this extension to the contract. There is an increase in cost associated with this extension.
- 6.4 A building contractor has been engaged to develop the design for the facilities upgrade at Bell Island. The geotechnical investigation has shown that the ground conditions are suitable. It is expected that these facilities will be constructed and available for use by the end of June 2021.

### 7. Odour management

- 7.1 NRSBU has been struggling to find an independent odour monitor. Discussion has been entered into with 5 different parties, but all of these have chosen not to proceed, (or have not been able to provide the level of service required).
- 7.2 NRSBU staff are now looking to source a company rather than a person to undertake this, and will prepare a request for proposals.

### 8. Resource Consents

- 8.1 Aberrational Overflow Consent - NRSBU is technically non-compliant with the aberrational overflows consent. No overflow events have occurred and therefore there is little consequence of the non-compliance, however NRSBU is at risk in the event that an overflow does occur.
- 8.2 NRSBU has struggled to make progress on this consent for two reasons.
  - 8.2.1 The first is there is no clear way to engage Iwi to undertake the Cultural Health Indexing required by the consent. Aneika Young

## Item 8: Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report

has been engaged to facilitate this for us. At this time there is no clear timeframe for resolving this.

- 8.2.2 The second issue is that the screening design has proven difficult due to no hydraulic head being available to drive water through a screen. The design has been reviewed and developed to include overflow pumps into the designs to allow them to function effectively.
- 8.3 Physical progress has been made with the overflow screening systems, and Nelmac are presently installing the overflow screening facility at the Airport pumpstation. This has been delayed due to COVID 19 related shipping delays of the screens. It is expected that this screen will be operational by the end of September 2020.
- 8.4 The detailed design of Songer St pump station overflow screening system is underway. NRSBU staff anticipate starting the construction for this screen installation in the next 2 months. This screen has been a difficult screen to design due to the low lying nature of the site, and the need to bund the site to prevent inundation from high tides.
- 8.5 The Whakatu screening concept has been developed and NRSBU staff will move onto the design of this screen once the Songer Street screen has started construction.
- 8.6 Desludging Consent -The Bell Island sludge bund for the pond dewatering is partly constructed but wet weather has delayed progress at present. This containment area will be complete prior to starting desludging, which is planned for late October.
- 8.7 Bell Island Discharge Consent - Monitoring of Bell Island discharge performance against the new Bell Island resource consent has shown compliance with all parameters at this time.
- 8.8 Rabbit Island Biosolids Reuse Consent - The application for the Rabbit Island biosolids discharge consent has been submitted. NRSBU is able to continue to operate under the existing consent until the consent application is completed.
- 8.9 The discharge of biosolids this year is the highest seen in many years. This is thought to be due to high loads being received into the plant, and due to the operation of the facility during summer to reduce the risk of odour issues.
- 8.10 The biosolids application operation on Moturoa / Rabbit Island continues to perform well and there have been no odour issues during this period.
- 8.11 During the last 3 months NRSBU has renewed one of the tanks at Rabbit Island and have extended the capacity of the other three tanks. This gives significantly more storage capacity on Rabbit Island, and will allow more flexibility to store biosolids during adverse weather events.

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- 8.12 The biosolids application contract 3619 has been extended until 30 June 2021.
- 8.13 The biosolids discharge odour management app is being developed at present. The company developing the app (Accredited Technology Ltd) have indicated that this will be available as a trial version before the end of September. NRSBU is looking forward to our contractor using the app as it will streamline record keeping and make decision making more consistent and auditable.
- 8.14 Considerable effort has gone into trying to renew the existing Licence to Occupy which runs out in November 2020. This licence is required to allow NRSBU on the Rabbit Island site. This has been quite a saga, and TDC have recently responded that they are unable to renew the licence, and want to have an MOU for the land instead.
- 8.15 Following a number of discussions the GM has decided that a pragmatic solution is to accept an MOU rather than continue to try to get a lease or licence.
- 8.16 As part of this negotiation for Rabbit Island, Tasman District Council are requiring NRSBU to pay \$85,000 for the use of Rabbit Island.
- 8.17 NRSBU does not believe this is a fair reflection of the costs. In order to proceed NRSBU requested the assistance of Duncan Cotterill to continue the work on NRSBU behalf.
- 8.18 Review of the costs shows that Tasman District is claiming that NRSBU cause \$30,000 maintenance to road each year, increases management costs to PFOlsen by \$30,000 and pruning costs of 2500 per Ha. NRSBU believe the road maintenance costs to be exaggerated. At present in order to get the MOU in place it is proposed to accept the costs without prejudice, and get an independent review of the cost and additional value that accrues from the activity. This information would then be used as a basis for negotiations with TDC in future.

## 9. Land Irrigation

- 9.1 NRSBU has notified Raine Farms Ltd that NRSBU is terminating the lease on Bell Island.
- 9.2 NRSBU has decided to terminate for a number of reasons. including;
- The lease has come to an end and the lease value is no longer a commercial rate.
  - A number of issues have been ongoing with the management of the irrigation system, with a lack of data for resource consent reporting.
  - Irrigation system be operated insufficiently for waste reuse purposes.

## Item 8: Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report

- With the purchase of the Best Island land there is the ability to offer a larger lease as a single package.
- 9.3 NRSBU may need to invest to purchase the existing irrigator (or purchase a replacement) following the termination of the lease.
- 9.4 A number of actions have been undertaken in regard to the Best Island land. These include increased security for the site, arranging the removal of the existing batch, and initiating actions for improving fencing and tiding up the house on the site.
- 9.5 The contract with Fulton Hogan for sand extraction has been completed and NRSBU are now receiving royalties of \$7 per ton.
- 9.6 Fulton Hogan have started landscaping their site, with the road having been upgraded, and new earthworks bunds and fencing being constructed.
- 9.7 The Radio Yacht Squadron has started clearing and setting up the facilities at the second pond at Best Island. This includes hand railing, and locating a container and mobile toilet on the site. A peppercorn lease is being put together to cover this activity. The Radio Yacht Squadron are holding a national tournament in October and plan to use the new facility for this tournament
10. Regional Pipeline
- 10.1 As discussed above work is ongoing to comply with some of the conditions of the aberrational discharge consent at pump stations (e.g. installation of screens).
- 10.2 Initial investigations have been undertaken on the old rising main between Saxtons Rd and Monaco. These initial investigation have shown that the existing pipe is in good condition and identified that a section of the pipe has been replaced with HDPE historically, and it is therefore not necessary to install a new pipe under the western carriageway of Whakatu drive.
- 10.3 Further investigations are required at the Monaco end of the pipe, and our consultants (BECA) are finishing the pipe relining options review and the planning review at present.
- 10.4 NRSBU staff expect additional investigation works to be undertaken over the next 2 months, and design procurement toward the end of this year. Physical installation works for the pipe liner are expected at the start of 2021.
- 10.5 NRSBU will face issues with this installation of the liner as the specialists will need to come to NZ from overseas, and it will therefore be necessary to apply for exemptions for them, and have them go through quarantine.

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- 10.6 An investigation plan for the old Monaco to Bell Island pipe (sectional concrete pipe) is being developed, with this work expected to be undertaken following the Monaco investigation works during the 2020/21 summer.
- 10.7 Higher power output back-up generators are being procured for the pump stations. The procurement package for this is being developed at present.
- 11. Trade Waste Agreements
  - 11.1 In investigating some invoicing issues it has been identified that there is an ambiguity in the way that NRSBU is charging our customers.
  - 11.2 The current approach has been used for many years.
  - 11.3 NRSBU proposes to discuss the charging calculation with the contributors over the next few months to consider whether any change should be made to the charging calculation.
- 12. Trade Waste Management
  - 12.1 Ongoing improvements are being worked on for the trade waste monitoring.
  - 12.2 It became clear as a result of very high loads received to the facility that there has been no focus by the O & M contractor on determining where the high loads came from. While investigating these issues NRSBU identified that sampling procedures have not always been followed accurately by the O&M contractor.
  - 12.3 This means that NRSBU billing has not always followed the prescribe method outlined in the contributor contracts, and that the sampling may not accurately represent that actual loads and flows from the facility. This finding is a serious disappointment. It has highlighted a critical lack of understanding by our O & M contractor, and has bought NRSBU credibility into question.
  - 12.4 As a result NRSBU reiterated the requirement that Nelmac undertake flow proportional sampling of all contributors everyday (as should have been undertaken), and requested Nelmac store the samples for later analysis if adverse events are identified. This will enable NRSBU to examine the issues and identify the contributor and catchment causing the issues.
  - 12.5 Flow monitoring has been an ongoing area of investigation for some time. Changes are being implemented to the flowmeters to make sure that the reading on the meter matches the reading on the SCADA system.

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13. Bell Island Resource Consent Application

13.1 The decision was received 21 February 2020.

13.2 Monitoring against these conditions has been undertaken and Bell Island is currently compliant with all the consent conditions following the new consent.

13.3 It is a bit difficult to analyse some parameters as they require an average of 26 samples and NRSBU has not yet analysed sufficient samples for this 26 point average to be generated.

14. Treated Wastewater Re-use Trial

14.1 Construction and assembly of this facility was delayed by COVID 19 but is now nearly complete. Minor additional delays have occurred and it is expected that commissioning of this system will occur toward the end of September.

15. Carbon Emissions

15.1 The development of the emissions dashboard has commenced and NRSBU is expecting this to be up and running by year end 2020.

15.2 Enabling works have been undertaken to change all NRSBU electrical meters to smart meters so that the data can be automatically updated to the dashboard. Due to workload the dashboards have not yet been developed.

15.3 The electrical recycle pump at the discharge channel is being installed as part of the water recycling facility installation, and this will reduce diesel consumption when pond performance issues require large recirculation events to occur.

16. Annual Report

16.1 The Annual report (2019/2020) (A2458265) is submitted for approval at this meeting.

16.2 Following approval the annual report will be presented to NCC and TDC.

17. Finance

17.1 Income Account for NRSBU to 30 June 2020:

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<b>Nelson Regional Sewerage Business Unit</b>								
<b>Financial Report</b>								
<b>Income Account for the period to</b>				<b>30th June 2020</b>				
	<b>Actual</b>	<b>Budget</b>	<b>Actual</b>	<b>%</b>	<b>%</b>	<b>2019/20 Budget</b>		
	<b>Month</b>	<b>Month</b>	<b>YTD</b>	<b>YTD</b>	<b>Year</b>	<b>YTD</b>	<b>Annual</b>	<b>YTD Variation</b>
<b>Income</b>								
Contributions Fixed	321,545	327,833	3,858,540	98	98	3,934,000	3,934,000	(75,460)
Contributions Variable	857,189	338,478	4,220,993	104	104	4,061,732	4,061,732	159,261
Other Recoveries	- 5,470	13,189	254,990	161	161	158,268	158,268	96,722
Interest	0	-	141			-	-	141
Forestry Income	23,560	-	23,560			-	-	23,560
Revaluation Derivative Instruments	-		-					
Vested Assets	-		-			-		
<b>Total Income</b>	<b>1,196,824</b>	<b>679,500</b>	<b>8,358,223</b>	<b>103</b>	<b>103</b>	<b>8,154,000</b>	<b>8,154,000</b>	<b>204,223</b>
<b>Less Expenses</b>								
Management	77,697	49,880	797,716	133	133	598,563	598,563	(199,153)
Electricity	75,985	75,027	800,224	89	89	900,322	900,322	100,098
Contract Maintenance	69,061	58,877	839,909	119	119	706,492	706,492	(133,417)
Reactive and Proactive Maintenance	64,183	61,469	687,265	93	93	737,600	737,600	50,335
Monitoring	10,411	19,602	134,583	56	56	240,500	240,500	105,917
Consultancy	713	6,250	81,894	109	109	75,000	75,000	(6,894)
Insurance	7,577	6,250	85,415	114	114	75,000	75,000	(10,415)
Sundry	4,703	18,998	76,969	34	34	227,974	227,974	151,005
Biosolids Disposal	159,428	54,881	866,614	132	132	658,571	658,571	(208,043)
<b>Operating &amp; Maintenance Expenses</b>	<b>469,758</b>	<b>351,234</b>	<b>4,370,589</b>	<b>104</b>	<b>104</b>	<b>4,220,022</b>	<b>4,220,022</b>	<b>(150,567)</b>
Financial	20,886	39,083	334,343	71	71	469,000	469,000	134,657
Depreciation	222,755	185,333	2,090,140	94	94	2,224,000	2,224,000	133,860
<b>Total Expenses</b>	<b>713,398</b>	<b>575,650</b>	<b>6,795,072</b>	<b>98</b>	<b>98</b>	<b>6,913,022</b>	<b>6,913,022</b>	<b>117,950</b>
<b>Net Income</b>	<b>483,426</b>	<b>103,850</b>	<b>1,563,151</b>	<b>126</b>	<b>126</b>	<b>1,240,978</b>	<b>1,240,978</b>	<b>322,173</b>
<b>Capital Expenditure</b>								
Renewals	66,679		1,516,875				870,000	
New Capital Expenditure	3,186,627		4,497,634				7,700,000	
<b>Total Capital Expenditure</b>	<b>3,253,306</b>		<b>6,014,509</b>				<b>8,570,000</b>	

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Balance Sheet as at 30 June 2020.

<b>Nelson Regional Sewerage Business Unit</b>			
<b>NRSBU Balance Sheet</b>			
<b>As at</b>			
<b>30th June 2020</b>			
	<b>Current</b>	<b>Last Month</b>	<b>June 2019</b>
<b>Equity</b>			
Opening Equity (July)	49,562,837	49,562,837	48,867,719
Plus Net Income YTD	0	1,079,726	0
Plus Revaluation	2,602,714	0	695,117
<b>Closing Equity</b>	<b>52,165,551</b>	<b>50,642,562</b>	<b>49,562,837</b>
Contingency Reserve	100,000	100,000	100,000
	<b>52,265,551</b>	<b>50,742,562</b>	<b>49,662,837</b>
Which was Invested as follows -			
<b>Current Assets</b>			
Bank	4,382	4,382	244,462
Debtors	568,279	37,073	552,781
NCC Current account	0	192,231	0
<b>Total Current Assets</b>	<b>572,661</b>	<b>233,686</b>	<b>797,243</b>
<b>Fixed Assets</b>	<b>70,812,223</b>	<b>65,155,398</b>	<b>64,261,580</b>
<b>Current Liabilities</b>			
Creditors	(21,081)	(486,521)	(60,919)
NCC Loan	(960,000)	(160,000)	0
TDC Current Account	(423,626)	0	(514,939)
NCC Current account	(1,714,625)	0	(820,128)
<b>Total Current Liabilities</b>	<b>(3,119,333)</b>	<b>(646,521)</b>	<b>(1,395,986)</b>
<b>Term Liabilities</b>	<b>(16,000,000)</b>	<b>(14,000,000)</b>	<b>(14,000,000)</b>
Derivative Financial Instruments	0	0	0
	<b>52,265,551</b>	<b>50,742,562</b>	<b>49,662,837</b>

17.2 Total income was 3% over budget.

17.3 Total expenses were 2% under budget.

17.4 Owners Distribution was \$1,563,151 for the year

17.5 A wash up will be required from the contributors of \$412,000.

17.6 Significant renewals works were undertaken this year with \$1.516 Million being spent. This is above the budget of \$870,000. The discrepancy in the accounts relates to CAPEX expenditure works for the Rabbit Island



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and inlet works odour upgrade having been recorded as renewals rather than CAPEX.

- 17.7 A number of projects have been delayed by COVID 19 the investigation of the Bell Island rising main, and the Bell Island sludge management works.
- 17.8 Capital expenditure was \$4.5 million vs annual budget of \$7.7 million. Capital expenditure was delayed by COVID 19 but has commenced following level 2 lockdown. Significant work is currently being undertaken.
- 17.9 Approximately \$2.5 Million CAPEX was carried over from 2019/20 to 2020/21
- 17.10 The carryover of capital from 2019/20 to 20/21 has identified that NRSBU has had ongoing issues with delivery of its capital program for some time.
- 17.11 While NRSBU has staff on board it is clear that this issue has not been addressed.
- 17.12 The GM has considered the forward program outlined in the NRSBU (and NTRLBU) Activity Management Plans (AMP) and believes it will not be possible to achieve the capital expenditure with the current level of Regional Services resourcing.
- 17.13 The GM proposes to review the AMP works program (potentially reduce the activities NRSBU implement), and to engage additional staff to deliver the projects required by the final AMP.
18. Strategic Plan (referred to as the Master Plan)
  - 18.1 The Strategic Plan (called the Master Plan) is being rewritten.
  - 18.2 A brief workshop to discuss the plan was held in March 2020 to discuss this plan.
  - 18.3 The workshop discussion has helped to refine the focus for the draft Activity Management Plan. The Strategic Plan (called the NRSBU Master Plan) will continue to be developed during 2020.
  - 18.4 It is proposed that a workshop be held to discuss this in advance of the 11 December NRSBU board meeting.
  - 18.5 It is proposed that this will be presented to NRSBU in a draft form for discussion at the workshop.
  - 18.6 The Master Plan is the key basis for the Asset Management Plan, but in this AMP cycle the timing of the AMP and the Master Plan will be out of cycle.

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- 18.7 Despite this issue a significant amount of the long term planning has been undertaken for the Master Plan, so that NRSBU staff can – as far as possible- align the AMP with the Master Plan
- 18.8 It is proposed that the AMP will be updated to reflect any changes that result from the adoption of the Master Plan in 2021.
19. NRSBU Resourcing
- 19.1 The new Regional Services Activity Engineer commenced work on 29 June 2020.
- 19.2 While the current Regional Services staffing (GM/OM/AE) will allow a significant improvement in capacity, responsiveness from Regional Services staff, there is concern regarding their ability to deliver the capital programme outlines in the AMP.
- 19.3 Review of Regional Services capital programme and development works has identified that current staffing level are unlikely to allow effective delivery of all capital development activities.
- 19.4 The GM proposes to seek additional resources, and will be reviewing the capital programme to allow effective delivery to be achieved.
- 19.5 The GM has purchased a utility vehicle for Regional Services to allow staff to be on-call, and respond to emergencies.
- 19.6 Discussion with the NCC programme manager has indicated that NCC capital projects is able to assist with overflow projects, but would prefer not to be needed for the NRSBU (and NTRLBU) base load of projects.

Author: Nathan Clarke, General Manager Regional Sewerage and Landfill

Attachments

Attachment 1: A2458265 - NRSBU Annual Report 2019-2020 [↓](#)

Attachment 2: A2458267 - NRSBU Financial Report 2019-20 [↓](#)

<b>Important considerations for decision making</b>
<b>1. Fit with Purpose of Local Government</b>  The NRSBU is a joint committee constituted pursuant to the provisions of Schedule 7 to the Local Government Act 2002 and contributes to the four Local Government well-beings of social, economic, environmental and cultural.
<b>2. Consistency with Community Outcomes and Council Policy</b>  The NRSBU Business Plan guides the Activity Management Plan and the Nelson and Tasman Long-term Plans.
<b>3. Risk</b>  This report presents the NRSBU Annual report for approval following consideration by the Board. The Annual report will be circulated to TDC and NCC following approval.  The risk of not approving the Annual report is that mean the information may not be available to the councils in a timely fashion.
<b>4. Financial impact</b>  The NRSBU Annual Report reflects the previous year and therefore has little impact on the current activities.
<b>5. Degree of significance and level of engagement</b>  The NRSBU is a Joint Committee of the two Councils and its activities are included in the Long-term Plans and Annual Plans of each Council. Consultation is undertaken by both Councils in the preparation and adoption of these plans.
<b>6. Climate Impact</b>  A key feature of the work being undertaken by NRSBU is the inclusion of a long-term objective of greenhouse gas emissions with the commitment to measure and reduce greenhouse gas emissions from the facility.
<b>7. Inclusion of Māori in the decision making process</b>  No engagement with Māori has been undertaken in preparing this report but iwi have representation on the Board.
<b>8. Delegations</b>  The Councils are agreed that the responsibility for all management and administrative matters associated with the NRSBU operation shall be with

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the Board, and in particular the Board shall without the need to seek any further authority from the Councils:

1 operate a bank Account for the business unit,

2 Comply with the Procurement Policy of the Administering Council,

3 Enter into all contract necessary for the operations and management of the Business Unit in accordance with approved Budgets and the intent of the Business Plan.

4 Authorise all payments necessary for the operations and management of the business unit within the approve budgets and the intent of the Business Plan

5 Do all other things, other than those things explicitly prohibited by this MOU or relevant statutes, that are necessary to achieve the objectives as stated in the strategic Plan, Asset Management Plan or Business Plan approved by the councils.

6 Comply with the Health and Safety Policy and requirements of the Administering Council.

## Nelson Regional Sewerage Business Unit



### Annual Report 2019/20

#### 1. Background

- 1.1 This Annual Report is a review of what has been achieved by the Nelson Regional Sewerage Business Unit (NRSBU) in the 2019/20 financial year and its level of performance against Key Performance Indicators.

#### 2. Discussion

- 2.1 The NRSBU achieved a surplus of \$1,563,151.
- 2.2 Operating and maintenance costs were 4% over budget and largely related to the costs associated with increased management and increase biosolids discharge costs.
- 2.3 Capital expenditure for the year totalled \$6,014,509 and included the purchase of the Best Island land, work on the inlet, Bell Island biofilters, pond upgrades and the costs associated with the consenting of the NRSBU discharges.
- 2.4 An issue with the ponds on Bell Island in March 2020 resulted in a number of odour complaints from neighbours, and additional complaints were received resulting from biosolids discharge activities.
- 2.5 Odour patrols carried out by an independent contractor has demonstrated that the residual odour at the treatment plant odours have been reduced.
- 2.6 Further upgrade work on treatment plant elements generating odour is continuing.
- 2.7 The effluent discharge quality has met the consent conditions for the year.
- 2.8 The sludge treated at Bell Island consistently met the requirements for A Grade biosolids.
- 2.9 The operation and maintenance contractor maintained a high level of Health and Safety vigilance. There were two lost time injuries during the year – both were illnesses relating to the same wet well entry. As a result the O&M contractor has change their processes to require the use of full face masks, to mitigate the risk.

#### Level of Service Performance

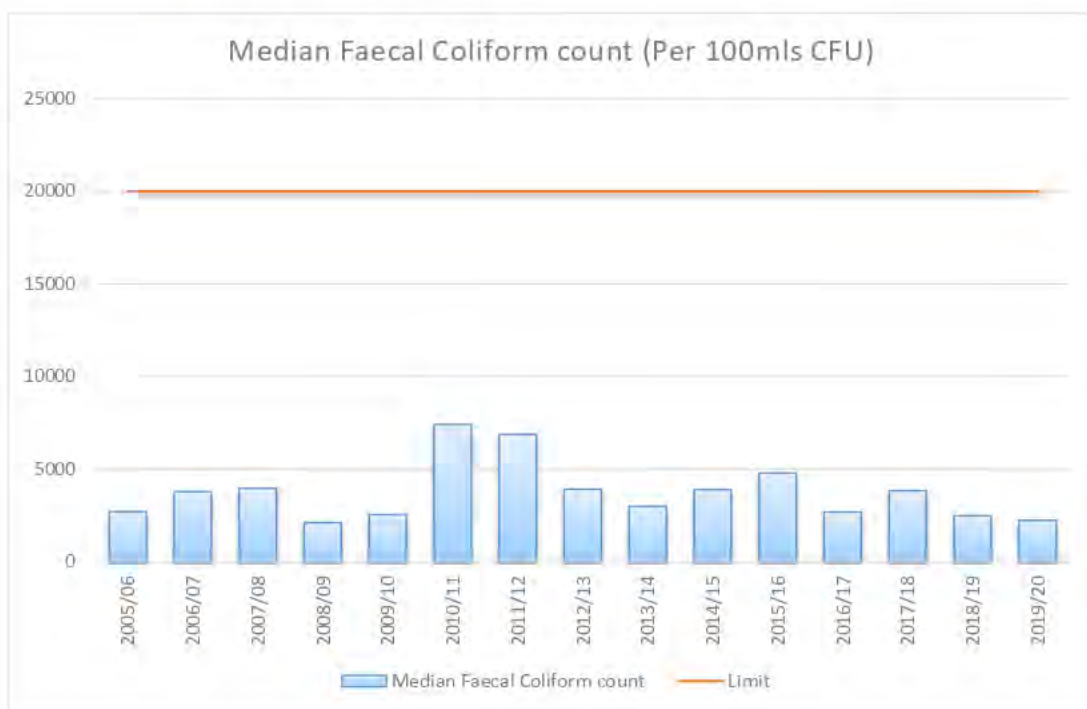
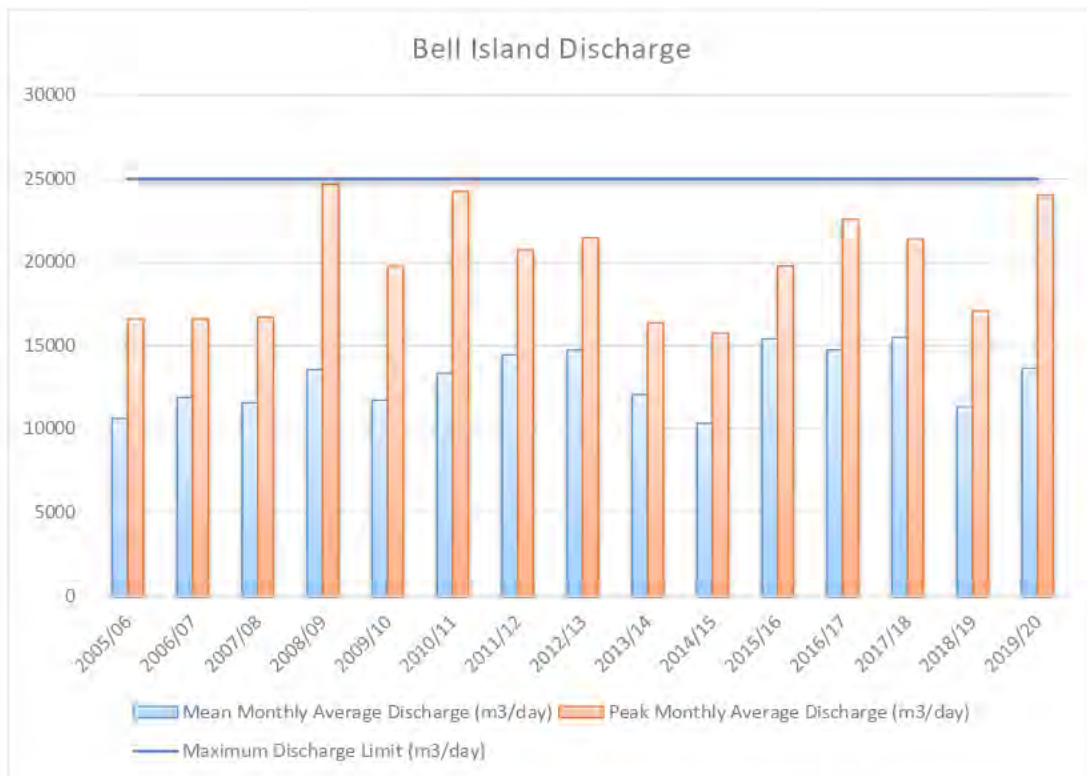
- 2.10 The levels of service recorded over the past three years have stayed reasonably consistent. The following table summarises compliance of the levels of service.

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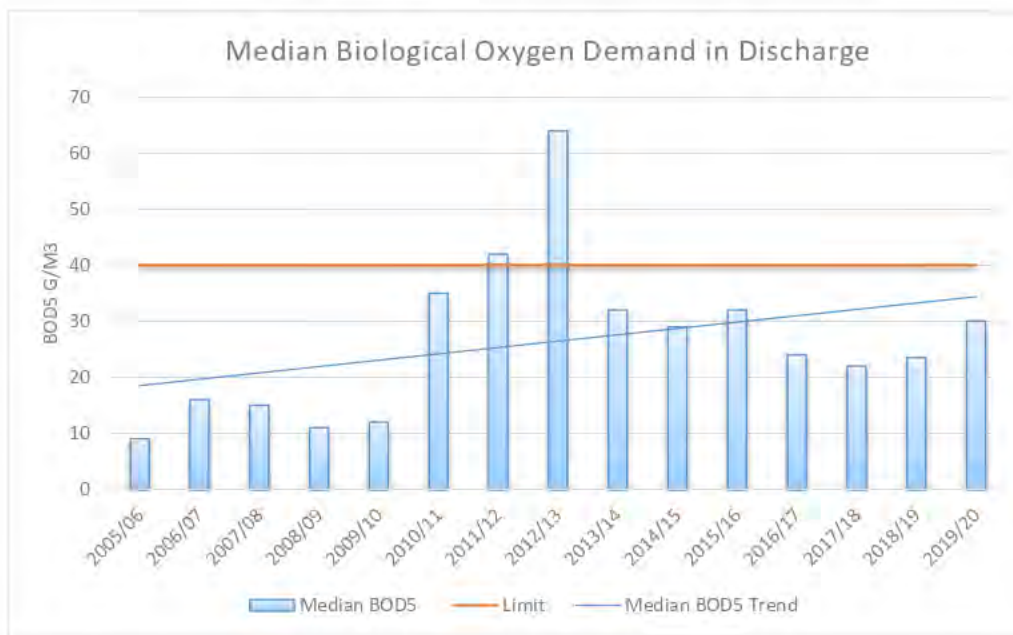
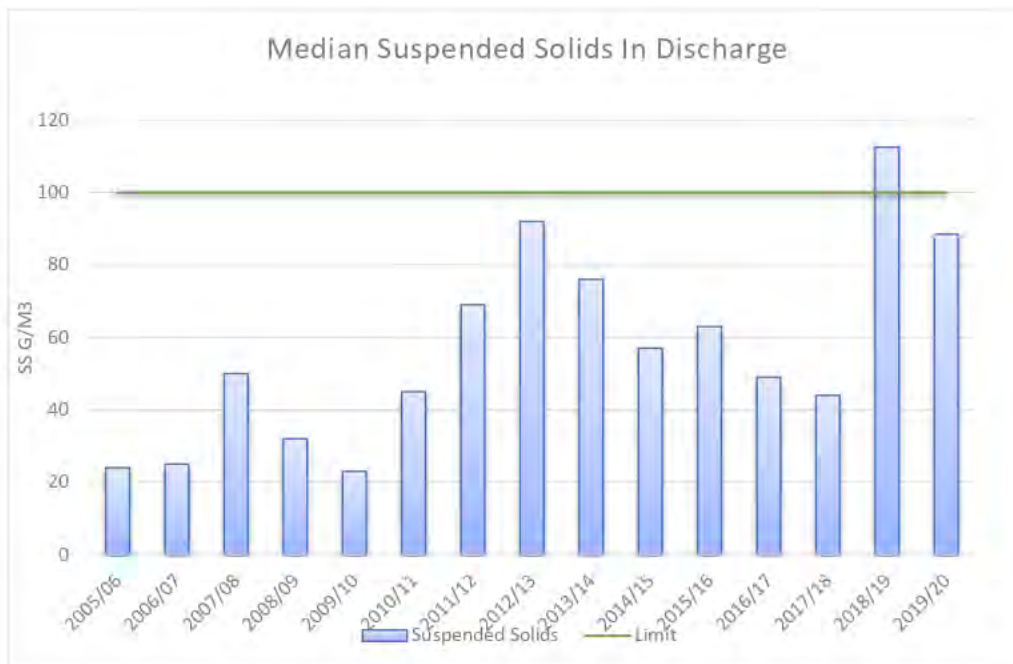
Item 8: Nelson Regional Sewerage Business Unit Quarterly Update Report and 2019/20 Annual Report: Attachment 1

Level of Service	Function	Category	Target Technical Level of Service	Compliance		
				2017/18	2018/19	2019/20
Environmental Impacts	Treatment & Disposal	RMA Consent - Wastewater Discharge to Coastal Marine Area	100% compliance with consent conditions	Yes	Yes	No
		RMA Consent - Discharge of Contaminants to Air	100% compliance with consent conditions	No	Yes	No
		RMA Consent - Discharge of Contaminants to Land	100% compliance with consent conditions	No	Yes	Yes
		Equipment Failure of critical components within the treatment and disposal system	No equipment failures that impact on compliance with resource consent conditions	Yes	No	Yes
		RMA Consent - Aberrational Discharge	100% compliance with consent conditions	N/A	No	No
	Pump Stations	Odour complaints from pump stations	No odour complaints originating from pump stations	Yes	Yes	Yes
		Pump station wet weather overflows	No overflows for all pump stations	Yes	Yes	Yes
		Pump station overflows resulting from power failure	No overflow events occurring	No 2 event	Yes	Yes
		Pump station overflows resulting from mechanical failure	No overflow events occurring	No 1 event	Yes	Yes
		Reticulation Breaks	No reticulation breaks	1 event	Yes	Yes
		Air valve malfunctions	No air valve malfunction that result in wastewater overflows	Yes	Yes	Yes
Capacity	Treatment & Disposal	Overloading system capacity	Treatment and disposal up to all contracted loads and flow	Yes	Yes	Yes
	Pump Stations	Overloading system capacity	No overflow events occurring for the contracted contributor flows	Yes	Yes	Yes
Reliability	Treatment & Disposal	Equipment failure of critical components	No equipment failures that could lead to non-compliance with resource consent conditions	No	Yes	Yes
	Pump Stations			Yes	Yes	Yes
	Pipelines			Yes	Yes	Yes
Responsiveness	Treatment & Disposal	Speed of response for emergency and urgent maintenance works	Achievement of Response times specified in Maintenance Contract	Yes	No	Yes
	Pipelines	Speed of response for routine and programmable maintenance works	Achievement of Response times specified in Maintenance Contract	Yes	No	Yes
Key Contributor Relationships	Treatment & Disposal	Overall satisfaction	Agreed levels of service provided to all Contributors.	Yes	Yes	Yes
	Pump Stations		Robust charging structure is put in place	Yes	Yes	Yes
	Pipelines		Contributors are satisfied with Sewerage Scheme	Yes	Yes	Yes

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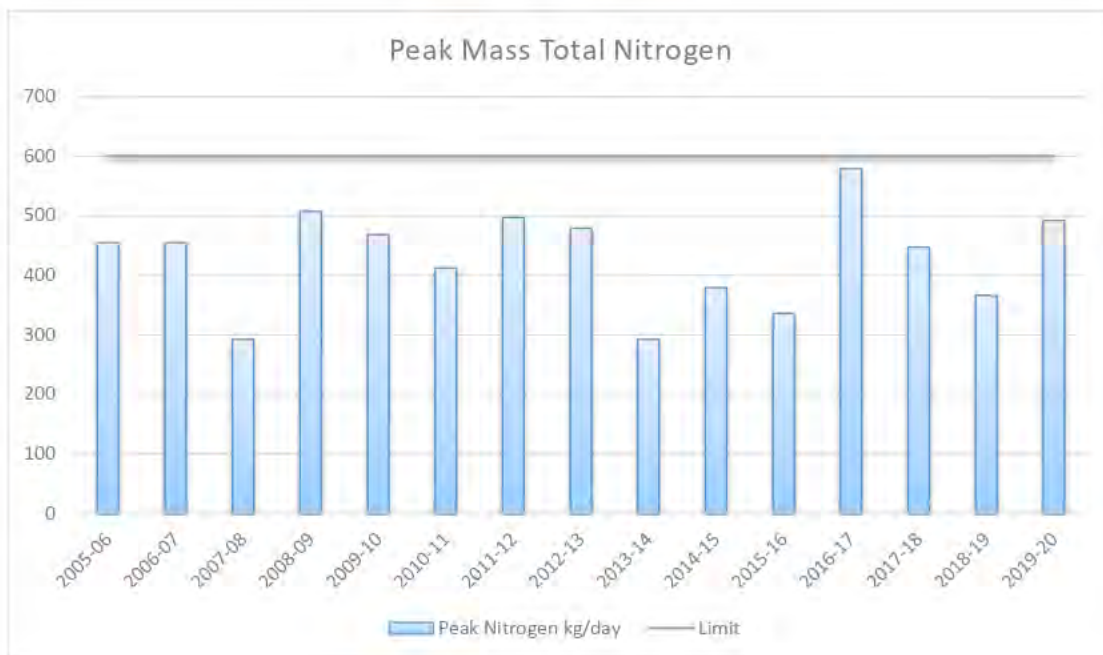
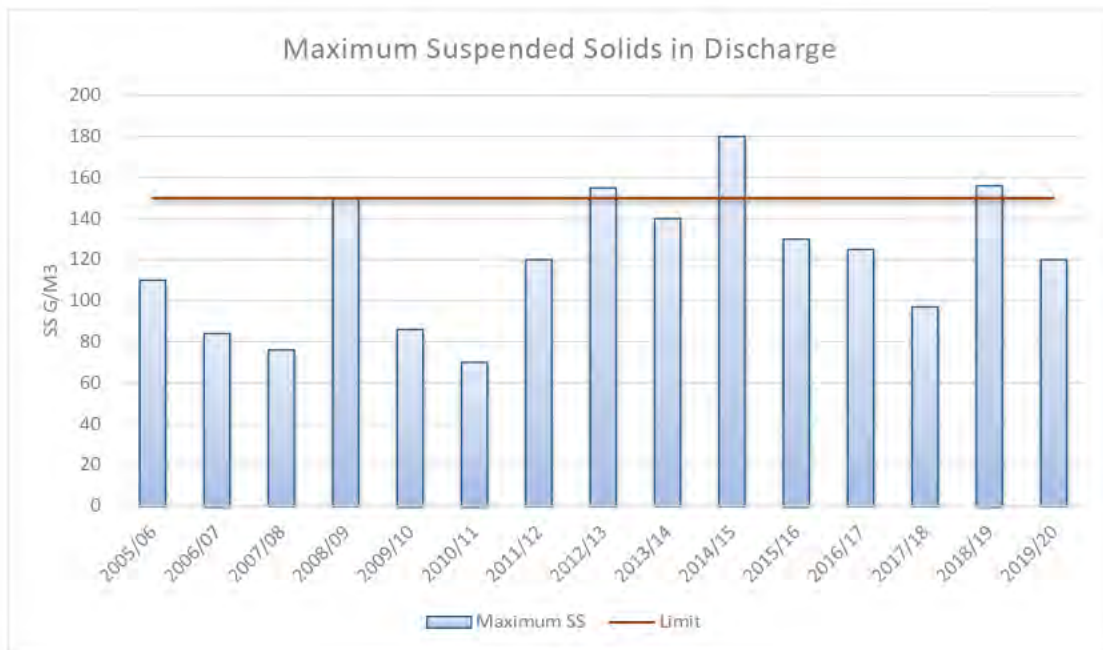


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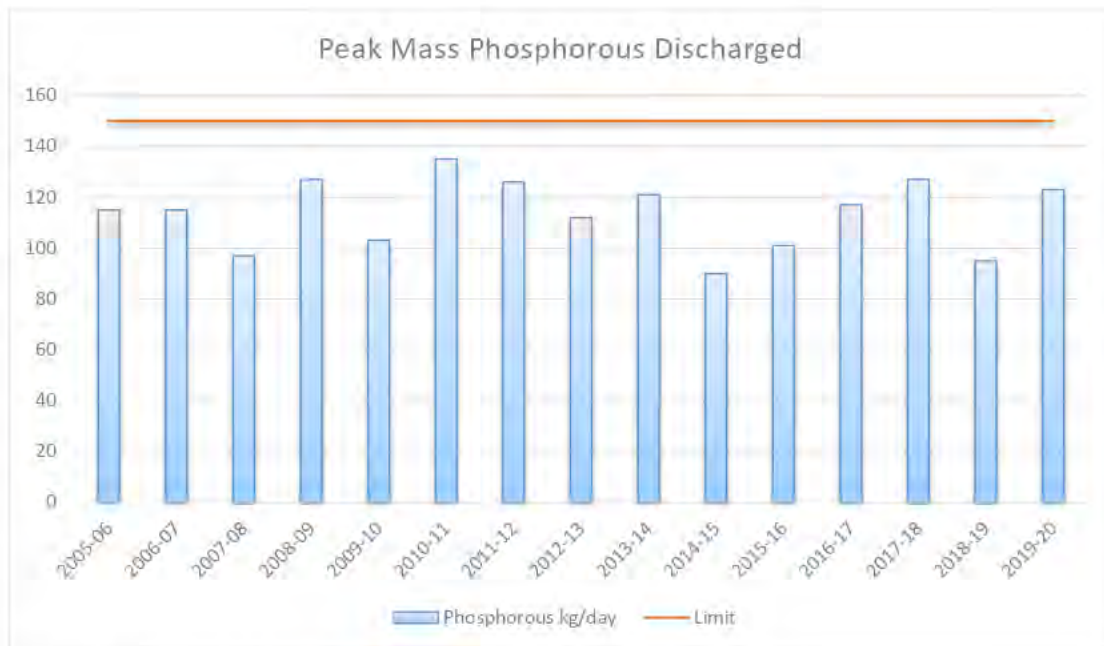


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2.11 No overflow occurred during the past year.

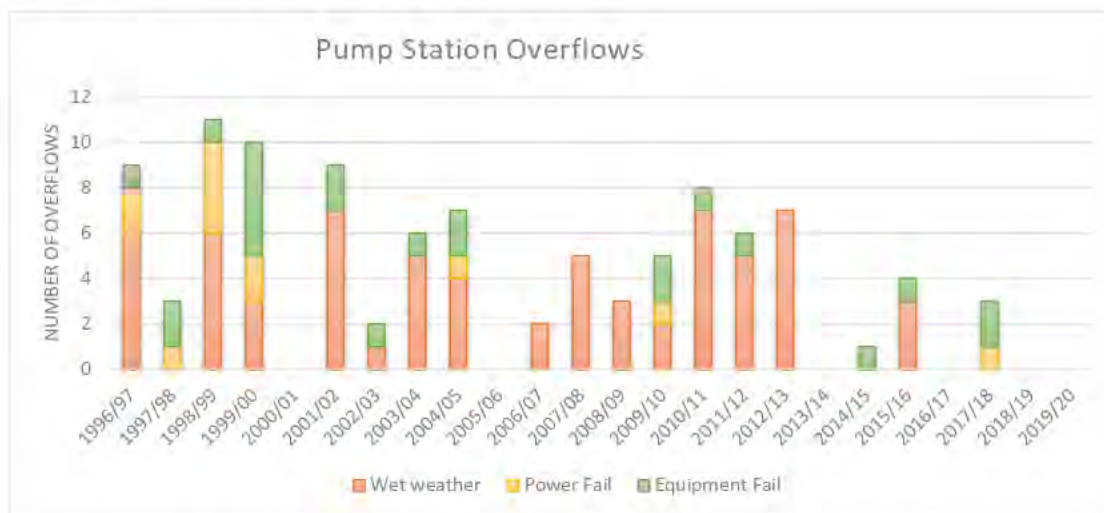


Figure 5: Pump Station Overflow Causes

2.12 Odour Management – a number of odour complaints were received in late summer. Approximately 2/3rds were attributed to Rabbit Island biosolids application, the remainder to Bells Island WWTP.

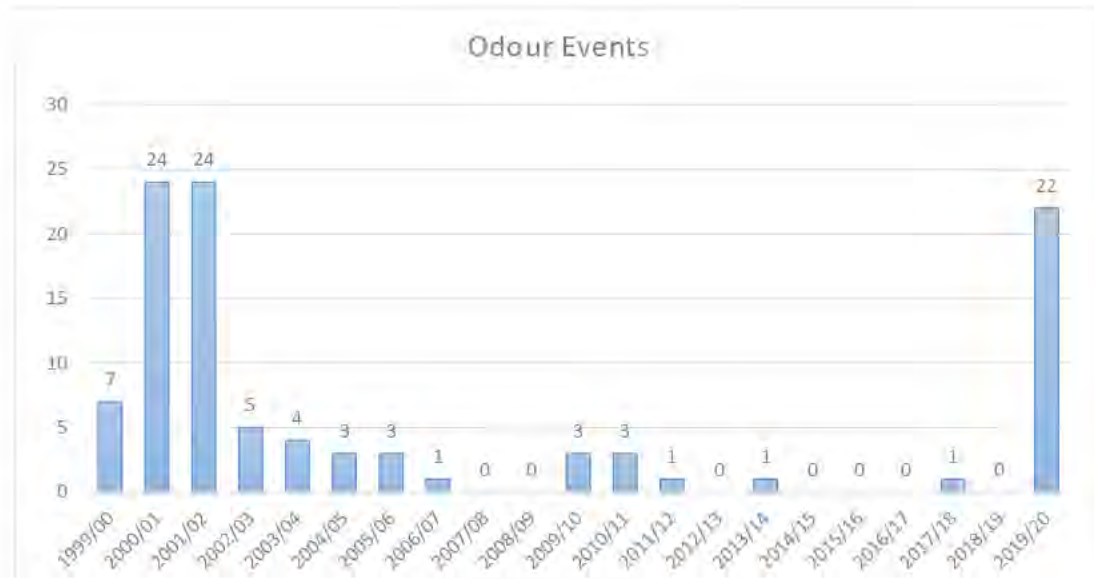


Figure 6: Odours

**Customer Group**

- 2.13 Customer group meetings were held during the year. Customers see reliability and continuity of service as the most important task of the NRSBU, followed by, cost effective and efficient operation of the regional scheme, and then environmental compliance.
- 2.14 At the time this report was prepared survey results from NRSBU customers had not been received. The following graph shows last years results and will be updated to reflect the 2019/20 result once received from the customers.

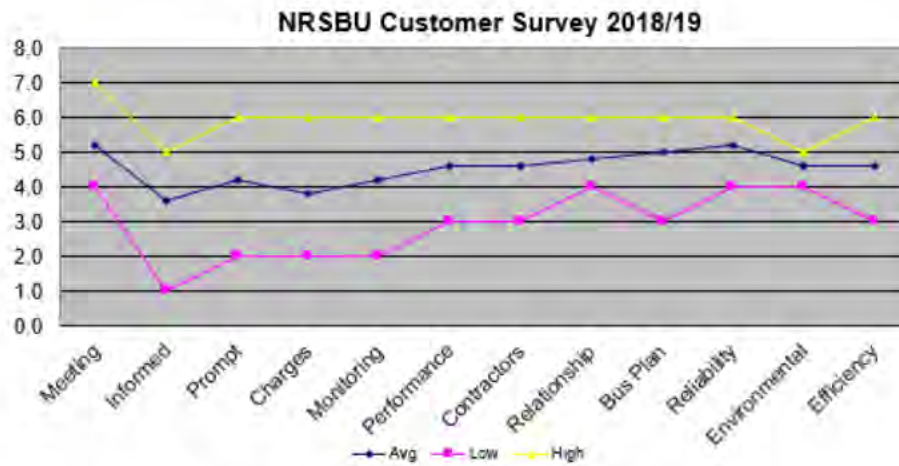


Figure 4.2: Customer Survey Results 2018/2019

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**Performance Measured Against Strategic Business Objectives**

2.15 The strategic goals of the NRSBU set the basis for performance measurement and longer term strategies. Seven Key Result Areas are identified and a set of Key Performance Indicators developed to measure the performance of the NRSBU. The following section reports the performance of the NRSBU towards achieving the 2018-19 performance objectives. The following table outlines the performance objectives, key performance measures and what was achieved:

2.16 “5.1 Wastewater reticulation, treatment and disposal services meet customers’ long term needs.”

Objective	Key Performance Measures	Performance
Sufficient reticulation, treatment and disposal capacity is available for loads received.	Loads do not exceed the capacity of system components.	Achieved.
Intergenerational equity is maintained.	Loans are repaid over 30 years (the average life of the assets).	Achieved.
Customers are encouraged to engage with the organisation and are satisfied with the service.	All customer representatives attend at least 75% of customer meetings.	Achieved.
	Customer surveys show an average score of at least 5 out of 7 on satisfaction with services.	Annual Survey Not completed at time of report preparation.
Levels of service are defined in all contracts and are met.	100% compliance with service level agreements by all major contractors.	Achieved.

2.17 “5.2 The cost of wastewater reticulation, treatment and disposal services are minimised”.

Objective	Key Performance Measures	Performance
The costs of reticulation, treatment and disposal processes are minimised.	The operational costs of reticulation, treatment and disposal processes are maintained under the cost for these services at 30 June 2013 when adjusted by the Producer Price Index.	Achieved. The cost of operations is 2% lower than operational cost for the year ending 30 June 2013 when adjusted by the Producer Price Index.
	All capital projects are delivered within budget.	Not achieved. Capital budgets were significantly underspent due to the deferral of capital projects that are contingent to the renewal of resource consents.
The economic lives of all assets are optimised.	Three yearly independent audit of asset management practices confirms this.	Achieved. No comment received from Audit New Zealand.

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Customers understand the benefits of demand management and the costs, risks and environmental implications of increasing demand.	That progress made by NCC and TDC with implementation of load management policies, priorities and plans will be reported on by June 2016.	Both Councils have developed inflow and infiltration strategies in their asset management plans and these strategies are part of their Long Term Plans.
	Combined Loads do not exceed the capacity of the components of the system.	Achieved.
Technology choices are well understood and are proven to be reliable, sustainable and cost effective.	All significant technology choices are supported by cost benefit analysis, independent peer review, energy efficiency analysis, risk analysis and, where appropriate, by other users of those technologies.	Achieved.

- 2.18 "5.3 Risks associated with the services provided are identified and mitigated to a level agreed with customers and owners".

Objective	Key Performance Measures	Performance
Risk management plans include all significant health and safety, environmental, cultural, social economic and contractual risks.	No event, which impacts on agreed levels of service, occurs that has not been identified in the Nelson Regional Sewerage Business Unit risk management plans.	Achieved.
	Customer representatives review and approve the risk management plan annually and following any incidents which require activation of the plan.	Achieved.
Contingency plans adequately address emergency events.	Customer representatives review and approve the plans annually.	Achieved. These matters are considered during the development of the asset management plan and considered at customer meetings.
	Effectiveness of plans is reviewed and confirmed following incidents which require activation of the plan.	Achieved. Incidents reported in quarterly reports and considered at customer meetings.

- 2.19 "5.4 We engage the right people, with the right skills and experience".

Objective	Key Performance Measures	Performance
Those engaged with the Nelson Regional Sewerage Business Unit have the right	Annual staff performance reviews include assessment of the skills and experience required in their role in Nelson	Staff have recently been engaged to manage NRSBU, and insufficient time has been available to complete a

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skills, experience, and support to perform well.	Regional Sewerage Business Unit and their development needs are identified and met.	skills and experience review and development plan. Review of operations and maintenance delivery model is in process.
	Development and succession plans are in place.	As above.
	The Board reviews its performance at least every two years.	No review carried out during 2019/20.
Operation and maintenance manuals reflect best practice for the management of the plant and reticulation systems and are followed consistently.	An independent audit every three years confirms this.	Achieved. The plans are currently in the process of being updated.

2.20 "5.5 Nelson Regional Sewerage Business Unit operates sustainably and endeavours to remedy or mitigate any identified adverse environmental, social or cultural impact"

Objective	Key Performance Measures	Performance
Nelson Regional Sewerage Business Unit minimises adverse environmental, social and cultural impacts where this is economically viable.	That progress towards meeting energy efficiency targets are reported on and reviewed annually.	Achieved. The cost of electricity in 2019/20 was 11% lower than in 2018/19
	Current capacity to utilise beneficial application of biosolids to land is sustained.	100% of biosolids treated at Bell Island are beneficially applied to Radiata pine plantations belonging to Tasman District Council and Nelson City Council.
	Beneficial economic and environmental reuse of treated waste water is maintained or increased.	The lessee continued to use the irrigation system on Bell Island.  NRSBU has acquired a block of land on Best Island, to allow future expansion of irrigation to land.  A test water recycling facility is currently under construction to provide water suitable for industrial use.
	Environmental, social and cultural impacts are considered in all decision making.	While this is not directly measured the Assessment of Environmental demonstrates that the NRSBU are achieving quality environmental outcomes.

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2.21 “5.6 Good relationships are maintained with all stakeholders.

Objective	Key performance Measures	Performance
Shareholders are satisfied with the strategic direction and the economic performance of the business unit.	All strategic and business plans are approved by shareholders.	Achieved.
	All budget projections are met.	Not achieved. Capital Expenditure was under budget, and Variable operational costs were 400,000 above budget.
Good relationships are maintained with all stakeholders including owners, iwi, customers, contractors, neighbours, and the wider community.	All complaints or objections are addressed promptly.	Not achieved. Some of the neighbours were not satisfied with the NRSBU response to odour complaints.
	All applications for resource consents are approved.	Achieved.
	Up to date information on activities and achievements are publicly available.	The NRSBU website is reviewed annually and updated as required.  Public notification was undertaken for the RSBU rabbit island Resource consent application.

2.22 “5.7 All statutory obligations are met”.

Objective	Key Performance Measures	Performance
All statutory obligations are identified and met and are included in contracts with suppliers.	100% compliance with all statutory obligations.	Achieved.
All resource consents requirements are met.	100% compliance with all statutory obligations.	Not achieved. Aberrational discharge consent condition requirements are being developed.

**Capital Expenditure 2018/19**

An amount of \$6.015 million was spent during 2019/20 on capital and renewals projects, compared the budget of the \$8.570 million.

Capital expenditure: Renewal and Upgrade:

	Actual YTD 30th June 2020	Full Budget 2019/20	Budget Unspent
<b>Capital Expenditure</b>			
<b>Renewals</b>			
Renewals: Buildings		95,000	95,000
Renewal Inlet	343,835	-	343,835
Renewals: Pump Stations and Rising Mains	119,662	67,000	52,662
Road renewal	7,567	25,000	17,433
Renewal Aeration Basin	129,521	-	129,521
Renewal Primary Clarifier	6,123	-	6,123
Renewal: Sludge Treatment (ATAD)	102,907	165,000	62,093
Renewals: Outfall	601	-	601
Renewal: Sundry Plant	106,984	256,000	149,016
Inlet: Aeration Basin, Clarifier & Ponds		88,000	88,000
Bell Island Discharge Consent	578,454	-	578,454
AM: Bell Island Discharge Consent	-	136,000	136,000
Rabbit Island renewals	78,784	38,000	40,784
Renewal: Ponds	42,438	-	42,438
<b>Total renewals</b>	<b>1,516,875</b>	<b>870,000</b>	<b>646,875</b>
Land purchase	3,103,500	3,100,000	3,500
Pipeline & Pumpstation Upgrades	122,138	840,000	717,862
Pump Station Overflow Screens	68,531		
NRSBU Expand solids treatment	140,106	1,491,000	1,350,894
Bells Island Road Improvements	-	110,000	110,000
Capital: Primary Clarifier	-	70,000	70,000
Inlet upgrades	4,875	10,000	5,125
Inlet Odour upgrade	67,630		
Sludge management	72,972	320,000	247,028
Sludge Management in Ponds at Bell	273,359	750,000	476,641
Capital: Resouce Consent Accid	59,407	-	59,407
Capital: Oxidation Ponds	74,758	80,000	5,242
Washwater and Water recycling	277,832	230,000	47,832
Bullivant Road Cycleway	-		
Biosolid Consent & Contingency		500,000	500,000
Thicking Building modification		80,000	80,000
Data and record systems		64,000	64,000
Bell Island Electricity Supply	1,300		
Capital: Plant and Equipment	231,226	55,000	176,226
<b>Total New Capital</b>	<b>4,497,634</b>	<b>7,700,000</b>	<b>3,339,827</b>
<b>Total Capital Expenditure</b>	<b>6,014,509</b>	<b>8,570,000</b>	<b>2,692,952</b>

The expenditure of capital & renewals funds was affected by the COVID-19 shutdown, and further pressure on resources following the Governments infrastructure funding boost (design & construction). Supply of overseas products & materials have been hampered by the pandemic.

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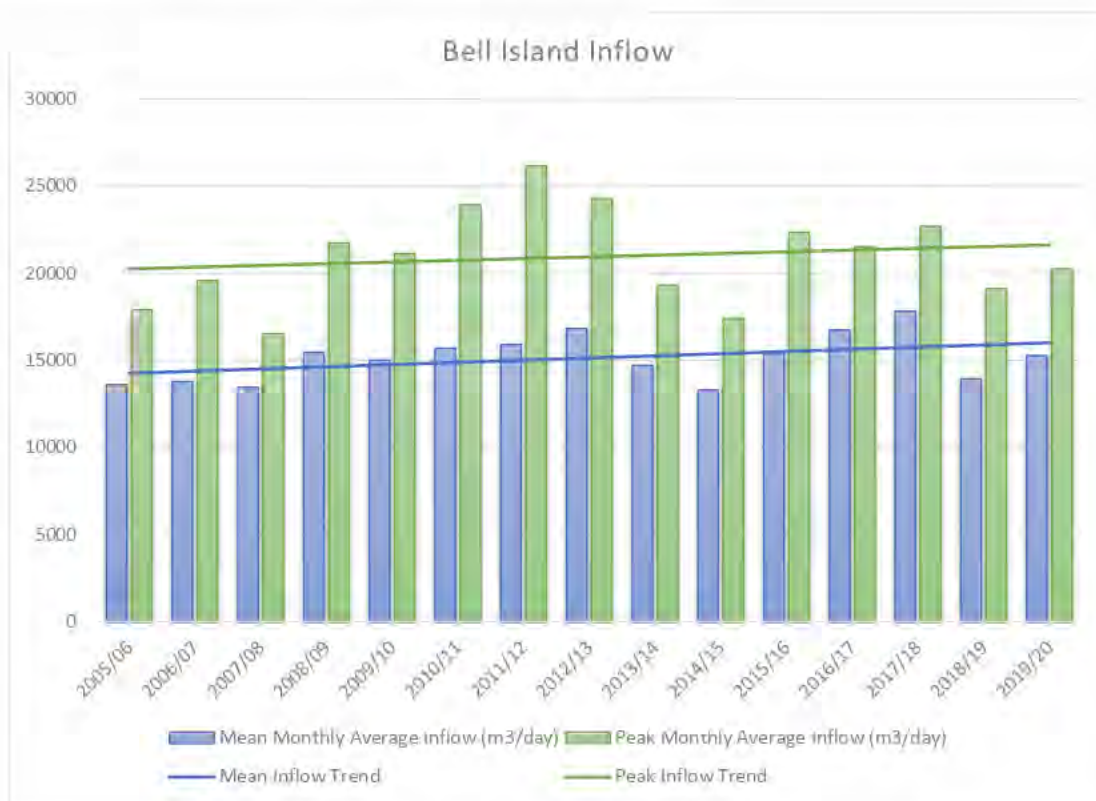
**Scheme Capacity Trends**

Capacity	Average flow m <sup>3</sup> /day	Peak flow l/s	BOD kg/day	COD kg/day	SS kg/day	TKN kg/day	TP kg/day
Estimated Capacity	25,920	1,508	12,226	28,000	11,000	750	230

**Figure 2.21: Bell Island Wastewater Treatment Plant Capacity**

2.23 Bells Island inflow figures are trending consistently upwards. This trend can be attributed to population growth within the contributory catchments.

Analysis of the average vs peak inflow trendlines indicates that any reduction in inflow & infiltration within the contributory catchments has been minimal.



**Figure 2.22: Shows the inflows into Bell Island**

2.24 The biological oxygen demand in the inflow continues to decrease or remain static.

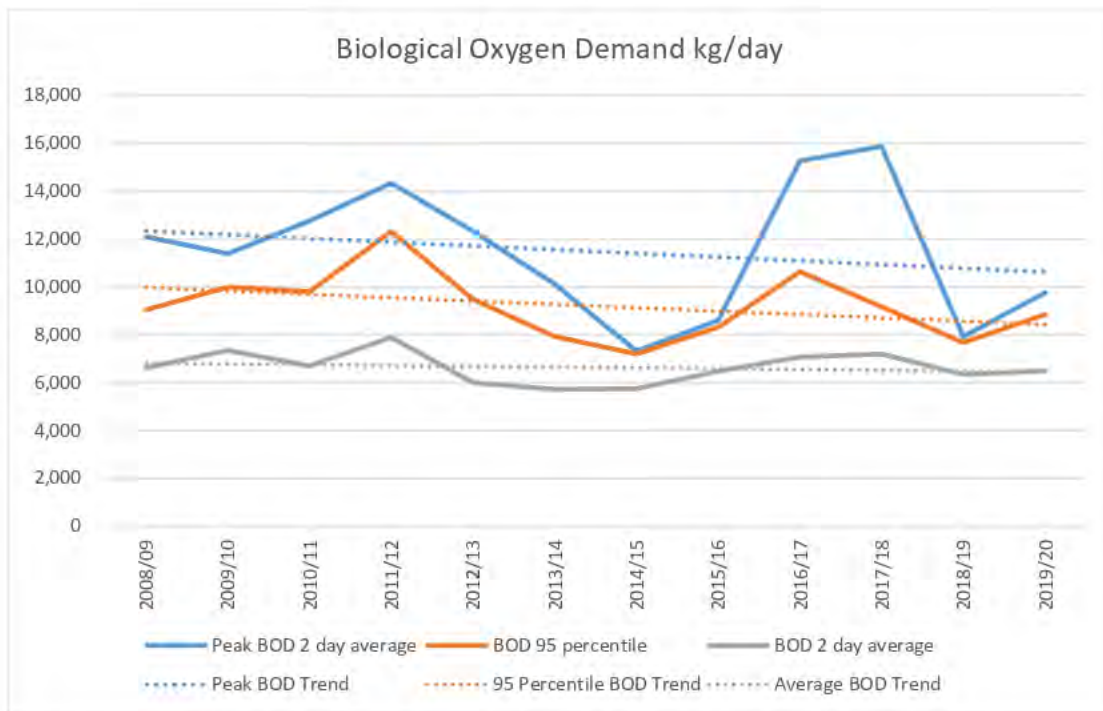
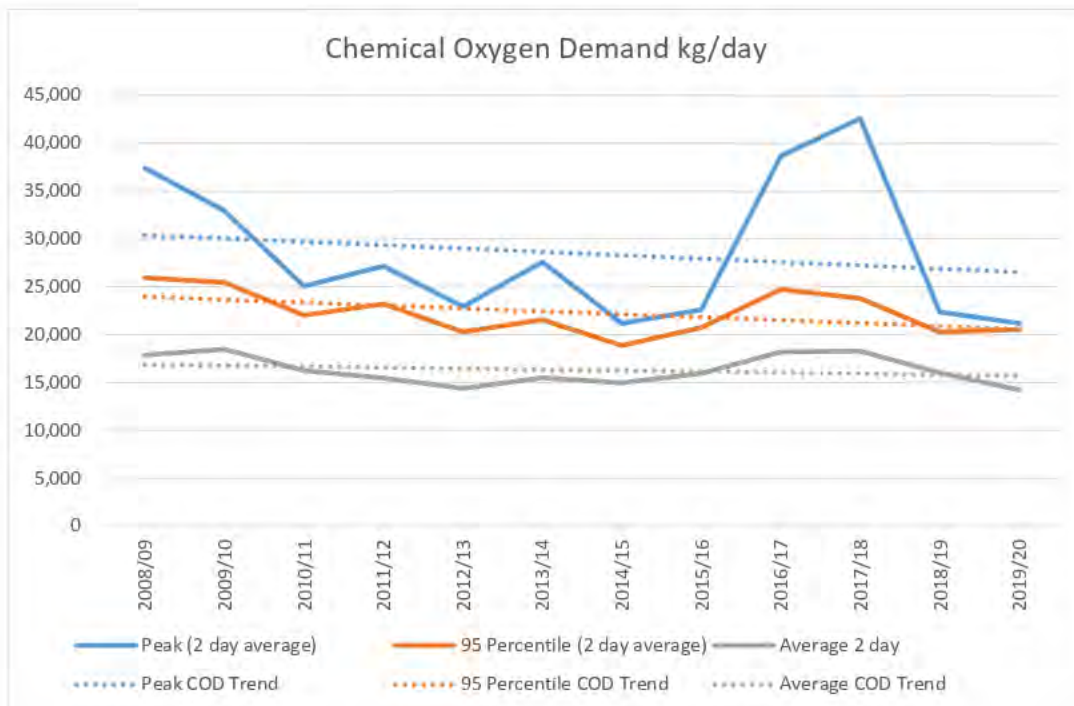


Figure 2.24: Inlet Biological Oxygen Demand

2.25 The chemical oxygen demand has continued the decrease over the last ten years. This demonstrates that the trade waste agreements continue to provide an incentive for industrial customers to improve on site treatment of waste water. The converging trendlines confirm this.

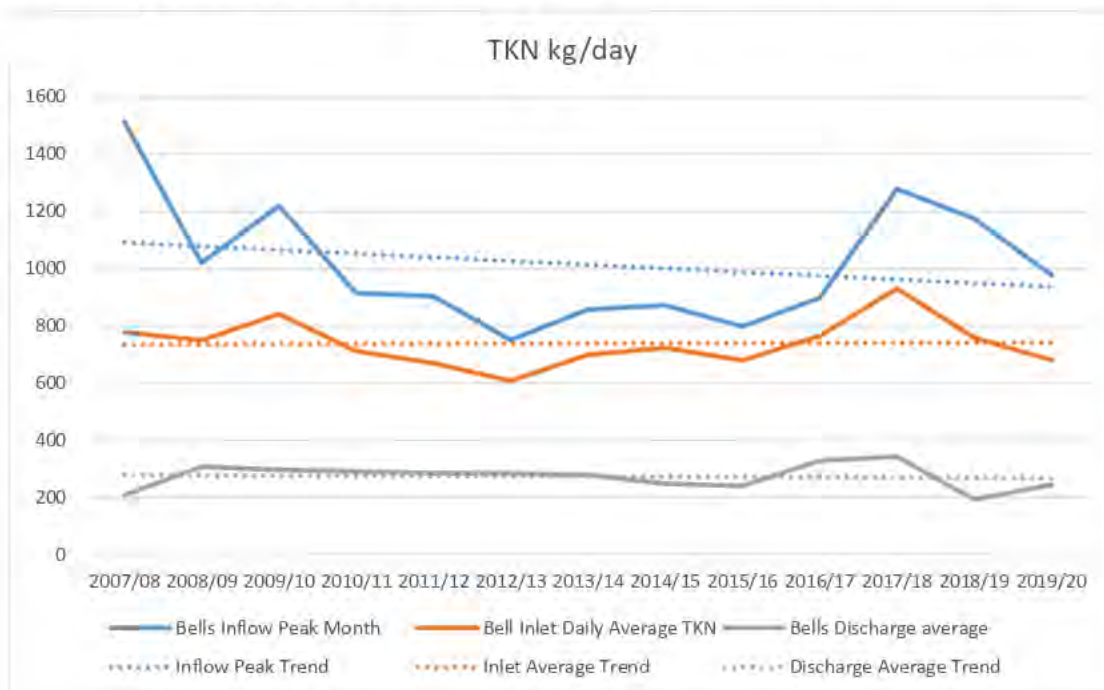


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**Figure 2.25: Chemical Oxygen Demand**

2.26 The Total Kjeldahl Nitrogen (TKN) Peaks in the wastewater received at the Bell Island Treatment Plant continues to reduce, with a notable convergence between the average & peak trendlines. Interestingly average inlet nitrogen loads remain steady, while average discharge levels have reduced slightly over the same period.

Total phosphorus levels in the influent have decreased (both peak & average loadings) with discharge average phosphorus remaining constant.



**Figure 2.26: Shows a decrease in the nutrients received at Bell Island**

2.27 The graph below shows that the application of nitrogen at Rabbit and Bell Island through biosolid application is within the capacity of these areas to receive nitrogen.

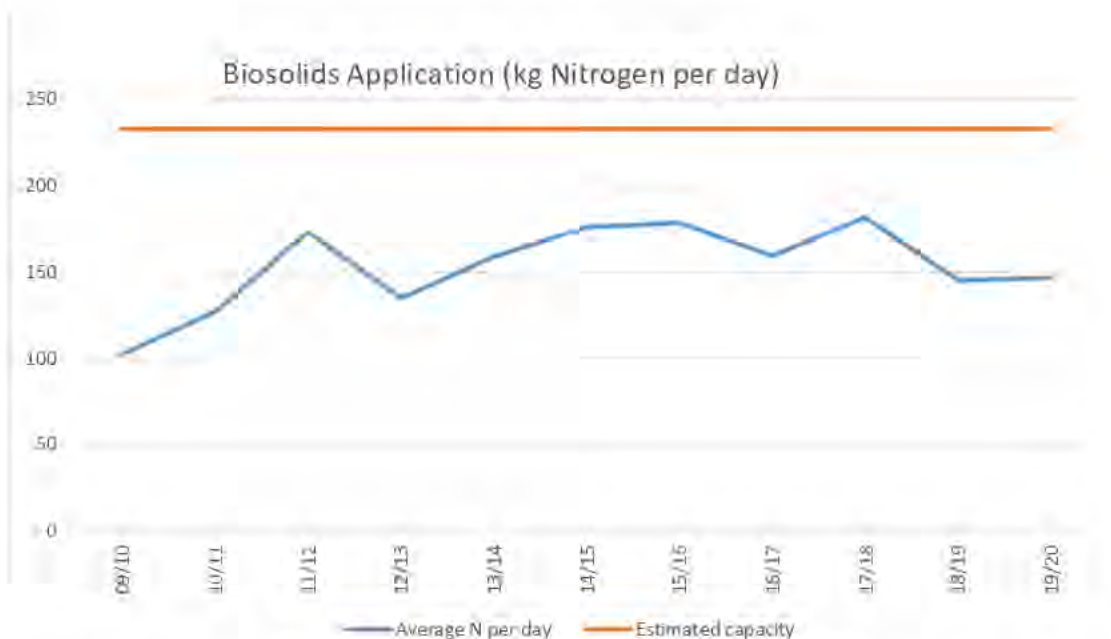


Figure 2.27: Average daily biosolids application

### Conclusion

- 2.28 The assessment of environmental effects carried out as part of the resource consent application demonstrates the effectiveness of the Bell Island Wastewater Treatment Plant to treat wastewater so that the discharge from Bell Island has only a minor effect on the receiving environment. The AEE for Rabbit Island submitted as part of the NRSBU application for Biosolids Discharge consent also found no areas of environmental concern and it was concluded that our system is the best practicable option.
- 2.29 Analysis of the scheme capacity trends shows that loads to the plant have not increased at the growth projections used to develop the 2010 upgrade. The plant is well placed to continue to operate and minor improvements to capacity will be required to overcome flow related capacity issues.
- 2.30 An analysis of the trends demonstrates that the way in which the treatment plant is operated affects the quality of the discharge and it is considered important that the plant be operated in a way to maximise the removal of pathogens in the interest of public health.
- 2.31 The results of sludge surveys and discharge quality of effluent discharged from the facultative ponds to the maturation ponds indicate that while the pond have capacity to treat wastewater, pond F2 has been found to contain a significant mass of sludge and there areas in F1 and F3 areas close to corners and edges of the facultative ponds where banks of sludge has built up. Desludging of pond F2 is programmed for later in 2020/21 with Pond F1 and F3 following this.

### Financial Performance

- 2.32 Explanations for major variations from the Nelson Regional Sewerage Business Unit's 2019/20 Business Plan are as follows:

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**Statement of Comprehensive Income**

- 2.33 Total Income is \$204,223 more than budget. The sales include a capital charge for access to treatment and an operational charge based on actual usage and actual operating cost. The capital charge budgeted was \$3,934,000 and however recovery against this was 75460 less than budgeted.
- 2.34 Variable charges were budgeted at 4,061,732 with the actual annual charge being 159261 above budget at 4,220,993.
- 2.35 Total expenses are \$150,567 more than budget due to increased operation and maintenance largely related to the increased management costs associated with the use of consultants to managing the NRSBU.

Appendix A

NRSBU Annual Financial Statement 2019 -20

**NELSON REGIONAL SEWERAGE BUSINESS UNIT**

**ANNUAL FINANCIAL STATEMENTS**

**For the Year ended 30 June 2020**

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## **NELSON REGIONAL SEWERAGE BUSINESS UNIT**

### **Representatives for year ended 30 June 2020**

Representing Tasman District Council  
Cr K Maling (Chairperson)  
Cr T Tuffnell

Representing Nelson City Council  
Cr T Skinner (Deputy Chair)  
Cr B McGurk

Iwi Representative  
Frank Hippolite

Independent member  
Mr B Silcock

### **Principal Administration Office**

C/- Nelson City Council  
110 Trafalgar St  
Nelson

### **Bankers**

Westpac New Zealand Ltd  
Queen St  
Richmond

### **Solicitors**

Duncan Cotterill  
197 Bridge St  
Nelson

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27/06/2019

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## **NELSON REGIONAL SEWERAGE BUSINESS UNIT**

### **Statement of Accounting policies**

**For the year ended 30 June 2020**

#### **Reporting Entity**

The Nelson Regional Sewerage Business Unit (the Business Unit) is a Joint Committee of Nelson City Council and Tasman District Council, under Section 48 of the Local Government Act 2002.

The primary purpose of the Business Unit is to manage the treatment facilities and network in a cost efficient and environmentally sustainable manner rather than making a financial return. Accordingly, the Business Unit has designated itself as a public benefit entity for the purposes of financial reporting.

The financial statements of the Business Unit are for the year ended 30 June 2020. The financial statements were authorised for issue by the Committee on the 11th September 2020.

#### **Basis of Preparation**

The financial statements have been prepared on the going concern basis, and the accounting policies set out below have been consistently applied to all periods presented in the financial statements.

#### **Statement of compliance**

The financial statements of the Business Unit have been prepared in accordance with the requirements of the Local Government Act 2002, which includes the requirement to comply with New Zealand generally accepted accounting practice (NZ GAAP).

The financial statements of the Business Unit have been prepared in accordance with Tier 2 PBE standards on the basis that the Business Unit does not have public accountability (as defined) and has total annual expenditure of less than \$30 million.

These financial statements comply with Tier 2 PBE standards.

#### **Measurement base**

The financial statements have been prepared on a historical cost basis, modified by the revaluation of land, infrastructural assets and biological assets.

#### **Functional and presentation currency**

The financial statements have been prepared in New Zealand dollars and all values are rounded to the nearest dollar. The functional currency of the Business Unit is New Zealand dollars.

### **Accounting Policies**

The following particular accounting policies which materially affect the measurement of results and financial position have been applied:

#### **a) Revenue**

Revenue is measured at the fair value.

Interest income is recognised using the effective value method.

#### **Exchange and non-exchange transactions**

An exchange transaction is one in which Business Unit receives assets or services, or has liabilities extinguished, and directly gives approximately equal value in exchange. Non-exchange transactions are where Business Unit receives value from another entity without giving approximately equal value in exchange

#### **Sales and provision of services**

Revenue from the rendering of services is recognised by reference to the stage of completion of the transaction at balance date, based on the actual service provided as a percentage of the total services to be provided. These are exchange transactions and include charges to the two owner Councils, three large industrial customers and Septage tank operators, and rentals. The contracts with the two Councils and three large industrial customers provide for a capital charge for access to treatment and an operational charge based on actual useage and actual operating costs.

#### **b) Borrowing Costs**

Borrowing costs are recognised as an expense in the period in which they are incurred.

#### **c) Cash and Cash equivalents**

Cash and Cash equivalents includes cash on hand, deposits held at call with banks and other short term highly liquid investments with original maturities of three months or less.

#### **d) Trade and other receivables**

Trade and other receivables are initially recorded at face value less any provision for uncollectability.

A provision for impairment of receivables is established when there is objective evidence that the Business unit will not be able to collect all amounts due according to the original terms of the receivables. The amount that is uncollectable is the difference between the amount due and the present value of the amount expected to be collected.

#### **e) Trade and other payables**

Short term creditors and other payables are recorded at their face value.

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**f) Borrowings**

Borrowings are initially recognised at their face value plus transaction costs. After initial recognition, all borrowings are measured at amortised cost using the effective interest method.

Borrowings are classified as current liabilities unless the Council or group has an unconditional right to defer settlement of the liability for at least 12 months after balance date.

**g) Income tax**

As a Joint Committee of Nelson City Council and Tasman District Council the Business Unit's surplus is incorporated into the accounts of the two councils. The Business operations are a non-taxable activity for each Council.

**h) Goods and Services Tax**

The financial statements have been prepared exclusive of goods and services tax (GST) with the exception of trade receivables and payables, which are stated with GST included.

**i) Distribution Policy**

Any Net Surplus Income before extraordinary items over budget, as decided by the Committee, is returned to the Councils on an equal share basis. These are exchange transactions.

**j) Property, Plant and Equipment**

There are three categories of Property, Plant and Equipment:

- Freehold land
- The Infrastructural Network – incorporates pipelines, pump stations, ponds, aerators, clarifiers, odour control unit, power supply and buildings
- Work in Progress

**Revaluation of property plant and Equipment**

- Land is reviewed annually and revalued at market value every five years or if there is a material movement. The latest valuation was conducted as at 30 June 2019 by QV Valuations.

- Infrastructural assets are valued annually internally at depreciated replacement cost by Council engineers as at 30 June 2020. The valuation methodology has been peer reviewed by Opus International Consultants Ltd and revaluations are updated annually. Work in progress is recognised at cost less impairment and is not depreciated.

The results of revaluing land and infrastructural assets are credited or debited to other comprehensive revenue and expense and are accumulated to an asset revaluation reserve in equity for that class of asset. Where this results in a debit balance in the asset revaluation reserve for any class of asset, this is expensed in the Surplus or Deficit. To the extent that increases in value offset previous decreases debited to the Surplus or Deficit, the increase is credited to the Surplus or Deficit.

**Additions**

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The cost of an item of property, plant and equipment is recognised as an asset if, and only if, it is probable that future economic benefits will flow to the Business Unit and the cost can be measured reliably.

Vested infrastructure assets have been valued at the time of vesting based on the actual quantities of infrastructure components vested and the current 'in the ground' cost of providing identical services.

Work in progress is measured at cost less impairment and is not depreciated.

New Business Unit assets are added between valuations are recorded at cost except when acquired through a non-exchange transaction. Where an asset is acquired through a non-exchange transaction, such as vested assets it is recognised at fair value as at the date of acquisition.

**k) Depreciation**

Depreciation is provided on a straight line basis on all PPE other than Land at rates which will write off the cost/valuation of the assets over their useful lives. The useful lives of the major classes of infrastructural assets have been estimated as follows:

Sewerage Network	10 - 999 years
Buildings	50 years
Plant & Equipment	5 - 50 Years

The Business Unit has implemented an activity management plan for the continuing replacement and refurbishment of components to ensure that conveying, treatment and disposal systems are maintained to provide a satisfactory service on an ongoing basis.

iii) Work in progress is valued at cost of construction. Depreciation is applied at time of commissioning.

**l) Biological Assets**

Forestry consisting of 18 hectares planted on Bell Island adjacent to the ponds is revalued annually by P F Olsen and Company Ltd to Market Value. The latest valuation available is at 30 June 2020.

The movement in the Forestry valuation is recorded in the Surplus or Deficit as income if a credit and as an expense if a debit.

**m) Budget figures**

The budget figures are those approved by the Committee at the beginning of the year in the Business Plan. The budget figures have been using accounting policies that are consistent with those adopted by the Committee for the preparation of financial statements.

**n) Critical accounting estimates and assumptions**

In preparing these financial statements the Business Unit has made estimates and assumptions concerning the future. The key assumptions relate to the valuation of the Business Unit's property, plant and equipment. These estimates and assumptions may differ from the subsequent actual results. Estimates and assumptions are continually evaluated and are based on historical experience and other factors, including estimates and expectations of future events that are believed to be reasonable under the circumstances.

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**NELSON REGIONAL SEWERAGE BUSINESS UNIT**  
**Statement of Comprehensive Revenue and Expense**  
**For the year ended 30 June 2020**

	Notes	Actual 2019/20	Budget 2019/20	Actual 2018/19
<b>Revenue</b>		\$	\$	\$
Sales		8,079,533	7,995,732	8,032,777
Other Recoveries		254,990	158,268	245,525
Interest		141	-	1,823
Gain in Fair Value of Forestry	5	23,560	-	9,240
<b>Total Revenue</b>		<u>8,358,223</u>	<u>8,154,000</u>	<u>8,289,366</u>
<b>Less Expenses</b>				
Management		798,966	598,563	494,875
Audit Fees	-	1,250	-	-
Interest Paid		334,339	469,000	471,160
Insurance		85,415	75,000	66,686
Loss in Fair Value of Forestry	5	-	-	-
Depreciation	6	2,090,140	2,224,000	1,932,523
Abandoned Assets		-	-	-
Electricity		800,224	900,322	798,989
Operations & Maintenance		1,527,174	1,444,092	1,474,585
Monitoring		134,583	240,500	180,390
Biosolids Disposal		866,614	658,571	685,446
Consultancy		81,894	75,000	28,446
Sundry		76,973	227,970	177,891
<b>Total Expenses</b>		<u>6,795,072</u>	<u>6,913,018</u>	<u>6,310,991</u>
<b>Net Surplus</b>		<u>1,563,151</u>	<u>1,240,982</u>	<u>1,978,374</u>
<b>Other Comprehensive Revenue and Expense</b>				
Gain on revaluation of Fixed Assets	1(b)	2,602,714	-	695,117
<b>Total Comprehensive Revenue and Expense</b>		<u><u>4,165,865</u></u>	<u><u>1,240,982</u></u>	<u><u>2,673,491</u></u>

**Statement of Changes in Equity**  
**For the year ended 30 June 2020**

	Actual 2019/20	Actual 2018/19
<b>Equity at the start of Year</b>	\$	\$
Opening Equity	49,662,837	48,967,720
Plus Total Comprehensive Revenue and Expense for the year	4,165,865	2,673,491
Less Owners Distribution	1,563,151	1,978,374
<b>Equity at the end of Year</b>	<u><u>52,265,552</u></u>	<u><u>49,662,837</u></u>

Explanations of major variances against budget are found in note 11.

The attached notes form part of and should be read in conjunction with these financial statements.

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**NELSON REGIONAL SEWERAGE BUSINESS UNIT**  
**Statement of Financial Position**  
**as at 30 June 2020**

	Notes	Actual 2020 \$	Actual 2019 \$
<b>Equity</b>			
Accumulated Funds	1(a)	15,819,055	15,819,055
Contingency reserve		100,000	100,000
Revaluation reserve	1(b)	<u>36,346,496</u>	<u>33,743,782</u>
<b>Total Equity</b>		<u><u>52,265,551</u></u>	<u><u>49,662,837</u></u>
This was represented by:			
<b>Current Assets</b>			
Cash and cash equivalents		4,382	244,462
Trade receivables from exchange transactions		568,279	552,781
Inter-entity receivables from exchange transactions		<u>357,949</u>	<u>474,248</u>
<b>Total Current Assets</b>		<u>930,610</u>	<u>1,271,491</u>
<b>Current Liabilities</b>			
Trade Payables from exchange transactions		535,273	395,704
Sundry Creditors and other payables from exchange transactions		21,081	60,919
Inter-entity payables from exchange transactions	4	1,960,928	1,413,611
Current portion Inter-Entity Borrowings	2	<u>960,000</u>	<u>-</u>
<b>Total Current Liabilities</b>		<u>3,477,282</u>	<u>1,870,234</u>
<b>Net Working Capital</b>		<u>(2,546,672)</u>	<u>(598,744)</u>
<b>Non Current Assets</b>			
Property, plant and equipment	6	70,751,423	64,224,340
Forestry assets	5	<u>60,800</u>	<u>37,240</u>
<b>Total Non Current Assets</b>		<u>70,812,223</u>	<u>64,261,580</u>
<b>Non Current Liabilities</b>			
Borrowings	2	<u>16,000,000</u>	<u>14,000,000</u>
<b>Total Non Current Liabilities</b>		<u>16,000,000</u>	<u>14,000,000</u>
<b>Net Assets</b>		<u><u>52,265,551</u></u>	<u><u>49,662,837</u></u>

For and on behalf of the Nelson Regional Sewerage Business Unit

Chairman

Acting General Manager

Date

The attached notes form part of these financial statements

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**NELSON REGIONAL SEWERAGE BUSINESS UNIT**

**Statement of Cash Flows**  
**For the year ended 30 June 2020**

	Notes	2019/20 \$	2018/19 \$
<b>Cash Flows from Operating Activities</b>			
Receipts from customers		8,435,324	7,597,953
Interest received		141	1,823
		<u>8,435,464</u>	<u>7,599,776</u>
Payments to suppliers		(3,232,929)	(4,546,134)
Interest paid		(334,339)	(471,160)
		<u>(3,567,268)</u>	<u>(5,017,294)</u>
<b>Net Cash Flows from Operating Activities</b>	3	<u>4,868,196</u>	<u>2,582,482</u>
<b>Cash Flows from Investing Activities</b>			
Purchase of property, plant and equipment		(6,089,902)	(1,031,154)
<b>Net Cash from Investing Activities</b>		<u>(6,089,902)</u>	<u>(1,031,154)</u>
<b>Cash Flows from Financing Activities</b>			
Owners Distribution		(1,978,374)	(1,928,424)
Loan repayment		0	(890,000)
Loan raised		2,960,000	890,000
<b>Net Cash from Financing Activities</b>		<u>981,626</u>	<u>(1,928,424)</u>
<b>Net Increase/(Decrease) in cash and cash equivalents</b>		(240,080)	(377,096)
Cash and cash equivalents at beginning of the year		244,462	621,558
Cash and cash equivalents at the end of year		<u>4,382</u>	<u>244,462</u>

The attached notes form part of these financial statements

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**NELSON REGIONAL SEWERAGE BUSINESS UNIT**

Notes to and forming part of the Financial Statements  
for the year ended 30 June 2020

	2019/20	2018/19
	\$	\$
<b>1 Equity</b>		
The Business Unit is jointly owned by the Nelson City Council and the Tasman District Council.		
<b>1(a) Accumulated Funds</b>		
Opening Balance	15,819,055	15,819,055
Net Surplus	1,563,151	1,978,374
Distribution to Owners	(1,563,151)	(1,978,374)
Closing Balance	<u>15,819,055</u>	<u>15,819,055</u>
<b>1(b) Revaluation Reserve</b>		
Opening Balance	33,743,782	33,048,665
Revaluation Movements		
Land revaluation	0	287,200
Buildings revaluation	(20,418)	3,767
Sewerage network revaluation	2,636,877	396,417
Plant & Equipment revaluation	(13,745)	7,733
Total Revaluation Movement	<u>2,602,714</u>	<u>695,117</u>
Closing Balance	<u>36,346,496</u>	<u>33,743,782</u>
<b>Balance held as follows:-</b>		
Land	2,410,857	2,410,857
Buildings	320,174	340,592
Sewerage network	33,419,105	30,782,228
Plant & Equipment	196,360	210,105
<b>Total Revaluation Reserve</b>	<u>36,346,496</u>	<u>33,743,782</u>

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**2 Term Loans**

A core funding facility exists with Tasman District and Nelson City for 110% of the current funding with a constant maturity of no less than five years.

Interest rates payable range was 2.58% to 1.775% with a weighted average of 2.379%. (For 2018/19 the range was 3.4675% to 2.867% with a weighted average of 3.324%).

	<b>2019/20</b>	<b>2018/19</b>
Total Loans	16,960,000	14,000,000
Less Current Portion	960,000	-
Term Portion	<u>16,000,000</u>	<u>14,000,000</u>
1 to 2 years	-	-
2 to 5 years	<u>16,000,000</u>	<u>14,000,000</u>
	<u>16,000,000</u>	<u>14,000,000</u>

A working capital facility exists with Nelson City with interest rates payable on the same rate as the core funding facility. At 30 June \$960,000 was drawn down (2019 \$0).

The interest rate on the borrowings from the two Councils is set at the three year swap rate plus a margin equivalent to the rate charged by Westpac bank to Nelson City Council. As at 30 June 2020 this rate was 1.455% which will be used to calculate the Capital Charge in the Trade Waste charges to customers for 2020/21. (June 2019 2.58%)

**3 Related party transactions**

Related party disclosures have not been made for transactions with related parties that are within a normal supplier or client/recipient relationship on terms and conditions no more or less favourable than those it is reasonable to expect the Business Unit would have adopted in dealing with the party at arm's length in the same circumstances.

**4 Inter-entity payables from exchange transactions**

Inter-entity payables from exchange transactions is the amount owing to the two Council owners in regard to the unpaid owners distribution.

**5 Forestry Assets**

The Biological Assets are valued at Fair Value less cost to sell. Any movement in the valuation is recorded in the Profit and Loss Account.

	<b>2020</b>	<b>2019</b>
	<b>\$</b>	<b>\$</b>
Opening Balance	37,240	28,000
Current increase (decrease) in Market Value	<u>23,560</u>	<u>9,240</u>
Closing balance	<u>60,800</u>	<u>37,240</u>

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**6 Property, plant and equipment continued - further disclosures**

There are a number of Estimates and Assumptions exercised when valuing the infrastructural assets using the depreciated replacement cost method. These include:

- Estimating any obsolescence or surplus capacity of the asset.
- Estimating the replacement cost of the assets.
- Estimating the remaining useful life over which assets are depreciated. To minimise this risk, infrastructural assets useful lives have been determined with reference to the NZ Infrastructural Asset Valuation and Depreciation Guidelines and have been adjusted for local conditions based on past experience. Asset inspections, deterioration, and condition modelling are also carried out regularly as part of the asset management planning activities, which provides further assurance over useful life estimates.

There are no restrictions on the Business Units' Property, plant and equipment.

**7 Financial Instruments**

The Business Unit is party to financial instrument arrangements as part of its everyday operations. These financial instruments include cash and cash equivalents, accounts receivable and payable, investments, and loans which have all been recognised in the financial statements. Revenues and expenses in relation to all financial instruments are

**a) Credit Risk**

Financial instruments which are potentially subject to credit risk consist of bank balances, accounts receivable and short term deposits.

	<u>2020</u>	<u>2019</u>
	\$	\$
Bank Balances	4,382	244,462
Accounts Receivable	926,228	1,027,029
No collateral is held on the above accounts		

**b) Concentration**

Concentrations of credit risk with respect to accounts receivable are high, with Nelson City Council, Tasman District Council and three private users as major customers. However, all are considered high credit quality entities.

**c) Currency Risk**

Nelson Regional Sewerage Business Unit has no currency risk as any financial instruments it deals with are all in New Zealand dollars.

**d) Fair value interest rate risk**

The Business Unit is exposed to interest rate risk and seeks to minimise this exposure through the adopted treasury policy which provides for an interest rate based on a 3-year market swap rate on the facilities with the two owner councils.

**8 Statement of Contingent Assets and Contingent Liabilities**

The Business Unit has no contingent asset or contingent liabilities as at 30 June 2019. (2018 The Business Unit has a contingent asset for an insurance claim for damage to beach Road Pump Station as a result of a weather event and no contingent liabilities).

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**9 Statement of Commitments**

The Business Unit has capital commitments of \$966,565 as at 30 June 2020. (2019 \$86,976).

Operating Leases as lessor	<u>2020</u>	<u>2019</u>
Less than one year	-	-
One to Five years	-	-
Over five years	-	-

**10 Subsequent events**

There are no material adjusting events after balance date.

**11 Explanation of major variances against budget**

**Statement of Comprehensive Revenue and Expense**

Total Revenue is \$204,000 more than budget. The sales include a capital charge for access to treatment and an operational charge based on actual usage and actual operating cost. The capital charge was \$75,000 less than budget and the operational charge was \$159,000 more budget due to recovery of operational costs above budget under the charging formula. Other recoveries are up \$97,000 due to increased recoveries from Septage operators.

Total expenses are \$118,000 less than budget due to lower interest costs of \$135,000 and depreciation of \$134,000 offset by higher operations and maintenance costs of \$151,000. The higher operations and maintenance costs were due to increased management, biosolid disposal and operational costs less lower electricity, water charges and monitoring costs.

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**6 Property, plant and equipment**

	Land	Sewerage Network	Buildings	Plant & Equipment	Total
<b>Valuation / Cost</b>					
Balance June 2018	2,807,800	61,281,262	304,802	317,482	64,711,346
Additions 2019		1,207,026		35,075	1,242,101
Abandoned Assets 2019		0			0
Revaluation 2019	287,200	396,417	3,767	7,733	695,117
Revaluation transfer 2019		(2,361,874)	(18,842)	(43,510)	(2,424,225)
Balance June 2019	3,095,000	60,522,831	289,727	316,780	64,224,338
Additions 2019	3,103,500	2,827,694	55,034	28,283	6,014,511
Abandoned Assets 2020		0			0
Revaluation 2020	0	2,636,877	(20,418)	(13,745)	2,602,714
Revaluation transfer 2020		(2,038,534)	(15,419)	(36,187)	(2,090,140)
Balance June 2020	6,198,500	63,948,868	308,924	295,131	70,751,423
<b>Accumulated Depreciation</b>					
Balance June 2018	-	479,357	3,761	8,585	491,702
Depreciation charge 2019	-	1,882,517	15,081	34,925	1,932,523
Revaluation transfer 2019	-	(2,361,874)	(18,842)	(43,510)	(2,424,225)
Balance June 2019	-	-	-	-	-
Depreciation charge 2020	-	2,038,534	15,419	36,187	2,090,140
Revaluation transfer 2020	-	(2,038,534)	(15,419)	(36,187)	(2,090,140)
Balance June 2020	-	-	-	-	-
<b>Carrying amounts</b>					
Balance June 2019	3,095,000	60,522,831	289,727	316,780	64,224,338
Balance June 2020	6,198,500	63,948,868	308,924	295,131	70,751,423
<b>Work in Progress (Included above)</b>					
Property, plant and equipment in the course of construction by class of assets is detailed below					
Balance June 2019	-	1,226,820	-	-	1,226,820
Balance June 2020	-	1,505,026	-	-	1,505,026