Te Kaunihera-ā-Rohe o Ngāmotu
New Plymouth District Council

STRATEGIC PROJECTS COMMITTEE MEETING AGENDA

Wednesday 23 February 2021 at 1pm

COUNCIL CHAMBER
LIARDET STREET, NEW PLYMOUTH

Chairperson:	Cr	Harry	Duynhoven
Members:	Cr	Marie	Pearce (Deputy)
	Cr	Tony	Bedford
	Cr	David	Bublitz
	Cr	Amanda	Clinton-Gohdes
	Cr	Richard	Handley
	Cr	Stacey	Hitchcock
	Cr	Colin	Johnston
	Mayor	Neil	Holdom

COMMITTEE PURPOSE

Purpose of Local Government
The reports contained in this agenda address the requirements of the Local Government Act 2002 in relation to decision making. Unless otherwise stated, the recommended option outlined in each report meets the purpose of local government and:

- Promote the social, economic, environmental, and cultural well-being of communities in the present and for the future.

- Would not alter significantly the intended level of service provision for any significant activity undertaken by or on behalf of the Council, or transfer the ownership or control of a strategic asset to or from the Council.

END

OPENING KARAKIA

Kia uruuru mai	I draw in (to my being)
Ā hauora	The reviving essence
Ā haukaha	The strengthening essence
Ā haumāia	The essence of courage
Ki runga, ki raro	Above, below
Ki roto, ki waho	Within, without
Rirerire hau paimarire	Let there be peace

Te Kaunihera-ā-Rohe o Ngāmotu
New Plymouth District Council

Health and Safety Message

In the event of an emergency, please follow the instructions of Council staff.

Please exit through the main entrance.

Once you reach the footpath please turn right and walk towards Pukekura Park, congregating outside the Spark building. Please do not block the foothpath for other users.

Staff will guide you to an alternative route if necessary.

If there is an earthquake – drop, cover and hold where possible. Please be mindful of the glass overhead.

Please remain where you are until further instruction is given.

APOLOGIES

None advised

CONFLICTS OF INTEREST

1. People who fill positions of authority must undertake their duties free from real or perceived bias. Elected members must maintain a clear separation between their personal interests and their duties as an elected member. Failure to do so could invalidate a Council decision and leave the elected member open to prosecution and ouster from office.

2. An elected member is entitled to interact with the Council as a private citizen. However, they cannot use their position as an elected member to gain an advantage not available to the general public.

3. Elected and appointed members will:

    - Declare any interest whether pecuniary or non-pecuniary at a meeting where the interest is relevant to an item on that agenda.

    - Exclude themselves from any informal discussions with elected members relating to a matter they have an interest in.

    - Seek guidance from the Chief Executive if they are unclear of the extent of any interest.

    - Seek guidance or exemption from the Office of the Auditor General if necessary.

ADDRESSING THE MEETING

Requests for public forum and deputations need to be made at least one day prior to the meeting. The Chairperson has authority to approve or decline public comments and deputations in line with the standing order requirements.

PUBLIC FORUM

Public Forums enable members of the public to bring matters to the attention of the committee which are not contained on the meeting agenda. The matters must relate to the meeting's terms of reference. Speakers can speak for up to 5 minutes, with no more than two speakers on behalf of one organisation.

- None advised

DEPUTATIONS

Deputations enable a person, group or organisation to speak to the meeting on matters contained on the agenda. An individual speaker can speak for up to 10 minutes. Where there are multiple speakers for one organisation, a total time limit of 15 minutes, for the entire deputation, applies.

- None advised

PREVIOUS COMMITTEE MINUTES

Recommendation

That the minutes of the Strategic Projects Committee (1 December 2021), and the proceedings of the said meeting, as previously circulated, be taken as read and confirmed as a true and correct record.

END

REPORTS

ITEMS FOR DECISION BY COMMITTEE

END

STRATEGIC PROJECTS SUMMARY REPORT

PURPOSE

1. The purpose of this report is to provide an overview of the status of the projects currently identified as Strategic Projects.

RECOMMENDATION

That, having considered all matters raised in the report, the report be noted.

SIGNIFICANCE AND ENGAGEMENT

2. This report is provided for information purposes only, and has been assessed as being of some importance.

DISCUSSION

3. The 2021-31 Long Term Plan (LTP) included 379 capital projects totalling more than $963m (inflation adjusted). Of these, 25 individual projects and 3 programmes of work made up of a further 28 sub-projects were tagged as being "Strategic Projects". These are summarised in table 1. The current status of these projects is also summarised in the infographic in Figure 1.

Figure 1

Budget Code	Project	Budget	Start FY	End FY
WA1040	Mountain Road & Henwood Road Reservoirs	$19,940,000	2019/20	2021/22
WA2019	Universal Water Metering (WMP)	$15,543,650	2021/22	2023/24
WW2301	TDF Crown Infrastructure funded Thermal	$45,082,575	2021/22	2024/25
WW2001	Urenui & Onaero Sewer System	$29,174,300	2021/22	2031/32
ST2001	Waitara Stormwater Upgrades	$20,188,890	2021/22	2031/32
N/A	Integrated Transport Strategy	$490,000	2021/22	2022/23
RD2024	Walkway Extension to Waitara	$25,616,792	2021/22	2026/27
SW2002	Establish Commercial and Industrial MRF	$657,873	2021/22	2021/22
SW3001	Historic Landfill Erosion Protection	$508,011	2021/22	2022/23
SW3005	Construction of the Junction Permanent Building	$3,347,763	2021/22	2022/23
PK2010	Kawaroa to Belt Road Cliff Erosion & Seawall	$6,364,700	2021/22	2024/25
PK1038	Taranaki Traverse Land Acquisition	$961,103	2021/22	2031/32
PK3042	Te Kohia Pa	$300,000	2021/22	2023/24
PK3500	Planting Our Parks Climate Action Programme	$2,249,996	2021/22	2031/32
PK2054	Kaitake Trail	$6,435,550	2021/22	2023/24
CB2026	Multi-Sports Hub Development	$38,455,981	2021/22	2027/28
Transportation Safety Programme		**$6,619,222**		
RD3005	Brois - Govett Intersection Roundabout	$65,390	2021/22	2021/22
RD3013	Gover Street - Liardet Street Central Block Traffic Calming	$2,175,455	2021/22	2024/25
RD3055	Inglewood SH3 Pedestrian Crossing Signals	$436,828	2021/22	2021/22
Transportation Active Transport Programme		**$9,043,040**		
RD1033	Waiwhakaiho Pedestrian Bridge to The Valley	$1,309,762	2021/22	2023/24
RD3018	Mangorei Road (Tupuhi Pl to Mangorei School) Kerb and Chanel	$301,800	2021/22	2021/22
RD3019	Mill Road (Harris - Huatoki Reserve) Walking Improvements	$25,149	2021/22	2021/22
Transportation Network Efficiency Programme		**$3,780,921**		
RD3022	Parklands-Nugent Intersection Roundabout	$100,600	2021/22	2021/22
RD3053	David Tukapa Street Signalisation	$784,680	2021/22	2021/22
RD3054	Lorna & Devon Street West Signalisation	$744,412	2022/23	2022/23
	Total:	**$221,261,260**		

Table 1

INFLATION COST PRESSURES

4. There are emerging cost pressures across many project budgets due to the inflation impacts of COVID-19.

5. Because most of Council's projects are based around the construction of municipal infrastructure the Input Producers Prices Index (PPI) for Heavy and Civil Engineering Construction best reflects the actual inflation impacts. This PPI index measures the input costs, such as the cost of materials and freight.

6. The most recent PPI indices, published by Stats NZ, are the quarter ending September 2021. These shows that heavy and civil engineering construction input costs increased by 6.1% over the preceding 12 months.

7. By comparison, Table 2 summarises the allowances made for inflation in the Council's LTP. The business cases and associated cost estimates for most projects in the LTP were developed prior to September 2020 (the base date for the PPI inflation mentioned in paragraph 6) to allow time for the LTP to be collated, consulted on and then deliberated and adopted by Council. There is a clear order of magnitude difference between the year 1 LTP inflation allowance and actual inflation for the same period.

	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10
LTP Capital Cost Inflation	0.6%	2.5%	3.0%	2.6%	2.6%	2.7%	2.6%	2.8%	2.8%	2.9%

Table 2 – LTP Capital Cost Inflation Allowances.

8. Whilst the headline PPI inflation figure is 6.1%, there are a number if commodity and material prices that have increased significantly higher. These are summarised in figure 2 and the bullet points below[1]:

- Fuel and oil FPIQ index has increased by 29.7%
- Raw steel prices increased by 215%
- 40ft sea shipping containers from china to Auckland have increase by more than 350%
- Aluminium increased 62%
- Copper increased 89%
- Concrete increased 18%

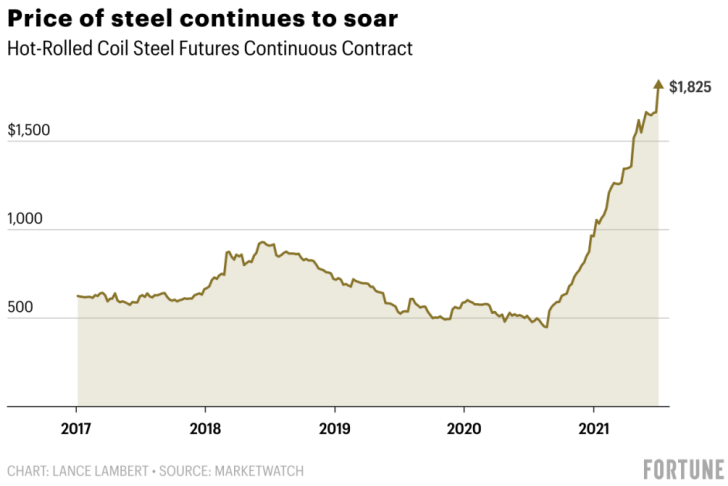


Figure 2 – benchmark price for hot-rolled steel

[1] Price increases are for the year up to July 2021.

OVERVIEW OF CURRENT STRATEGIC PROJECTS

Mountain Road and Henwood Road Reservoirs (budget: $19,940,000)

9. The physically works for the reservoirs are now complete and the project is in the final close out stage. This close-out stage includes, recording "as-built" asset data, assets are recorded in the council's asset inventories with unique asset identifications and the costs of the project are capitalised against the assets and removed from the Work in Progress account.

Centre City Strategy (Budget: $11,729,996)

10. The development of a centre city strategy, in partnership with Ngāti Te Whiti Hapū is now complete and the strategy has been formally adopted by the Council at the full council meeting in December 2021.

Universal Water Metering (Budget: $15,543,650)

11. The first batch of 200 meters for the pilot area scheduled to commence in autumn 2022 has now been delivered. The first bulk batch of 6,000 meters is scheduled for delivery in mid-August 2022.

12. Following a Request for Quote procurement process, a preferred supplier has been selected for the supply of manifolds and in-ground meter boxes. Terms and conditions are being finalised and materials will be available for the pilot.

13. There is an ongoing risk to the timing of delivery due to the disruption to supply chains caused by the recent COVID lockdowns limiting manufacturer's capacity to fabricate materials.

14. Work is underway for the procurement installation contractors. This is on track to be awarded in time for the scheduled delivery of the first bulk batch water meters. The pilot will be used to refine installation methodologies and understand key risks to be mitigated prior to the main programme commencing in winter 2022.

Thermal Dryer Facility Replacement (Budget: $45,082,575)

15. This project is currently proceeding as planned. The first work package for the horizontal infrastructure and other enabling works commenced in November 2021.

16. Concept design for the new administration and control building is complete and undergoing a value engineering review.

17. Detailed design for the thermal drying equipment is underway by the manufacturer, Haarslev.

18. Contract negotiations for the thermal drying equipment fabrication are virtually complete and it is expected that the contract with Haarslev will be signed in February.

19. Contract negotiations for the main works contractor are nearing completion with competitive dialogue with the preferred two suppliers. It is anticipated that a contract will be awarded in mid-2022.

20. Inflation pressures are expected to have an impact on the cost of delivering this project against the LTP Budget. This is because of the long delivery phase (programmed completion is 2024) and because of the large exposure to particular material commodity price increases such as cement and stainless steel.

Urenui and Onaero Sewer System (Budget: $29,174,300)

21. Development of a Terms of Reference for the project, and consultation regarding the plan for population growth for Urenui is underway with Ngāti Mutunga.

22. Initial flows and loads assessment and the first stage of disposal site identification is complete. Work is underway on the concept design for the sewer network, short listing suitable land disposal sites and treatment basis of design.

23. The strategic outline business case for the project is expected mid-2022.

24. Lining of the existing reticulation at Urenui Domain to reduce inflow and infiltration is underway. This will, in turn reduce the load on the existing septic systems and reduce the likelihood of the maximum flow limits set by the resource consents being periodically breached.

25. Concept design on options to relocate part of the Onaero leach field due to coastal erosion risk is complete and detailed design has commenced.

Waitara Storm Water Upgrades (Budgets: $20,188,890)

26. Upper Waitara: Construction of SH3 diversion pipeline underway in partnership with Waka Kotahi. Preliminary design for upgrades to connect to the diversion pipeline underway.

27. Tangaroa: Detailed design for storm water upgrades on Richmond Street completed. Construction to be scheduled around Waka Kotahi SH3 diversion pipe works and proposed road closures. Negotiating scope and contract details with preferred tenderer for detailed design of the rest of the catchment.

28. Concept design is underway for the storm water upgrades to Bailey Street.

29. Separate programme for storm water maintenance and renewals in Waitara funded primarily through a combination of transport and storm water maintenance and renewals budgets is underway. This has identified a significant body of work required to keep the existing assets working as originally designed. Physical works have commenced and will be ongoing for 12 months or more.

Integrated Transportation Strategy (Budget: $490,000)

30. Waka Kotahi have approved the business case and funding for this Investment Management/Planning project.

31. Procurement of specialist consultants for technical work streams, such as building a traffic model for the district's road network have commenced.

32. The timing of this work remains at risk as the Transportation Planning Team Lead position is currently vacant after the first recruitment round failed to fill this vacancy.

Walkway Extension to Waitara (Budget: $25,616,792)

33. Waka Kotahi have provisioned for funding the project in the National Land Transport Plan subject to approval of the detailed business case. Good progress have been made of the Business Case and it is in the final stages of preparation. It is expected that the business case will be completed ready for submission to the NZTA for a final funding decision in April.

34. A partnership agreement between Council and Te Atiawa iwi, Puketapu Hapū, Pukerangiora Hapū, Manukorihi Hapū and Otaraua Hapū is having final review with the steering group on 15th February ready for signing. The Steering group have been meeting to progress planning for the walkway.

35. Design work is progressing in partnership with Iwi and Hapū reps and the walkway route has been confirmed alongside key aspirations from a cultural perspective being identified that inform the Urban Landscape Design Framework document that forms part of the business case.

36. The first stage component, starting at Marine Park has begun preparation for detailed design alongside other park outcomes identified as stage 1 of the park development. This is due to be started this financial year. This work includes a detailed survey to inform the design for the walkway in this location.

37. A Land Purchase Strategy has been developed. Some early negotiations with willing land owners have commenced. Actual acquisitions will commence once the detailed business case has been approved and the NZTA 51 per cent funding released.

Transportation Safety Programme (Budget: $6,619,222)

38. The Inglewood Pedestrian Crossing has been designed by Waka Kotahi. Community consultation have also been completed and a report to Council has approved the necessary amendments to parking controls. It is anticipated that construction will commence during this summer.

39. The Brois/Govett Street intersection Roundabout design is in progress and will be constructed this financial year.

40. The Gover Street/Liardet Street central block traffic calming project around central school is associated with the new Central City Strategy, and Speed Management legislation. This financial year's output will be to produce an area wide concept design.

Transportation Active Transport Programme (Budget: $9,043,040)

41. The Waiwhakaiho Pedestrian Bridge to the Valley project will focus on early engagement and planning this financial year, with design and construction in Years 2 and 3.

42. The design for the Mangorei Road (Tupuhi Place to Mangorei School) shared path project is in progress.

43. Mill Road (Harris Street to Huatoki Reserve) walking improvements project design is in progress.

Transport Network Efficiency Programme (Budget: $3,780,921)

44. Detailed design for the David/Tukapa Street traffic signals has been commissioned. It is anticipated that construction will commence this summer.

45. Detailed design for the Lorna Street/Devon Street West traffic signals has been commissioned, with construction scheduled and budgeted for the 2022/23 financial year.

46. The Bell Block Parklands/Nugent safety improvements are currently being scoped for design.

Establish a Commercial and Industrial MRF (Budget: $657,873)

47. A request for tenders for the construction of the facility are currently being advertised. Tender documents for the contracts to operate the new facility are being drawn up and the tender is expected to be advertised in March.

48. Work to draft the operational business plan for the facility is now complete.

49. Work has commenced to develop business processes, such as customer billing, interfacing with weighbridge software etc. are underway.

Historic Landfill Erosion Protection (Budget: $508,011)

50. Consultation with Otaraua Hapū and Manukorihi Hapū are ongoing in order to identify the preferred solution for the historic landfill at Battiscombe Terrace.

Construction of the Junction Permanent Building (Budget: $3,347,763)

51. Detailed design work is largely completed. A new Project Manager has been appointed to finalise the design and complete the detailed business case. Construction planned for the 22/23 financial year.

Kawaroa to Belt Road Cliff Erosion Protection (Budget: $6,364,700)

52. Detailed design work underway this financial year. Construction work not schedule to commence until 2023/24.

Taranaki Traverse Land Acquisition (Budget: $961,103)

53. A working group with Ngāti Tawhirikura and associated Hapū/iwi has been established to develop over-arching principals for the Taranaki Traverse Waiwhakaiho Section project that will guide the project going forward. A preliminary meeting is scheduled for March (delayed from November/December 2021 due to availability) to explore the vision and principals for the project and establish a way of working.

54. GIS mapping and ground truthing of potential routes and links to existing pathways has been started, this also identifies features (historic, cultural and recreational) along the route. In addition as per Council LTP recommendations, a link from Inglewood will be explored.

55. Some local opportunities for land acquisition along the route have arisen through subdivision and these are in progress with sale and purchase agreements in place (e.g. Gordon Street).

56. On completion of GIS mapping and establishment of project principles over the next two months, a land acquisition strategy will be commissioned and progressive purchase of land along the route not already in Council ownership will be undertaken.

Te Kohia Pā (Budget: $300,000)

57. Work has commenced to negotiate a partnership and funding agreement between NPDC and Te Atiawa Iwi so that the concept planning and business case for this project can be delivered directly by Te Atiawa.

Planting Our Parks Climate Action Framework (Budget: $2,249,996)

58. First phase of planting over the 2021 planting season has been completed. The partnership with Ngāti Tawhirikura has completed 6.8 hectares of planting with a total of 14,200 plants.

59. A contract for plant supply, site preparation and maintenance is being established. Market briefings occurred in December with great responses from a range of suppliers, including community groups and Hapū. The expression of interest is due to be sent out in in February. This will provide for pre-ordering of natives for subsequent years of planting to progress.

60. The Te Korowai o Tāne community grant criteria is being considered at Council's March meeting as part of the Community Funding Investment Policy Review. If and when approved, notification will be made for applications ready for the autumn 2022 planting season.

61. An eco-sourcing seed collection guide and approval form for Council reserves is being developed that will assist community groups wanting to source local seeds to grow from.

Kaitake Trail (Budget: $6,435,550)

62. This project has some significant risks to its delivery. Most notable is the ongoing discussions with the two hapū. When the Council approved the project as part of the LTP, a resolution was passed requiring this project to be delivered in partnership with the hapu.

63. The hapū have some fundamental issues with the purpose and form of the proposed trail, in particular, the inclusion of cycling. As a result it has not yet been possible to confirm a mutually agreeable scope for the project and form any kind of willing partnership with the Hapū. A report to council is currently being prepared that will outline options and a recommendation on the way forward for this project.

Multi-Sport Hub Development (Council Funded Budget: $38,455,981)

64. This is a collaborative project, between New Plymouth District Council, Sport Taranaki and Te Kohitanga o Te Atiawa and Ngāti Te Whiti Hapū and Ngati Tuparikino. The parties are working with a 'co-design, co-invest and co-deliver' focus to ensure the best outcomes for the project.

65. The project director Steve Bramley from SGL has been testing the draft Master Plan and has reported positive responses from initial funding and stakeholder discussions. Consideration is being given to how we can develop future effective partnerships and solutions with different groups with an interest in the facility. Incorporating the 'well-ness' component into the project has also identified opportunities to better integrate with surrounding education, recreational and event activities. Focus is also being placed on developing a financial model that will ensure the development and the operation of the facility is viable.

66. The next stage of the project is to appoint a design team. The design team will work with the stakeholders to refine and further develop the master plan before undertaking detailed design.

67. Some project risks have been identified as a key member of the execution team has left. This has provided the opportunity for a 'project reset' and a resourcing review that is now underway.

FINANCIAL AND RESOURCING IMPLICATIONS

68. Reporting on the current strategic projects will be met from within existing resources.

IMPLICATIONS ASSESSMENT

69. This report confirms that the matter concerned has no particular implications and has been dealt with in accordance with the Local Government Act 2002. Specifically:
    - Council staff have delegated authority for any decisions made;
    - Council staff have identified and assessed all reasonably practicable options for addressing the matter and considered the views and preferences of any interested or affected persons (including Māori), in proportion to the significance of the matter;

- Council staff have considered how the matter will promote the social, economic, environmental, and cultural well-being of communities in the present and the future.
- Unless stated above, any decisions made can be addressed through current funding under the LTP and Annual Plan;
- Any decisions made are consistent with the Council's plans and policies; and
- No decisions have been made that would alter significantly the intended level of service provision for any significant activity undertaken by or on behalf of the Council, or would transfer the ownership or control of a strategic asset to or from the Council.

APPENDICES

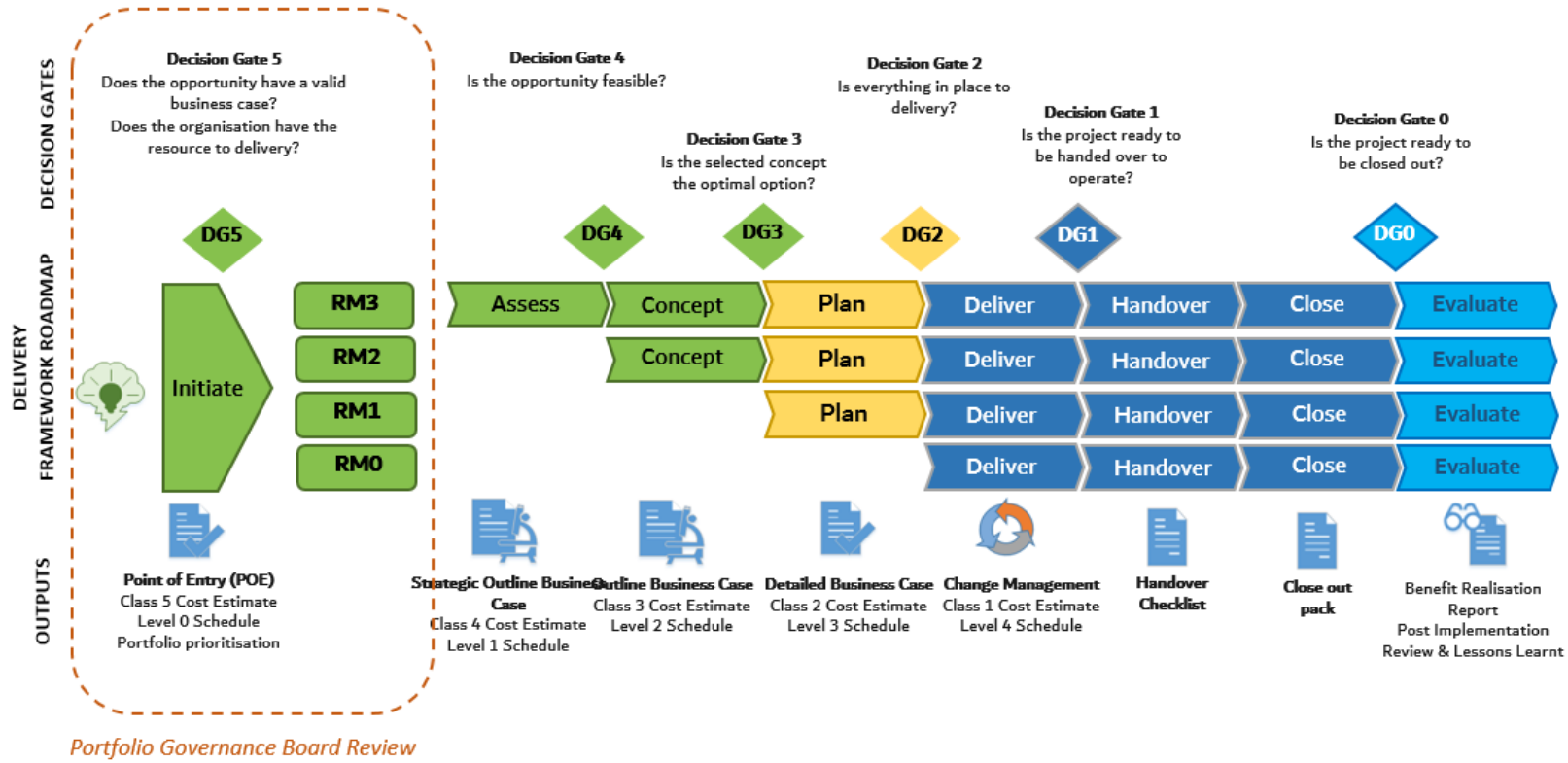
Appendix 1 P3M Project Road Map (ECM8465643)

Report Details

Prepared By:	Andrew Barron (Manager Infrastructure Projects), David Taylor (Three Waters Planning Lead), Rui Leitao (Manager Transportation), Renee Davies (Planning & Design Lead), Juliet Johnson (Manager Planning)
Team:	Planning and Infrastructure Group
Approved By:	David Langford (Group Manager Planning & Infrastructure)
Ward/Community:	District Wide
Date:	04 February 2022
File Reference:	ECM 8715459

----------End of Report ----------

APPENDIX 1: P3M Project Roadmap Diagram



STRATEGIC PROJECTS DEEP DIVE REPORT – INGLEWOOD DISCOLOURED WATER

PURPOSE

1. The purpose of this report is to provide an in depth review of the Inglewood Water Main Renewal programme of work and review the associated benefits realisation, including its effectiveness at resolving the town's discoloured water issues.

RECOMMENDATION

That, having considered all matters raised in the report, the report be noted.

SIGNIFICANCE AND ENGAGEMENT

2. This report is provided for information purposes only, and has been assessed as being of some importance.

DISCUSSION

Executive Summary

3. The council has a record of complaints from the Inglewood community regarding discoloured drinking water going back almost two decades.

4. Detailed investigations have been undertaken to diagnose the root cause of the discoloured water events. These investigations confirmed that the treatment plant is effective at removing metals and other minerals from the raw water drawn from the Ngatoro Stream. The actual root cause was identified as the uncontrolled oxidation of metals, most notably manganese inside the trunk mains between the treatment plant reservoir and the Inglewood reticulation network.

5. This oxidisation process was a product of the chemical conditions (high pH) and the slow water flow rates inside the trunk mains. As manganese oxide precipitates from the water, the slow flow rates allow it to settle and accumulate in the pipes. During periods of high flow, such as during a water main break or during firefighting operations, these deposits are re-mobilised causing them to move further into the reticulation network and causing discolouration of the water being supplied to Inglewood residential and commercial water customers.

6. A total budget of **$10.89m** has been allocated through the long term plan for pipe replacements in Inglewood to address both the issue of aging pipe assets and the discoloured water issue. The majority of the works are now complete with a small number of sites to be completed by the end of the financial year. The final costs at completion of the outstanding works are forecast to be **$10.63m** which is slightly below the approved budget.

7. Monitoring of the number of instances and complaints related to discoloured water events confirms that the project has been effective at fixing the underlying issue.

8. In addition, the overall condition of the Inglewood water reticulation network has been materially improved. The proportion of pipes that are in a poor or very poor condition has reduced from 24 per cent to just 6 per cent.

9. A number of relatively minor lessons learnt have been captured so that good practice can be carried forward to future projects along with any areas that have been identified for improvement. The most material area for improvement relates to the council's process for valuing its drinking water assets. There are several points of evidence that indicates these assets are undervalued. Work is underway to prepare the next 3-yearly statutory asset valuation, so there is an immediate opportunity to undertake this review.

Background

10. The Inglewood Township is supplied with a reticulated drinking water system. Raw water is supplied from the Ngatoro Stream via an infiltration gallery to a treatment plant located on Dudley Road (Upper).

11. Inglewood Water Treatment Plant and reticulation system connections approximately 3,980 people with potable water. In the 2015-16 financial year the total volume of water supplied was 650,000m^3 with the average daily demand being 1,770m^3/day.

12. Treatment at the plant consists of coagulation using poly aluminium chloride, clarification, filtration, disinfection with chlorine injection and pH is adjusted with lime injection.

13. Prior to the 1990's the coagulation and filtration process used at the Inglewood water treatment plant were operating sub-optimally, resulting in high levels of manganese, aluminium and other particles entering the reticulation system. These particles subsequently settled in the reticulation during periods of low flow forming build ups of mineral deposits. Periodically, some of these were remobilised during high demand, causing dirty water complaints.

14. Upgrades to the treatment plant in the 1990's significantly improved the treatment process. This reduced the concentration of these elements in the treated water, thereby reducing the dirty water complaints. However, it is noted that the concentration of a number of the metals is still up to ten times that found in the water from the New Plymouth Water Treatment Plant.

15. Drinking water consumers in Inglewood have historically experienced a high frequency of instances of discoloured water being supplied. Figures 1 and 2 show photographs taken by Inglewood residents during discoloured water incidents.

16. Water discolouration is most pronounced when large volumes of water are drawn off from the system which increases the velocity of the water inside the pipes. Higher velocities scours any deposited minerals or biofilm from the inside of the pipes, flushing them from the reticulation system as water discoloured a yellowy-brown colour.

17. Samples of water taken and tested during these discoloured water events have shown elevated levels of aluminium, manganese, iron, lead and copper. Iron and manganese are frequently associated with discoloured water complaints. Manganese in particular can cause staining of laundry, where issues are exacerbated by the use of oxidising cleaning products.

Figure 1

Figure 2

18. Table 1 shows a summary of the number of customer complaints relating to discoloured water incidents in Inglewood since 2004. Whilst there is some randomness to the data, there is an elevation in the number of complaints from circa 2010 onwards.

Year	Number of Complaints
2004	5
2005	9
2006	8
2007	7
2008	1
2009	4
2010	8
2011	44
2012	5
2013	17
2014	14
2015	14
2016	23
2017	30
Total:	**189**

Table 1 – Summary of Discoloured Water complaints from Inglewood residents.

Drinking Water Safety

19. All drinking water supplied by the council is required to meet the New Zealand Drinking Water Standards 2005 (amended 2008) (NZDWS). The performance of the Inglewood treatment plant and the quality of the water is monitored and controlled by NPDC Water and Wastes team and audited quarterly by Taranaki District Health Board on behalf of the Ministry of Health.

20. The NZDWS list a plethora of chemicals found in drinking water and sets a Maximum Allowable Value (MAV) and Guideline Value (GV) for each listed chemical. The MAV represents the maximum value that could be safely consumed daily by an average adult over a 70 year long period without adverse effects on health. The GV is a value which represents aesthetic requirements such as; taste, odour and the avoidance of discoloured water.

21. The raw water received at Inglewood WTP is taken from the Ngatoro Stream. Raw water sampling shows that the natural water source contains varying levels of metals. Based on 33 samples the average aluminium and iron content exceeds the GV and manganese is just below the GV. However the levels vary with the maximum recorded value being at least four times the GV.

22. Routine sampling and testing has shown that the water in Inglewood has been fully compliant with the NZDWS. Testing over the last two decades has shown that; despite the level of metals in the raw water exceeding MAV and GV limits, post treatment these contaminants are consistently less than half the MAV.

23. Table 2 summarises the results of a series of samples taken across the Inglewood treatment and reticulation in February 2014. This data confirms that aluminium iron and manganese is removed in the treatment process. The data also shows that the levels of manganese in particular varies between the water leaving the reservoir and the water entering the urban area at Miro St.

Test	Units	MAV/ GV[1]	Raw water	After filters	At reservoir	Reticulation
Aluminium	mg/l	0.10	0.549	0.021	0.025	0.025
Cadmium	mg/l	0.004	<0.001	<0.001	<0.001	<0.001
Copper	mg/l	1	0.003	<0.002	<0.002	0.013
Iron	mg/l	0.2	2.3	<0.1	<0.1	<0.1
Lead	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
Manganese	mg/l	0.04	0.033	0.008	0.009	0.003
Nickel	mg/l	0.08	<0.001	<0.001	<0.001	<0.001
Zinc	mg/l	1.5	0.007	0.008	0.010	0.009

Table 2 – summary of metals analysis results from February 2014

[1] GV's in red, MAV's in black

24. Further testing was undertaken between 1 January 2015 and 30 June 2016 with more than 230 individual samples tested. The results are summarised in table 3 below. Again, the test result indicate that the treatment process is effective at removing metals from the raw water.

Test	Units	MAV/GV[1]	Raw water	After filters	At reservoir	Reticulation
Aluminium	mg/l	0.10	0.383	0.028	0.033	0.028
Copper	mg/l	1	0.003	<0.002	<0.002	0.0068
Iron	mg/l	0.2	0.297	<0.1	<0.1	0.3
Manganese	mg/l	0.04	0.015	0.008	0.012	0.009
Nickel	mg/l	0.08	0.006	<0.001	<0.001	<0.001
Zinc	mg/l	1.5	0.013	0.006	<0.005	0.011

Table 3 – summary of metals analysis results from January 2015 and June 2016

[1] GV's in red, MAV's in black

Root Cause Investigations

25. Testing clearly demonstrates that the Inglewood treatment plant is effective at removing metal contaminants and, as such, a failure of the treatment process is not the root cause of the discoloured water events.

26. Under normal operating conditions the levels of metals in the reticulation are well below the GV. However, when flow rates in the reticulation system are abnormally high, the levels of metals rises significantly and discoloured water events are reported by consumers. Metal levels rapidly return to low levels once flow rates drop and the discolouration stops. This correlation between flow rates, metals sampling results and discoloured water events strongly suggests a cause-and-effect relationship.

27. The oxidation of soluble manganese to insoluble manganese dioxide is used in many water treatment processes including the New Plymouth WTP to reduce the levels of manganese in treated water. The same process is also used to remove iron, which is more readily oxidised than manganese.

28. Manganese is oxidised in the presence of chlorine and the process is accelerated at higher ph. The presence of manganese dioxide also assists the reaction to occur. In the case of Inglewood the pH of the water is controlled with an average of pH7.7 being recorded. Chlorine is added to the water as it exits the treatment process but before entering the reservoir to provide disinfection. The pH is not considered high and significant formation of manganese dioxide is not expected. The reservoirs have a residence time of 2 – 3 days and any manganese dioxide could reasonably have been expected to form and subsequently settle in the reservoirs.

29. The sample testing demonstrates that the measured levels of metals varies from when it leaves the reservoir at the treatment plant to when it enters the urban reticulation. This provides evidence that metals, in particular manganese, are precipitating out of the water and accumulating inside the trunk main.

30. The drop off in manganese from the samples taken at the trunk main suggests that 5.2kg of manganese could be being deposited in the trunk mains each year. Further reductions across the reticulation network suggests that up to another 1.95kg/year of manganese is being deposited here.

31. The water leaving the plant travels via two 250mm trunk mains each approximately 3.75km long. One main is cement lined steel while the other is asbestos cement. The velocity in the trunk mains is low, and it is possible that a high pH is present at the interface between the water and the cementitious pipe material.

32. The velocity of the water in the trunk mains is only 0.2m/s and, even at peak summer flows, it only rises to 0.45m/s. At these velocities water is resident in the trunk mains for about 5 hours. The NZDWS recommends that velocities of at least 1.5-2m/s are required to flush mains and prevent deposits accumulating.

33. These chemical conditions combined with low water velocities are optimal for further uncontrolled oxidation of manganese which would settle in the trunk mains and reticulation network leading to the gradual accumulation of insoluble material in the pipes.

34. Simple chemical reaction may not be the only cause of oxidation. Sampling results showing an increase in some metals between the reservoirs and reticulation indicated that internal corrosion of aging cast iron and steel pipes could be in a medium to advanced state.

35. In addition it was noted that there was a significant build-up of manganese and other metals in a biofilm that had formed, lining the inside of the pipes. As such, it was possible that microbiological activity, which oxidises manganese, may also be occurring.

36. To better understand the cause of the discoloured water events, and the condition of the older water mains in Inglewood, a testing program was developed with pipe samples taken for destructive testing as well as microbiological analysis. Table 4 summarises the results of the sample testing.

Parameter	Concrete Lined Steel	Cast iron
Sludge	Abundant	Sporadic
Unicellular bacteria	Frequent	Sporadic
Protozoa	Absent	Sporadic
Iron related particles	Frequent	Numerous
Total heterotrophic plate count at 25°C	6,600	4,900
Iron-precipitating heterotrophic bacteria (*Pseudomonas, Klebsiella* etc.)	2,000	10-100
Slime forming heterotrophic bacteria (*Pseudomonas*)	40	<10
Clostridium	10-20	40
Anaerobic Sulphate-reducing bacteria (SRB)	120	100
Yeast	30	90
Filamentous Fungi	40	60

Table 4

37. The laboratory testing found no presence of any filamentous, iron-oxidising bacteria and a low level of slime producing bacteria for all the samples. Therefore the potential for biofouling and/or microbial induced corrosion was likely to be low. Clostridia, an anaerobic Sulphate reducing bacteria, was present in low levels suggesting that there were likely to be anaerobic areas within the pipe surface, however the low levels suggest that a deep biofilm had not formed.

38. The concrete lined steel pipe had higher readings for most of the parameters examined in particular for the presence of sludge which was found to be "abundant compared to only "sporadic" in the cast iron pipe. This result was counter intuitive as the concrete lined steel pipes had been air scoured and the cast iron had not.

39. Given the low water velocities, it is unlikely that any scouring of these water mains is occurring. The additional deposition in the concrete lined steel pipes could be simply associated with it being a larger diameter pipe and therefore having a larger volume of water from which the sediment can settle out from.

40. The reports on the destructive testing also showed the cast iron pipe to be relatively free of internal corrosion. This indicated that the source of the high iron in the flushing water is not from corrosion of the cast iron pipes as expected.

41. All the above indicates that the original hypothesis that the dirty water problem is primarily associated with the cast iron pipes due to the inability to air scour was incorrect.

Scouring and Flushing of Mains

42. A number of investigations were undertaken to explore the costs and efficacy of cleaning the trunk mains in order to resolve the discoloured water issues.

43. Air scouring and routine flushing of the trunk mains was undertaken but proved not as effective as expected. Further discoloured water issues which arose after the air scouring prompted concerns that deposits from the trunk mains were being mobilised and redeposited across the reticulation network.

44. Investigations into the use of ice pigging on the two trunk supply mains was undertaken; however the quotations received from contractors proved the process to be disproportionately expensive.

45. Swabbing the trunk mains was also explored as an option. However, this would require the installation of a number of additional purge points for entry and retrieval of the foam swabs. In addition, the small number of specialist contractors required to undertake the work were fully committed to other works and were not available.

46. In September 2014 the two trunk supply mains had to be cleaned before the commencement of a project to replace a 500m section of one of the mains. Contrary to expectations, this did not result in a reduction of the problem. Occurrences of discoloured water continued to be reported soon after this flushing was completed. This indicates that the accumulations within the trunk mains were reoccurring rapidly and that the cause was broader and extended across the wider reticulation network as well as the trunk mains.

NO-DES Pipe Cleaning

47. NO-DES (Neutral Output Discharge Elimination System) is a water mains flushing technology developed in the USA and has been extensively used in Australia since June 2016.

48. The NO_DES technology uses the basic principles of unidirectional flushing to clean water mains, but recirculates the water, thereby minimising waste. The NO-DES unit connects to the water mains via two hydrants, creating a temporary above ground loop in the water network. This is illustrated in Figure 3.

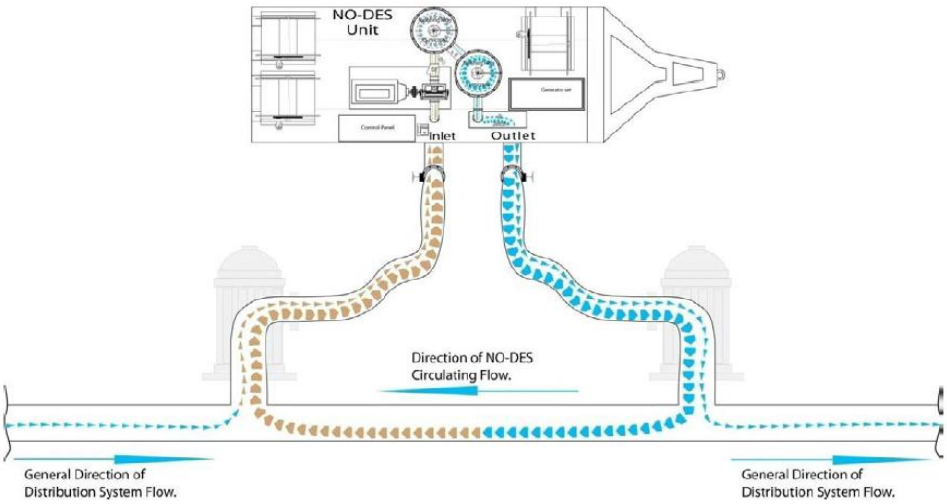


Figure 3 – NO-DES operational schematic.

49. A pump on the NO-DES unit then circulates water through the loop at the required flushing velocity (typically 1 to 1.5 meters per second). The water circulates in the opposite direction to the normal water flow in the mains and, as it circulates, the water passes through the filters on the NO-DES unit. The unit also includes a disinfection station in order to re-chlorinate the waiter to maintain quality and safety standards. The water continues to circulate until the turbidity drops below 1 NTU (Nephelometric Turbidity Units), indicating that debris and deposit build ups inside the pipe have been revolved. Figure 4 shows the truck mounted NO-DES unit being set up ready for operation.

50. Whilst the NO-DES unit proved effective when it was used, it was limited by the requirement to have multiple hydrants or other such connection points at regular spacing on the pipes to be cleaned. This meant that it was not possible to use the unit across large parts of the network without the costly installation of additional connection points. Because of this limiting factor, there is no intention to reuse the NO-DES unit in the future.

Figure 4 – Truck Mounted NO-DES Unit in operation.

Renewals Programme

51. The Inglewood drinking water reticulation system consists of just over 46km of trunk mains and distribution pipes as well as a further 11.68km of service laterals.

52. Table 5 provides a breakdown of the 46km of trunk mains and distribution pipes by their material types.

Pipe Material	Length (m)
Asbestos Cement	9427.52
Cast Iron	4391.42
Copper	61.36
Galvanised Steel Tub	225.81

Pipe Material	Length (m)
MPVC	3191.06
Polyethylene High De	533.79
Polyethylene Low Den	584.34
Polyethylene Medium	14336.32
PVC	49.14
Stainless Steel Spiral Wound	1605.04
Steel	4161.14
Steel Concrete Lined	626.25
unknown	27.03
Un-plasticised PVC	6873.98

Table 5 - Total pipe inventory for Inglewood Township.

53. Figure 5 shows the distribution of pipe condition ratings for the Inglewood reticulation network. Approximately a quarter of the pipes in Inglewood were known to be in a poor or very poor condition. Replacing these aging assets presented an opportunity to remove any pipes that may have internal corrosion and pipes that have large accumulations of metal oxides, both of which contribute to discoloured water events. In addition, the replacement pipes can be resized and alternative materials specified in order to increase the velocity of the water and remove unfavourable chemical conditions, in order to improve pipe flushing and reduce settlement of deposits. This was a particular opportunity for the two trunk mains.

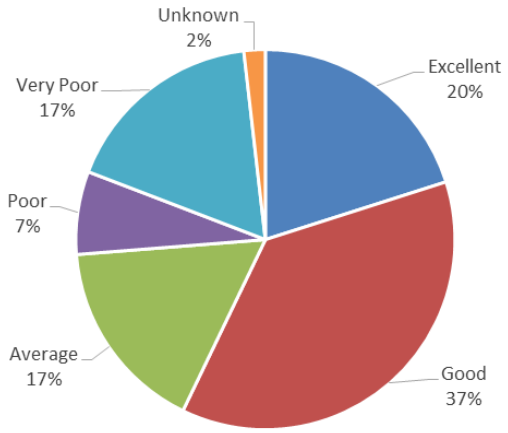


Figure 5

54. In total 15.35km (33% of the Inglewood Reticulation system) of pipes were replaced over a 3 year period. This included replacing; 74% of the asbestos concrete, 97% of the cast iron and 90% of the steel pipes in Inglewood.

55. A total budget of $10.69m has been allocated for reticulation renewals in Inglewood since the 2018/19 financial year to the current year. A further $0.2m of budget was allocated from the post cyclone Gita water resilience budgets for the installation of flowmeters on the Inglewood reticulation network, giving a total budget of **$10.89m** for the works.

56. As of December 2021, a total of $10.15m had been spent on the Inglewood pipe renewals programme. It is forecast that a further $480k of work is due to be completed by the end of the current financial year, giving a total cost of **$10.63m** for the project. A high level breakdown of these costs is included in table 6.

Description	Cost
Project Management	$255,614
Engineering Design	$1,294,228
Contracts for pipe replacement	$7,290,024
Installation of flow meters	$192,694
Footpath and road resurfacing	$524,868
Other items (backflow preventers etc.)	$241,777
Protection/relocation of underground utility services	$223,493
COVID-19 lockdown delays	$99,160
Adverse Weather Events	$25,715
Work to be completed	$480,000
Total:	**$10,627,573**

Table 6

Benefits Realisation

57. There is still work in progress and not all of the "as-built" asset information has been uploaded into the asset management system. As such, a high accuracy and reliable assessment of the impact on the condition of the Inglewood reticulation system is not yet possible. However Figure 6 shows the outputs of a manual assessment.

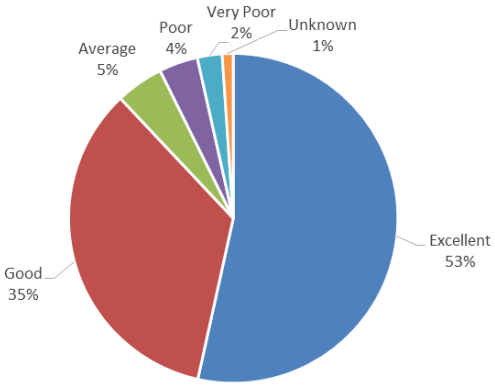


Figure 6

58. 88% of the town's pipes are now in a good or excellent condition and the proportion in a poor or very poor condition have reduced to just 6%. Furthermore, it is estimated that the weighted average remaining useful life of the reticulation system has increased from 47.5 years to 69.6 years, which represents a material improvement.

59. As discussed earlier in this report, a significant quantity of pipes manufactured from materials such as asbestos cement, cast iron and steel have been replaced with modern plastic equivalents. Of particular note is the replacement of the asbestos concrete pipes that have a design life expectancy of 50 years. Replacing these with plastic equivalents that have a design life expectancy of 100 years will halve the annual depreciation of these assets. In monetary terms this is estimated to be a circa $30k per annum reduction in depreciation expense.

60. Table 7 shows a summary of discoloured water complaints in more recent years (an extension of Table 1) with an accompanying commentary. As can be seen, the work to replace the two trunk mains in-between the treatment plant and the Inglewood town generated a large number of discoloured water complaints.

Calendar Year	Number of Complaints	Commentary
2013	17	← steady trend of complaints
2014	14	
2015	14	
2016	23	
2017	30	← preparation of LTP 2018 budgets underway
2018	7	← Pipe Replacement programme commences
2019	53	← replacement of trunk mains generates large number of discoloured water events
2020	11	← Pipe Replacement continues
2021	3	
2022	1	← Caused by routine pipe flushing (very short in duration, localised and considered normal for most reticulation networks)

Table 7

61. Noting that work is still in progress, since 2021 there has been a noticeable reduction in the number of complaints with a trend towards zero. Furthermore, there has been a material reduction in the scale and duration of discoloured water events when they have occurred.

62. The single complaint in January 2022 was as a result of NPDC undertaking pipe flushing to clean parts of the reticulation network as part of the outstanding works programme.

63. At this point in time, it can be concluded that the project has been successful in addressing the root-cause issues causing the discoloured water events. It is recommended that the number of complaints continues to be monitored for an extended period of time to confirm that the improvements are enduring beyond the completion of the project.

64. One cost aspect of note is the cost of temporary traffic management (TTM) which is a critical safety control for any worker delivering works in the road corridor. As part of the council's maturing approach to strategic procurement and its developing ethos of Soppy Chain Leadership, in 2019 the council changed its approach to paying for TTM.

65. Under the Council's previous approach, the cost of TTM was required to be included in the price of undertaking the works when a contractor tenders for a project. This approach unintentionally incentivizes the tenderers to under-price the cost of this safety control in order to remain competitive and win the work. Furthermore, the successful tenderer could be incentivized to minimize the actually TTM deployed in order to manage their cost of delivering the project.

66. Under the new approach, tenderers are required to exclude the cost of TTM from their bids. Once a successful tenderer is selected, the form of TTM (temporary traffic lights, road closure etc.) is negotiated and agreed to ensure the safety of the workers is the highest priority. The cost of the TTM is then paid on a cost reimbursable basis. This ensures that the contractor's costs for TTM are always covered and there are no commercial drivers that would incentivize corner cutting.

67. This approach was recently recognized as national best practice by the Ministry of Business Innovation and Employment (MBIE) when NPDC won the inaugural Construction Sector Accord Beacon Award. This award recognizes transformational leadership that will have materially positive impact on the New Zealand construction sector.

68. With a move to a cost reimbursable basis of payment, there was a risk that costs would escalate in the absence of competitive tension to incentivize efficiency. As such, careful management and monitoring has been applied to mitigate this risk.

69. With the change in approach to TTM occurring half way through the Inglewood water main replacement project it has been possible to undertake a side by side comparison of the two different contracting approaches and their impact on cost. Under both approaches, the cost of TTM is approximately 12% of the total cost of the project. This is within the normally expected range for project costs. On this basis, it is apparent that the move to a safer approach to TTM has been achieved on a cost neutral basis.

Lessons Learnt

70. Now that the project is nearing its completion the team has started to undertake lessons learnt debrief workshops. These workshops take an objective review of what went well on the project that should be carried forward to future projects as current best practice. They also examine what did not go as well as planned so that mitigations can be identified and implemented as part of future projects in order to continuously improve performance.

71. So far, a number of both good practice examples and areas for improvement have been identified. Most of these are relatively tactical and are summarised below:

- Working at night in commercial areas minimised the impact on businesses that operate during normal day time.

- Some of the early work packages issued to contractors were too large and managing TTM and trench reinstatements across multiple active sites became challenging. Optimising efficiency needs to be moderated with remaining manageable.

- The process of collecting asset "as-built" data was not particularly robust nor well understood at the beginning of the project. The long term Infrastructure Maintenance Contract has provided a platform for these processes to be refined and for training and practice to improve their effectiveness.

- Coordination of pipe replacements with the transportation team's road and footpath resealing programmes has delivered cost efficiencies and minimised the risk of excavating newly resealed pavements due to poor programme coordination. However, more community communication is needed to build a tolerance for temporary road reinstatements as an interim measure before a permanent reinstatement is undertaken.

72. In addition to the examples above, the main material improvement opportunity to arise from this project is regarding the asset valuation for drinking water asset. The existing portfolio of drinking water reticulation assets has a total replacement value of just over $260m.

73. This gives an average replacement cost of $350 per linear meter of pipe; however, the Council's asset valuation uses a range of unit rates that scales according to the size of the pipe. This compares poorly to the actual cost of undertaking pipe replacement which averages at $520 per linear meter of pipe.

74. By comparison, the average unit rate for wastewater and storm water pipes are $1,072 and $1,206 respectively. One of the key points of difference between the drinking water network and the other two water networks when valuing them are is the depth that they are installed below the ground. Both wastewater and storm water networks largely utilise gravity to convey water. As such, the pipes need to maintain a falling gradient and the depth that pipes are installed often varies and can be several metres below the surface.

75. Because the water network operates under pressure undulations in the pipes do not impede the flow of water. As a result the pipes can typically be installed at a shallower depth.

76. When preparing the council's asset valuations the unit rates used for wastewater and storm water pipes are banded based on a range of pipe installation depths. Figure 7 illustrates the range of unit rates for storm water pipes based on their diameter and installation depths. This figure also shows the range of unit rates for water pipes based solely on the pipe diameter.

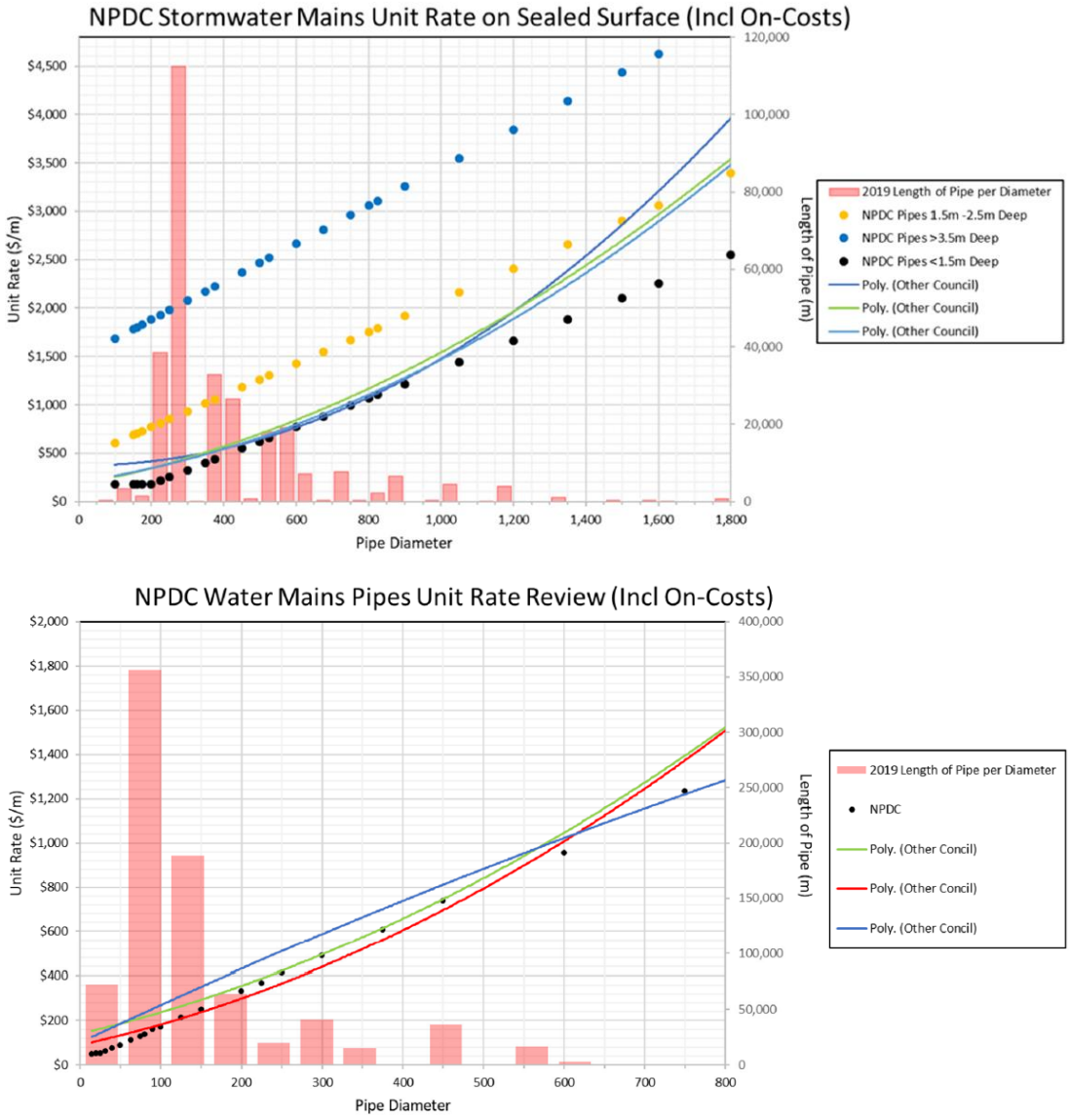


Figure 7

77. The council's asset management system currently does not record the depth of the majority of its drinking water pipes. In the absence of this data set, the asset valuation makes the assumption that drinking water pipes are installed at an average depth of 1.15m. This assumption is very close to the minimum installation depth required by the NZS 4404 Subdivision infrastructure standard of 1.08m.

78. Actual measurements of the depths of the pipes within Inglewood range in depth from the minimum up to 1.75m deep. In particular, the trunk main from the treatment plant to the town tends to be deeper.

79. In retrospect, had only the trunk main been valued on the same depth driven basis as the Council's wastewater and storm water pipes then the average valuation unit rate would have been approximately $635 per linear meter. This clearly compares more favourably with the actual cost of undertaking the works.

80. This inference that the Council's drinking water assets are undervalued is supported by the work undertaken by the Water Industry Commission for Scotland (WICS) in support of the current three waters reforms programme. Figure 8 shows an excerpt from the WICS Supporting Report (Part 1 – Required Investment). This shows the correlation between asset valuation and the level of community urbanisation. Based on the information provided by the local government sector as part of the Department of Internal Affairs in 2021, the New Zealand three waters assets are likely to be undervalued by as much as 47%.

81. For the council's three waters portfolio this undervaluation is likely to be focused on the drinking water assets. This is because the current unit rates correlate closely with the New Zealand average; whereas, the unit rates for the wastewater and storm water assets buck the trend and are already significantly higher than the national average.

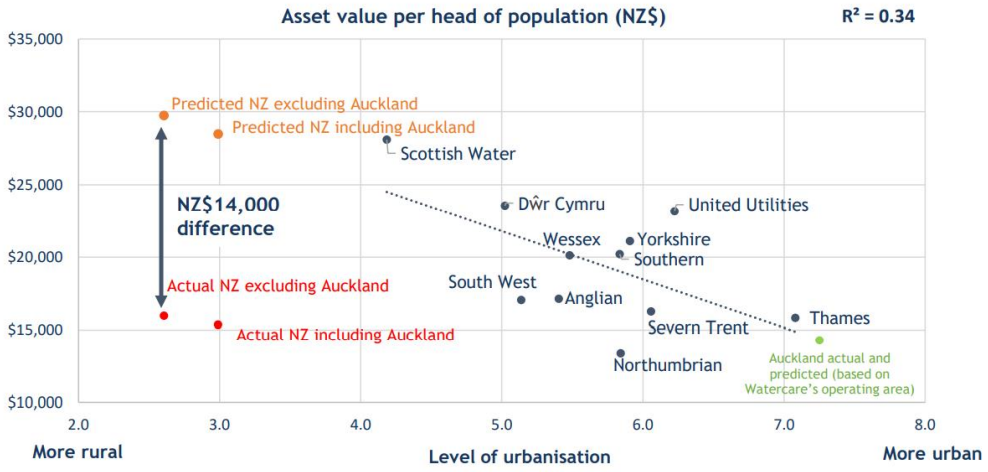


Figure 8

82. Given the council is due to undertake its next 3 yearly asset valuation. There is a present opportunity to take a more detailed assessment of the drinking water asset values.

COVID 19 lockdown impacts

83. The COVID-19 lockdowns during April 2020 and August 2021 caused the council to close down all but the most critical of its projects. This generated additional costs associated with closing down sites to make them safe during the period of inactivity. For the period of the lockdowns, there was also a non-productive cost associated with waged and salaried labour and stood-down plant and equipment.

84. Under the terms and conditions of most standard forms of construction contract, including those used by the Council, high impact, low probability risks, such as civil unrest, war breaking out and pandemics are the client's liability. As such, there is a contractual requirement to pay for the reasonable additional costs incurred by the contractor. This was confirmed by legal advice issued to the construction sector at the time of the first lockdown.

85. The two COVID lockdowns resulted in additional costs of $99,160 across several contractors.

86. In addition to the direct costs of the lockdowns, there are ongoing inflationary pressures associated with the COVID-19 pandemic. The council's contractors are report that, over the last 2 years the cost of:

- Waged labour has increased by 9% due to changes in minimum wage, sick leave entitlements and the additional statutory holidays.
- Concrete products have increased by 18% due to increases in cement costs and production costs.
- PVC pipe has increased by 98% due to manufacturing and supply shortages. To mitigate this alternative pipe materials are being selected.

FINANCIAL AND RESOURCING IMPLICATIONS

87. This is an information only report and as such, there are no direct financial implications.

IMPLICATIONS ASSESSMENT

88. This report confirms that the matter concerned has no particular implications and has been dealt with in accordance with the Local Government Act 2002. Specifically:

- Council staff have delegated authority for any decisions made;
- Council staff have identified and assessed all reasonably practicable options for addressing the matter and considered the views and preferences of any interested or affected persons (including Māori), in proportion to the significance of the matter;

- Council staff have considered how the matter will promote the social, economic, environmental, and cultural well-being of communities in the present and the future.
- Unless stated above, any decisions made can be addressed through current funding under the Long Term Plan and Annual Plan;
- Any decisions made are consistent with the Council's plans and policies; and
- No decisions have been made that would alter significantly the intended level of service provision for any significant activity undertaken by or on behalf of the Council, or would transfer the ownership or control of a strategic asset to or from the Council.

Report Details

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Ward/Community:	South-West Ward / Inglewood Community
Date:	30 January 2022
File Reference:	ECM 8715123

----------End of Report ----------

CLOSING KARAKIA

Unuhia, unuhia,	Draw on, draw on
Unuhia i te uru tapu-nui	Draw on the supreme sacredness
Kia wātea, kia māmā te ngākau, te tinana	To clear, to free the heart, the body
Te Wairua i te ara takatū	and the spirit of mankind
Koia rā e Rongo whakairihia ake ki runga	Rongo suspended high above us (in heaven)
Kia wātea, kia wātea	To be cleared of obstruction
Ae rā kua wātea	It is cleared
Hau Paimarire	

This karakia is recited to close a hui or event. It takes us from a place of focus and releases us to be clear of all the issues or tenisions that may have arisen during the hui. We are now free to get on with other things.