REPLY STATEMENT OF BARRY JOHN SOMERS FOR RIGHT OF REPLY IN RELATION TO APPLICATION FOR RESOURCE CONSENT

1. I confirm that I am the Assets Manager – 3 Waters at Far North District Council. This statement is produced in addition to my statement of evidence tabled at the hearing of this matter in Taipa on 24-26 June 2019. The purpose of this evidence is to address matters arising during the hearing for the purposes of the applicant's right of reply.

Current Value of the Taipa Wastewater Treatment Plant ("TWWTP")

2. I confirm that the current insured value of the TWWTP and wetlands is approximately $2.187m as indicated on the extract from Council's Asset Valuation report: refer report extract **attached** hereto **(BJS-1)**. This includes $2.105m for the Assets and $81.4k for Land.

Council's allocation of funding for upgrade and consideration of alternative disposal options

3. There is currently a nominal amount of $672,000 capital budget allocated in the Long-Term Plan for upgrades to the TWWTP.[1] This is unlikely to be enough to fund the desired upgrade. Consideration of alternative disposal options will be funded using a generic operational budget developed for professional services (consultant) fees.

4. The amount of funds required determines the process needed to be followed to obtain approval of those funds. Request for unbudgeted expenditure above $100,000 must be approved by Council. Any funding increases that are deemed "significant" will need to be achieved by amendment to the Annual Plan for 2020-2021 or by amendment to the Long-Term Plan by Special Consultative Procedures.

5. Council's Significance and Engagement Policy **(attached as BJS-3)** has the following definitions for what is significant:
   - Financial – unbudgeted (i.e. not in an annual or long-term plan) capex exceeding 10% of total rates in the year commenced (roughly $8.6m) or opex exceeding 2.5% of total rates in the year commenced (roughly $2.15m).

[1] Refer LTP 2018-2028, pages 20, 26 and 46 **(attached)** **(BJS-2)**

- Level of public interest – proposal will generate considerable interest or community views render the community deeply divided.
- Effect on district or ward – proposal will create radically different effects on ratepayers.
- Effect on individuals or communities – proposal will radically impact specific demographics
- Levels of service – changes to the level of service will be major and long-term.

6. Although we can't be sure at this stage that funding required for TWWTP would meet the "*significant*" financial threshold, it almost certainly will have a significant effect on ratepayers connected to this scheme and the impact of that decision will impact on the people of Taipa.

7. Council is currently undertaking a revenue review which includes Council's rating system. This will consider the affordability of the wastewater schemes. If the review recommends any changes to the rating system, Council will need to amend the 2018-28 LTP to put those changes in place.

Future consultation with tangata whenua in relation to TWWTP upgrades and consideration of alternative disposal options

8. The proposed resource consent conditions require Council to undertake meaningful consultation with Tangata Whenua. Far North District Council proposes creating a Tangata Whenua Working Group with representation from Far North District Council and Tangata Whenua effected by the discharge from the Taipa Wastewater Treatment Plant.

9. Council acknowledges that meaningful consultation needs to be more comprehensive, and more focused on outputs- than the consultation previously undertaken.

10. Council has some key principles for meaningful consultation which include;
    - The purpose and objectives of the working group are clearly defined in a Terms of Reference document that is developed and adopted by the Tangata Whenua Working Group;
    - It will involve active listening from all representatives;
    - It will provide information where there is a lack of information;
    - It will promote recommendations developed by the Tangata Whenua Working Group;

- That it will require adequate resourcing to contribute in a technical, cultural and administrative manner;
- It is undertaken in a climate of manaakitanga.

11. It is also acknowledged that for meaningful consultation to be successful, these criteria, and any others, need to be discussed and agreed to by all those involved in the Tangata Whenua Working Group.

12. In establishing the Tangata Whenua Working Group, the group's membership will be revisited, as it would be remiss to assume membership would automatically be as before and only involve the previously constituted Hapu Integration Roopu (HIR).

13. With regards to timing, once the consent has been granted, Council will initially meet fortnightly for with the Tangata Whenua Working Group to reach agreement around meaningful consultation and development of the Terms of Reference. Hui between Council and Working Group will be a held at a minimum of 3 monthly until the short-term upgrade of the treatment process has been completed, and a minimum of 6 monthly until the hearings of any necessary replacement resource consents.

14. In respect of wider community and public engagement on alternative disposal options, it is anticipated that this will occur through the community consultation as part of the LTP.

15. Mr Tim Hegarty recommended the establishment of a Community Liaison Group. Other CLGs around the District are focused on keeping the community informed about operational matters and Council doesn't consider that a CLG in this instance is required. Instead of adopting Mr Hegarty recommendation, Council proposes to assess alternative discharge options with the Tangata Whenua Working Group and this being a collaborative approach giving effect to the Principles of the Treaty of Waitangi.

Dated July 2019

Barry Somers

Barry Somers

Assets Manager- 3 Waters

Asset Balances (Enquire) (F1ASR815)

Asset Numl	Description		Book Status	Insured Value	Current Asset Cost	Current Depreciation	Written Down Value	Depreciation Method	Depreciation Rate	Asset Activity
LAND										
197060	Land East Coast Sewage Treatment Plant		Commissioned	5,200.00	5,200.00	0.00	5,200.00	Not Applicable	0.0000	SEWR
197061	Land East Coast Sewage Treatment Plant 00085-172-01		Commissioned	27,000.00	27,000.00	0.00	27,000.00	Not Applicable	0.0000	SEWR
197062	Land East Coast Sewage Treatment Plant 00085-172-01		Commissioned	8,000.00	8,000.00	0.00	8,000.00	Not Applicable	0.0000	SEWR
197063	Land East Coast Sewage Wetlands 00085-181-01		Commissioned	22,000.00	22,000.00	0.00	22,000.00	Not Applicable	0.0000	SEWR
197064	Land East Coast Sewage Wetlands 00085-181-01		Commissioned	8,000.00	8,000.00	0.00	8,000.00	Not Applicable	0.0000	SEWR
197065	Land East Coast Sewage Wetlands access 00085-181-00		Commissioned	3,200.00	3,200.00	0.00	3,200.00	Not Applicable	0.0000	SEWR
197066	Land East Coast Sewage Wetlands access 00085-181-00		Commissioned	8,000.00	8,000.00	0.00	8,000.00	Not Applicable	0.0000	SEWR
PLANT										
308148	East Coast	East Coast Sewage Treatment Plant - Site 1 Outlet flowmeter,ABB Kent Magmaster 2007 20081203154824	Commissioned	11,954.98	6,997.75	402.64	6,595.11	Straight Line	6.2500	SEWR
308149	East Coast	East Coast Sewage Treatment Plant - Site 1 1km of fencing wire & battons 2008 20090518112852	Commissioned	7,569.97	4,541.98	278.76	4,263.22	Straight Line	6.6667	SEWR
308150	East Coast	East Coast Sewage Treatment Plant - Site 1 Taipa STP Pond 3 interpond pipework, 225NB uPVC 2009 20100419140518	Commissioned	11,979.10	9,283.81	275.69	9,008.12	Straight Line	3.2258	SEWR
308151	East Coast	East Coast Sewage Treatment Plant - Site 1 Taipa STP Pond 3 Inlet Manhole 1050 x 1300mm deep 2009 20100419140930	Commissioned	6,019.39	5,116.48	92.36	5,024.12	Straight Line	1.9608	SEWR
308152	East Coast	East Coast Sewage Treatment Plant - Site 1 Taipa STP Pond 3 sample jetty, timber, 6mlong x 1.2m wide 2009 20100419141331	Commissioned	3,719.38	2,882.52	85.60	2,796.92	Straight Line	3.2258	SEWR
308153	East Coast	East Coast Sewage Treatment Plant - Site 1 Taipa STP Pond 3 outlet pipework, 150NB, uPVC 2009 20100419142719	Commissioned	1,415.23	1,096.81	32.55	1,064.26	Straight Line	3.2258	SEWR
308154	East Coast	East Coast Sewage Treatment Plant - Site 1 Taipa STP Pond 3 discharge control valve, ISVL 2009 20100419143216	Commissioned	793.49	507.84	29.24	478.60	Straight Line	6.2500	SEWR
308155	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator No 1 Aeromix Class 1Tornedo Aspirating Aerator 2008 20100420131926	Commissioned	22,051.85	11,025.92	1,014.95	10,010.97	Straight Line	10.0000	SEWR
308156	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator No 2, Aeromix Class 1 Tornedo Aspirating Aerator 2008 20100420132148	Commissioned	22,051.85	11,025.92	1,014.95	10,010.97	Straight Line	10.0000	SEWR
308157	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator 1 Mounting Frame, 50NB SS 2010 20100420132603	Commissioned	3,221.40	2,190.56	118.59	2,071.97	Straight Line	5.8824	SEWR
308158	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator No 2 Mounting Frame, 50NB SS 2008 20100420132750	Commissioned	3,221.40	1,610.70	148.28	1,462.42	Straight Line	10.0000	SEWR
308159	East Coast	East Coast Sewage Treatment Plant - Site 1 STP Inlet Pipework SS 150mm, 2m 2008 20100625124859	Commissioned	2,479.68	1,859.76	57.11	1,802.65	Straight Line	3.3333	SEWR
308160	East Coast	East Coast Sewage Treatment Plant - Site 1 STP Inlet Pipework, 1.5m 100mm SS 2008 20100625125131	Commissioned	1,525.18	1,143.89	35.09	1,108.80	Straight Line	3.3333	SEWR
308161	East Coast	East Coast Sewage Treatment Plant - Site 1 Inlet Bypass Valve, Hawle 100NB Gate Valve 2008 20100625125709	Commissioned	1,126.20	675.72	41.48	634.24	Straight Line	6.6667	SEWR
308162	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 1 pipe , 1m Painted SS 2008 20100625130041	Commissioned	959.55	719.66	22.10	697.56	Straight Line	3.3333	SEWR
308163	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 1 suction ISVL 80NB Gate, AS Valve 2008 20100625130256	Commissioned	1,218.38	731.03	44.87	686.16	Straight Line	6.6667	SEWR
308164	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 1 delivery pipework, 3m painted stainless steel 2008 20100625130652	Commissioned	2,881.18	2,160.89	66.33	2,094.56	Straight Line	3.3333	SEWR
308165	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 1 delivery valve, ISVL, 80NB gate valve 2008 20100625130854	Commissioned	1,218.38	731.03	44.87	686.16	Straight Line	6.6667	SEWR
308166	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 1 NRV, Crane, 80NB, wafer check 2008 20100625131054	Commissioned	1,373.67	824.20	50.61	773.59	Straight Line	6.6667	SEWR
308167	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 2 suction pipework, 1m 80mm painted SS 2008 20100625131257	Commissioned	959.55	719.66	22.10	697.56	Straight Line	3.3333	SEWR
308168	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 2 suction valve, AS, 80NB Gate 2008 20100625131435	Commissioned	1,218.38	731.03	44.87	686.16	Straight Line	6.6667	SEWR
308169	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 2 delivery pipework, 2m, 80NB painted SS 2008 20100625131606	Commissioned	1,920.37	1,440.28	44.21	1,396.07	Straight Line	3.3333	SEWR
308170	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 2 delivery valve, ISVL AS, 80NB gate 2008 20100625131733	Commissioned	1,218.38	731.03	44.87	686.16	Straight Line	6.6667	SEWR
308171	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 2 NRV, Crane, 80NB, wafer check 2008 20100625131912	Commissioned	1,373.67	824.20	50.61	773.59	Straight Line	6.6667	SEWR
308172	East Coast	East Coast Sewage Treatment Plant - Site 1 Rising Main Pipework in Shed, 1.6m,Painted SS, 150NB 2008 20100625132146	Commissioned	1,984.76	1,488.57	45.67	1,442.90	Straight Line	3.3333	SEWR
308173	East Coast	East Coast Sewage Treatment Plant - Site 1 Rising Main pipework, 100NB painted SS, 0.5m, In shed 2008 20100625132341	Commissioned	1,454.48	1,090.86	33.49	1,057.37	Straight Line	3.3333	SEWR
308174	East Coast	East Coast Sewage Treatment Plant - Site 1 Rising main pipework in shed, 1m 80NB painted SS 2008 20100625132504	Commissioned	959.55	719.66	22.10	697.56	Straight Line	3.3333	SEWR
308175	East Coast	East Coast Sewage Treatment Plant - Site 1 STP PS Air relief valve, ARI, 50NB automatic 2008 20100625132633	Commissioned	2,116.07	1,269.64	77.92	1,191.72	Straight Line	6.6667	SEWR
308176	East Coast	East Coast Sewage Treatment Plant - Site 1 STP PS Air relief ISVL, 50NB, Kitz 2008 20100625132851	Commissioned	320.69	192.42	11.80	180.62	Straight Line	6.6667	SEWR
308177	East Coast	East Coast Sewage Treatment Plant - Site 1 STP PS pipe supports & hanging brackets 2008 20100625133019	Commissioned	2,330.39	1,747.79	53.64	1,694.15	Straight Line	3.3333	SEWR
308178	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 1 - 2 pipework 7.5m PSTC 200 2007 20100628142140	Commissioned	902.74	654.48	20.78	633.70	Straight Line	3.4483	SEWR
308179	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 1-2 ISVL, sluice valve AVK, 200NB gate valve 2007 20100628142356	Commissioned	2,337.39	1,308.94	86.06	1,222.88	Straight Line	7.1429	SEWR
308180	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 2-3 pipework, 8.5m 200NB PSTC 2007 20100628142715	Commissioned	973.59	705.85	22.42	683.43	Straight Line	3.4483	SEWR
308181	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 2-3, AVK 200NB ISVL 2007 20100628142937	Commissioned	2,337.39	1,308.94	86.06	1,222.88	Straight Line	7.1429	SEWR
308182	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 3 oxidation pond 37m 200NB PVC SN4 2007 20100628143155	Commissioned	2,322.45	1,683.77	53.43	1,630.34	Straight Line	3.4483	SEWR
308183	East Coast	East Coast Sewage Treatment Plant - Site 1 275m pipework 63OD MDPE PN12.5 2007 20100628143832	Commissioned	6,245.67	4,528.11	143.73	4,384.38	Straight Line	3.4483	SEWR
308184	East Coast	East Coast Sewage Treatment Plant - Site 1 Peet valve, 50NB ISVL 2007 20100628144010	Commissioned	1,392.59	779.85	51.27	728.58	Straight Line	7.1429	SEWR
308185	East Coast	East Coast Sewage Treatment Plant - Site 1 PH Temp transmitter, Endress & Hauser Liquiline M CM42 s/n A703A205G00 2008 20100628155623	Commissioned	6,940.77	2,443.92	449.93	1,993.99	Straight Line	20.0000	SEWR
308186	East Coast	East Coast Sewage Treatment Plant - Site 1 PH probe, Endress & Hauser Amperometric, s/n A600DE05000 2008 20100628155952	Commissioned	4,588.94	1,615.82	297.51	1,318.31	Straight Line	20.0000	SEWR
308187	East Coast	East Coast Sewage Treatment Plant - Site 1 Dissolved Oxygen Xmitter, Endress & Hauser Liquiline M CM42 s/n A8036405G00 2008 20100628160457	Commissioned	8,831.21	3,109.57	572.51	2,537.06	Straight Line	20.0000	SEWR
308188	East Coast	East Coast Sewage Treatment Plant - Site 1 O2 sensor, Endress & Hauser, Oxymax 2008 20100628160736	Commissioned	5,434.40	1,913.51	352.27	1,561.24	Straight Line	20.0000	SEWR
308189	East Coast	East Coast Sewage Treatment Plant - Site 1 Flow Meter Chamber 1500 x 1050 2008 20100909152649	Commissioned	21,028.13	15,771.10	483.94	15,287.16	Straight Line	3.3333	SEWR
308190	East Coast	East Coast Sewage Treatment Plant - Site 1 Flow Meter chamber lid, cast iron, 1500x1050 2008 20100909152805	Commissioned	2,523.32	1,892.49	58.07	1,834.42	Straight Line	3.3333	SEWR
308191	East Coast	East Coast Sewage Treatment Plant - Site 1 Screen Hydro Press inc screw & controls 2008 20100909154249	Commissioned	107,633.65	64,580.19	3,963.30	60,616.89	Straight Line	6.6667	SEWR
308192	East Coast	East Coast Sewage Treatment Plant - Site 1 30m 250 PSTC Inlet, Outlet, Bypass Pipework ,valve & reducer 2008 20100909155053	Commissioned	8,692.79	6,519.59	200.07	6,319.52	Straight Line	3.3333	SEWR
308193	East Coast	East Coast Sewage Treatment Plant - Site 1 Screen access platform, 2 level with handrails, 4150mm long x 1000mm wide, 3 steps, galv steel with webforge decking 201	Commissioned	4,144.56	3,315.65	95.39	3,220.26	Straight Line	3.1250	SEWR
308194	East Coast	East Coast Sewage Treatment Plant - Site 1 Screen electrical control cabinet, SS, 600x600x225mm hinged lockable SS 2010 20101123144725	Commissioned	2,550.08	1,530.05	117.38	1,412.67	Straight Line	8.3333	SEWR
308195	East Coast	East Coast Sewage Treatment Plant - Site 1 rock rretaining wall 20m long x 4.5m high 2010 20111101135342	Commissioned	14,857.34	11,885.87	341.94	11,543.93	Straight Line	3.1250	SEWR
308196	East Coast	East Coast Sewage Treatment Plant - Site 1 Flowmeter ABB Explorer, 150NB Magmaster, s/n 3K220000089739 2011 20120405080517	Commissioned	8,412.16	5,467.90	387.18	5,080.72	Straight Line	7.6923	SEWR
308197	East Coast	East Coast Sewage Treatment Plant - Site 1 Flow meter chamber, 1050 dia x 1200 deep, concrete 2011 20120405094637	Commissioned	3,330.90	2,747.99	76.64	2,671.35	Straight Line	3.0303	SEWR
308198	East Coast	East Coast Sewage Treatment Plant - Site 1 Flowmeter Chamber ISVL, keystone 150NB gate valve 2011 20120405095546	Commissioned	1,189.76	856.63	43.80	812.83	Straight Line	5.5556	SEWR
308199	East Coast	East Coast Sewage Treatment Plant - Site 1 10m x 1.2m high retaining wall. 2008 20121220083554	Commissioned	3,900.75	3,343.50	51.28	3,292.22	Straight Line	1.6667	SEWR
308200	East Coast	East Coast Sewage Treatment Plant - Site 1 AC-DC Switchboard, SS, Cabinet Type 2012 20130227090058	Commissioned	40,698.56	28,488.99	1,873.27	26,615.72	Straight Line	7.1429	SEWR
308201	East Coast	East Coast Sewage Treatment Plant - Site 1 Highlift Pump 1 VSD Telemechanique Altivar61 s/n 6W1052020044 2012 20130227090806	Commissioned	10,384.03	7,268.82	477.96	6,790.86	Straight Line	7.1429	SEWR
308202	East Coast	East Coast Sewage Treatment Plant - Site 1 Highlift pump 2 VSD telemchanique Altivar61, s/n No 6W1111020032 2012 20130227111602	Commissioned	10,384.03	7,268.82	477.96	6,790.86	Straight Line	7.1429	SEWR
308203	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator 1 soft start, Altistart ATS22D17Q 2012 20130227112116	Commissioned	3,127.68	2,189.38	143.95	2,045.43	Straight Line	7.1429	SEWR
308204	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator 2 soft start, Altistart ATS22D17Qs/n 881041552020 2012 20130227112717	Commissioned	3,127.68	2,189.38	143.95	2,045.43	Straight Line	7.1429	SEWR
308205	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator 4 Soft Start Altistart ATS22D17Qs/n 881041552013 2012 20130227113738	Commissioned	3,127.68	2,189.38	143.95	2,045.43	Straight Line	7.1429	SEWR
308206	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator 5 Soft Start, Altistart ATS 22D17Qs/n 881041552013 2012 20130227114436	Commissioned	3,127.68	2,189.38	143.95	2,045.43	Straight Line	7.1429	SEWR
308207	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator 6 Soft Start, Altistart ATS22D17Qs/n881027173024 2012 20130227114718	Commissioned	3,127.68	2,189.38	143.95	2,045.43	Straight Line	7.1429	SEWR
308208	East Coast	East Coast Sewage Treatment Plant - Site 1 PLC Touch Panel Red Lion Model G310 s/n C21049105 2012 20130227115207	Commissioned	8,865.88	6,206.12	408.09	5,798.03	Straight Line	7.1429	SEWR
308209	East Coast	East Coast Sewage Treatment Plant - Site 1 PLC Communication Box 1 Red Lion Model CSMTRV2, s/n 20112 2012 20130227122028	Commissioned	1,363.32	954.32	62.75	891.57	Straight Line	7.1429	SEWR
308210	East Coast	East Coast Sewage Treatment Plant - Site 1 PLC Communication Box 2, red Lion Model CS1N18s/n 14111 2012 20130227124703	Commissioned	984.86	689.40	45.32	644.08	Straight Line	7.1429	SEWR
308211	East Coast	East Coast Sewage Treatment Plant - Site 1 Entrance gate galv 4m long x 1.1m high, 5 metres 150 x 50 tanalised timber fencing 2012 20130409140509	Commissioned	1,802.42	1,369.84	66.36	1,303.48	Straight Line	5.2632	SEWR
308212	East Coast	East Coast Sewage Treatment Plant - Site 1 Aerator 3 VSD ABB ACS550-01-015A s/n 3153605096 7.5kw 2016 20160829102017	Commissioned	2,977.29	2,679.56	137.03	2,542.53	Straight Line	5.5556	SEWR
308213	East Coast	East Coast Sewage Treatment Plant - Site 1 1108m Telephone Cable,includes MDPE 32NB cable duct. 2017 20170823104524	Commissioned	24,677.55	23,443.68	1,135.88	22,307.80	Straight Line	5.2632	SEWR
308214	East Coast	East Coast Sewage Treatment Plant - Site 1 1200m telephone line plus ducting 2017 20170823111905	Commissioned	24,677.55	23,443.68	1,135.88	22,307.80	Straight Line	5.2632	SEWR

308215	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 3 waveband, concrete 155m x 1.2m w , 100mm thick 2017 20180409144857	Commissioned	52,113.89	50,811.04	1,199.31	49,611.73	Straight Line	2.5641 SEWR
308216	East Coast	East Coast Sewage Treatment Plant - Site 1 General Sonde Setup , Hydrolab HL4 sonde, s/n 18008h400952, includes Custom Carry Case 2018 20180417132953	Commissioned	7,760.36	7,760.36	1,020.55	6,739.81	Straight Line	14.2857 SEWR
308217	East Coast	East Coast Sewage Treatment Plant - Site 1 General Sonde DO Sensor, Hydrolab HL4 2018 20180417141405	Commissioned	2,823.43	2,823.43	371.32	2,452.11	Straight Line	14.2857 SEWR
308218	East Coast	East Coast Sewage Treatment Plant - Site 1 General Sonde PH/ORP Probe, Hydrolab HL4 2018 20180417143158	Commissioned	1,603.67	1,603.67	210.90	1,392.77	Straight Line	14.2857 SEWR
308219	East Coast	East Coast Sewage Treatment Plant - Site 1 General Sonde, Hydrolab HL4 50m marine cable s/n 1800220001263 2018 20180417144603	Commissioned	2,239.44	2,239.44	294.49	1,944.95	Straight Line	14.2857 SEWR
308220	East Coast	East Coast Sewage Treatment Plant - Site 1 General Sonde, Hydrolab HL4 Comms Module s/n 17304c300097 2018 20180417150342	Commissioned	449.92	449.92	59.17	390.75	Straight Line	14.2857 SEWR
308221	East Coast	East Coast Sewage Treatment Plant - Site 1 General Sonde Conductivity Sensor, Hydrolab HL4 2018 20180420110849	Commissioned	774.24	774.24	101.79	672.45	Straight Line	14.2857 SEWR
308222	East Coast	East Coast Sewage Treatment Plant - Site 1 Fire extinguisher, Wormald, 3.5 kg CO2 type 1995 WW_plant-0342	Commissioned	376.31	42.97	13.21	29.76	Straight Line	33.3333 SEWR
308223	East Coast	East Coast Sewage Treatment Plant - Site 1 Level control, Omron, model 61F-G electrodes, 4 off 1989 WW_plant-0343	Commissioned	3,596.18	240.17	110.55	129.62	Straight Line	50.0000 SEWR
308224	East Coast	East Coast Sewage Treatment Plant - Site 1 Flow sensor , SagiNoMiya, model FQS-U30G 1989 WW_plant-0349	Commissioned	899.04	92.10	28.27	63.83	Straight Line	33.3333 SEWR
308227	East Coast	East Coast Sewage Treatment Plant - Site 1 Telemetry, Computer Engineering, RMU-2, whip aerial 2004 WW_plant-0357	Commissioned	8,364.65	2,069.24	380.96	1,688.28	Straight Line	20.0000 SEWR
308228	East Coast	East Coast Sewage Treatment Plant - Site 1 Telemetry, Computer Engineering, RMU-2, whip aerial, Relay 1 2004 WW_plant-0358	Commissioned	8,364.65	2,983.95	343.36	2,640.59	Straight Line	12.5000 SEWR
308229	East Coast	East Coast Sewage Treatment Plant - Site 1 Sindico electrical box with electrical panels 2004 WW_plant-0365	Commissioned	15,425.63	8,111.90	466.71	7,645.19	Straight Line	6.2500 SEWR
308230	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 1 inlet walkway. Timber, 3.6m long x 1.0m wide 1989 WW_plant-0366	Commissioned	2,044.45	593.38	45.51	547.87	Straight Line	8.3333 SEWR
308231	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 2 inlet walkway. Timber, 3.6m long x 1.0m wide 1989 WW_plant-0367	Commissioned	2,044.45	593.38	45.51	547.87	Straight Line	8.3333 SEWR
308232	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 2 surface aerator 3, Unknown make/model 1989 WW_plant-0370	Commissioned	14,609.48	2,973.85	391.07	2,582.78	Straight Line	14.2857 SEWR
308233	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 2 surface aerator 4, Unknown make/model 1989 WW_plant-0371	Commissioned	14,609.48	2,973.85	391.07	2,582.78	Straight Line	14.2857 SEWR
308234	East Coast	East Coast Sewage Treatment Plant - Site 1 Pressure measurement (pump 1 discharge), Unknown gauge, 0 - 250 psi range 1989 WW_plant-0373	Commissioned	762.62	9.59	8.82	0.77	Straight Line	100.0000 SEWR
308235	East Coast	East Coast Sewage Treatment Plant - Site 1 Pressure measurement (pump 2 discharge), Unknown gauge, 0 - 250 psi range 1989 WW_plant-0374	Commissioned	762.62	9.59	8.82	0.77	Straight Line	100.0000 SEWR
308236	East Coast	East Coast Sewage Treatment Plant - Site 1 Entrance gate 2. Galv stl, 3.5m wide x 1.1m high 1989 WW_plant-0376	Commissioned	545.19	110.98	14.61	96.37	Straight Line	14.2857 SEWR
308237	East Coast	East Coast Sewage Treatment Plant - Site 1 Perimeter fence 1. Timber post with 1 wire, 1.8km x 1.1m high 1989 WW_plant-0377	Commissioned	79,427.14	16,167.86	2,126.21	14,041.65	Straight Line	14.2857 SEWR
308238	East Coast	East Coast Sewage Treatment Plant - Site 1 Perimeter fence 2. Timber & 7 wire, 1.3km x 1.1m high 1989 WW_plant-0378	Commissioned	166,111.52	33,812.98	4,446.60	29,366.38	Straight Line	14.2857 SEWR
308239	East Coast	East Coast Sewage Treatment Plant - Site 1 Site access. Gravel, 1.3km x 2.5m wide 1989 WW_plant-0379	Commissioned	44,296.41	12,856.65	986.25	11,870.40	Straight Line	8.3333 SEWR
308240	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 1 wharf. Timber, 8.5m long x 0.75m wide 1989 WW_plant-0382	Commissioned	3,748.16	1,087.87	83.45	1,004.42	Straight Line	8.3333 SEWR
308241	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 1 wharf. Timber, 4.6m x 1.0m wide 1989 WW_plant-0383	Commissioned	2,555.56	741.73	56.90	684.83	Straight Line	8.3333 SEWR
308242	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 2 wharf. Timber, 4.6m x 1.0m wide 1989 WW_plant-0384	Commissioned	2,555.56	741.73	56.90	684.83	Straight Line	8.3333 SEWR
308243	East Coast	East Coast Sewage Treatment Plant - Site 1 Concrete pad 1.8x2.6x0.1 2004 WW_plant-0386	Commissioned	1,541.90	1,002.23	35.48	966.75	Straight Line	3.8462 SEWR
308244	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond inlet 250mm dia uPVC 2004 WW_plant-0387	Commissioned	700.14	455.09	16.13	438.96	Straight Line	3.8462 SEWR
308245	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond outlet 250mm dia uPVC 2004 WW_plant-0388	Commissioned	1,400.28	910.18	32.22	877.96	Straight Line	3.8462 SEWR
308246	East Coast	East Coast Sewage Treatment Plant - Site 1 Rubbish Bin 2004 WW_plant-0389	Commissioned	252.15	89.95	10.31	79.64	Straight Line	12.5000 SEWR
308247	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 1 inlet screen. Stainless steel, 1.3m long x 0.85m wide with 10mm apertures 1989 WW_plant-0391	Commissioned	1,798.09	510.70	39.16	471.54	Straight Line	8.3333 SEWR
308248	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 2 inlet screen. Stainless steel, 1.3m long x 0.85m wide with 10mm apertures 1989 WW_plant-0392	Commissioned	1,798.09	510.70	39.16	471.54	Straight Line	8.3333 SEWR
308249	East Coast	East Coast Sewage Treatment Plant - Site 1 Main building. Corrogated steel walls and roof, 4.55m x 4.25m x 2.5m high 1989 WW_plant-0393	Commissioned	7,155.57	2,420.43	148.51	2,271.92	Straight Line	6.6667 SEWR
308250	East Coast	East Coast Sewage Treatment Plant - Site 1 Water tank structure. Timber, 1.9m x 1.7m x 1.8m high 1989 WW_plant-0394	Commissioned	3,407.42	988.97	75.86	913.11	Straight Line	8.3333 SEWR
308251	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 1 waveband. Cast insitu conc, 535m long x 2.0m wide 1989 WW_plant-0395	Commissioned	40,105.28	11,640.21	892.93	10,747.28	Straight Line	8.3333 SEWR
308252	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 1 inlet structure. Conc riser, 1.35m dia x 1.5m deep 1989 WW_plant-0396	Commissioned	4,259.27	1,440.73	88.42	1,352.31	Straight Line	6.6667 SEWR
308253	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 1 waveband. Cast insitu concrete, 144m long x 2.0m wide 1989 WW_plant-0397	Commissioned	19,626.71	5,696.48	437.01	5,259.47	Straight Line	8.3333 SEWR
308254	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 2 inlet structure. Conc riser, 1.35m dia x 1.5m deep 1989 WW_plant-0398	Commissioned	4,259.27	1,440.73	88.42	1,352.31	Straight Line	6.6667 SEWR
308255	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 2 waveband. Cast insitu concrete, 144m long x 2.0m wide 1989 WW_plant-0399	Commissioned	19,626.71	5,696.48	437.01	5,259.47	Straight Line	8.3333 SEWR
308256	East Coast	East Coast Sewage Treatment Plant - Site 1 Water tank. Glass reinforced plastic, 1.7m dia x 0.7m deep 1989 WW_plant-0401	Commissioned	1,874.08	633.92	38.90	595.02	Straight Line	6.6667 SEWR
308257	East Coast	East Coast Sewage Treatment Plant - Site 1 Pond 1. Earthbanks 1989 WW_plant-0402	Commissioned	102,222.47	45,222.85	1,809.98	43,412.87	Straight Line	4.3478 SEWR
308258	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 1. Earth banks, 48m x 24m 1989 WW_plant-0403	Commissioned	58,777.92	26,003.14	1,040.73	24,962.41	Straight Line	4.3478 SEWR
308259	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 2. Earth banks, 48m x 24m 1989 WW_plant-0404	Commissioned	58,777.92	26,003.14	1,040.73	24,962.41	Straight Line	4.3478 SEWR
308260	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 3. Earth banks, 48m x 24m 1989 WW_plant-0405	Commissioned	58,777.92	26,003.14	1,040.73	24,962.41	Straight Line	4.3478 SEWR
308261	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 1 electrical chamber. Conc riser, 0.6m dia x 0.9m deep with galv stl lid, 0.8m dia 1989 WW_plant-0406	Commissioned	2,555.56	741.73	56.90	684.83	Straight Line	8.3333 SEWR
308262	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 2 electrical chamber. Conc riser, 0.6m dia x 0.9m deep with galv stl lid, 0.8m dia 1989 WW_plant-0407	Commissioned	2,555.56	741.73	56.90	684.83	Straight Line	8.3333 SEWR
308263	East Coast	East Coast Sewage Treatment Plant - Site 1 Lagoon 3 electrical chamber. Conc riser, 0.6m dia x 0.9m deep with galv stl lid, 0.8m dia 1989 WW_plant-0408	Commissioned	2,555.56	741.73	56.90	684.83	Straight Line	8.3333 SEWR
308264	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland replace & repair fence Taipa Marsh 200m SSide 400m NSide 2008 20080414161501	Commissioned	6,514.91	3,908.95	239.87	3,669.08	Straight Line	6.6667 SEWR
308265	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Stream Bank erosion protection, rock spall 2008 20091105085237	Commissioned	6,689.33	4,013.60	246.33	3,767.27	Straight Line	6.6667 SEWR
308266	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Outlet headwall, concrete 2008 20091105085426	Commissioned	705.27	564.22	13.00	551.22	Straight Line	2.5000 SEWR
308267	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Marsh Site Flowmeter Chamber, Cover & Lid concrete 1050 dia x 1800 deep 2011 20120405102512	Commissioned	3,749.47	3,093.31	86.28	3,007.03	Straight Line	3.0303 SEWR
308268	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Marsh ,Flowmeter, ABB Explorer, 100NB Magflow, 100-150NB PVC reducer, 2011 20120405103210	Commissioned	6,337.07	4,119.10	291.67	3,827.43	Straight Line	7.6923 SEWR
308269	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland 280m Flowmeter cable to solar panel,280m cable ducting 40NB Orange PVC 2011 20120405110504	Commissioned	6,020.97	3,913.63	277.12	3,636.51	Straight Line	7.6923 SEWR
308270	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Flowmeter chmber fence, timber, 4.8m x 4.8m 2011 20120405111006	Commissioned	1,965.51	1,415.16	72.39	1,342.77	Straight Line	5.5556 SEWR
308271	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Wetlands Flow meter Transmitter ABB Kent s/n 3K2200000145837 2013 20130717114119	Commissioned	3,693.64	2,770.23	170.04	2,600.19	Straight Line	6.6667 SEWR
308272	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland wetland plants 2006 2006 20130926152229	Commissioned	46,647.68	26,312.93	1,513.88	24,799.05	Straight Line	6.2500 SEWR
308273	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland 1313m Eastern Boundary Fence post and 5 wire electric, 5m culvert railing 2018 20180703124136	Commissioned	24,845.02	24,845.02	914.81	23,930.21	Straight Line	4.0000 SEWR
308274	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland 698m Western Boundary Fence post and 5 wire electric, 5m culvert railing 2018 20180703125439	Commissioned	26,814.26	26,814.26	987.39	25,826.87	Straight Line	4.0000 SEWR
308275	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Telemetry, Computer Engineering, RMU-2, whip aerial, solar powered 2004 WW_plant-0413	Commissioned	10,165.77	2,514.80	463.01	2,051.79	Straight Line	20.0000 SEWR
308276	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Telemetry solar panel, Solarex, mounted on telemetry cabinet 2004 WW_plant-0414	Commissioned	2,788.11	1,812.27	64.17	1,748.10	Straight Line	3.8462 SEWR
308277	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Perimeter fence. Timber post and 7 wire, 500m x 1.1m high 1989 WW_plant-0415	Commissioned	29,814.89	6,069.00	798.14	5,270.86	Straight Line	14.2857 SEWR
308278	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Entrance gate. Galv stl, 3.5m wide x 1.1m high 1989 WW_plant-0416	Commissioned	545.19	110.98	14.61	96.37	Straight Line	14.2857 SEWR
308279	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Gate. Timber, 3.5m wide x 1.1m high 1989 WW_plant-0417	Commissioned	545.19	110.98	14.61	96.37	Straight Line	14.2857 SEWR
308280	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Site access. Gravel, 500m x 3.0m wide 1989 WW_plant-0418	Commissioned	17,037.08	4,944.86	379.34	4,565.52	Straight Line	8.3333 SEWR
308281	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 1 outlet pipe. 250mm dia uPVC pipe 1989 WW_plant-0419	Commissioned	2,149.85	834.73	42.70	792.03	Straight Line	5.5556 SEWR
308282	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 2 outlet pipe. 250mm dia uPVC pipe 1989 WW_plant-0420	Commissioned	2,149.85	834.73	42.70	792.03	Straight Line	5.5556 SEWR
308283	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 3 outlet pipe. 250mm dia uPVC pipe 1989 WW_plant-0421	Commissioned	2,149.85	834.73	42.70	792.03	Straight Line	5.5556 SEWR
308284	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 4 outlet pipe. 250mm dia uPVC pipe 1989 WW_plant-0422	Commissioned	2,149.85	834.73	42.70	792.03	Straight Line	5.5556 SEWR
308285	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 1 wharf. Timber, 4.6m long x 1.05m wide 1989 WW_plant-0423	Commissioned	2,555.56	741.73	56.90	684.83	Straight Line	8.3333 SEWR
308286	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 2 wharf. Timber, 6.1m long x 1.05m wide 1989 WW_plant-0424	Commissioned	3,407.42	988.97	75.86	913.11	Straight Line	8.3333 SEWR
308287	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 3 wharf. Timber, 5.8m long x 1.05m wide 1989 WW_plant-0425	Commissioned	3,237.04	939.52	72.08	867.44	Straight Line	8.3333 SEWR
308288	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 4 wharf. Timber, 5.5m long x 1.05m wide 1989 WW_plant-0426	Commissioned	2,555.56	741.73	56.90	684.83	Straight Line	8.3333 SEWR
308289	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 1. Earth banks, 55m x 53m 1989 WW_plant-0427	Commissioned	148,989.25	65,912.31	2,638.04	63,274.27	Straight Line	4.3478 SEWR
308290	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 2. Earth banks, 55m x 53m 1989 WW_plant-0428	Commissioned	148,989.25	65,912.31	2,638.04	63,274.27	Straight Line	4.3478 SEWR
308291	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 3. Earth banks, 53m 53m 1989 WW_plant-0429	Commissioned	148,989.25	65,912.31	2,638.04	63,274.27	Straight Line	4.3478 SEWR
308292	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 4. Earth banks, 53m x 40m 1989 WW_plant-0430	Commissioned	108,355.82	47,936.22	1,918.57	46,017.65	Straight Line	4.3478 SEWR
308293	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 2 inlet channel. Rock and cement, 6.0m long x 0.7m wide x 0.7m deep with 250mm PVC pipe 1989 WW_pla	Commissioned	5,537.05	375.79	172.96	202.83	Straight Line	50.0000 SEWR
308294	East Coast	East Coast Sewage Treatment Plant -Site 2 - Wetland Pond 4 outlet channel. Rock and cement, 3.0m long x 0.7m wide x 0.8m deep 1989 WW_plant-0432	Commissioned	2,555.56	213.18	65.43	147.75	Straight Line	33.3333 SEWR
311154	East Coast	East Coast Sewage Treatment Plant - Site 1 VSD on Blower, ABB ACS580, 11kW, S/N 4188A2411	Commissioned	2,701.78	2,701.78	68.11	2,633.67	Straight Line	10.0000 SEWR
318727	East Coast	East Coast Sewage Treatment Plant - Site 1 Pump 2 motor, Teco, 2960rpm, 30kW	Commissioned	5,659.41	5,659.41	0.00	5,659.41	Straight Line	5.0000 SEWR
805				**2,186,964.65**	**1,098,483.07**	**56,665.65**	**1,041,817.42**		**1,439.6112**

Far North District Council
Te Kaunihera o Tai Tokerau ki te Raki

LONG TERM PLAN 2018-28

WASTEWATER ASSET MANAGEMENT PLAN

Part C: Managing our assets

A1973623

CONTENTS

1. SUMMARY

Far North District Council (FNDC) provides wastewater services to seventeen communities within the District. This service is essential for Council to deliver its District Vision - He Whenua Rangatira – A District of Sustainable Prosperity and Wellbeing, by protecting public health and freshwater and coastal environment, which enables recreational use, fishing and shellfisheries.

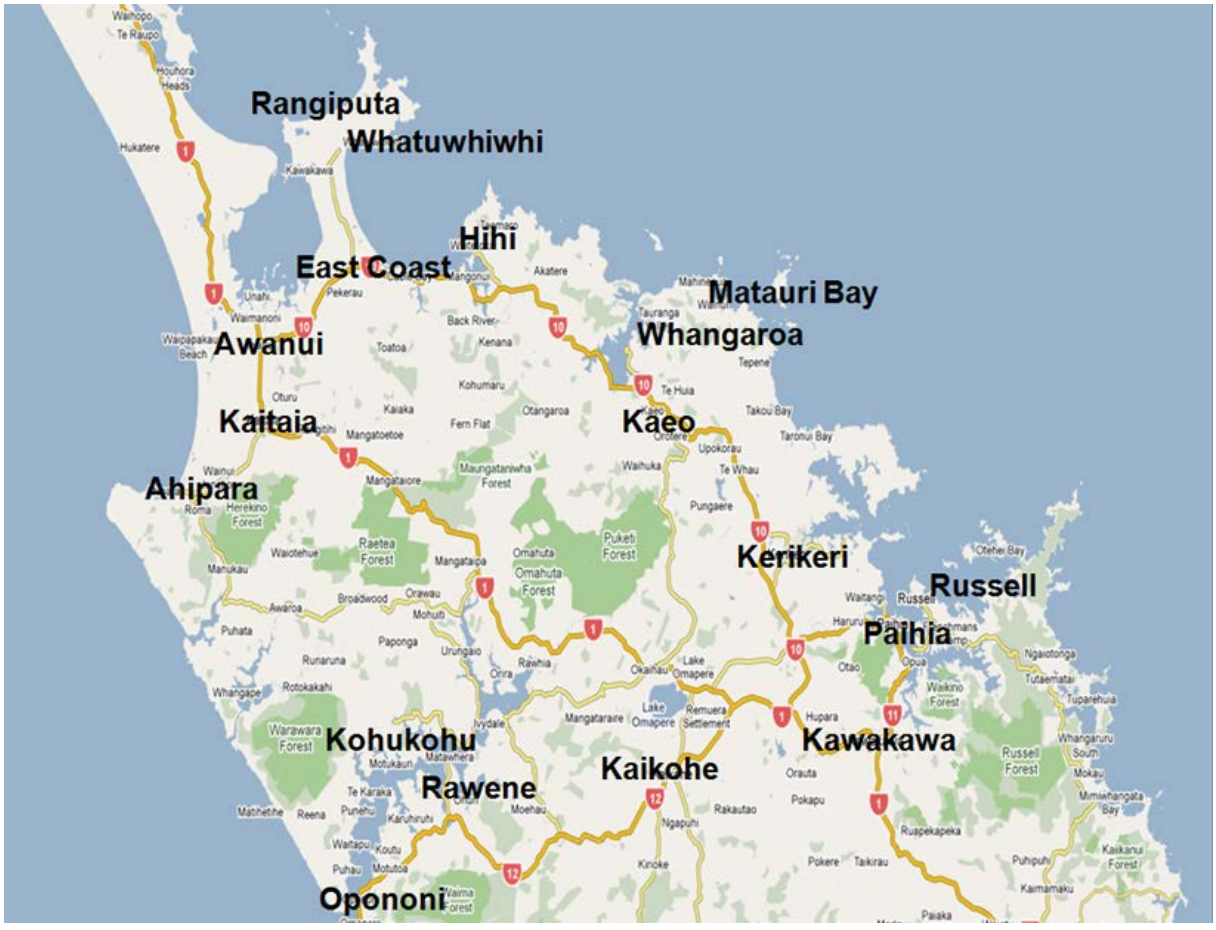
Under the Local Government Act 2002 (LGA), the wastewater service is considered one of the core activities of Council.

1.1. Activity description

The wastewater infrastructure comprising treatment plants, pumping stations and reticulation systems, contribute to the council's vision by providing for the collection and treatment and safe disposal of wastewater. The wastewater activity also includes the treatment and disposal of septic tank wastes from properties not connected to the urban sewerage networks.

This activity is one of the core activities of Council as confirmed by statute in the LGA. Generally, the LGA requires the continued operation of any sewerage system that Council operated at the time the LGA was passed and the continued operation of any new systems that Council constructs after that date.

Figure 1: Location of FNDC wastewater treatment schemes



The summary of the wastewater scheme is shown in Table 1.

Table 1: District wastewater asset summary

	Serviced population	Annual wastewater treated (m^3/year)	Asset replacement value
Opononi	908	77,020	5,322,755
Rawene	564	56,080	4,749,634
Kohukohu	207	11,930	2,267,813
Kaikohe	3803	765,880	19,097,300
Kawakawa	1328	290,490	10,389,886
Paihia	4678	440,930	32,492,024
Russell	1288	83,110	11,046,786
Kerikeri	2495	216,450	13,405,070
Kaeo	420	81,740	4,646,953
Whangaroa	35	-	415,084
Matauri Bay	-	-	726,998
Hihi	397	177,510	2,804,029
East Coast (Taipa)	3370	197,100	19,957,069
Whatuwhiwhi	1748	41,990	12,652,786
Rangiputa	258	7,170	1,261,325
Awanui and Kaitaia	5895	957,510	30,257,721
District-wide	-	-	799,438
Ahipara	1212	74,700	7,699,735
Total	28,606	3,479,610	179,992,409

1.2. Activity rationale

The primary driver for a reticulated wastewater system is to provide sanitation and environmental protection. This aligns with Council's vision of attaining sustainable prosperity and community wellbeing. For further details on Council's Community Outcomes, refer to 1.4 Community Outcomes.

Our wastewater treatment plants, pumping stations and reticulation systems contribute by controlling the quality of effluent and minimising the risk of sewage overflows and spills. Our work programme is driven by community expectations about the quality of our environment and the need for sustainability by reducing our overall impact on the environment, as well as the requirement for statutory compliance with the Resource Management Act 1991 (RMA) both now and in the future.

1.3. Strategic goals

Whilst Council does not have a specific vision relating to just wastewater collection, treatment and disposal, reticulated wastewater systems enable Council to achieve its vision and mission of enabling culturally strong, healthy, vibrant and resilient, prosperous, connected people and communities, as stated in the Council's vision - He Whenua Rangatira – A District of Sustainable Prosperity and Wellbeing.

We have a number of strategic goals for the wastewater service that we aim to achieve within the life of this plan. These are:

Priority 1: Reducing the volume and frequency of wet weather overflow in Kaitaia.

Priority 2: Expanding the Kerikeri reticulated area to service the central urban area of Kerikeri and upgrade the treatment plant to meet new resource consent effluent discharge limits.

Priority 3: Reducing the ammonia levels in the effluent discharge from the Paihia wastewater treatment plant

Priority 4: Continued development of a sludge management strategy. Pond desludging will progress in line with this new strategy. Ponds that contain high levels of sludge include Kaitaia, Kaikohe, Kawakawa, Kaeo and Rawene.

Physical works are planned to improve the wastewater networks in Kaitaia for overflow reduction, as well as Kerikeri for population growth. Also, wastewater treatment plants at Kerikeri and Paihia will undergo upgrades to improve the quality of the effluent discharge.

The 2015/16 WaterNZ benchmarking showed Council's wastewater schemes were among the least affordable of the 50 Councils surveyed. To avoid worsening this situation, wherever possible capital investment will only be sought where the assets are at the end of their useful lives or, when improved Levels of Service (LoS) are required or, where the investment will deliver a significant saving in operational or maintenance costs. This will be demonstrated by development of robust business cases of options prior to the commitment to capital investment.

Our Asset Management Plan (AMP) looks at a ten year period and, the plan is reviewed every three years, ensuring the goals remain relevant and support LoS.

1.4. Community Outcomes

FNDC developed several Community Outcomes as part of its Long Term Plan (LTP). Most of these can relate to wastewater activities.

	**Liveable communities that are healthy, safe, connected and sustainable**	**Whakatauki** He tina ki runga, he tāmore ki raro. Contentment above, firmly rooted below.
	**'Can do' communities prepared for the unexpected**	**Whakatauki** Te toka tū moana. The boulder standing in the ocean.
	**Proud, vibrant communities**	**Whakatauki** Te pā harakeke. A community of harakeke plants.
	**Prosperous communities supported by a growing economy**	**Whakatauki** He kūaka marangaranga, kōtahi te manu i tau ki te tāhuna, ka tau, ka tau, tau atu e. Godwits rise and flock together in the air, one bird comes down to land on the sandbank to feed, then another, then another and another.
	**A wisely managed and treasured environment**	**Whakatauki** Whatungarongaro te tangata, toitu te whenua. As man disappears, the land remains.

1.5. Key service drivers

Council provides and maintains wastewater schemes on behalf of the communities requiring the services and who are prepared to pay the associated costs. The objective of the service is to:

- Provide efficient and safe wastewater collection, treatment and disposal methods that are best value and are environmentally; economically, socially and culturally sustainable.
- Ensure that the present needs of the community are met without constraining future generations.

Council has both statutory and community reasons for the continued delivery of the service. These can be summarised as

- **Public Health and Sanitation Service** – Benefits to the community from the management of the wastewater and prevention of related harmful diseases.
- **Statutory** – Requirements under the LGA 2002 (amended 2010); Health Act 1956; Resource Management Act 1991.
- **Community expectation** – Public expectation for the provision of the service
- **Community support and wellbeing** – basic requirements to maintain a healthy community and environment
- **Links to community outcomes** – A community that has access to effective services.

1.6. Key issues

Table 2 presents the key issues identified for wastewater assets.

Table 2: Key issues and challenges

Key issues	Implications	Section in AMP for further info
High growth in Kerikeri and Bay of Islands area, stagnant growth in rest of the district	Wastewater infrastructure affordability issue as significant capacity upgrades necessary for Kerikeri and Bay of Islands area Long term planning for Kerikeri infrastructure needs to be lead and aligned with the updated District Plan	3.4 and 4.4.2
Worsening inflow and infiltration issues resulting in more frequent spills	Worsening inflow and infiltration issues will result in further reduction of network conveyance capacity, as higher stormwater volume enters the wastewater network. Short term response will require network modelling be done to increase understanding of the network's performance and issues, increased maintenance in wastewater network to minimise overflow risks, and community education about water conservation and what to flush in toilets. In the medium to longer term, an improved and risk-based renewal program needs to be in place to address the hot spots in the wastewater networks.	4.4.2
Aging infrastructure reaching its end of useful life	Risk of service interruption is likely to increase as the infrastructure ages and asset condition deteriorates. Short term response is to improve accuracy of asset condition data, which enables Council to more effectively plan for its medium and long term asset renewal and replacement programme.	4.2 & 4.3
Climate change is increasing the frequency of droughts and significant storms resulting in higher wastewater flows.	The increase in storm frequency and intensity will result in worsening inflow and infiltration issues. Increased frequency of droughts and storms mean higher fluctuations in operating conditions, and greater requirement for treatment plants to cope with higher variances between peak demand periods and low flows. This will require consideration of resilience measures to protect against extremes, such as buffering.	6.4
Higher discharge standards required by resource consent	To meet these higher standards would normally require a significant capital improvement program. This can significantly affect the community's ability to afford the wastewater scheme.	2.5, 2.6, 2.7.4

Key issues	Implications	Section in AMP for further info
Sludge accumulation in pond-based wastewater plants	Historical sludge accumulation reduces the biological treatment capacity of pond-based treatment plants, in turn lowering the effluent quality for discharge. Short term response will require Council to develop a district-wide sludge management strategy to prioritise the future expenditure to remove sludge in the medium term.	2.7.4, 2.8
Affordability	Smaller schemes tend to be more expensive to invest and operate than larger schemes, on a per property scale. Significant asset new and replacement programs can affect the community's ability to afford the wastewater scheme. Lower LoS may need to be adopted.	1.3, 4.6, 5.4.1
Minimising environmental impacts	Failing On-Site Disposal (OSD) systems may require extension of existing reticulation schemes. Affordability is likely to be a constraint in this respect.	3.5, 3.6

1.7. Significant negative and positive effects on the activity

The purpose of identifying significant positive and negative effects is to ensure that activities are conducted in accordance with the principles of sustainability. Council is committed to the minimisation of any detrimental effects of the wastewater activity, wherever possible and practical, and fully supports the initiatives of demand management.

Table 3: Significant positive effects and mitigation

Significant positive effect	Mitigation measure	AMP reference
Improved community health through the reduction of waterborne diseases.	Effective treatment of wastewater	4.3.4, 6.2
Maintaining the natural environment and waterways	Effective treatment of wastewater and transport of wastewater	1.2, 6.2
Sewage spills to water can affect public access for bathing and recreational shellfish collection, as well as commercial oyster farming and tourism.	Continued renewal and improvements of assets together with improved monitoring and management practices targeting and measuring the agreed LoS	1.6, 4.1.2
Inadequate infrastructure (not meeting LoS) may cause difficulty and hardship in the community.	Implementing programs of plant and system improvements and reducing inflow and infiltration into the reticulation system. The development of a demand management plan to ensure the system has sufficient capacity for expansion.	4.5.1, 4.5.2
The cost of operating and/or improving the infrastructure may exceed the community's ability to pay.	Consulting with the community on costs and options for LoS via the LTP process. Review of the rating policy by Council.	5.4.2, 7.1

Significant positive effect	Mitigation measure	AMP reference
Acquisition of Resource Consent renewals is subject to environmental and cultural considerations in a manner that attracts significant interest and opinion from the community.	Community is engaged in consultation throughout the renewal process with opportunity to formally submit under the RMA.	4.1.4

1.8. Our management structure for wastewater

The wastewater activity is governed, managed, delivered and monitored across a number of council departments.

Figure 2: Wastewater management structure for delivering wastewater services

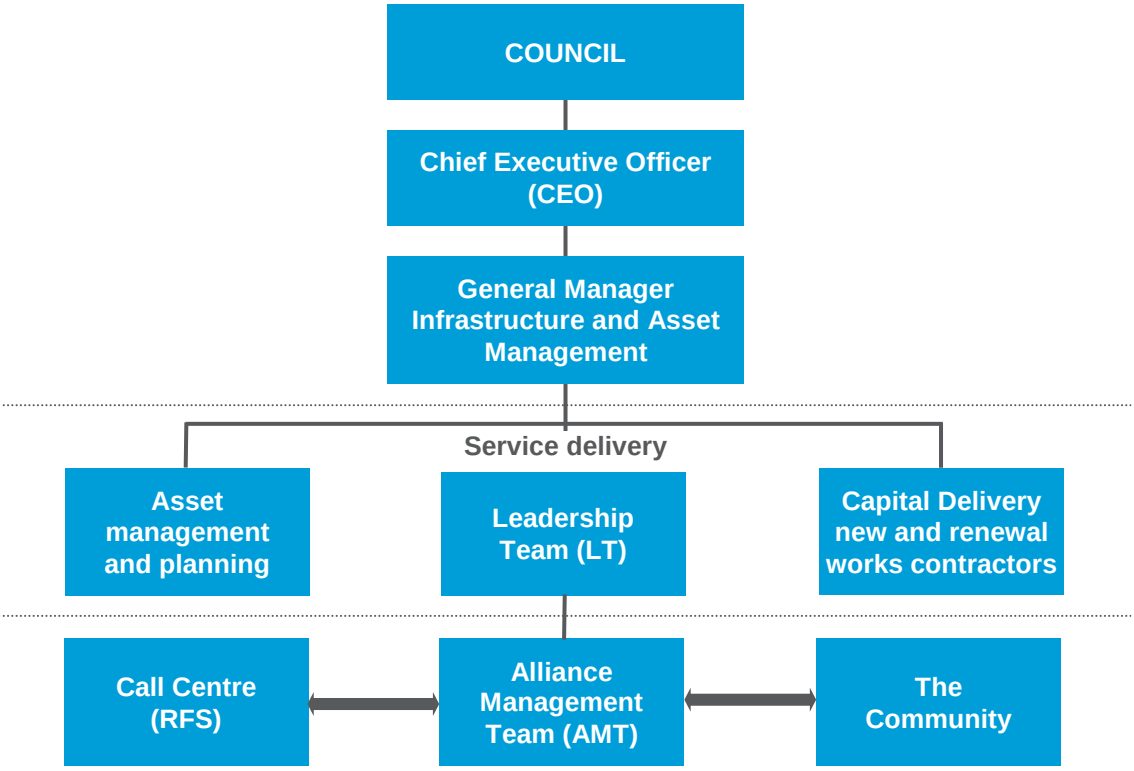


Table 4: Wastewater network service providers

Party	Role
Mayor and Councillors	Provide the governance role. Determine LoS, consult with communities, and approve expenditures.
Chief Executive Officer	Responsible for the FNDC staff involved with the wastewater activity and accountable for delivery of the wastewater service
General Manager IAM	Responsible for delivery of the majority of the activity through the Assets Team, Operations Team, Projects Team, Planning and Consents Team.
IAM Assets team	Undertaking asset management and budgeting of renewal and capital works. Includes maintaining asset records, plans and GIS information.
IAM Operations team	Contract management of service delivery as part of Water Alliance

Party	Role
IAM Projects team	Delivery of capital and major renewal projects.
IAM Planning and Consents team	Responsible for engineering standards, development standards, long term planning, obtaining and renewal of resource consents.
Finance - Water Rates	Reading and billing of water usage, and rates demands.
Finance - Accounting Services	Financial support services, asset valuations, account payments.
District Services - Call Centre	Point of contact for enquiries from residents and ratepayers.
Operational Contractors	Engaged by Council to undertake the daily operation of the schemes.
Consultants (external to FNDC)	Engaged by Council to undertake specific investigations, designs and provide technical support.
Northland Regional Council (external to FNDC)	Determine resource consent standards and monitors compliance to those standards.

2. LEVELS OF SERVICE

FNDC aims to provide sustainable levels of wastewater service to the community, in line with Council's vision of: He Whenua Rangatira – A District of Sustainable Prosperity and Wellbeing.

2.1. The services we provide

Council aims to operate the wastewater systems to provide our customers with an uninterrupted service, without any spills, and be compliant with all discharge resource consents. However, the service may occasionally be interrupted to carry out planned maintenance or repairs on broken pipes. Council aims:

- to return to normal supply within four hours for all interruptions
- to operate the wastewater asset to minimise further disruption to our customers in a number of ways:
  - For planned works, give customers at least three days' notice of an interruption;
  - For our maintenance contractors to carry spares of the commonly used pipe sizes and materials and are able to get on site with the correct equipment within minutes of receiving notification of a pipe break.

2.2. LoS overview

LoS are a broad range of measures, criteria, performance targets and measures of customer satisfaction that determine how the activity is delivered. These measures have been established via statutory requirements, bylaws, engineering standards and customer expectations determined via the LTP process.

From 1 July 2015, The Department of Internal Affairs (DIA) has set and will be monitoring key performance indicators (KPIs) that will be used to nationally benchmark Councils. These national requirements are in addition to the Council's customer LoS (LOS), which continue to be formally monitored and reported. Some of the DIA KPIs are lacking in clarity or appropriateness, and appear to be inconsistently measured nationally. The DIA KPIs are measured separately for reporting purposes, but are not intended as formal customer expectations.

LOS have been evolving and improving over the years with new requirements added, or when deficiencies in the KPIs are recognised and corrected. These changes reflect the changing LoS expectations around wastewater supplies.

The revised KPIs are outlined in Section 2.7 - Service Level Summary.

2.3. Customer satisfaction

This section describes Council's engagement with the stakeholders and measurement of customer satisfaction.

A good understanding of stakeholders and their area of interest is essential to deliver the appropriate Wastewater Activity across the District. Table 5 summarises the stakeholders and their area of interest in the wastewater activity.

Table 5: Wastewater activity - key stakeholders

Stakeholders	Areas of interest
Resident/ratepayers	Rates, current LoS are maintained.
Visitors/non-ratepayers	Visitors and holiday makers – they expect prompt and reliable wastewater services. They present large temporary demands for popular coastal townships particularly during the summer holiday period.
Industry and commercial	These business owners/operators expect reliable wastewater services to allow them to operate their businesses with no/minimal interruptions.
Iwi	They expect an affordable and reliable wastewater service. Council meets with them periodically to provide project updates and to engage/consult before and during consent applications. They expect Council to consult their cultural views on projects.

Stakeholders	Areas of interest
Environmental Groups	These non-government organisations are often consulted during major consent renewals and they are often keen to see improvements made to the natural environment.
Northland Regional Council (NRC)	Council adopts an open and transparent approach with NRC to communicate the issues, progresses and challenges with NRC staff on a regular basis. NRC is interested to see Council is taking steps to look after the environment.

Customer satisfaction is monitored in two ways. The Council Request for Service system (RFS), and an annual customer satisfaction survey.

Council also undertakes an annual community satisfaction survey where residents connected to Council's wastewater systems are randomly selected and asked how satisfied they are with the wastewater activity. The survey also records the reasons why customers are dissatisfied.

2.3.1 Requests For Service

When a request for service is received, it is logged in Council's RFS system. The RFS is then delegated to the appropriate party, with the majority of RFSs' passed directly to Council's operational contractor to action. Written correspondence is scanned, logged and emailed directly to the officer responsible for a response.

The RFS System is used to monitor the speed of responses and the actions taken to respond to the requests made. The overall focus of the RFS system is to ensure that our customers receive a high quality response in a timely manner, and provides a means to monitor Council performance.

2.3.2 Community surveys

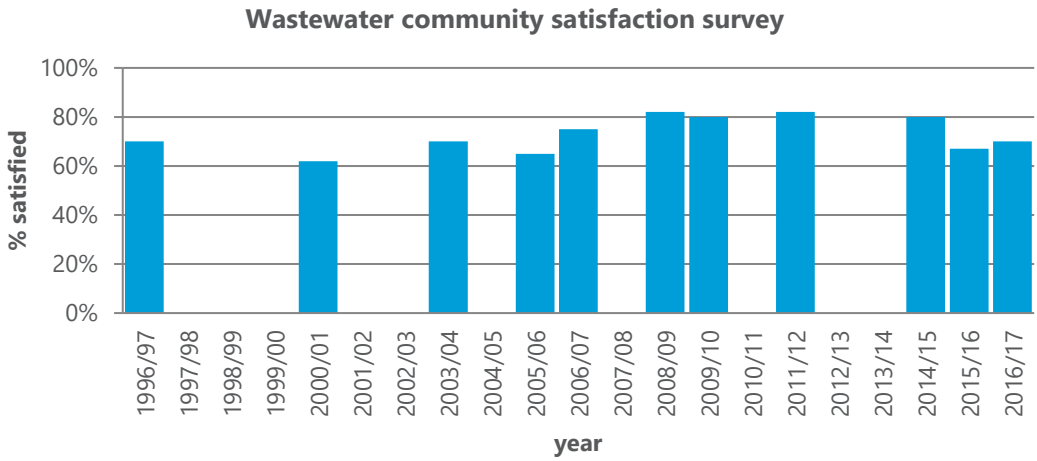
Until and including 2015/16 the community satisfaction survey had a four level satisfaction score, very dissatisfied, dissatisfied, satisfied and very satisfied. In 2016 this was changed to a five level scoring system with neither dissatisfied nor satisfied placed in the middle.

The reporting of the community survey results has remained at reporting the percentage of people satisfied or very satisfied. But the means by how this is calculated has changed. From 2016/17 onwards those who were neutral, but not dissatisfied have been excluded from the total.

The latest available data is from the 2016 Communitrak Survey. The survey provides Council with robust statistically valid data. The survey questions were developed to gain an understanding of levels of satisfaction around a number of core wastewater related areas.

The latest community satisfaction survey on Council's wastewater activity is shown in Figure 3. This survey feedback is used for annual reporting purposes, and is considered when reviewing and resetting LoS as part of the LTP process.

Figure 3: Overall wastewater satisfaction results



2.4. Statutory requirements

Statutory requirements have a profound impact on the way in which the wastewater activity is managed and operated. The key documents relating to the management of the wastewater activity are outlined in this section. Also refer to AMP Part A&B for further details on the impact of the statutory requirements at the strategic level.

2.4.1 Acts and Regulations

Table 6 summarises the key Acts and Regulations related to the management of wastewater assets.

Table 6: Acts and Regulations

Name	Function
Local Government Act 2002	Enables Council to run wastewater activity, enables Council to rate for water services including wastewater, details Governance requirements (including 30 year Infrastructure Strategy and 10 Year LTP), enables land access.
Local Government Rating Act 2002	Relates to how water rates can be charged, funding and depreciation requirements.
Health Act 1956	Relates water quality and public Health. Details minimum LoS and minimum quality requirements.
Resource Management Act 1991	Relates to environment impacts, water abstractions and waste discharges.
Consumers Guarantee Act 1993	Relates to quality of product.
Hazardous Substances and New Organisms (HSNO) Act 1996	Provides a framework on how waste and hazardous substances are managed, controlled and disposed.
Civil Defence and Management Act 2002	Provides a framework on how to manage, prepare and recover from local and national emergencies.

2.4.2 Bylaws

The LGA empowers Council to create local bylaws for the management of the stormwater supplies. These bylaws can be found on Council's website www.fndc.govt.nz. Bylaws relating to the stormwater activity are:

Table 7: Bylaws

Name	Purpose
Onsite Wastewater	Provide a minimum standard of onsite wastewater systems in the district to minimise adverse effects on the environment

Name	Purpose
Wastewater Drainage	Enables Council to set a minimum standard of wastewater connections to the public reticulation networks.
Trade Waste Bylaw	To regulate non-domestic discharges within the District

2.4.3 FNDC polices and strategies affecting LoS

Council has developed various policies and works in partnership with many other agencies and organisations throughout the district to fulfil its role and align the activities. This means that in establishing its programmes, Council must be aware of the following policies, strategies and guidelines. The relevant policies, plans and strategies are identified in Table 8 and Table 9.

Table 8: Council's policies

Policy number	Policy name	Status
1311	Risk Management	Under review
2104	Procurement Goods and Services	Current
2124	Significance and Engagement	Under review
	Control of Onsite Wastewater Disposal Systems bylaw	Current
	Trade Waste Bylaw	Current
	Wastewater Drainage Bylaw	Current / under review

Table 9: Council's plans and strategies

Name	Purpose
Far North District Plan 2009	To control and manage how and where development occurs
Kerikeri / Waipapa Structure Plan	To create a development strategy for Kerikeri and Waipapa
District Sludge Strategy	Provide a framework for wastewater sludge management and disposal

2.4.5 National and regional standards, polices, strategies and guidelines

The wastewater activity is influenced by a wide range of directly related industry standards and guidelines that influence the operations of the schemes which impacts on the LoS provided.

Table 10: National and regional standards, policies, strategies and guidelines

Name	Function
FNDC Engineering Standards and Guidelines	Part 5 of this document stipulates the minimum wastewater service requirements for design and construction for subdivisions and developments.
National Policy Statement for Freshwater Management 2014 (Freshwater NPS)	The National Policy Statement for Freshwater Management 2014 sets out the objectives and policies for freshwater management under the Resource Management Act 1991. The Freshwater NPS will help drive national consistency in local RMA planning and decision-making while allowing for an appropriate level of regional flexibility. This will support improved freshwater management in New Zealand. The Freshwater NPS sets in place some important ingredients of a strengthened limits-based regime for water management and helps clarify the regulatory framework for the Fresh Start for Fresh Water package as a whole.

Name	Function
Regional Policy Statement (administered by NRC)	The purpose of the Regional Policy Statement is to give an overview of the resource management issues of the region and provide objectives, policies and methods to achieve integrated management of the natural and physical resources of Northland.
Regional Water and Soil Plan for Northland (administered by NRC)	The Regional Water and Soil Plan for Northland covers the following activities: • Discharges to land such as landfills, rubbish dumps and tips, sewage, stormwater, agricultural discharges, industrial and trade discharges • Discharges to water • The taking, using, damming or diverting of surface and groundwater • Building and modifying structures in river and lake beds • Introducing plants to river and lake beds • Drainage and river control activities • Earthworks • Vegetation clearance • Activities within the Riparian Management Zone along rivers, lakes, and the coastal marine area.
Proposed Regional Plan for Northland (administered by NRC)	This will replace the existing Regional Plan. The Proposed Regional Plan will align with the Freshwater NPS, and impacts the wastewater activity in the Far North District in the following manner: • Defining significant natural areas • Discharges of effluent to water • Mixing zones of effluent discharge into water • Network discharges to water • Wastewater network management via wastewater network -plans, identification of overflow points, • Wider catchment management issues • Earthworks • Vegetation clearance • Activities within the Riparian Management Zone along rivers, lakes, and the coastal marine area.

The proposed Northland Regional Plan (September 2017) is expected to become operative in 2019, and will supersede the currently operating Regional Water and Soil Plan. In particular, the proposed Regional Plan contains clear contaminant acceptance limits (such as ammoniacal nitrogen and nitrate nitrogen etc.) in the receiving water bodies. This may lead to more stringent future discharge standards when the consents are renewed.

2.5. Industry standards and guidelines

The Wastewater Activity is influenced by a wide range of industry standards and guidelines that affects the operations of the schemes and/or the LoS provided.

Table 11: External policies and strategies

Name	Function
New Zealand Government's Sustainable Development Goals	To enhance the betterment of citizens lives. There are 17 goals which include: improving living standards, health and education and protecting the environment.
New Zealand Standard SNZHB 4360:2000 Risk Management for Local Government	Provides a basis for undertaking risk assessments

Name	Function
The Optimised Decision Making Guidelines published by the National Asset Management Steering Group	Provide a suggested framework on infrastructure investment decision making
The New Zealand Infrastructure Asset Grading Guidelines, first published in 1999 by the New Zealand Water and Wastes Association Inc.	Defines how assets should be graded,
New Zealand Infrastructure Asset Valuation and Depreciation Guidelines Manual Edition 2.0 2006	Details how assets are to be valued and depreciated.
International Infrastructure Management Manual 2015	Provides guidance on asset management for infrastructure providers
WaterNZ Pipe Renewal Guidelines	Provides guidance on developing a 'Evidence-based pipe renewal program'
WaterNZ Underground Utilities – Seismic Assessment and Design Guidelines	Provides guidance on risk identification, mitigation measures, restoration and resilience design of underground utilities
Beneficial Use of Organic Waste Products on Land	Provide guidelines on applying organic waste products (including conditioned sludge) for land application
WaterNZ Inflow and Infiltration Control Manual	Provides guidelines on controlling inflow and infiltration
WaterNZ Visual Assessment Manual of Utility Asset	Provides guidelines on undertaking visual inspection of asset
WaterNZ Manual for Wastewater Odour Management	Provides guidelines on managing odour from wastewater assets

2.6. Changes to LoS

A change in the Level of Service (LoS) will be reflected as either an increase or decrease. Changes are normally consulted on with key stakeholders and the community. The outcomes of that consultation are then incorporated into the Council's decision-making process. Changes to LoS can also come about through compliance with legislation – for example , when resource consent renewals impose higher stringent discharge limits this may trigger treatment plant upgrades. The upgrades to Kerikeri and Paihia, which are scheduled for completion over the next 3 years, fall in this category.

Further increases in future LoS at several wastewater schemes are anticipated to be needed when these schemes renew their discharge consents within the next 10 years, as described in Section 4.8. These future upgrade works will place demand on the funding for wastewater infrastructure in the District.

Changes or modifications to the wordings that measure LOS may occur without a physical change to the service provided. This is normally done to improve the clarity of a measure. The Department of Internal Affairs benchmarking has resulted in new key performance indicators being introduced. As these are new measurements, in many cases it has not been possible to use past records as a starting point for the target performance. In many situations a nominal value has been inserted and is likely to be changed in subsequent years as more reliable data becomes known.

Typically there is a natural tension between achieving LOS within funding constraints. FNDC focused on the correct sizing of service delivery within available budget funding, in the context of regional aspirations to improve the receiving environment and add resilience in the wastewater networks.

2.7. Service level summary (includes LoS and DIA performance measures)

2.7.1 Proposed LoS

To provide reliable wastewater infrastructure, protecting the environment and community

Local Government mandatory performance measure

Table 12: Proposed LTP LoS

Performance measure	Latest results: 2016/17	2018/19	2019/20	2020/21	2021 onwards
The number of dry weather sewerage overflows from the territorial authority's sewerage system, expressed per 1000 sewerage connections to that sewerage system.	1.3 per 1000 connections	≤ 12 per 1000 connections	≤ 12 per 1000 connections	≤ 12 per 1000 connections	≤ 12 per 1000 connections
Compliance with the territorial authority's resource consents for discharge from its sewerage system measured by the number of: a. abatement notices b. infringement notices c. enforcement orders, and d. convictions, received by the territorial authority in relation those resource consents.	a. 3 b. 4 c. 0 d. 0	a. 1 or less b. 0 c. 0 d. 0	a. 1 or less b. 0 c. 0 d. 0	a. 1 or less b. 0 c. 0 d. 0	a. 1 or less b. 0 c. 0 d. 0
Where the territorial authority attends to sewerage overflows resulting from a blockage or other fault in the territorial authority's sewerage system, the following median response times measured: a. attendance time: from the time that the territorial authority receives notification to the time that service personnel reach the site, and b. (b) resolution time: from the time that the territorial authority receives notification to the time that service personnel confirm resolution of the blockage or other fault.	a. 58 minutes b. 2 hours 42 minutes	a. 2 Hours b. 4 Hours These are median times	a. 2 Hours b. 4 Hours These are median times	a. 2 Hours b. 4 Hours These are median times	a. 2 Hours b. 4 Hours These are median times

Performance measure	Latest results: 2016/17	2018/19	2019/20	2020/21	2021 onwards
The total number of complaints received by the territorial authority about any of the following: a. sewage odour b. sewerage system faults c. sewerage system blockages, and d. the territorial authority's response to issues with its sewerage system, expressed per 1000 connections to the territorial authority's sewerage system.	24.5	≤ 50 per 1000 connections	≤ 50 per 1000 connections	≤ 50 per 1000 connections	≤ 50 per 1000 connections
Where Council attends to sewerage overflows resulting from a blockage or other fault in the Council's sewerage system, the following response times are measured: a. attendance b. resolution to prevent overflow	a. 58 minutes b. 2 hours 42 minutes	≥ 95% responded to within set timeframe	≥ 95% responded to within set timeframe	≥ 95% responded to within set timeframe	≥ 95% responded to within set timeframe
The number of dry weather sewerage overflows from the territorial authority's sewerage system, expressed per 1000 sewerage connections to that sewerage system.	1.3 per 1000 connections	≤ 12 per 1000 connections	≤ 12 per 1000 connections	≤ 12 per 1000 connections	≤ 12 per 1000 connections
Compliance with the territorial authority's resource consents for discharge from its sewerage system measured by the number of: a. abatement notices b. infringement notices c. enforcement orders, and d. convictions, received by the territorial authority in relation those resource consents.	a. 3 b. 4 c. 0 d. 0	a. 1 or less b. 0 c. 0 d. 0	a. 1 or less b. 0 c. 0 d. 0	a. 1 or less b. 0 c. 0 d. 0	a. 1 or less b. 0 c. 0 d. 0
Where the territorial authority attends to sewerage overflows resulting from a blockage or other fault in the territorial authority's sewerage system, the following median response times measured: a. attendance time: from the time that the territorial authority receives notification to the time that service personnel reach the site, and b. resolution time: from the time that the territorial authority receives notification to the time that service personnel confirm resolution of the blockage or other fault.	a. 58 minutes b. 2 hours 42 minutes	a. 2 Hours b. 4 Hours These are median times	a. 2 Hours b. 4 Hours These are median times	a. 2 Hours b. 4 Hours These are median times	a. 2 Hours b. 4 Hours These are median times

Performance measure	Latest results: 2016/17	2018/19	2019/20	2020/21	2021 onwards
The total number of complaints received by the territorial authority about any of the following: a. sewage odour b. sewerage system faults c. sewerage system blockages, and d. the territorial authority's response to issues with its sewerage system, expressed per 1000 connections to the territorial authority's sewerage system.	24.5	≤ 50 per 1000 connections	≤ 50 per 1000 connections	≤ 50 per 1000 connections	≤ 50 per 1000 connections
Where Council attends to sewerage overflows resulting from a blockage or other fault in the Council's sewerage system, the following response times are measured: a. attendance b. resolution to prevent overflow	a. a) 58 minutes b. 2 hours 42 minutes	≥ 95% responded to within set timeframe	≥ 95% responded to within set timeframe	≥ 95% responded to within set timeframe	≥ 95% responded to within set timeframe

2.7.3 General risks to LoS

Table 13: General risk to delivery of LoS

Impact	1 = Low, 2 = Medium, 3 = High
Probability	1 = Unlikely, 2= Probable, 3= Will Happen

LoS	Risk	Likelihood	Consequences	Score	Action	Priority
The number of dry weather sewerage overflows from Council's sewerage system, expressed per 1000 sewerage connections to that sewerage system.	Asset performance deteriorates due to poor asset condition data	3	3	9	Improve the collection of asset data and analysis of asset performance	High
	Poor planning through network models not current or up to date	3	2	6	Upgrade the network models	Medium
	Incorrect maintenance and management of sewers and pump stations	2	2	4	Document and monitor pump station maintenance	Medium
Sewerage overflows (all weather)	Higher storm intensity resulting higher inflows	3	2	6	Monitor network performance and upgrade where necessary	Medium
Compliance with the Regional Council's resource consents for discharge	Required upgrades are not installed by the required due dates.	3	1	3	Appropriately fund and ensure adequate resources to enable changes	High
	The requirements of the operations contract do not align with this KPI	1	2	2	Review contract document to ensure requirements alignment	High
Faults to be responded within required timeframes	The requirements of the operations contract do not align with the performance measure	1	2	2	Review contract document to ensure requirements alignment	High

Impact	1 = Low, 2 = Medium, 3 = High
Probability	1 = Unlikely, 2= Probable, 3= Will Happen

LoS	Risk	Likelihood	Consequences	Score	Action	Priority
The total number of complaints received Council to be less than annual target	Unusual events occur resulting in a higher number than normal complaints being received	2	1	2	Monitor and record unusual events	Medium
The % of respondents indicating they are very satisfied / satisfied with urban wastewater	The level of satisfaction with wastewater services continually drops	1	1	1	Ensure KPI are achieved. Undertake information/education programmes	Low
Operation and maintenance KPIs	Disruption when new operation and maintenance contractor appointed in 2018	2	2	4	Adequately resource FNDC staff to ensure best support and all information available during transition	Medium
Consent compliance and network system failures	Cyberattack or IT failure to Council IT and/or SCADA systems	1	2	2	Ensure all information is backed up and appropriate fire walls and protections are in place	High

2.7.4 Scheme specific risks to LoS

This section states the scheme specific risks which may impact the LoS of wastewater activity.

Scheme	LoS	Risk
Kaikohe	Compliance with discharge consents	Ponds are currently unable to meet consent limits all year round although studies have shown there is no environmental impact. Regional Council could request action ahead of new resource consent review. Ponds currently have elevated sludge accumulation, to be addressed as part of district-wide sludge management strategy. The new resource consent in 2021/22 may result in significant capital upgrades, as more stringent discharge standards may be specified.

Scheme	LoS	Risk
Kaitaia	Compliance with discharge consents	Historical inflow and infiltration issues have results in frequent network overflows. Studies are being carried out to identify the solution and develop an improvement plan over a period of time. Ponds currently have elevated sludge accumulation, to be addressed as part of district-wide sludge management strategy. The new resource consent in 2021/22 may result in significant capital upgrades, as more stringent discharge standards may be specified.
Kerikeri	Compliance with discharge consents	Currently unable to consistently meet discharge consent limits. Delays in construction of new treatment plant may result in further action by Regional Council. Potential faster growth in Kerikeri and the surrounding area may use up the capacity headroom of the new sewerage system (under construction in 2017/18); potentially bringing forward future expansion works.
Paihia	Compliance with discharge consents	Currently unable to meet discharge consent limits. Delays in construction of new treatment plant may result in further action by Regional Council Potential population growth and day/overnight visitors in the Bay of Islands including Watea may use up the capacity head room of the new sewerage system (details to be decided).
Smaller schemes Taipa, Kaeo, Rawene, Kohukohu and Opononi	Compliance with discharge consents	The new resource consents may require significant capital upgrades at the respective treatment plants. Short term summer peaks may also present potential challenges to comply with more stringent discharge standards.
Coastal schemes		Climate change may result in higher intensity rainfalls and increase potential flooding risks of these schemes. Network pump stations may require upgrades to improve resilience.

2.8. Significant capital projects

The following are significant capital projects. Excluded from this list are renewal projects and the majority of mains replacement, which when combined total significant expenditures.

Table 14: Significant capital projects for LoS increase

Project		Value	Year
Ahipara	WWTP install UV	$225,000	2022
District	Sludge disposal	$2,010,000	2019/22
East Coast	Walter Way overflows	$100,000	2019
East Coast	WWTP improvements	$685,000	2020
Kaikohe	Sludge facility	$333,000	2023
Kaikohe	WWTP improvements	$3,273,000	2024
Kaitaia	Reticulation reduction in overflows	$4,950,000	2019/22

Project		Value	Year
Kaitaia	WWTP sludge	$1,534,000	2024
Kaitaia	WWTP; algae reduction	$884,000	2024
Kaitaia	WWTP – Treatment improvements	$5,126,000	2026
Kaitaia	WWTP- Septage screening	$162,000	2021
Kerikeri - Waipapa	Disposal field development	$306,000	2020
Kerikeri	Reticulation extension and new WWTP	$12,130,000	2019
Kohukohu	WWTP Improvements	$158,000	2022
Opononi	WWTP improvements	$940,000	2023
Paihia	Haruru Pump station storage	$500,000	2022
Paihia	WWTP Improvement works	$2,551,000	2019
Rawene	Reticulation to un-serviced properties	$200,000	2019
Rawene	WWTP improvements	$131,000	2025
Russell	WWTP Process improvements stage 5	$110,000	2019
Whangaroa	WWTP improvements	$650,000	2027
Whatuwhiwhi	WWTP expansion	$1,600,000	2027

3. FUTURE DEMAND

3.1. Overview

The LGA requires that growth and demand be considered as part of asset management planning to ensure that future requirements are identified and planned for. This will ensure that the needs of individuals, the community and the district can be maintained over the long term.

This section outlines management options and strategies that Council utilises with regards to growth and demand for wastewater infrastructure.

A combination of small isolated communities that need access to wastewater services, and the requirement to meet high environmental standards, means that the services are expensive relative to the rest of New Zealand. In addition to urban growth, the increase of lifestyle blocks at the outskirt of the urban settlements and increase of tourists also puts additional pressure on the community wastewater systems.

The capacity of the wastewater schemes needs to allow for peak wet weather flows (comprising stormwater inflow and infiltration), and for peak seasonal loadings (affected by increased dwelling occupancy and tourist numbers). Peak wet weather flows have a significant impact on hydraulic capacity, while seasonal peak loading impacts on the biological treatment capacity.

In addition to normal urban growth, new wet industries can impose significant unplanned growth or expansion demands on wastewater schemes.

Recent studies have indicated that some areas across the Far North District will experience a decline in population numbers over future years. Demand for wastewater services in these areas will therefore decrease, however, there will be minimal or zero cost reduction in operating and maintaining the service. The net impact of this reducing demand will mean an increasing cost to remaining ratepayers under the current target rating system for wastewater services.

3.2. Current wastewater flows

Monitoring of wastewater discharge flows from treatment plants is an essential requirement of each of the resource consents issued by the Northland Regional Council. Requirements for maximum discharge flows that are stipulated in the consents, is usually based on the average 30-day Average Dry Weather Flow (ADWF). In some cases the consent may also stipulate maximum daily discharge flows as a result of wet weather impacts through inflow and/or infiltration.

The comparison of actual flows against consented flows provides some indication of available capacity for growth and demand. However, other considerations such as the actual treatment process capacity and hydraulic performance of pipes and pumps in the reticulated network are required. Network models are available for some catchments to assess hydraulic performance.

The seventeen wastewater schemes in the District vary considerably in size. Refer to Table 15 for the current average wastewater flows for each scheme in the Far North District.

Table 15: Annual wastewater treated effluent flows

	Serviced population	Annual wastewater treated (m^3/year)	Asset replacement value
Opononi	908	77,020	5,322,755
Rawene	564	56,080	4,749,634
Kohukohu	207	11,930	2,267,813
Kaikohe	3,803	765,880	19,097,300
Kawakawa	1,328	290,490	10,389,886
Paihia	4,678	440,930	32,492,024
Russell	1,288	83,110	11,046,786
Kerikeri	2,495	216,450	13,405,070
Kaeo	420	81,740	4,646,953
Whangaroa	35	-	415,084
Matauri Bay	-	-	726,998
Hihi	397	177,510	2,804,029
East Coast (Taipa)	3,370	197,100	19,957,069
Whatuwhiwhi	1,748	41,990	12,652,786
Rangiputa	258	7,170	1,261,325
Kaitaia and Awanui	5,895	957,510	30,257,721
District-wide	-	-	799,438
Ahipara	1,212	74,700	7,699,735
Total	28,606	3,479,610	179,992,409

Notes: 2.53 Average Number of people per household used.
Not included are the properties that use the WWTPs for septage disposal.
Kaikohe, Kaitaia, Paihia and Kerikeri are the larger schemes in the District, and they represent approximately 68% of the total wastewater flows in the District.

Figure 4 presents the aggregate of the annual wastewater volume in the Far North District.

Figure 4: District total wastewater flows from 2009 to 2016 (ML/year)

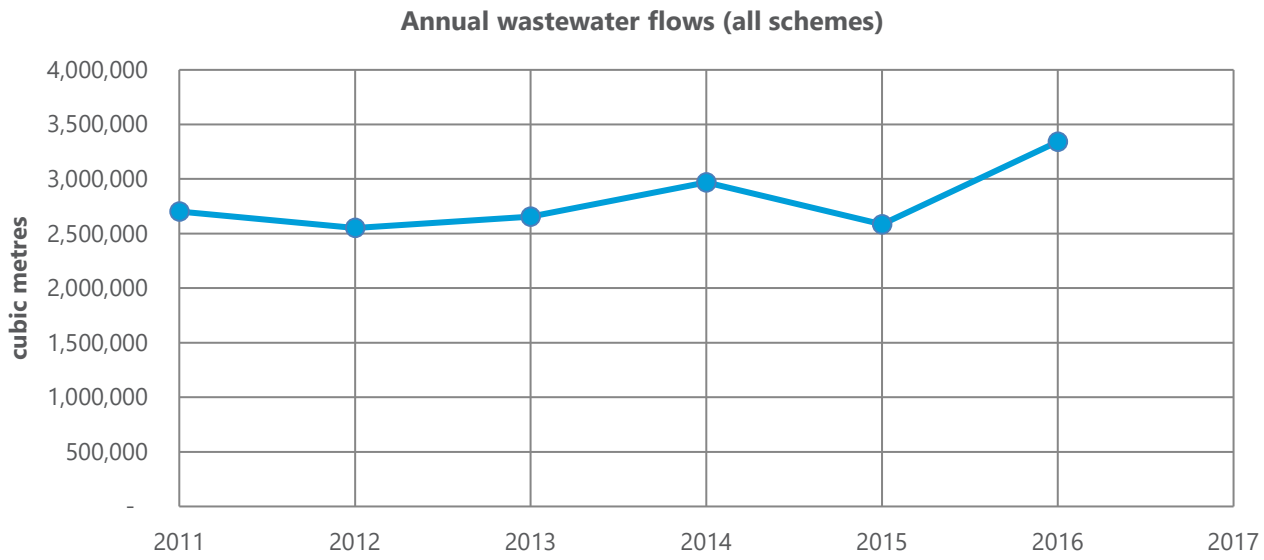
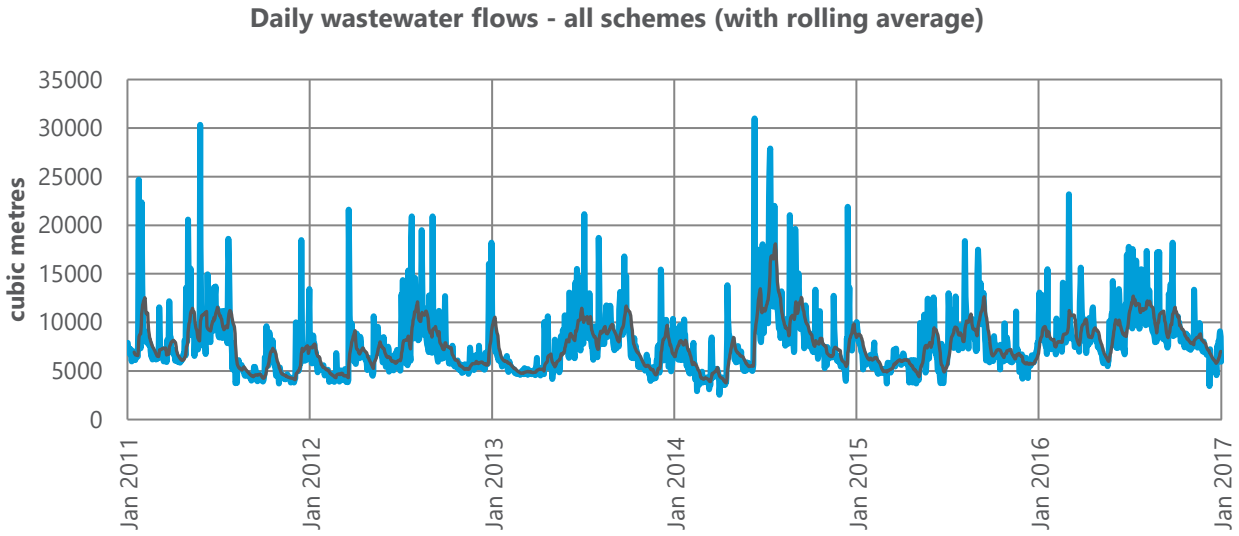


Figure 5: District peak and average wastewater flows in 2016 (ML/day)



As seen in Figure 4, peak wastewater flows are significantly higher in winter, associated with the inflow and infiltration issues experienced at various schemes.

Also the influx of tourists and visitors to the District would generate higher wastewater volumes, particularly during the summer months.

The treatment plants are sized to treat the higher wastewater flows and loads, prior to disposal.

3.3. Current capacity

The capacities of the wastewater schemes are generally estimated based on the following criteria:

- Network, including pump stations and pipelines - ability to convey peak wastewater flows, often characterised by wastewater network models;

- Treatment plant and effluent disposal – ability to treat contaminant loads in the wastewater to meet the consented discharge standards at average and peak scenarios. This is often characterised by calibrated process models.

System capacity may be reached or exceeded during one of the following situations:

1. Inflow and infiltration increase during storm events – this can cause an exceedance of the network hydraulic conveyance capacity.
2. More stringent discharge standards specified by resource consents – existing treatment process capacity is unable to meet the new standard without additional upgrade work.
3. Growth or densification allows for additional wastewater connections and increased flows – may impact on network hydraulic capacity and/or treatment process capacity.

Some wastewater network models exist. However, they are dated and have not been maintained to the current wastewater flows, Calibration/updates are necessary to accurately estimate capacity of the wastewater networks, and this has been identified as part of the Asset Management Improvement Plan. As an interim arrangement, specific localised modelling is carried out to provide an estimated impact assessment in response to any development enquiries where capacity is known to be a concern.

Similarly, treatment plant hydraulic and process capacity requires detailed engineering assessment to be carried out (included in the improvement plan). As an interim measure the current plant performance and feedback from operational staff is a useful indicator for assessment of growth headroom. In many cases pond treatment systems are unable to provide consistent performance, and ongoing issues suggest they are currently at or beyond capacity.

Table 16 summarises the wastewater treatment plants and the expected current capacity issues based on the recent plant performance observations by FNDC staff.

Table 16: Wastewater plants current capacity and connected populations

Scheme	Scheme overview	Comments on current capacity and potential shortfall	Current connected population
Opononi	Aerated pond and constructed wetland	The plant is near capacity regarding Biological (aeration) treatment and occasionally fails with regards to bacterial reduction.	908
Rawene	Anaerobic pond 2 oxidation ponds constructed wetland	The plant has theoretical spare capacity. Addition of aeration of the main pond will increase capacity	564
Kohukohu	1 oxidation pond and constructed wetland	The plant is near capacity. Additional aeration will increase capacity.	207
Kaikohe	2 anaerobic ponds (parallel) oxidation pond constructed wetland	The plant is failing in terms of nutrient reduction. Other parameters are within resource consent requirements.	3,803
Kawakawa	Activated sludge reactor/clarifier tertiary Filter and UV constructed wetland	The plant is near capacity, but operating satisfactorily	1,328
Paihia	3 anaerobic ponds 2 oxidation ponds constructed wetland	The plant is near capacity, and failing on ammonia reduction. Aeration is required to enhance the treatment process.	4,678

Scheme	Scheme overview	Comments on current capacity and potential shortfall	Current connected population
Russell	2 Sequencing Batch Reactors sand filtration and UV borefield disposal	The plant struggles to handle peak summer and wet weather flows. Modification to the process are planned to improve this situation.	1,288
Kerikeri	Being upgraded	The existing plant is grossly overloaded and is in poor condition. A new plant is planned to be commissioned in 2019-	2,495
Kaeo	2 oxidation ponds constructed wetland	The treatment plant is failing to meet the bacterial condition specified in the resource consent. This condition is considered impractical to meet.	420
Whangaroa	Holding tank emptied by tankers	This is a very high cost operation. There should be no further connection to this scheme -	35
Matauri Bay	Packed bed reactors Land irrigation	-This scheme has been build but never commissioned. No connections are possible until a rating area has been established.	-
Hihi	Package activated sludge plant constructed wetland	The plant struggles to handle peak summer and wet weather loads. A new plant is planned for 2018/19	397
East Coast (Taipa)	Aerated ponds constructed wetland	The plant fails to meet the ammonia levels. The consent lapsed in 2008 and a significant upgrade to the plant is expected as a requirement of a new consent.	3,370
Whatuwhiwhi	2 oxidation ponds with Aquamats UV disinfection	The plant is operating satisfactorily. The plant has been designed to accommodate modifications to substantially increase treatment capacity.	1,748
Rangiputa	2 oxidation ponds discharge to ground	The plant is operating satisfactorily	258
Kaitaia and Awanui	3 oxidation ponds floating wetland (Pond 3)	Sludge accumulation and blue green algae blooms are compromising the treatment process.	5,895
Ahipara	Oxidation pond constructed wetland	The plant struggles to handle peak summer flows and during those periods is overloaded. Additional aeration and desludging will assist this situation.	1,212

Source: idNZ (http://profile.idnz.co.nz/far-north/population)

3.4. Planning for growth

Growth in the Far North District is anticipated to continue around 0.5% to 1% until the mid-2020s, slowing into the 2030s with a potential decrease into the 2040s. Change in the usually resident population will continue to be uneven across the District. While some Eastern coastal communities will see growth of between 0.05% and 2% per annum, most townships will continue to experience a decline in the usually resident population (at a rate of between -ve0.02 to -ve2% p.a.).

Further details on growth assumptions are contained in Parts A&B Section 7.6 Demand and growth.

With the changing population, the average occupancy rate per house is projected to decrease from 2.62 in 2013 to 2.35 in 2043.

Despite the reduction in occupancy, there will be an increase of peak wet weather flows, potentially requiring additional network storage volume.

3.4.1 Overview of key demand drivers

The key demand drivers affecting the wastewater services are as follows:

- Localised population growth (e.g. Kerikeri, Bay of Islands) in some areas only
- Changes in numbers of visitors and tourists
- Non-residential growth
- Resource consent conditions (See Section 4.1.4)
- Climate change.

The primary driver for increased demand will be increases in serviced population. This is predominately occurring in the Kerikeri and Paihia areas. Increases in the serviced population can occur as a result of infill and densification within the Area Of Benefit (AOB), or from a decision to expand the current AOB as a result of Council directives or agreements made with developers. In addition to residential demands, the non-residential demands are expected to increase at a similar rate. For design purposes overall average wastewater production can be expected to increase at 333 L/person /day.

Any additional wet industries will have a significant effect on any of the wastewater schemes. The impacts of a wet industry can only be assessed on a case by case basis.

The District is a popular place in the summer months, especially during Christmas and New Year, with a large influx of visitors and tourists coming to the District.

It has been estimated that the temporary population would be in the order of 55,000 people or more. Hence, the presence of the holidaymakers would place a significant demand on the wastewater infrastructure.

The existing District Plan is being reviewed and the new District Plan is expected to put a stronger focus on economic development, which will result in more growth in commercial, industrial and tourism activities.

A recent review[1] indicated that the District has 295 hectares of zoned commercial lands of which 15 hectares were vacant as of 2016. Commercial land is concentrated in four townships, Kaitaia, Kerikeri, Kaikohe and Paihia-Russell-Opua, primarily for retail and office purposes, as well as commercial accommodations for visitors and tourists. The study estimated that commercial land enables the employment of approximately 7,590 people in the District, and an additional 6.4 to 77.2 hectares of commercial land will be required by 2045.

Another review[2], with the primary focus on industrial land, identified a potential gap of 126 and 210 hectares by 2031, depending on the economic cycle and future development.

Council recognises that upcoming consent renewals may potentially exacerbate the financial affordability of the wastewater schemes affected - the renewals are likely to create higher compliance requirements, which will require infrastructure upgrades. Council has studied the draft NRC Regional Plan and identified more stringent discharge standards are likely to be required when the current consents are renewed in future.

Section 6.1.4 outlines the current resource consent compliance status and Section 5.3 outlined the current challenges at each site.

Many of the community-based wastewater schemes in the Far North District are located in the coastal areas, and they are susceptible to the effect of climate change, e.g. rising sea levels, higher storm intensity, prolonged drought etc.

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[1] BERL, Far North District, Potential Future Demand for Commercial Land (October 2016)
[2] BERL, Upper North Island Industrial Land Demand (October 2015)

A climate change impact study was carried out for the Kaitaia catchment, and the following potential District-wide impact was forecasted by extrapolating the findings:

- More intense and more frequent storm events → resulting in higher risk of network overflows;
- Sea level rises → requiring planned retreat of vulnerable suburbs and communities;
- Prolonged and more severe droughts → potential effect on local economy.

Potential mitigation measures will include:

1. More frequent maintenance and inspection of sewer pipes to maximise capacity and performance.
2. Carry out investigations to identify potential sewer overflow hotspots.
3. At risk networks replaced with resilient designs, i.e. low pressure sewers
4. Planned retreat of service provision aligned with land inundation.

Further detailed planning and consultation on the impacts and mitigation options associated with climate change has been identified as part of the asset management improvement plan.

3.4.2 Population and development considerations

Generally the larger and denser a wastewater scheme is, the more economical a scheme is to operate. This is because the ratio of asset value/property is lower and less infrastructure is required. The most appropriate mechanism to apply control over density is best achieved through zoning in the District Plan.

The installation of Infrastructure is normally a long term process and carried out in stages. Failure to appropriately plan for the longer term will result in poor decisions around any upgrades or replacements.

Population growth overview

The following population changes are projected.

Table 17: Summary of community populations

Population projections	2018	2030	2043	2018-2043 change %
Kaikohe township	4,296	4023	3849	-10%
Kaitaia township	5,391	5397	5222	-3%
Kawakawa / Moerewa	2918	2802	2735	-6%
Kerikeri township	3774	4193	4626	23%
Kerikeri surrounds	3801	4474	4900	29%
Paihia / Opua / Haruru townships	3498	3648	3616	3%
Rawene / Opononi / Omapere - Hokianga South	3704	3253	3503	-5%

Source: id New Zealand (http://forecast.idnz.co.nz/far-north/population-summary)

Table 17 shows the projected growth or decline in resident population across each of the townships having a Council wastewater supply. Note that these figures reflect demographic forecasts for the entire township, gathered from census information, and do not necessarily reflect population numbers actually connected to the wastewater scheme. However, the projections can be used as indicators to assist in future planning reviews.

Changes in population is only one factor regarding future wastewater demands. Other factors include whether the scheme areas are expanded, whether densities per household change, changes in commercial and industrial demands, occupancy changes from permanent to holiday accommodation, or changing occupancy rates, i.e. more or less people per house.

3.5. Demand projections

Table 18 is an assessment developed from historic trends, future population trends and likely changes in future wastewater demands.

Table 18: Demand projections

Scheme	Overview potential demand change
Kaikohe	Static to declining population. Possible future demands from a potential Ngawha industrial area
Kaitaia	Static population. No changes expected Increase in inflow and infiltration expected
Kawakawa	Static population
Kerikeri	Growing urban and non-urban population. Long term growth projected, requiring additional capacity
Okaihau	Static population. No changes expected
Opononi	Declining permanent population. Increasing seasonal population. Expansion to service season population possible
Paihia	Growing urban population and increasing tourist numbers. Expansion required
Rawene	Static to declining population. No changes expected
Russell	Static population. Minimal changes expected
Taipa and Kaeo	Static population. Minimal changes expected
Whatuwhiwhi, Rangiputa, Hihi, Kohukohu, Awanui, Whangaroa, Ahipara	Static population. Minimal changes expected

In addition, more detailed demand projections have been undertaken for the two schemes experiencing growth being Kerikeri and Paihia. Both these are based on projecting forward past trends.

Paihia is one of the popular tourist hotspots in the District. For this reason, the peak seasonal wastewater flows for both Kerikeri and Paihia are expected to continue to increase, as shown in Figure 6 and Figure 7.

Figure 6: Annual wastewater flow projection – Kerikeri (2015 to 2048)

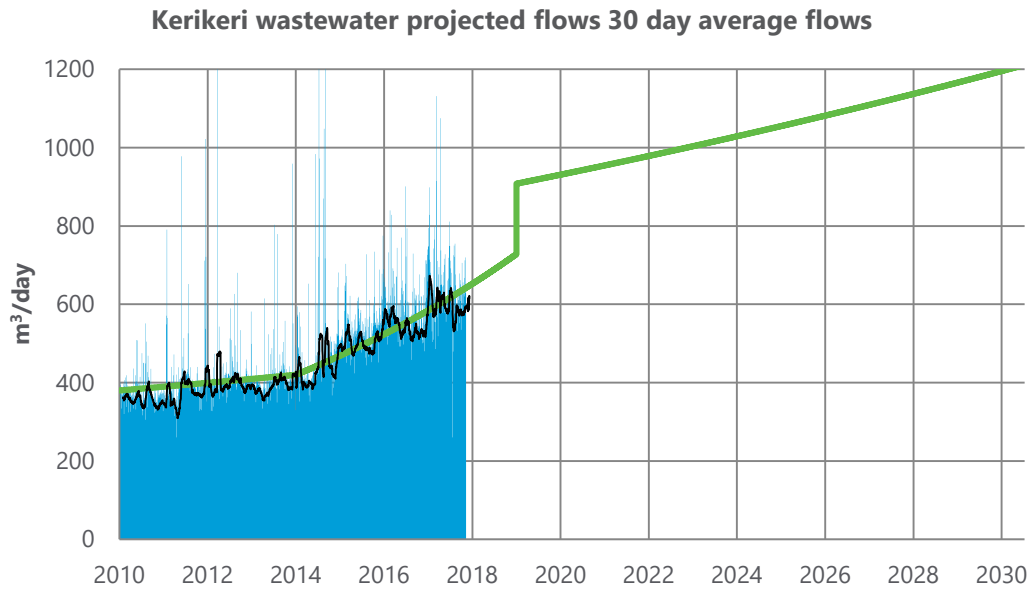
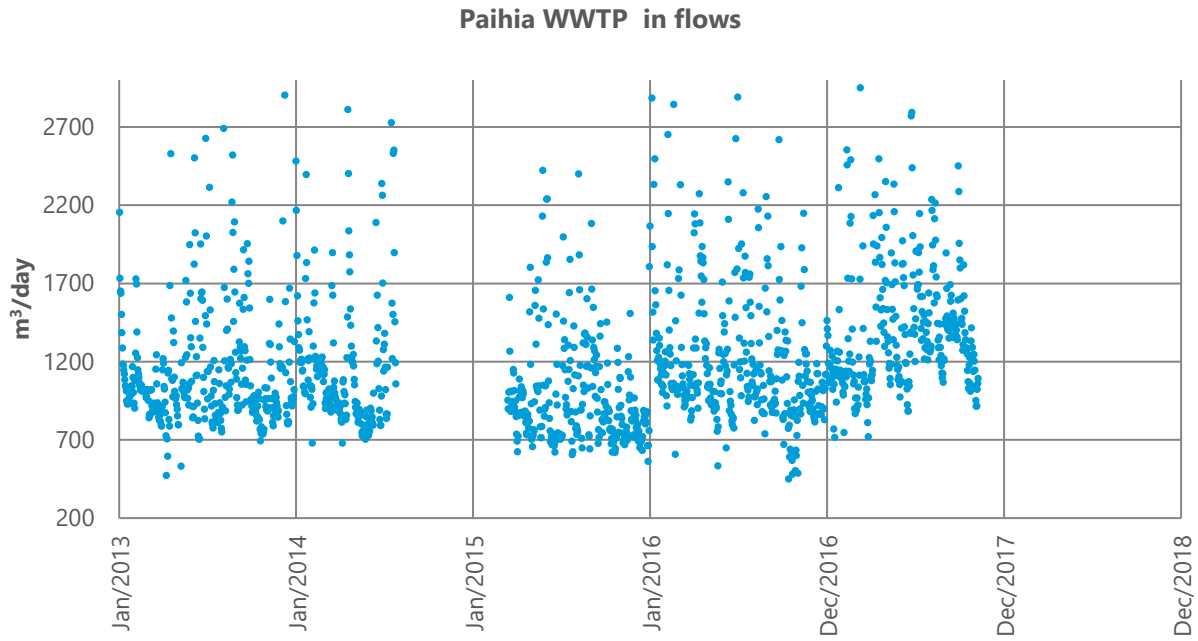


Figure 7: Annual wastewater flow - Paihia (2015 to 2018)



A current project is underway that will result in an expanded AOB for the Kerikeri township. The project will allow for an immediate step increase in connections to approximately 300 properties, and will include upgraded treatment and reticulation to cater for future growth over the short to medium term. It is expected that additional demand will continue within the new AOB as new development and densification occurs.

Demand projections for the longer term require planning and decisions regarding the expansion of the AOB. Consideration is required to the need for servicing areas such as Waipapa, Riverview and Reinga Heights. In Waipapa, concerns over commercial intensification and poor ground conditions for OSD, have been noted, while Riverview and Reinga Heights are subject to more densely populated coastal residential OSD systems with a risk of environmental contamination.

Future District Planning considerations, currently under review, will also inform on infrastructure development needs in the longer term.

Council's 30 year infrastructure strategy provides further direction for long term demand projections. More detailed planning around specific needs and timing is required and is identified as part of the Asset Management Improvement Plan.

3.6. Demand management plan

Projections indicate that for the majority of wastewater schemes growth will remain either static or will decline. Increased growth is expected only in the Kerikeri and Paihia schemes.

Climate change is also likely to have an impact on declining demand in the event that a managed retreat strategy is adopted.

Demand considerations are also relevant in static growth situations, where below ground asset deterioration results in increased stormwater ingress affecting capacity and performance.

Demand management strategies can provide alternatives to the creation of new assets in order to meet demand, and look at ways of modifying customer demands so that utilisation of existing assets is maximised, and the need for new assets is deferred or reduced. Demand management is required to optimise infrastructure capacity and performance at affordable and sustainable levels.

Components of the demand management strategy are shown in Table 19.

Table 19: Demand management components and strategies

Demand concept	Description
Growth requiring catchment expansion	Extend coverage of Kerikeri and Paihia wastewater networks
Inflow and infiltration (I&I)	Undertake I&I studies and modelling to identify cost effective sewer rehabilitation options, which will reduce system demand and allow for increased future capacity
Controlled development	Criteria as set out in the District Plan
Declining growth and climate change	Managed retreat of service provision
Regulatory consent improvements	Upgrades to meet higher environmental standards

Looking ahead, accurate forecasting of wastewater demand is essential for effective long term planning. Council focuses on sustainability and cost effectiveness – meeting the future demand at least cost to the community while protecting the environment and preventing overuse of the valuable natural resources.

Analysis of the growth forecasts suggests that over the next 10 years there is expected to be little or no growth in the Te Hiku ward and Kaikohe/Hokianga and medium growth in the Bay of Islands/Whangaroa Ward.

The most significant areas requiring demand management are Kerikeri and Paihia. Both these schemes are subject to current ongoing upgrades in response to regulatory and growth demand drivers.

The plan for Kerikeri includes provision of a new wastewater treatment plant that will meet enhanced effluent quality standards and increased connection numbers. It includes the changeover of private OSD's within the urban area to permanent reticulated connections, and expansion of the reticulation network to meet development demand on the periphery of the CBD and future intensification within. The current plan provides for project implementation by 2019, and is expected to provide for sustainable demand increases in the new AOB over the next 20 to 30 years.

Planning for Paihia includes provision of an upgraded wastewater treatment plant to meet enhanced effluent quality standards, with headroom provision for medium term demand increases. Growth affecting infrastructure in Paihia relates to commercial development in the Opua Township, together with increased visitor numbers and tourist cruise ships. Reticulation modelling is planned to better understand capacity risks and help to plan for future upgrades.

Planning for these significant areas is reflected in Council's 30 Year Infrastructure Strategy and LTP.

With ongoing growth and development expected it is essential that continuous review is undertaken to reassess demand forecasts and any future requirements and timing for capital investment. Longer term planning for demand, particularly in the Kerikeri area, aligned to District planning strategies and subject to community consultation is a requirement identified as part of the asset management improvement plan.

3.7. Significant capital projects planned

Table 20 presents the significant capital projects to address the future demand changes:

Table 20: Significant capital projects for demand changes

Project	Value	Year
Kerikeri – extended reticulation, new terminal pump station, New treatment plant and effluent disposal	$20.5m	2017 -19
Paihia – treatment plant upgrade	$3.2m	2018 -20
Paihia – rising main from Watea to Haruru Falls	$1.8m	2023-25
District – sludge disposal	$2.0m	2019-22
Whatuwhiwhi – expand treatment process	$1.6m	2025-27

3.8. Growth and demand assumptions

Growth and demand predictions include the following assumptions:

- growth will be in line with census predictions
- scheme areas extension and new wet industries will be assessed on available spare treatment capacity
- future demands will be based on current usage rates with no new wet industries
- wet industries will be assessed on a case by case basis
- that a decreasing permanent population will not automatically result in decreased peak demands
- that climate change will increase peak wastewater demands
- that targeted wastewater rating will remain in place.

4. OVERVIEW OF THE ASSETS

4.1. Managing the assets

Wastewater assets span from collection, conveyance, treatment and disposal. This section focuses on the physical assets that deliver wastewater services to our customers:

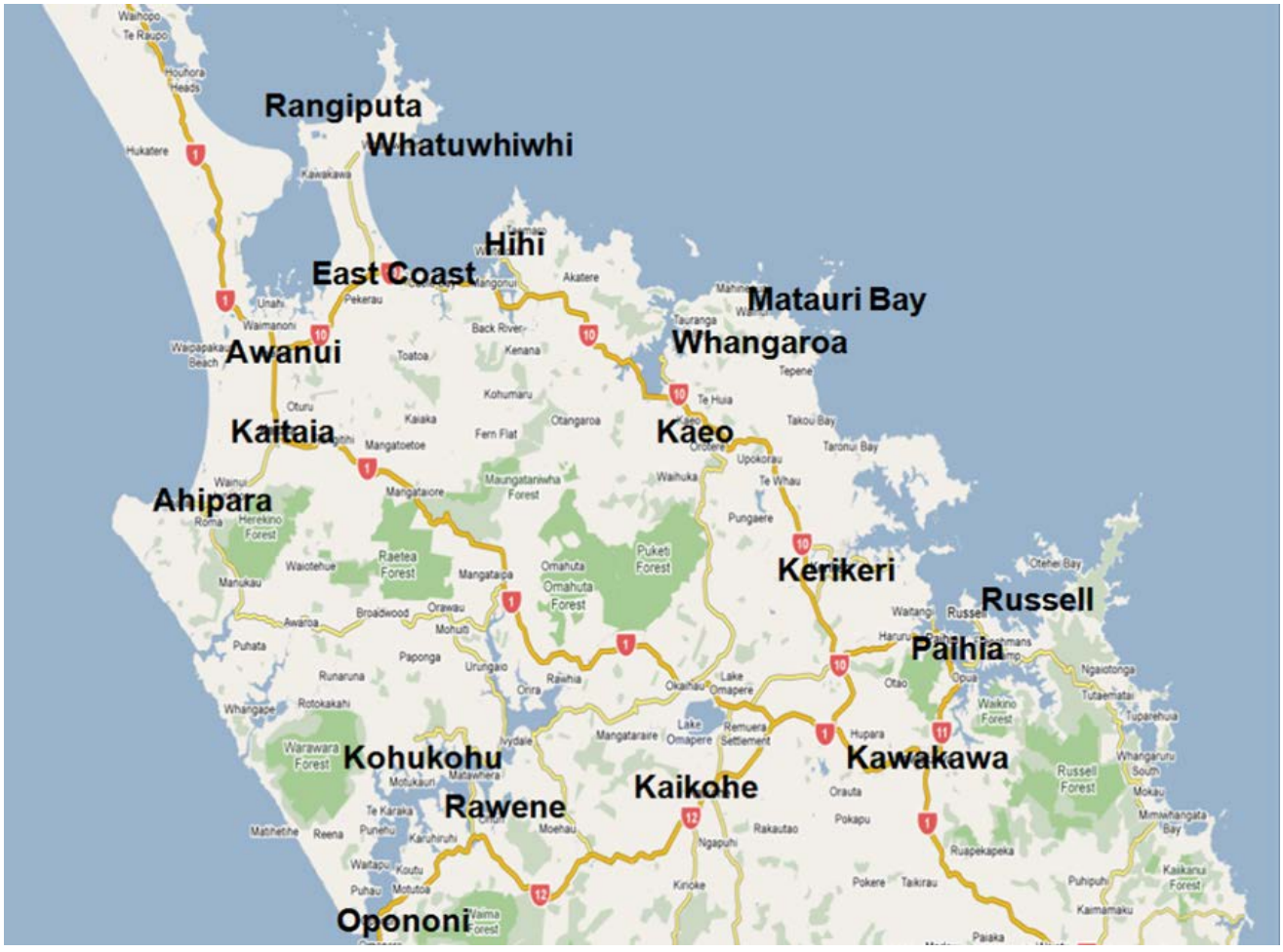
- it describes the assets we have
- how they work
- their condition

A critical look is taken at the key assumptions and confidence in the asset data. This detailed knowledge is needed to gain a good understanding of how the wastewater system is working and how well our customers' needs are met, and also to ensure excellent and cost-effective asset management.

4.1.1 Overview of schemes

There are seventeen community-based wastewater schemes in the Far North District, as depicted in Figure 8 which presents the location of these wastewater schemes.

Figure 8: Far North District wastewater scheme localities



Wastewater treatment plants are located in 15 of the 17 schemes, with wastewater from the Whangaroa and Awanui schemes being transferred into the Kaeo and Kaitaia treatment plants respectively. An additional treatment plant at Matauri Bay was previously vested into Council ownership, although to date no public scheme has been established and there is no wastewater flows received at the plant.

Dwellings located outside Council's serviced areas, are connected to onsite wastewater systems for treatment and disposal. The responsibility for operating, maintaining and renewing these local wastewater systems lies

entirely with the occupiers and/or landowners. There is a requirement under Council bylaws that waste sludge from these onsite systems be removed and transported to Council's wastewater facilities for further treatment and disposal every five years.

Biological wastewater ponds have been the preferred low cost treatment option for the District, with 11 of the 15 plants using a pond based treatment process. Land availability or the requirement for process upgrade following resource consent renewal, has resulted in the need for more sophisticated mechanical processes at Kawakawa, Kerikeri, Russell and Hihi. With increasing environmental standards Council expects pond treatment is likely to be inadequate to meet future resource consent requirements, and plant upgrades will be necessary. Final effluent disposal is largely to river, stream or natural wetland, with the exceptions of Opononi which discharges into the Hokianga Harbour, and Russell where discharge to land via multiple boreholes is carried out.

Recent sewerage network extensions to the Kaikohe, Kaitaia and Paihia schemes has incorporated the use of low pressure sewer systems as an alternative to conventional gravity sewers.

4.1.2 Asset management practices

Council's Infrastructure and Asset Management Team (IAM), is structured and resourced to undertake asset management of all activities including wastewater. The team consists of dedicated personnel involved in planning and development, asset creation and renewals, operations and maintenance, and asset systems management. Additional functions such as call centre and customer services, rating and billing, and financial management are undertaken by separate support teams.

This AMP, provides a detailed overview of the wastewater activity, and is intended to document current practices and also identify future needs and improvements across Council's asset management processes.

Council currently uses AssetFindA (previously known as BizzeAsset), as its asset management system (AMS), and has held licenses over the past 14 years. All wastewater asset data including itemised attributes is held on the database, and the system is supported by GIS software for mapping of all assets.

The asset management team is currently progressing business improvements that will utilise the additional functionality of the AMS. These improvements include:

- asset condition rating information
- planned maintenance scheduling and recording
- reactive maintenance and fault recording
- use of hand held field devices by staff and contractors.

These business improvements are seen as essential improvements required over the short term to ensure sound and efficient asset management decision making.

Council currently utilises a number of other software packages in its asset management processes:

Fixed asset register: Excel spreadsheet download from the Tech1 application used by the finance team, updated from AssetFindA

Tech1: Finance application system

Pathways: Access database application for customer service management

MEX: Access database application used by the operations contractor for maintenance scheduling and recording.

4.1.3 Contract management, scope and terms of major contracts

Council has in-house personnel who undertake:

- asset management and GIS
- project management
- wastewater planning and managing subdivisional development
- operations contract management

- call centre, customer contacts
- rating.

Activities such as the daily operations and maintenance, project construction and specialist professional services are contracted out.

Current operations and maintenance services are provided by Broadspectrum Ltd. The original contract was awarded in 2002 for a 10 year period, allowing for an additional 2 year extension. The contract has been extended until July 2018 for various reasons, and will be formally tendered following a recent LGA section 17a review. The contract originally started as a conventional service delivery contract with associated schedule of rates, but after the deficiencies in this approach were recognised, the contract was renegotiated to become a collaborative working arrangement. The current contract is structured on a cost reimbursable basis that is incentivised by assessment based on key performance indicators.

Reactive renewals, some minor planned renewals and capital works are undertaken as variations to the Operations contract. Major capital works and renewals, and professional services are competitively tendered to ensure value is achieved.

Further details on asset operation/maintenance and asset creation are discussed in Section 5.4.

4.1.4 Resource consents

Each community wastewater scheme is operated under resource consent, authorised and issued by the Northland Regional Council.

Each resource consent has specific terms, conditions, monitoring requirements and reporting requirements that must be met during the life of the consent.

The monitoring programmes specified in the resource consents are normally regarded as the minimum requirements. The purpose of the monitoring programme is to confirm the adequacy of the operation and maintenance of the wastewater infrastructure assets to meet environmental requirements or constraints. Failure to comply with these consent conditions may result in abatement notices being served, or if the breach is significant non-compliance may result in prosecution.

Near the end of the consent period, Council determines whether to apply to renew the consent or apply for new consents. Early application for consent renewal avoids the risk of consent expiry if no application is made in time. If a renewal application is made six months before the expiry of the current consent, the current consent continues until a new consent is granted. Applications made within three months, the consent may be permitted to continue until the new consent is granted.

New and renewal consents are subject to consultation requirements of the RMA, and can involve significant public submission and Council hearings, and in some cases may be referred to the Environment Court for final decision.

A key performance measure is for treated effluent to comply with the discharge standards as stipulated in the resource consents.

Table 21 summarises the current consent compliance performance and the consent expiry dates.

Table 21: Wastewater discharge resource consents

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
Ahipara	AUT.003775 (01 to 03) for discharges	18/09/2013	30/11/2033	Water quality: generally non-compliant with Faecal coliform limits (median 12 and 90% tile) since early 2015.	The project manager has requested IAM Planning to investigate changing the WQ compliance sample point, moving it from ex-constructed wet land, to ex-natural wetland. This planning work has not yet started.	Currently operating under NRC Abatement Notice EAC.067878.01 for failure to meet faecal coliform limits. Issued 06-09-2017 and compliance deadline of 31 May 2018 (original deadline was Sept 2017 but NRC extended this). NRC issued abatement notice EAC.066662.01 for failure to operate ponds and wetland correctly, FNDC commenced de-sludge programme and NRC cancelled this AN on 08-08-2017.
				Leachate from Ahipara Landfill: Consent permits flows up to $10m^3$ per day, flows have regularly exceeded limit since records commenced in Jan 2015	s127 resource consent application lodged with NRC Dec 2016, to increase leachate discharge volume limit. Application currently on hold awaiting further input. Consultants, due to provide this Nov 2017. Once received, app will continue to progress	
				Discharge to land options investigation: Due to contested consent process, consent requires establishment of Liaison Group with local hapū, generally to inform group on the operation of the WWTP and with a primary purpose to engage WW engineer to investigate discharge to land options. Engineer required to be engaged by late March 2014. This group has been established, but as yet a Wastewater engineer has not been engaged as required.		
	AUT.003775 (04 to 05) to de-sludge constructed wetlands on site	12/11/2014	1/12/2019	No known issues	No known consenting requirements	No known enforcement
Hihi	CON201007 39901 for discharges	3/03/2011	30/11/2022	Typically operates within consent limits	No known consenting requirements	No known enforcement

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
Kaeo	CON20100720501 for discharges	2/09/2011	31/10/2022	Ongoing breach of bacteriophage log reduction requirement: must achieve at least 4x magnitude (4 log) reduction in F-specific bacteriophage within the WW as measured at outlet point. Of the non-compliant results over the past five years, the average log reduction has been three.	Consultants have been engaged to prepare s127 resource consent application to remove the log reduction condition; however this has stalled as they are unable to confirm no more than minor effects, require further monitoring data and conditions setting out contaminant thresholds. No work has progressed on this project to amend consent conditions around bacteriophage.	No known enforcement

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
Kaikohe	CON20100241701 for discharges	4/08/2005	30/11/2021	Flows: Technical non-compliance - discharge volume limit is based on Dry Weather Flows; because there have been insufficient recent dry weather days; the formula becomes meaningless when having to go back into archives to get 30 DWF results. NRC is aware of this technical non-compliance. Water quality: intermittent non-compliance with Ammonia limit (1.6g/m^3), however discharge has complied with this since March 2017.	Current consent expires Nov 2021; the 2015-2025 LTP includes $3.2M for a wastewater upgrade in 2023-2024, associated with the expected new consenting requirements. Research into the effects of the intermittent ammonia breaches has revealed that the WWTP is having an effect on the environment, but as a result of nitrification, rather than ammonia toxicity. The plant upgrades will need to address this issue. Last full Compliance report to Ops Com (April 2017) stated that FNDC staff are looking into RC application that would address ammonia and nitrogen issues; however this work is not currently being carried out.	No known enforcement
	CON20041203101 for sludge dewatering on site	11/08/2004	31/03/2016	No known issues	Recently BSL staff contacted IAM Planning to discuss obtaining a new sludge storage consent for this WWTP. In late November BSL staff were advised of the info required to support the preparation of a resource consent application). No further progress on this.	No known enforcement

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
Kaitaia	AUT.000932 (01 to 03) for discharges	17/08/2005	30/11/2021	No long term issues at WWTP, however currently the effluent flow meter is not working and estimate discharge flows are being based on influent flows. Occasionally during summer the toxic cell count, during an algae bloom, exceeds consent limit.	No known issues. BSL regularly suggests decommissioning Ahipara WWTP and upgrading Kaitaia WWTP to a mechanical plant that accepts Ahipara + Kaitaia flows.	Currently operating under NRC Abatement notice EAC.066717.01 for discharge of untreated overflows into Tarawhataroa Stream. Issued 20-04-2016. Compliance deadline 30 June 2016. NRC acknowledge installation of the screens at discharge points but advise this is insufficient to cancel AN. Currently they are holding off on further action, on the basis that we demonstrate progress with the overflow frequency reduction and associated consent, by way of monthly emailed updates to NRC Compliance team.
				Kaitaia WW network - when reticulation is overloaded (due to inflow and infiltration), untreated WW is discharged from three overflows, into Kaitaia waterways. BSL has introduced screens at the discharge points, to minimise discharge of solid matter. FNDC has progressed a project to reduce the frequency of overflows to 1:3 months. Current staff shortages means consultation around this approach is not being progressed	Currently the untreated WW discharges are unauthorised, NRC is aware of the efforts made to date around this issue, and FNDC needs to submit a resource consent application to authorise discharges at a frequency of 1 per 3 months, once the project is sufficiently advanced.	

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
	AUT.030602 (01 to 04) for sludge storage facility	Originally issued 12/09/2012	30/11/2021	NRC has requested compliance with conditions requiring evidence of construction in accordance with approved design. The approval required a compacted clay liner, and that an IQP observed and certified construction in accordance with design plans and consent conditions. It appears these two aspects were not complied with at time of facility construction. Steve L is looking into retrospective IQP certification. NRC has requested that FNDC cease using the facility until these compliance issues are resolved.	Current RC requires that all sludge achieves a minimum 20% dry matter content, prior to being deposited. It transpires that the costs associated with achieving this level of dryness are prohibitive, and Operations have requested a s127 application is prepared to change this condition to allow sludge with a dry matter content of 10%. Draft application has been prepared and now needs to be reviewed; however there is some concern that the lack of sufficient impermeable lining to the facility (compacted clay) may make this a difficult application. 2014 preliminary geotech investigations by Opus reveal some in situ clay, one option, if necessary, is to request more detailed geotech investigations to ascertain extent of in situ clay, which may be sufficient that RC application can also seek to remove the condition that requires clay liner.	No known enforcement
Kawakawa	CON20090116801	9/07/2012	30/04/2036	Conditions 19 requires annual meeting with hapū representatives to discuss this WWTP. These meetings are not being carried out.	No known consenting requirements	No known enforcement

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
Kerikeri	AUT.004111 (01 to 06) discharges associated with current and proposed WWTP's	6/09/2016	30-09-2036 for all except discharges to air from the existing WWTP, which expires 30-09-2018	This new consent covers discharges being generated at existing WWTP and will also authorise discharges once new WWTP is constructed. The current WWTP has typically struggled to comply with median limit for Faecal Coliforms and bacteriophage, however this new authorisation doesn't require testing for these determinands, instead limits TSS, BOD, Ammonia and E.coli. Compliance with 50%tile and 90%tile TSS and E.coli limits are not being met.	S127 resource consent application lodged with NRC in November 2017 to shift the discharge contaminants to air coordinates for the proposed WWTP, which is in the process of being redesigned approximately 100 m NW of the approved site within disused quarry on the subject site. Consultants have assessed the impact of the location change as less than minor; if NRC agrees, this will be a straight forward application.	No known enforcement
	AUT.004111 (07 to 08) site enabling works and pipework through waterways	23/02/2017	30/09/2022	No known issues	Changes will be required to this consent, once the new extent of earthworks is confirmed, at the proposed new location. When this info is available, application will be prepared and lodged.	No known enforcement

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
Kohukohu	CON20010383901 for discharges	19/06/2002	31/08/2016	Typically operates within consent limits but has exceeded Faecal Coliform limits three times since 2010	Resource consent application to renew this consent was lodged with NRC May 2016, currently operating pursuant s124 of RMA. Application is on hold as iwi consultation is incomplete. In late 2016 staff attended two hui with reps from four Kohukohu marae. The hui were only partially successful and issues were raised that needed support from other departments in Council. The primary issue raised, relating to the WWTP, was the state of the Hokianga Harbour and the impact of our discharge on it. Hapū representatives indicated a strong preference that any new consent include a condition requiring a hydrodynamic model of the harbour, to understand residence times in the harbour and where our discharge is expected to end up. All works associated with this consent renewal are currently on hold due to lack of staffing resources.	No known enforcement

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
Opononi	CON20070266701	18-11-2009 by Environment Court Decision	31/08/2019	Ongoing breaches of E.coli median and 90%tile limits for the discharge. BSL have investigated and undertaken various adjustments but to date these have not achieved success.	The current resource consent required establishment of Community Liaison Group, to discuss operation of the plant and to be involved in discharge to land options assessment. The Group has been established for some years, and the discharge to land assessment was completed in 2014, concluding no viable discharge to land options exist. FNDC staff now need to work with the LG to explore WWTP upgrade options that would be acceptable to the community (to avoid another consent process via Environment Court); addresses the E.coli issues, and meets expected higher water quality standards generated by the newly released NRC Proposed Regional Plan. Work with this group needs to be recommenced - options need to be progressed to one suitable to take forward in a resource consent renewal process. RC renewal application needs to be lodged no later than May 2019 in order to secure the ability to continue to operate under s124 of the RMA, until a decision is made on the renewal app. Hydrodynamic model of the harbour will substantially aid preparation of the required RC application.	Currently operating under NRC Abatement notice EAC.066718.01, issued 20-04-2016 for failure to comply with E.coli median and 90%tile consent limits. Compliance originally due by 29 April 2016, NRC approved requests to extent this to 26-08-2016, and then out to current compliance deadline of 31-03-2017.
Paihia	AUT.001108 (01 to 03) for discharges	29/08/2014	30/04/2034	Ongoing breach of Ammonia limits. Operators have introduced sludge reducing bacteria to ponds; lagoon master aerators to ponds; and cleaned out anaerobic pond to attempt to improve water quality results with regards to Ammonia.		

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
				Failure to undertake plant upgrades as required by consent condition. See email to GM dated 01-12-2017 for full summary of history around this issue.	Resource consent application will be required, to amend relevant conditions of consent that require specific SAF upgrades to the plant, if the upgrade design does not include SAF. Consent application to be progressed once a decision around upgrade design is made.	Currently operating under NRC Abatement Notice EAC.067129.01, issued 26-10-2016 for failure to comply with the Ammonia limits set out in consent. Compliance deadline 30 December 2016. Alliance staff meet with NRC Compliance staff quarterly, at the last meeting (28-11-2017) at which NRC verbally confirmed they will be seeking and Environment Court Enforcement Order to require full compliance with consent conditions.
	AUT.016330.02.02 sludge disposal	27/02/2014	30/04/2029	No known issues	No known consenting requirements	No known enforcement
Rangiputa	CON20070263501 for discharges	17/07/2008	30/11/2032	Typically complies with consent limits.	No known consenting requirements	No known enforcement

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
Rawene	CON20080257701 for discharges	TBC, via Environment Court order	31/10/2023	Water quality consistently complies with consent limits. Consent conditions required establishment of a Community Liaison Group, for purpose of informing the community on the operations of this WWTP, and also to enable direct community involvement into a public health risk assessment regarding the current system, and research into alternative methods of waste treatment and disposal. The group has been set up and investigations are ongoing. This liaison group have requested a Hydrodynamic model be created of the harbour, to assist this investigative work.	No known consenting requirements	No known enforcement
Russell	AUT.008339 (01 to 02) for discharges	2/09/2013	30/04/2024	Typically complies with consent limits, apart from E.coli, which generally complies, apart from singular days (4 since new consent was issued) where the sample grossly exceeds limit of 1000c/100mL, with last couple of results up around 25,000c/100mL	No known consenting requirements	Currently operating under NRC Abatement Notice EAC.067566.01, issued 06-03-2017, for failure to comply with E.coli consent limits. Compliance deadline 31-03-2017.

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
				Condition 8 requires submission annually of a report into land instability risk, associated with discharging to the bores. Last report submitted to NRC in 2015, current report is overdue, an RFQ is to be issued to the consultant (Rileys) to prepare and provide report covering time period from last report to now.	S127 resource consent application currently being prepared to lodge with NRC, seeking to remove condition 8 (annual land instability risk report) on the basis that assessments so far indicate that discharging to the bores is not impacting on land instability. Application prep on hold pending obtaining complete set of data required by Rileys, to complete the application report.	Infringement notice EAC.067261.01, issued by NRC on 25-11-2016 for $750 due to discharge of WW that may have resulted in contaminants entering water. Paid December 2016.
				Condition 9 requires submission of programme for 2-yearly monitoring and reporting of the infiltration efficiency within each of the disposal bore areas. This has not been submitted.	No known consenting requirements	
Taipa	NLD 96 4007 (01 - 03) for discharges	7/08/2001	30/11/2008	Water quality: Consistent non-compliance with Ammonia limit (>5g/m^3) since Aug 2014, and intermittent compliance prior to Aug 2014. Intermittent non-compliance with Faecal Coliform limit (1000c/100mL)	Application to renew expired consent was lodged prior to expiry date (2008) so currently operating under s124 of RMA. Lack of specific upgrade proposal to meet Ammonia limits, along with insufficient agreement within hapū consultation/limited staffing capacity are the key factors around delays to consent renewal. Current status is hapū consultation recommenced last month, and an additional Consents Planner starts early 2018, who will progress the required upgrade options assessment, with hapū involvement, from Feb 2018. One key issue around hapū consultation is that WW is collected within one rohe and discharged in another, so there is a strong desire to see discharge within the rohe the WW is generated.	In late 2017 NRC advised that they would set a hearing date for the resource consent renewal, indicatively mid-2018. Either FNDC will be prepared for this hearing with a design for upgrade that will meet water quality standards, and also be satisfactory to hapū (consent will need to include condition(s) around timeframes to undertake necessary upgrade). Alternative is a contested hearings process and expectation that the options review work and resulting upgrade will form conditions of the new consent.

Site	Consent #	Date of issue	Date of expiry	Compliance issues	Comments	NRC enforcement
Whatuwhiwhi	CON201107 20302 for discharges	Originally issued 28-06-2007	30/11/2025	Typically operates within consent limits	No known consenting requirements, other than an ongoing expression of interest by Carrington Resort to investigate benefits of the resort funding an upgrade to the WWTP, and discharge consent, to enable the expected flows from the planned resort upgrade to be processed and discharged via the FNDC WWTP.	Historical Abatement Notice issued 2014, and since cancelled.

As seen in Table 21,10 out of 15 resource consents will be due for renewal within the next LTP period 2018-28:

- Taipa (on hold, iwi consultation underway)
- Hihi
- Kaeo
- Kaikohe
- Kaitaia
- Kohukohu (on hold, iwi consultation underway)
- Opononi-Omapere
- Rawene
- Russell
- Whatuwhiwhi.

More stringent discharge standards may be specified for these schemes to align with the new Northland Regional Policy Statement and proposed Regional Plan. As a result, these treatment facilities may require significant upgrades to the existing treatment process to achieve the new discharge standards. Apart from Russell and Hihi, these plants are wastewater pond systems, and future upgrades may also result in higher operating and maintenance costs.

4.2. Assets overview

The data in this section is sourced from the current asset data held on Council's asset inventory system, AssetFindA. The following sections describe a range of attributes associated with water assets that are located both below and above ground. The attributes include details on quantity, condition, capacity, criticality and performance. Tables are included which identify asset attributes by scheme location.

Table 22 is a summary of the wastewater assets in the District, depicting the size of the catchment (population and number of connections) and the key assets (length of pipes and number of pump stations) and the current asset value.

Table 22: Wastewater assets District-wide summary

Community	Service population	No of connections	Length of pipe	No. of PS	Scheme asset value
Ahipara	1,317	479	19533	10	$7,699,736
Awanui and Kaitaia	6,408	2330	70175	20	$30,257,721
East Coast (Taipa)	3,663	1332	53408	25	$19,957,069
Hihi	432	157	4358	1	$2,804,030
Kaeo	457	166	10546	7	$4,646,953
Kaikohe	4,133	1503	45065	9	$19,097,300
Kawakawa	1,444	525	13371	1	$10,389,886
Kerikeri	2,712	986	29768	12	$13,405,070
Kohukohu	226	82	5307	3	$2,267,813
Matauri Bay	-	-	6490	-	$726,998
Opononi	987	359	13415	7	$5,322,755
Paihia	5,085	1849	66348	25	$32,492,025
Rangiputa	281	102	2758	1	$1,261,326
Rawene	613	223	10912	5	$4,749,634
Russell	1,400	509	21074	7	$11,046,786

Community	Service population	No of connections	Length of pipe	No. of PS	Scheme asset value
Whangaroa	39	14	572	3	$415,085
Whatuwhiwhi	1,900	691	28595	14	$12,652,786
District-wide	-	-	-	-	$799,438

Note: not including land values, but includes resource consents and easements
Serviced population = 2.75 people per connection
As shown above, Council's wastewater asset is currently valued at $180 million.

4.3. Physical asset attributes

4.3.1 Above ground assets

The aboveground assets primarily consist of treatment facilities and pipe bridges.

4.3.1.1 Wastewater treatment plants

The purpose of wastewater treatment plants is to accept raw effluent flows from all domestic and commercial wastewater connections, and provide processing to a level that meets the quality requirements of resource consent conditions issued by NRC. Effluent treatment is a biological process which in some cases occurs naturally by the action of UV sunlight in the case of pond based systems, or in other cases may include more sophisticated mechanized and electronic equipment such an activated sludge process.

Council uses a mixture of methods depending on land availability and quality requirements, with a variety of associated running costs, usually related to the use of energy requirements.

As shown in Table 23, the majority of the treatment plants in the District are pond-based systems, for which there is increasing difficulty in complying with the new, more stringent discharge standards.

Table 23: Lists the major components of the treatment facilities for each scheme

Treatment plant component	Ahipara	East Coast	Hihi	Kaeo	Kaikohe	Kaitaia/Awanui	Kawakawa	Kerikeri	Kohukohu	Matauri Bay	Opononi	Paihia	Rangiputa	Rawene	Russell	Whangaroa	Whatuwhiwhi
Anaerobic pond					2							3		2			
Oxidation pond	1	5		1	1	3			1		2	2	3	2			2
Aquamat system																	1
Floating wetland						1											
Activated sludge			1				1	1							1		
Filtration				1			1	1							1		
UV disinfection			1	1			1	1							1		1
Packed bed reactor										1							
Constructed wetland	1	1	1	1	1						1			1			
Natural wetland discharge	1				1			1	1			1					
River discharge		1	1	1	1	1	1										
Harbour discharge									1		1			1			
Borefield discharge															1		
Land discharge										1			1				1
Tanker transfer to treatment																1	

It should be noted that Kerikeri and Paihia wastewater treatment plants will complete the respective upgrades in the next three years (2018-2021).

After processing, treated effluent discharges are usually made to receiving rivers, streams or wetlands. Alternatively discharge direct to sea (Opononi), or to land (Russell), is an acceptable option. Discharge to land is becoming a preferred stakeholder option for consideration under consent renewal activities, although constraints can include land availability and cost.

More detailed descriptions of treatment plants, layout drawings, operation and maintenance tasks and risks can be found within specific operation and maintenance manuals and management plans.

4.3.1.2 Pipe bridges

There are also a number of pipe bridges throughout the District, which are necessary when pipelines have to cross sudden abrupt changes in ground elevation; such as water courses, road side drains, etc. Pipe bridges are usually required in the case of gravity sewer crossings, where the pipe gradient must be maintained across the opening. In some cases pumped rising mains may also form pipe bridges, although deviations in grade are not as critical. Pipe bridges can be subject to increased risk to the operations of the systems, as failure of the bridge structure can occur significantly earlier than failure of the pipe, either due to exposed conditions or external damage. Consequently, these structures need inspection on a more frequent basis than the pipelines.

Table 24: District summary of wastewater pipe bridges

Scheme	No. of pipe bridges	Average length (m)	Longest bridge (m)
Ahipara	1	35	35
East Coast	8	17	107
Kaeo	3	6	8
Kaikohe	10	27	145
Kaitaia	19	15	47
Kawakawa	5	15	33
Kerikeri	1	15	15
Kohukohu	1	4	4
Opononi	5	7	23
Paihia	22	34	164
Rawene	2	39	65
Whatuwhiwhi	4	3	4
DISTRICT TOTAL	**82**	**217**	**650**

4.3.2 Below ground assets

Below ground assets generally comprise wastewater network infrastructure, such as pump stations, manholes and pipelines and rising mains. Refer to Table 21 for a summary of the wastewater networks within the District.

4.3.2.1 Gravity pipelines

Pipe material and age

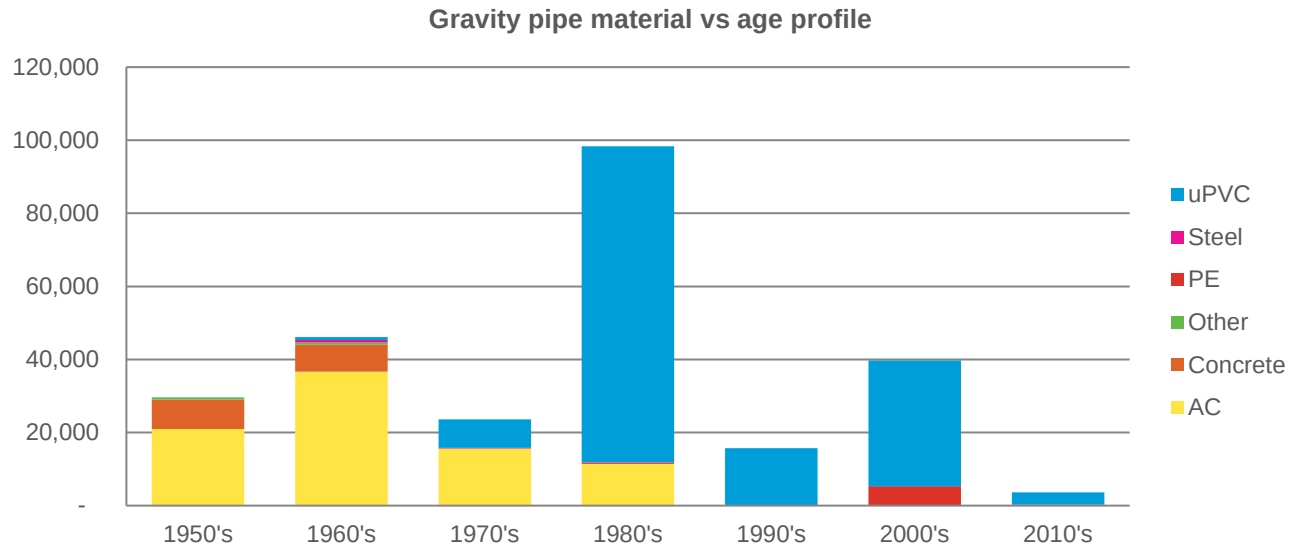
The below ground assets are primarily pipelines and manholes. Within the District, there are a total of 386,750 metres of pipes, of which 254,980 metres operate by gravity and 122,376 metres are pressure pipes. There are a total of 4,489 manholes spread across the 17 wastewater schemes. There are a total of 150 in-line network pumping and 449 individual low pressure pump stations throughout the District. These are primarily underground assets; though most have an above ground component in electrical cabinet and biofilters in some cases.

Original sewerage installations in the 1950 and 1960s in Kaikohe, Awanui, Kaitaia and Kawakawa, were primarily constructed using asbestos cement (AC) pipes. During the 1970s, reticulation installations in Paihia and Whangaroa were a mixture of approximately half asbestos cement and half un-plasticised polyvinyl chloride (uPVC). Other schemes constructed in the 1980s were primarily using uPVC pipes.

New reticulation is only provided through the extension of the service to new customers or by vested development. From the start of 2000, polyethylene (PE) began being used for pressure pipeline construction in the District, and this has remained the primary material since the mid-2000s. Installation of low pressure sewer networks in Kaikohe, Kaitaia and Paihia in recent years has resulted in a high use of small diameter PE pipe material.

Figure 9 shows there are approximately 84,816 metres of asbestos cement pipes that have been in the ground for more than 40 years with approximately 59,000 metres of those older than 50 years. These pipes are nearing the end of their theoretical useful life and should be considered for renewal in the near to medium term future.

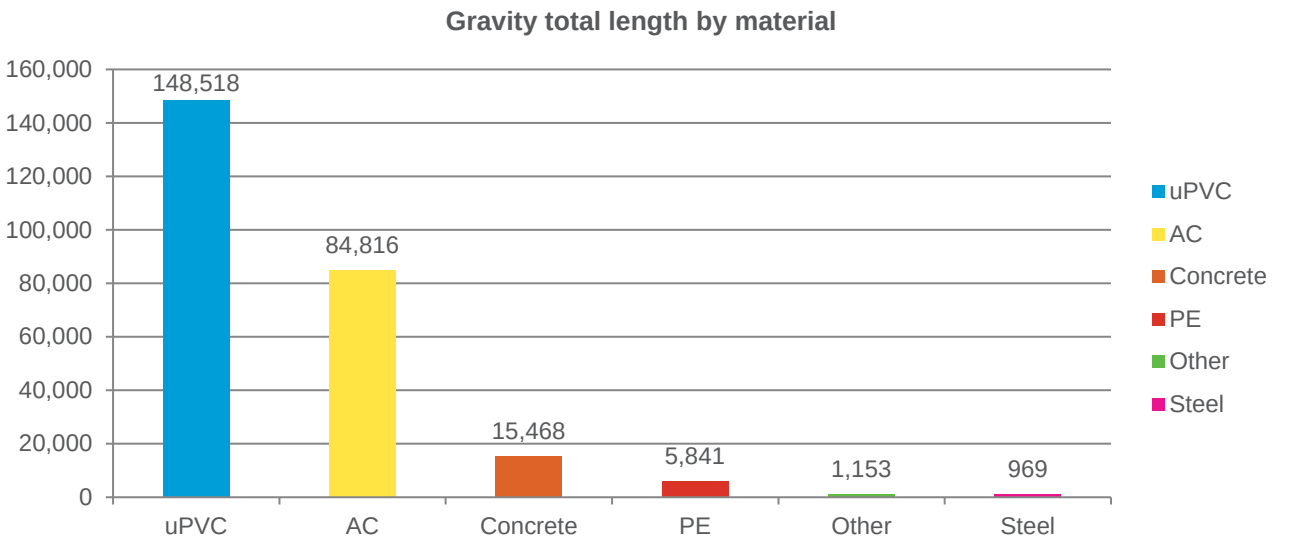
Figure 9: Gravity pipe material vs. age profile



Pipe length by materials

As depicted in Figure 10, u-PVC is the most common pipe material in the district, and reflects over 50% of the total length of pipeline installed. This is followed by AC, concrete and PE pipes.

Figure 10: Gravity pipe materials profile



The historical wide usage and age of the AC pipes, located in Kaitaia, Kaikohe, Paihia, Kawakawa and Kaeo, represents an operational risk as these pipes are coming to the end of their theoretically useful life. Only limited condition information on these pipes is available at this time, and further detailed inspection would assist in planning for asset renewal programs and managing operational risk. The need to carry out further condition assessment has been identified as part of the Asset Management Improvement Plan.

Manholes

There are 4,666 manholes in the District, and the age of the manholes. Figure 11 shows the age profile of manholes across the District.

Figure 11: Sewer manhole profile

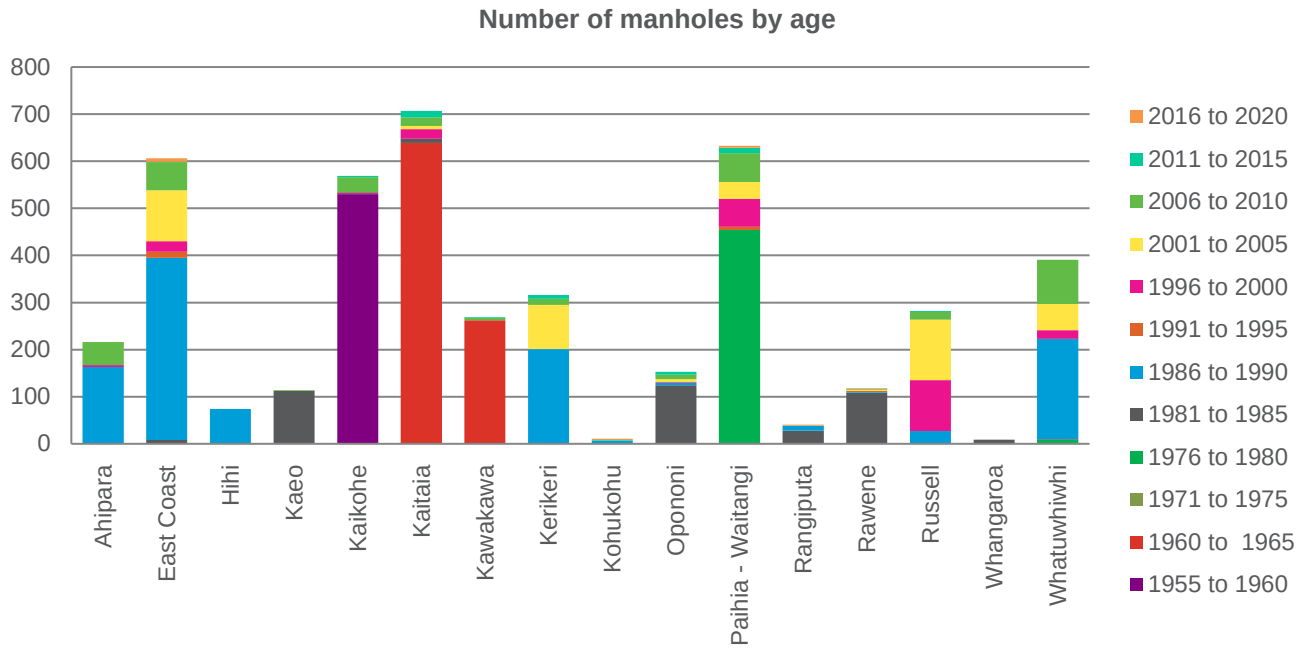
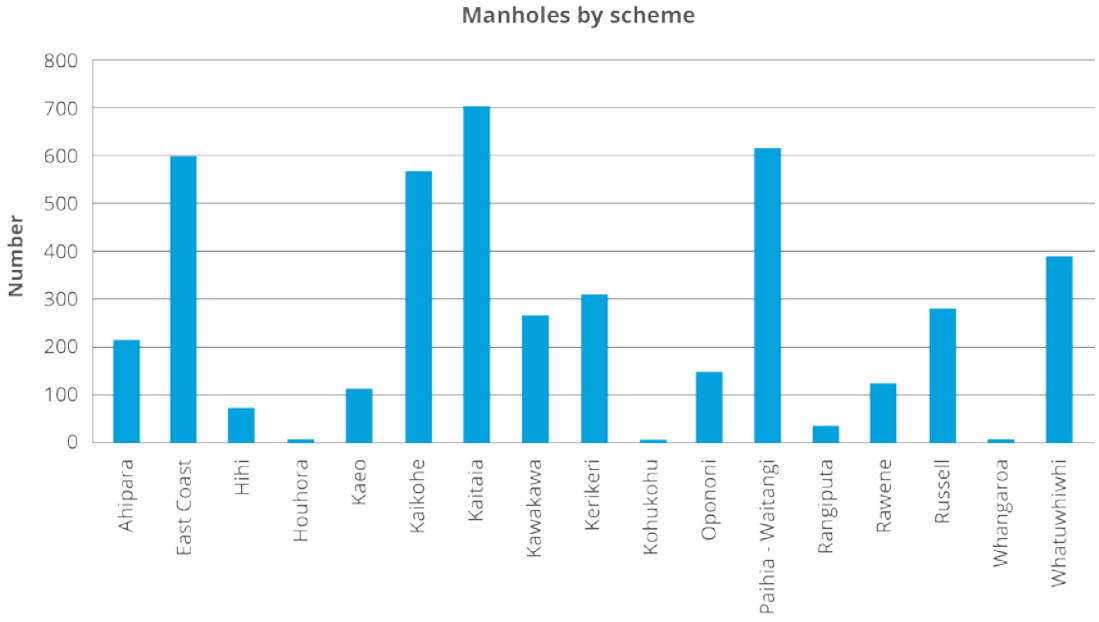


Figure 12 shows the number of manholes in each wastewater scheme. The average distance between manholes is 87 metres except for the Kohukohu scheme where the average distance between manholes is 315 m. This is due to the Kohukohu scheme being an EDS and hence fewer manholes are required.

Figure 12: Number of manholes by wastewater scheme



Pump stations

As depicted in Figure 13 and Figure 14 the District wastewater schemes are made up of 150 larger pump stations and 449 single dwelling pump stations giving a total number of schemes within the District of 611.

Figure 13: Pump station: District profile – number of pump stations

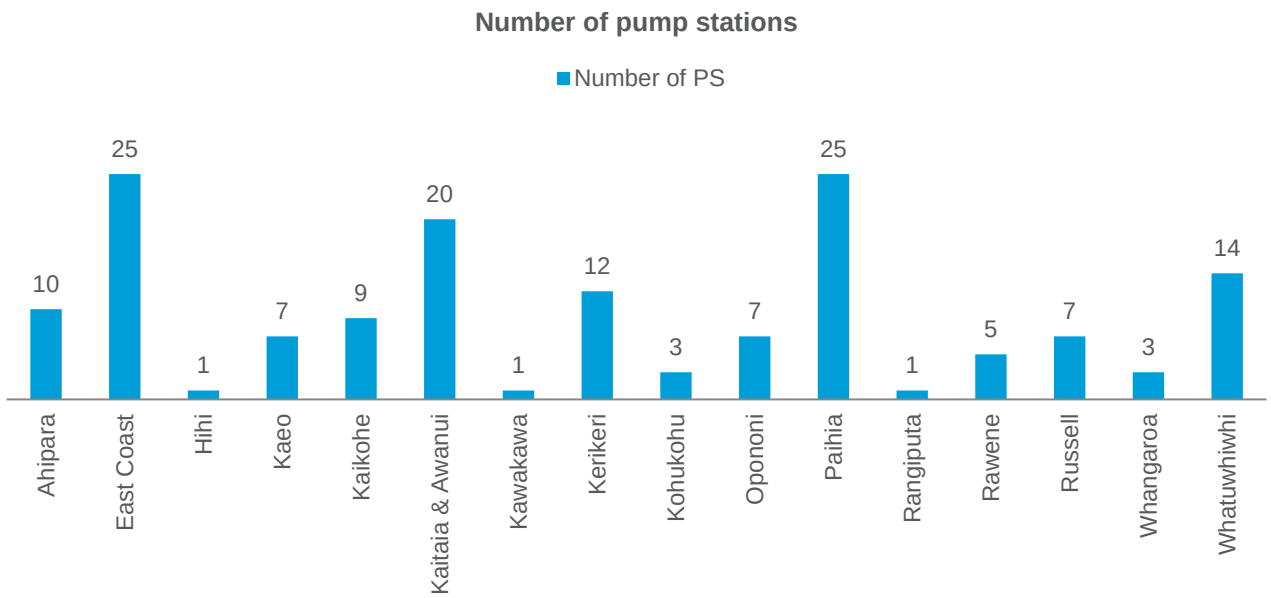
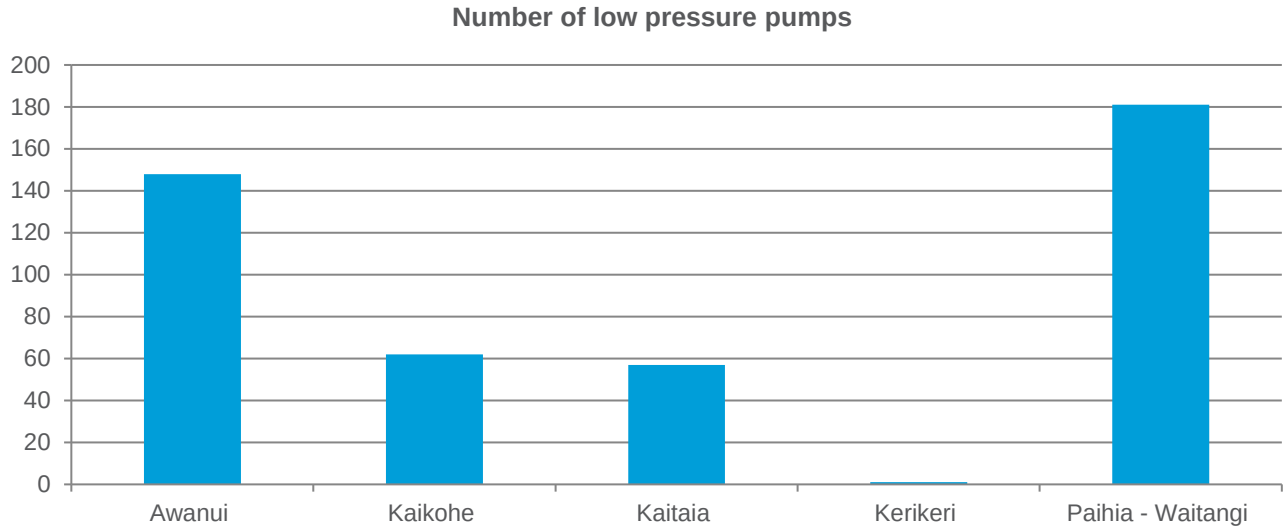


Figure 14: Pump station: District profile - number of low pressure pumps



Out of 150 larger pump stations, 6 of them are connected to permanent emergency generators. Storage tanks and permanent generators provide additional infrastructure resilience in the event of equipment failure or power outage.

The Northland Regional Water and Soil Plan specify that a minimum of 12 hours storage at dry weather flows is required to allow for emergency events. By having standby pumping configurations and good operational response times, experience has shown that the risks from dry weather incidents related to pump stations is low. However, there are greater risks associated with storm events, where high wet weather flows combined with the incidence of power outage can have severe consequences. Emergency storage tanks in these cases have minimal effect, as the increased flows reduce storage times considerably, to as little as one hour in some cases. System resilience for storm conditions is better resolved by the installation of permanent on site power generators that have automated change over functionality in response to outages.

Rising mains

Rising mains are pressured pipelines used to convey sewage from pump stations, in situations where gravity pipework is not possible due to geographical constraints, or is not appropriate from design and cost considerations. Correct design of pressure pipelines is important to ensure pipe material is suitable and sizing is aligned to the hydraulic design of the complete pumping system. Figure 15 and Figure 16 indicate rising main materials by length across all the wastewater schemes in the District, and at individual scheme level.

Figure 15: Pressure pipes - material distribution by length across all wastewater schemes

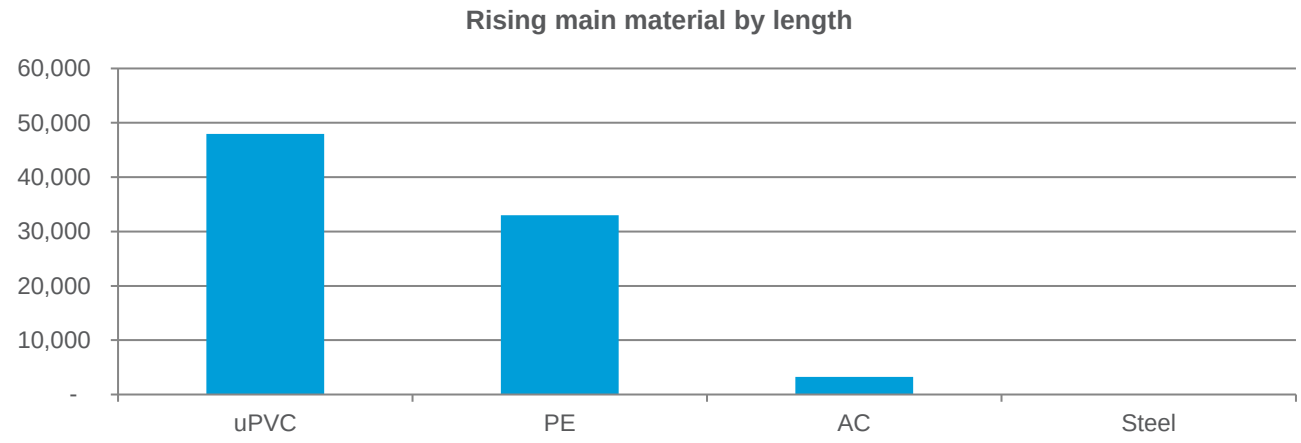
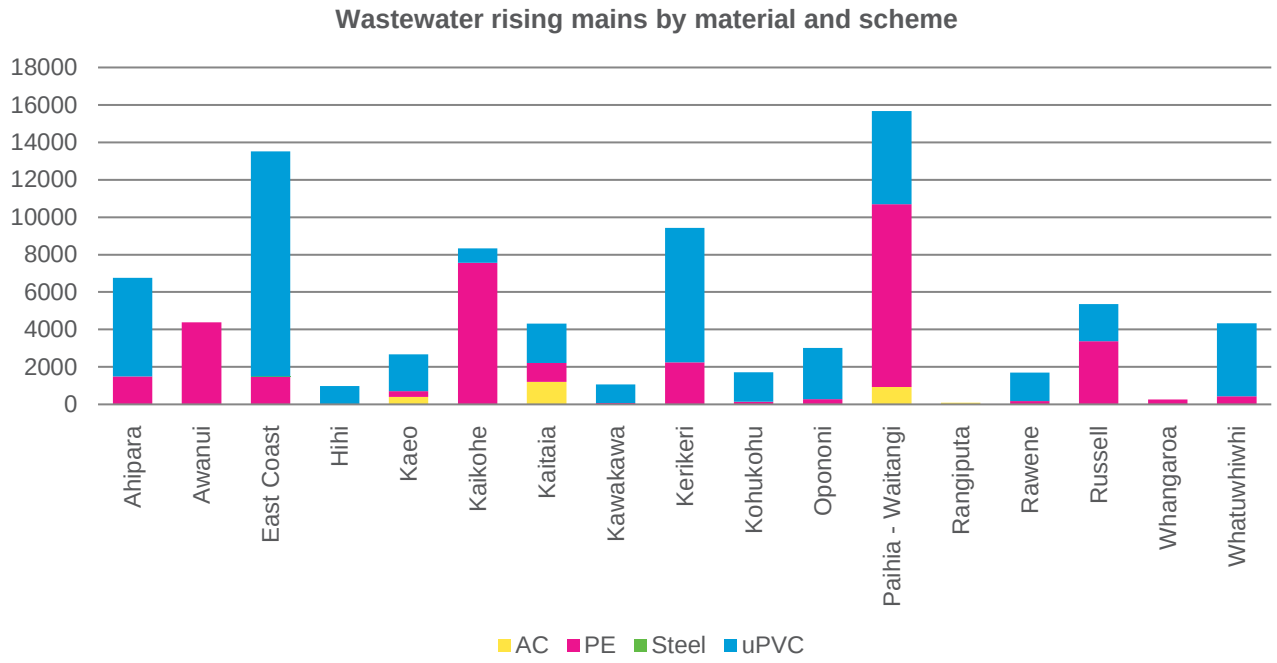


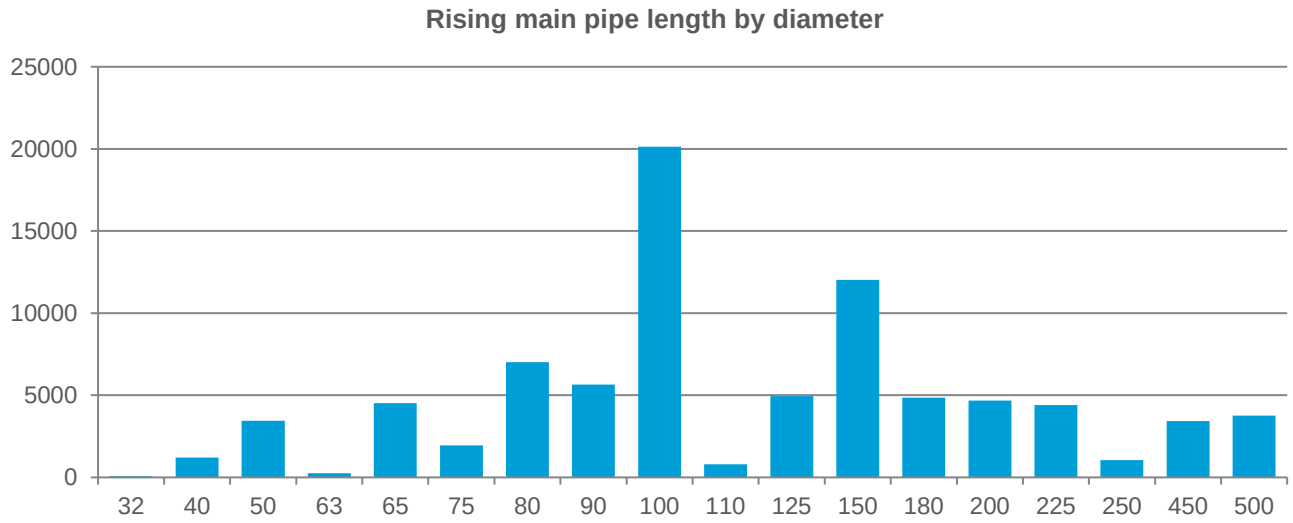
Figure 16: Wastewater rising mains by material and scheme



The amount and age of the AC pipes, located in Paihia and Kaitaia, represents an operational and maintenance risk; as these pipes are coming to the end of their theoretical useful life. Within the last 8 years, Council has replaced significant amounts of asbestos cement pressure mains in Paihia. These pipes had broken or were at risk of breaking, prompting the replacements. Further detailed inspection would assist in planning for asset renewal programs and managing operational risk.

Rising main pipe diameters range from 50 mm to 500 mm, as shown in Figure 17.

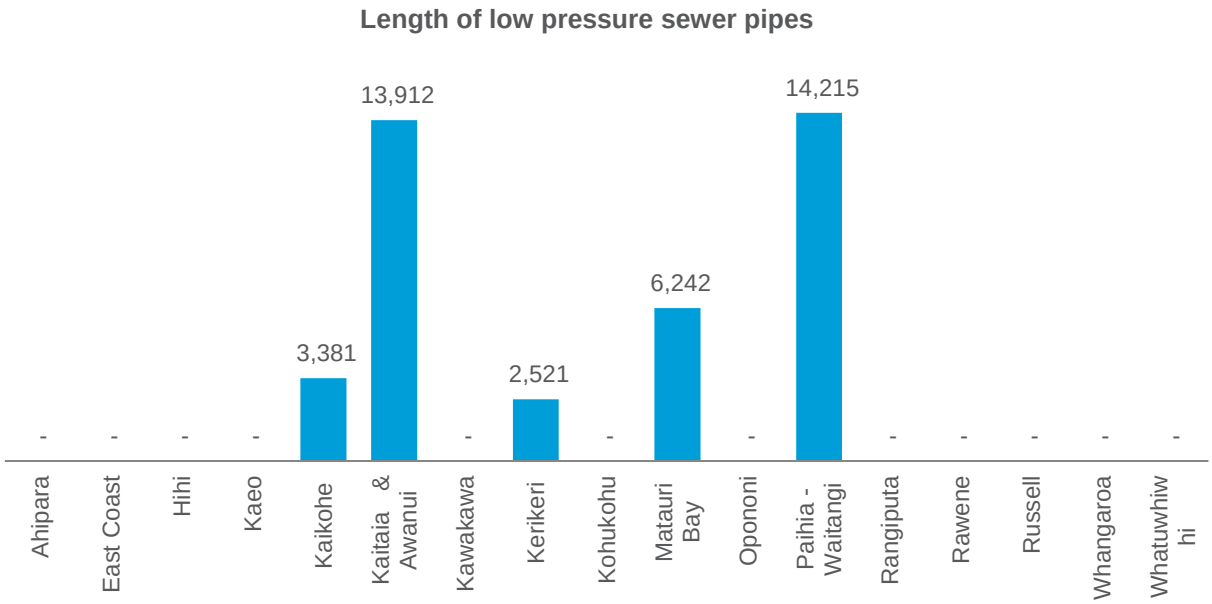
Figure 17: Rising main lengths for various pipe diameter sizes across the district



The larger diameter pipes are all in the Paihia catchment and make up the pipeline from Waitangi Major pumping station to the treatment works in the Waitangi Forest. This pipe was laid in 2007 as a replacement for an AC pipe which had come to the end of its useful life.

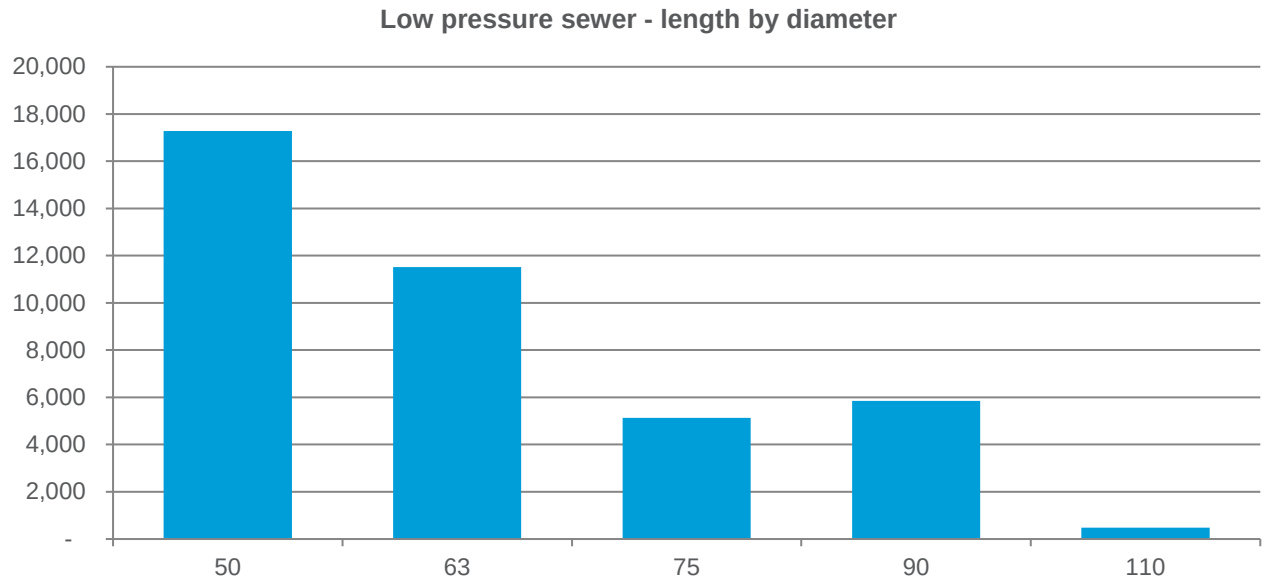
Smaller diameter PE pipework is found on a number of recently installed low pressure sewer systems in Kaikohe, Kaitaia/Awanui and Paihia. The small bore PE pipelines reflect the requirement to convey small flows from individual property pump stations.

Figure 18: Length of low pressure pipeline systems installed at various locations



Pipe diameters on low pressure sewer systems range between 50 mm and 110 mm as indicated in Figure 19.

Figure 19: Low pressure sewer, length by diameter



4.3.3 Critical wastewater assets

FNDC has adopted the definition of a critical asset as any asset where failure could result in any of the following:

- a serious health and safety incident
- loss of service to significant customer numbers for > 12 hours
- an immediate compliance failure
- significant financial loss or liability.

Critical assets receive the highest priority with regard to maintenance planning and renewal programmes. Decisions around timing for critical asset replacement are based on condition assessment and performance, rather than reference to age alone, which is possible in some cases for non-critical items.

In some cases spares for a number of critical assets have been procured and are held in storage by the operations contractor. Where failure occurs and the critical spare is deployed, a replacement critical spare asset is procured. Details of critical asset spares are held on the Council asset register.

An asset is unlikely to be defined as a critical asset where there are duty/standby arrangements in place.

Key critical wastewater assets include:

- wastewater retaining structures such as process and balance tanks
- sewer pipe bridges over waterways
- high capacity sewage pumps at specific pump station locations
- air valves on rising mains
- rising mains in sensitive environments
- low flow monitoring equipment
- telemetry and process control equipment
- UV process equipment.

Currently the substantial management and/or replacement of critical assets is based on advice from Councils operational contractor.

Further development of the critical assets register needs to be undertaken via a risk workshop that involves all key parties, and has been identified as part of the Asset Management Improvement Plan. Use of the register for operational management is a key strategic approach to minimising risks to LoS and compliance.

In addition to critical assets there are also critical components, i.e. a Programmed Logic Controller PLC card within an electrical switchboard on a wastewater treatment plant. A further detailed breakdown and understanding of risks associated with asset components would enhance the asset management and risk management capability.

Failure of a critical asset can also be caused by the failure of an associated service. This includes items like loss of functionality through power failure. Future development of a critical AMP will need to include all probable forms of failure.

4.4. Asset condition

4.4.1 Overview

Condition assessment is relevant to understanding the remaining life of assets or components. This understanding drives future expenditure patterns. By conducting regular condition and performance monitoring, maintenance strategies and/or rehabilitation strategies can be updated and refined, and ultimately replacement programmes can be determined more accurately.

It is critical that Council has clear knowledge of the condition of assets and how they are performing, as management decisions regarding maintenance, rehabilitation and renewal revolve around these two aspects. Not knowing the current condition or performance level of an asset may result in lack of essential maintenance and lead to premature failure of the asset. The unforeseen failure of an asset can have significant consequences that constitute a public health/liability risk, regulatory risk, or loss of service. The development and continued use of condition assessment data will allow preparation of verifiable predictive decay curves for particular asset types and hence permit prediction of remaining life. Consideration will still be required to allow for economic influences in the adopted life for the asset type.

The wastewater asset inventory is held on our AssetFindA system where reliable information is recorded regarding the location, type size, material, etc. of the assets. However, due to a lack of historical records, a substantial proportion of the age of the assets has been assumed. While a degree of actual asset condition assessment has been carried out recently on above ground assets, there is a significant level of theoretical assumed condition grading recorded, based on expectations aligned to the age of the assets, especially in the case of underground pipelines. It is reasonable to apply this methodology to certain asset types where visual inspection or testing is unrealistic. For instance in the case of electronic monitoring equipment where components are unlikely to show any signs of physical deterioration, but where componentry will fail due to age at some point.

Council is currently establishing a long term sustainable approach to gathering asset condition information. The preferred method is to combine asset condition monitoring for the majority of assets, together with a planned maintenance program for the same assets. Council contractors undertaking maintenance will have access to Council's asset management system via hand held field devices, and will update asset data in real time. Other asset types will require more specialised engineering consideration to assess condition, for instance structural inspection of wastewater holding tanks and other major structures. In these cases Council has and will continue to engage specialist consultant services, and provisions are made in annual professional fees budgets. Condition assessment of underground assets is much more challenging, and requires costly intrusive physical inspection, which can also result in service disruptions. Further planning is needed to determine the preferred strategy and cost effective method of assessment, and this has been identified as part of the Asset Management Improvement Plan.

Following the implementation of regular condition assessment, it will be possible to proactively use the asset management system to accurately predict asset renewal and replacement programs, along with critical maintenance interventions to avoid failure and loss of service.

At this time it is recognised there are limitations around the accuracy of some of the condition information held on our systems, and it is recommended that any decisions based on the data are subject to on-site review and confirmation.

Asset condition is assessed and recorded in a format as recommended by the International Infrastructure Management Manual, (IIMM), as described in Table 25.

Table 25: International infrastructure asset condition framework

Grade	Condition	Description of condition
1	Very good	Sound physical condition. Asset likely to perform adequately without major work for 25 years or more.
2	Good	Acceptable physical condition; minimal short-term failure risk but potential for deterioration in long-term (15 years plus). Minor work required.
3	Moderate	Significant deterioration evident; failure likely within the next 5 years but further deterioration likely and major replacement likely within the next 15 years. Minor components or isolated sections of the asset need replacement or repair now but asset still functions safely at adequate LoS.
4	Poor	Failure likely in short-term. Likely need to replace most or all of assets within 5 years. No immediate risk to health or safety but works required within 3 years ensuring asset remains safe. Substantial work required in short-term, asset barely serviceable.
5	Very poor	Failed or failure imminent. Immediate need to replace most or all of asset. Health and safety hazards exist which present a possible risk to public safety or asset cannot be serviced/operated without risk to personnel. Major work or replacement required urgently.

Confidence in the accuracy of data currently held on asset condition is represented in the following Table 26 and Table 27.

Table 26: Asset condition data overall confidence levels

Attribute condition	D Very uncertain	C Uncertain	B Reliable
Overall quality of asset condition data			
Condition of above ground assets			
Condition of below ground assets			
Where condition is based on material life, the type of material is known			
Where life is based on pipe size, the diameters of pipes is known			
Where the condition is based on installation date, the installation date is known			

Table 27: Asset data - confidence grades

Confidence grade	General meaning
A - Highly reliable	Data based on sound records, procedure, investigations and analysis, documented properly and recognised as the best method of assessment.
B - Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example the data is old, some documentation is missing, and reliance is placed on unconfirmed reports or some extrapolation.
C - Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade highly reliable or reliable data is available.

4.4.2 Asset condition below ground assets

Relative to the number of assets, there is limited information available relating to the condition of underground assets in the district.

In the absence of comprehensive condition survey information, the condition rating of the majority of underground pipes is based on age, and the pipe renewal program is currently built around age-based criteria. Council has also adopted an approach to progress the asset replacement in the event of multiple successive reactive repairs being required on a particular asset (e.g. pipe or valve).

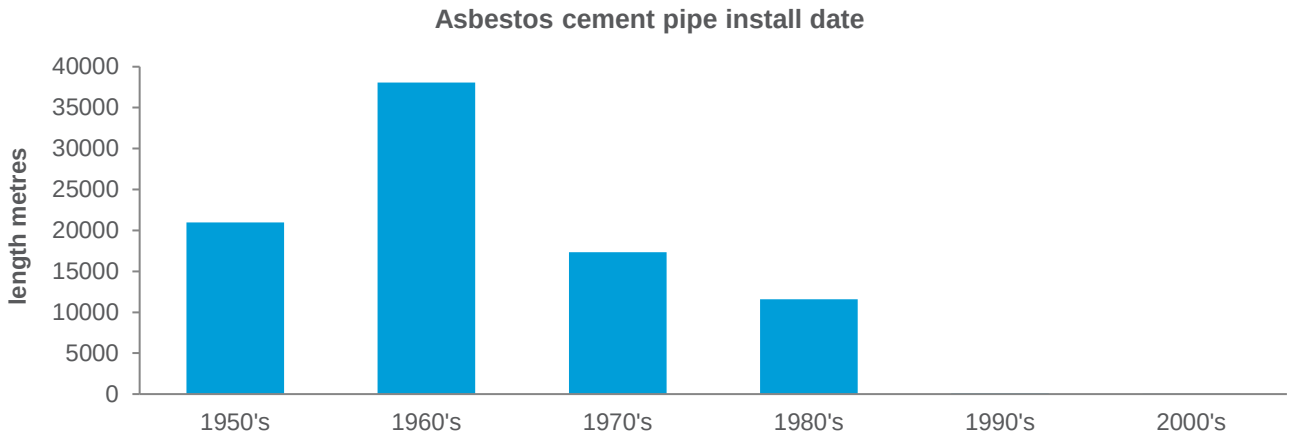
Asbestos cement pipe

As stated in Section 4.3 - Physical asset attributes, Council has more than 80,000 metres of AC pipes in the District. This presents a considerable risk to manage such assets. Based on the installation date, most AC pipes were installed in the 1950s and 1960s, as shown in Figure 20.

A CCTV inspection in 2006 indicated 30% of pipework in Kaitaia was in poor condition. A staff review of the CCTV assessment did not support this finding. However, the sample set is too small on which to base any forecast replacement program. Further condition assessment is required to enable Council to adopt a more risk-based, condition-based approach on pipe renewal.

Based on the asset life, and the known installation date, it could be expected that there will be an increase in failure of our AC pipelines over the next ten years, using an asset life of 60 years. While this impact is predicted in current renewals forecast modelling, based on asset age, further condition monitoring is expected to indicate that a longer life expectancy can be adopted, and the replacement program is likely to be extended beyond current forecasts.

Figure 20: Asbestos cement pipe expressed by age and length



PVC pipes

The second major group of pipes is made of PVC, and the asset age is between 10 and 40 years. The pipelines are well within the expected asset life expectancy. No major renewal is expected within the upcoming LTP period.

Pump stations

Pump station condition is regularly reviewed jointly by the asset manager and operational staff, and is based on visual inspection and feedback on performance by the operations contractor. With 160 pump stations across the district, a prioritization matrix has been developed to assess risk and assist in the development of renewals programs. The matrix uses the condition grading framework aligned to the IIMM), and described in Section 4.4.

In establishing a prioritisation score for each pump station, consideration is first given to individual aspects such as:

- Electrical pumps
- Structure
- Performance
- Area serviced
- Criticality.

The combination of each scoring attribute provides a priority ranking for each pump station that can be used for intervention planning.

As described earlier in Section 4.4.1, further improvements in collection of asset condition data are progressing through development of maintenance strategies linking contractor access to Council's asset management system.

4.4.3 Asset condition above ground assets

A full formal assessment of the wastewater infrastructure above ground assets was last carried out by Harrison Grierson in 2003. Ongoing assessment has been done through development of renewals programs since 2003. Data cleansing carried out at all pump stations and treatment plants, and annual review of renewal needs have been carried out by the FNDC's asset manager and operations teams.

In 2016 a structural engineer from Land Development Engineering (LDE) inspected and condition rated all major above ground structures and pipe bridges. Generally, the wastewater assets were found to be in reasonable condition.

There are however several specific issues that need to be addressed.

For instance:

- aeration tank in the Hihi wastewater treatment plant is in a poor condition, and needs to be replaced
- another example is the 2016 process review of Russell wastewater treatment plant has identified several equipment items including the IDEA decanters and the inlet screen that are in very poor condition and require immediate replacement.

As described earlier in Section 4.4.1, further improvements in collection of asset condition data are progressing through development of maintenance strategies linking contractor access to Council's asset management system. Where it is necessary, e.g. structural condition assessment, specialist engineering services will be engaged.

4.5. Asset capacity and performance

4.5.1 Overview

Capacity and performance of Council's wastewater assets is primarily determined by two factors. These are the ability of the asset to accept hydraulic flows, and the ability of the asset to provide processing that meets a required quality standard.

Hydraulic capacity relates to both underground and above ground assets, whereas processing requirement relate mainly to above ground treatment facilities.

At the asset design stage allowance is made for expected capacity and guidance includes for an element of headroom to ensure performance. Over time headroom may diminish due to growth or asset deterioration, which has a direct impact on asset performance.

For instance, pipeline and pump design considerations will include for aspects such diurnal flow, where peak loading occurs at certain times of day, and also for wet weather peak loading, as a result of inflow and infiltration (I&I). Design guidance suggests pipe sizing to reflect wet weather peak loading up to 6 times the expected dry weather loading rates. However, with age and asset deterioration, I&I levels increase, and will impact on the system capacity and performance, creating either surcharging of sewers or in some cases overflows.

4.5.2 Below ground assets

Regular maintenance of sewers and pump stations is essential to ensuring capacity and performance is optimised. Sewer blockages and silt build up can result in surcharging in pipes and potential overflows, whilst faults to pump station valving or controls can lead to failure to pass forward flows. Council's operations contractor provides sewer jetting maintenance services, and pump station inspection and maintenance.

Most of the pumping stations are equipped with duty and standby pumps. These are linked via telemetry to a central control station which monitors the performance of the pumping stations as well as the levels of effluent in the station. Most of the pumping stations have sufficient capacity to deliver the expected flows. Some pump stations in the Paihia network have very high run hours during wet weather, indicating they are very near capacity and that there could be capacity issues with the pumping stations in the near to medium term due to additional connections or pipeline deterioration resulting in increased infiltration and inflow.

Our RFS system logs all customer complaints and hence we have a good record of overflow from the system and the reason for the overflow.

In some cases capacity issues may be presented due to new developments occurring upstream of existing 100 mm diameter public sewers. Should this occur, then the developer would be required to upsize any under-capacity pipes in the system downstream of the development.

As a result of a recent failure on the rising main that connects Watea to the Paihia reticulation, it was found that this pipeline is very close to capacity, and an upgrade would be required if expansion of the Watea development was to occur. A rising main upgrade project from Watea to Haruru Falls is programmed to commence in 2019.

Network models

In order to understand current capacity and performance of sewerage networks, it is necessary to develop hydraulic software models. Models are created following extensive site survey and flow data collection across the entire network, carried out under a variety of different weather patterns and rainfall events. Essentially the intention is to make comparisons between design assumptions and actual inflow and infiltration rates across various rainfall conditions, and then to align the predictive software models to reflect actual network behaviour. Once calibrated and verified, the models can be used for a number of operational and asset management functions, including headroom checks to inform potential future development decisions, and risk management and mitigation to maintain LoS and avoid overflows.

Council has hydraulic models of the reticulation for twelve out of the seventeen wastewater catchments. The models were built and verified in 2006 and 2007, but were not immediately used for proactive assessment purposes. Recently the Kaitaia model has been recalibrated as part of an investigation and feasibility study around known overflows in the network. With confidence in the updated model which is now being used for project design purposes, it is felt that recalibration of the remaining network models is required before they can be used for future investment decisions.

Some work on the Kerikeri model has been undertaken as part of the project design for the Kerikeri Sewerage Extension project. A modelling review over the next 2-3 years is planned and work is included as part of the Asset Management Improvement Plan. Initial areas of focus will be the East Coast and Paihia, where there are known issues of localised surcharging together with proposed development activity.

Table 28 lists Council's sewerage networks together with any known capacity or performance issues.

Table 28: Sewerage network capacity and performance

Wastewater scheme	Capacity and performance comments
Ahipara	Both capacity and performance are adequate. The ingress of sand shortens the lives of the pumps
Awanui	Due to the leakiness of the private laterals, stormwater infiltration adversely affects this schemes performance

Wastewater scheme	Capacity and performance comments
Taipa	The common trunk main is at capacity and struggles to handle peak wet weather flows
Hihi	Both capacity and performance are adequate
Kaeo	Both capacity and performance are adequate. During major flood events, flood waters flood the reticulation
Kaikohe	Due to the age of the reticulations, blockages are becoming more frequent. Capacity is becoming an issue in some sections of the reticulation with untreated overflows frequently discharged from one constructed overflow
Kaitaia	Due to the age of the reticulations, blockages are becoming more frequent. Capacity is an issue in with untreated overflows occurring on average once every three weeks
Kawakawa	The reticulation has high levels of inflow and infiltration. This is in large managed by oversized main and storage
Kerikeri	Both capacity and performance are adequate. This may change as the flows increase with future development
Kohukohu	Both capacity and performance are adequate
Opononi-Omapere	Both capacity and performance are adequate
Paihia	Sections of the trunk main network are at capacity with no spare capacity for the Opua area. Significant upgrades are needed in the next few years
Rangiputa	Both capacity and performance are adequate
Rawene	Both capacity and performance are adequate
Russell	Both capacity and performance are adequate
Whangaroa	Both capacity and performance are adequate
Whatuwhiwhi	Both capacity and performance are adequate

6.5.3 Above ground assets

As discussed in earlier sections, each of our wastewater treatment plants operates under a resource consent issued by NRC. The performance of the wastewater treatment plants is measured by the compliance results to the consent conditions. All consents have a volumetric limit that restricts the amount of treated wastewater discharged from the treatment plants, usually specified as an Maximum Daily Flow (MDF) during dry weather conditions. The consents also specify final effluent quality standards required to meet the particular environmental conditions related to a specific discharge location. The combined volumetric and quality limits determine the design sizing and processing requirements for each wastewater treatment plant.

Regular maintenance of all above ground assets is essential to ensuring capacity and performance is optimised. Meeting compliance with quality limits requires that multiple assets are performing simultaneously, and operational procedures are diligently followed. Council's operations contractor provides daily monitoring of processes and asset maintenance, along with laboratory sampling and testing of effluent as required under each resource discharge consent.

Capacity and headroom calculations for each treatment plant requires detailed assessment of the existing process, and requires specialised process engineering resources. While some initial indicative work has been

undertaken to date, further detailed assessment is required on which to base any future planning decisions. Allowance has been included to carry out this activity as part of the Asset Management Improvement Plan.

Many the wastewater treatment plants in the District are pond based systems, in which solids in the wastewater is treated, digested and settled inside the ponds. Sludge waste from mechanical treatment plants is removed and transported weekly for disposal into one of four nominated treatment pond reception sites. Further sludge deposits occur as a result of commercial operators who provide private septic tank cleaning services.

Over time, the available pond volume is gradually reduced by the accumulation of sludge, resulting in a reduction of treatment capacity, and potential deterioration of effluent quality/performance.

A number of existing ponds are experiencing high sludge volume, hence, a district-wide sludge management strategy and plan is being developed, which will set a timetable for removing the accumulated sludge, and determine a sustainable approach to sludge management across the district. Future operating budgets will need to make allowance for sludge management in line with the adopted strategy and plan and be incorporated into Council's wastewater operation annual budget.

In addition, it is possible that future resource consents may introduce more stringent discharge standards, which could result in an increase of the sludge accumulation rate. This may increase as a result of additional tertiary treatment or increased complexity of biological treatment, requiring more proactive sludge management in the ponds.

Treatment plant capacity

Table 29 provides details on current treatment plant flows and associated consented flow limits, and also comments on any current performance status.

Table 29: Wastewater treatment plant capacity and performance summary

Treatment plant	2016/17 max discharge (m^3/d)	Consented discharge volume (m^3/d)	Comment on current performance
Ahipara WWTP	234 estimated. Flow meter problems	400	Elevated sludge accumulation resulted in a historical abatement notice in 2016, now cancelled. Elevated faecal coliform levels at discharge often detected.
Awanui WWTP	NA		-
Taipa WWTP	633	1005	Consent renewal application currently on hold, pending on iwi consultation outcome. Elevated levels of Ammoniacal Nitrogen and Faecal coliform at discharge occasionally detected.
Hihi WWTP	106	250	-
Kaeo WWTP	38	360	Elevated level of bacteriophage at discharge often detected.
Kaikohe WWTP	1952 Issues with flow meter did impact on reading.	1710	Elevated level of ammoniacal nitrogen at discharge occasionally detected.
Kaitaia WWTP	2739	3100	Abatement notice received in April 2016 for network overflow discharges. Investigation and improvement works are currently underway.
Kawakawa WWTP	1301 into plant	1600 into plant	-
Kerikeri WWTP	726	1000	A new treatment plant (at a new location) is being constructed, expect to commission in mid-2018.

Treatment plant	2016/17 max discharge (m^3/d)	Consented discharge volume (m^3/d)	Comment on current performance
Kohukohu WWTP	39.1	40	Consent renewal application currently on hold, pending on iwi consultation outcome.
Opononi Omapere WWTP	525 plant out	625 plant out	Abatement notice was issued in October 2016 associated with elevated ammonia level at the plant discharge.
Paihia WWTP	1374	2700	Abatement notice was issued in October 2016 associated with elevated ammonia level at the plant discharge. A plant upgrade improvement project is under development, construction expect to take place in 2018/19.
Rangiputa WWTP	-	-	-
Rawene WWTP	198	254	-
Russell WWTP	1392 Flow In	1235 Flow IN	Abatement notice was issued in March 2017 regarding occasional elevated E coli results in the discharge.
Whatuwhiwhi WWTP	184	700	-

4.6. Significant changes for the activity

It is anticipated demand will continue to increase on the Kerikeri and Paihia schemes. This will require expansion of the treatment capacity. A project is currently underway to expand the Kerikeri AOB, and to replace and upgrade the existing wastewater treatment plant. The new AOB has been aligned to include the Kerikeri residential zone, and will allow for increased development and densification around the current central business area. The new proposed treatment plant has capacity up to 1,000 cubic meters Dry Weather Flow (DWF), compared to the existing plant consent limitations of 570 cubic meters. Allowance for future expansion of the treatment plant has been included in the project design which will accommodate forecast growth in the immediate area over the next 20 -30 years. Demand in the outer areas of Kerikeri is also expected, and District Planning will need to allow for potential zoning changes and related infrastructure requirements. It is likely that decisions on further extensions to the wastewater AOB will result in the need for new reticulation and treatment facilities, particularly in the Waipapa and Riverview locations.

Global warming is expected to increase the size and frequency of severe weather events, both droughts and floods. Schemes which are approaching capacity or have performance concerns will be at risk from inundation and will require assessment for future resilience planning.

Rising sea levels is expected to result in increased coastal erosion and inundation. This is expected to result in a managed retreat of some wastewater reticulations which are located in the coastal erosion regions. This may have a significant impact on the Paihia and Opononi networks which are close to the water's edge. In some cases the solution may be to replace existing gravity networks with low pressure pump systems.

Changes in legislation and Regional planning requirements is likely to result in more stringent quality standards being imposed at the time of resource discharge consent renewals. A consequence will be that small community schemes become less affordable to ratepayers, especially in the case of declining populations. An option for Council will be to review the current targeted rating policy, and possibly revert to a District-wide rating method, which would minimize the financial impact of scheme upgrades on small communities.

Under the LGA section 17A, Councils are required to carry out periodic review of their wastewater service delivery activity. A recent review concluded that contracted service delivery under an Alliance arrangement was

preferred for the next 5 year period. However, it is possible that a future review may recognise the benefits offered by a Council Controlled Organisation (CCO) or a Council Controlled Trading Organisation (CCTO), to improve efficiency in delivery of the service to ratepayers.

5. LIFECYCLE STRATEGIES

Asset life cycle involves asset creation / acquisition, asset operation / maintenance, asset renewal / replacement and asset disposal. This section outlines the asset life cycle strategies practised in the District.

5.1. Operations and maintenance

Asset operation is the active process of utilising an asset consuming resources; such as manpower, energy and materials. Operations include routine inspections and testing to monitor the asset condition and identify the need for maintenance or repair work. Asset maintenance is the day to day work required to keep the asset serviceable and to prevent premature deterioration or failure

The assets are operated and maintained by the Council's Alliance Partner, Broadspectrum Limited (BSL), under a collaborative contract arrangement. BSL carry out the day to day operation and maintenance of the assets through an Alliance Management Team.

Council operates the systems to provide customers with a continuous wastewater collection and disposal service. However, supply may be occasionally interrupted in order to carry out planned maintenance, connect new customers or repair a pipe burst. The aim is to return supply within four hours for all interruptions, and to respond to faults and customer issues that may arise as follows:

- for planned works, give customers at least three days' notice of an interruption
- attendance to sewer dry weather overflows within 2 hours with resolution of the overflow issue within 4 hours.

A comprehensive range of flow monitoring and effluent quality sampling and testing is carried out to check compliance against NRC resource consent requirements. Analysis of any non-conformance is undertaken as part of a management action plan to remedy.

Telemetry and SCADA systems are used to monitor and record plant performance and also to shut down and alarm in the event of quality parameter exceedance or critical plant failures.

The Alliance Management Team is responsible for setting the overall operational objectives, targets, risk, emergency planning, etc. The key roles and responsibilities are listed in Table 30.

Table 30: Key roles and responsibilities of FNDC and BSL

FNDC		BSL	
Role	**Responsibility**	**Role**	**Responsibility**
Operations Manager	Management of alliance operations and maintenance contract, renewals and minor capital upgrades. Contractor payment authorisation and performance management	Business Manager	Direct management of contractor's personnel and establishment. Ensure financial targets and performance levels are achieved
Operations Engineer	Quality and performance monitoring and reporting. KPI data collection and reporting. Project management for minor projects. Customer response and liaison	Division Project Manager	Line management of projects team delivering renewals and minor capital programs to agreed financial targets and timescales
		Operation Maintenance Manager	Line management of operations and maintenance team to meet financial targets compliance performance and customer LOS

Operation and maintenance manuals identify details of each wastewater scheme including site layout drawings, process functionality, standard operating procedures and maintenance requirements. Wastewater management

plans further detail risks and management requirements to ensure wastewater effluent quality meets the requirements of discharge resource consents. Monitoring, recording and sampling is carried out by operations staff in line with the requirements of the consents.

The proposed NRC Regional Plan requires network management plans to be prepared for the wastewater schemes within the Northland region. This provides a project driver for Council's IAM team to update the existing management plans to the new format/content required by NRC for compliance purposes.

5.2. Maintenance plan

Maintenance occurs in two ways, planned or reactive.

Planned maintenance is carried out according to a pre-determined schedule, and requires an in depth knowledge of the assets and their specific servicing requirements, together with a management system to enable scheduling, resourcing and recording of all activities carried out.

Reactive maintenance, or repair, describes the operational response to plant and equipment breakdowns or failures, where there is an urgent need to restore operational conditions to meet LoS.

Historically, Council tended to operate under a predominantly reactive regime, but there has been a desire and a shift in emphasis towards planned maintenance. Benefits include:

- better understanding and forecasting of operational budgets
- extending asset lives by prevention of early breakdowns
- maximising asset lives before renewal and associated cost efficiencies
- increased asset knowledge and condition assessment
- increased plant reliability and reduced operational risk.

Movement to a comprehensive planned maintenance regime does require enhanced management procedures and investment in resources. At the same time, the need for reactive maintenance will always remain; not only for unforeseen failures, but in cases where planned servicing may not be cost effective, e.g. small pump replacement costs may be more cost effective to servicing costs.

In moving into the planned maintenance environment, Council has already made significant changes to its operating activities. Procurement of the MEX maintenance operating software has enabled planning, scheduling and recording of maintenance activities carried out by the operations contractor. Further ongoing development of Council's asset management system will allow direct contractor access and allow MEX to be replaced.

Future maintenance planning will include:-

- further development and refinement of planned maintenance schedules at asset level
- documented procedures around maintenance methodology, tasks and roles
- resolution of IT security arrangements for 3rd party access
- review of resource requirements, levels and capabilities
- resource recruitment where necessary
- additional hardware procurement and staff training.

These actions are included in the improvement plan.

5.2.1 Planned maintenance category

The current maintenance program using MEX software has been developed from a review of requirements best aligned with existing operational activities. The MEX scheduling tool allows for creation of work orders allocated to specific personnel responsible for the particular activity. Responses following execution of work order allocations are collected and recorded on the MEX system against each activity item. Reports are generated and reviewed monthly to understand levels of planned activity and progress achieved. A maintenance manager is employed by the operations contractor (BSL) to supervise the process.

Current activities being carried out under planned maintenance are:

Reticulation

- scheduled sewer jetting
- pump station inspection and cleaning
- pump station electrical plant inspection
- rising main air valve maintenance
- bark filter (odour control) maintenance.

Treatment - multiple aspects associated with the treatment process including

- flow meter calibration
- level probe cleaning
- UV sensor calibration and lamp cleaning
- air blower maintenance.

5.2.2 Reactive maintenance category

Reactive maintenance is carried out in response to plant and equipment failures or breakdowns, usually highlighted via the Council RFS system or direct to the operations contractor as an alarm raised via telemetry.

BSL provides a service that is able to respond 24 hours, 7 days a week. Coding of RFS' identifies the level of urgency and response times required to meet LOS. Similarly, telemetry alarms have been allocated at predetermined priority levels with relevant response timeframes.

Activities which occur as reactive maintenance are:

- rising main breaks
- sewer overflows and blockages
- pump failures
- odour complaints
- electrical equipment failure.

5.3. Renewal plan

5.3.1 Planned renewals

Asset renewal describes any major work that restores an asset to its original capacity or required condition, including rehabilitation or replacement.

Historically, renewals forecasts and annual plans used data held in the Financial Asset Register (FAR), combining expected asset lives and installation dates to trigger theoretical renewal dates. It is known the some asset installation dates are unreliable and consideration of age alone could result in forecasting early renewals. It is therefore essential that asset condition is taken into account as part of the assessment and renewal forecasting process. Acquisition of reliable asset condition information is ongoing, but has yet to achieve a level considered to be appropriate to allow accurate renewal forecasting to be extracted automatically from the Asset Management System. As an interim arrangement, Asset Managers use a combination of data provided from the FAR based on asset age, and apply local knowledge gained directly from operational staff to assess the current actual asset condition. In this way renewal forecasts are produced by manual amendments made to the FAR, based on real time knowledge from field staff. In some cases where operational knowledge may be lacking it is necessary to carry out physical inspections by site visits.

It is acknowledged that this interim assessment process is not ideal and has limitations. For instance long term renewals forecasting based on age alone using the FAR is possible, but attempting to apply local operational knowledge about the expected asset condition in future years, would lack accuracy and would be time consuming. Therefore the interim process aims to accurately assess renewal forecasts over a three year period

only, and reverts to the FAR age based forecasting for subsequent years. The process is currently carried out in detail during LTP development, but is repeated and updated annually as part of the Annual Plan (AP) reviews.

The Asset Management Improvement Plan identifies requirements for improved asset condition data acquisition, and subsequent improved long term renewal forecasting using automated processes within the Asset Management System.

5.3.2 Reactive renewals

Reactive renewals occur due to plant and equipment failures where asset maintenance and/or repair are uneconomical. Assets are replaced as an emergency response activity in order to maintain asset performance and service provision.

Due to their unknown nature there is no allowance made in financial budgets for reactive renewals. Processes have been put in place to manage the delivery and financial authorisation of reactive renewals; this is described further in Sections 5.3.3 and 5.3.4.

5.3.3 Renewal funding

In principle, all asset renewals are funded through rating for annual depreciation. In theory, when an asset reaches the end of its useful life, then sufficient funding will have been collected over the lifetime of the asset in order to fund its replacement. Independent professional experts carry out two yearly asset valuations to assess and confirm that assets are held at appropriate replacement values and that assumed asset lives are consistent with current failure rates and expected industry experience. This process aligns with guidance provided by the IIMM. For any asset type, a change to either the assumed asset life or replacement value will impact on the depreciation funding required, and consequently will impact on customer rates.

In the case of planned renewals, the forecast budgets in general reflect funds available through full depreciation of a particular asset. In theory the fully depreciated asset value should correspond with the proposed asset renewal funding required. This theory assumes that an asset will maintain its desired function and performance for the full duration of its theoretical lifetime, and also that the replacement value from the last valuation remains accurate. In reality however, some assets will fail early before they are fully depreciated, while others may function longer than expected. Replacement costs can also vary depending upon financial price fluctuations and current market conditions. In cases where the current depreciation funds are not adequate to fully fund asset replacements, it is necessary to ‘top up’ renewal budgets from capital loan funding. Further detailed analysis is required in order to understand what, if any, impact may be expected on future asset valuation and rating, and whether any mitigation measures may be required.

In the case of reactive renewals, these are unplanned because timing is unknown, and consequently no budgets are forecast in advance. In practise, emergency plant or equipment replacement is carried out following an unexpected failure, by the operations and maintenance contractor. After evaluation, approval for funding under the renewal program is authorised by the FNDC Contract Manager, and depreciation budgets are reviewed for availability of funding. As with planned renewals, if insufficient depreciations funds are available, additional ‘top up’ capital loan funding is required.

5.3.4 Renewal project delivery

Planned renewals programme

A programme of planned renewals is developed by the Asset Manager as part of Council’s LTP or AP process. A list of individual renewal projects is produced which can range from specific individual asset replacements such as an electrical switchboard, to more complex multiple asset projects such as a complete pump station refurbishment or replacement. Scoping documentation identifies which assets are to be replaced. In the case of large value projects it is practise to follow a tendered procurement route. However, with smaller value straightforward asset replacement projects, it is preferred for project delivery to be undertaken by the operations and maintenance contractor, especially in cases where an operational shutdown will be required.

Reactive renewals delivery

As discussed in the previous section, reactive renewals are carried out directly by the operations and maintenance contractor. Funding and payment is arranged retrospectively and the process is fully managed under the directions of the FNDC Operations Manager.

Asset data capture

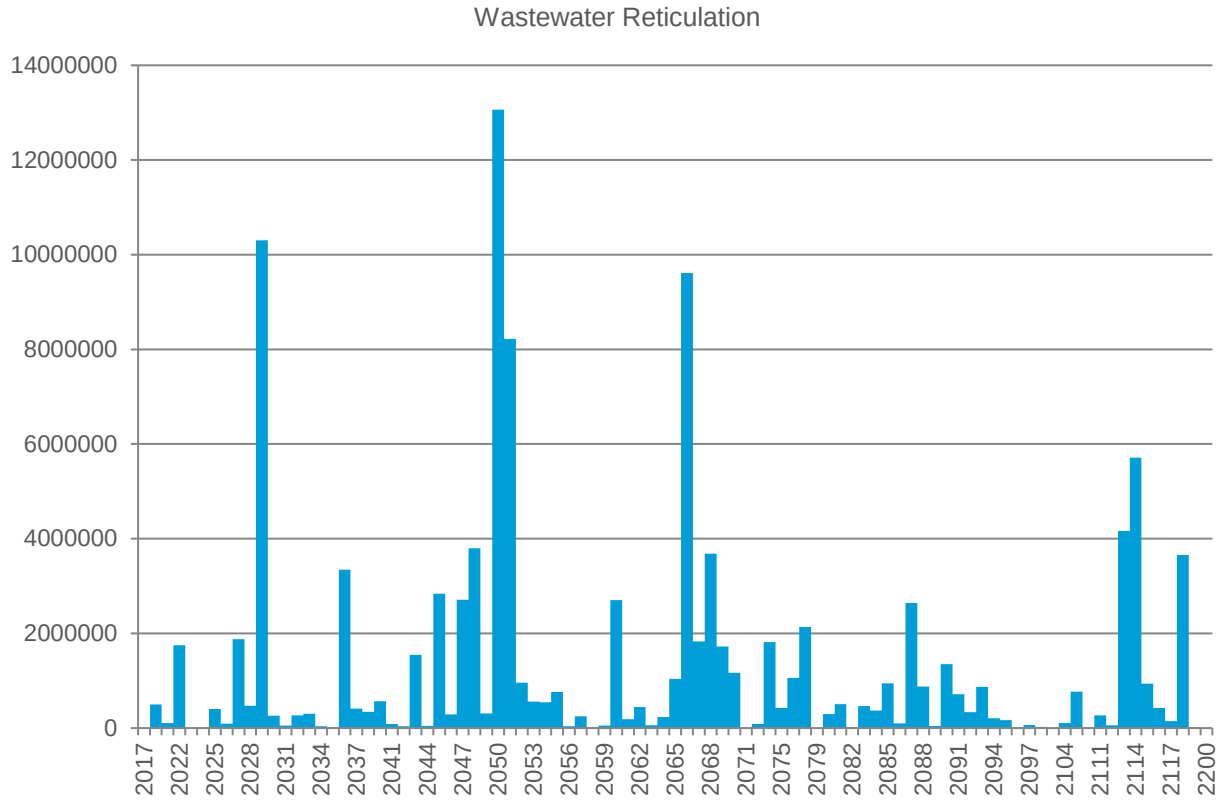
A procedure for asset data capture following renewal is in place to ensure that the asset register is maintained up to date. Contractors undertaking projects are required to provide a detailed breakdown of new and decommissioned assets together with associated costs aligned to specific asset types. A template has been developed to assist contractors to identify asset types and attribute the data required, for inclusion to update the Council Asset Management System.

5.3.5 Long term renewals planning

As part of its 30 year Infrastructure Plan, Council is required to review activities and significant issues arising. A review of the long term renewals forecast, based on asset age alone, has identified issues relating to the 'bow wave' effect. This terminology is used to describe spikes in projected future spending requirements over a very short duration, which are highly undesirable and unlikely to be achieved due to resourcing considerations. These spikes are not uncommon for all council's across New Zealand, and in some cases it is possible that the future spikes may be a result of previous deferral of renewals. For FNDC it appears that the spikes are associated specifically with underground pipework assets, where a large number of assets have been installed together, and consequently will be due for replacement at the same time. In previous cases where a new wastewater scheme has been installed, a large sewer network was created having a long duration asset lifespan, and in theory will be due for replacement in its entirety at some future date.

Figure 21 shows the wastewater assets renewal forecast over a 100 year period, with significant spikes occurring intermittently over the period. A review of the funding requirements in 2029 shows a forecast of $14 million, which from detailed analysis can be primarily, attributed to renewal of asbestos cement gravity mains in the Kaitaia scheme.

Figure 21: Wastewater activity 100 year asset renewal forecast



Subject to further analysis it will be necessary to develop a strategy and plan to address the 'bow wave' or funding spikes that are forecast. Condition assessment of assets will be essential to ensure informed decision making, and identify options for extending the lives of assets that are theoretically due for replacement. Options may also include the need for early asset replacement, in order to smooth out spending profiles to suit available resources. Recommendations for further action are included in the Asset Management Improvement Plan.

5.4. Asset creation

5.4.1 Asset creation strategy

Investment in new assets is based on:

- demand and growth
- increasing LoS
- regulatory requirements i.e. resource consent renewals.

New works is defined as those works that create assets that did not previously exist, or works which upgrade or improve an existing asset beyond its existing capacity or performance. The need for new works may result from demand or growth, new or amended legislative requirements, proposed enhancements in service levels or environmental needs. In addition, new assets may be acquired at no direct capital cost to the organisation (i.e. subdivision development).

Council's investment strategy for funding new works is achieved by capital loans, which are serviced through the customer rating system. Under Council's current policy, the method of capital rating varies according to the activity. Wastewater rating is targeted to individual communities, so that improvements to a particular wastewater scheme are directly funded by the users receiving the services of that particular scheme. The wastewater capital rate is derived from the cost to service the loan, (i.e. capital repayments and interest), plus the costs associated with funding for asset depreciation. This strategy best reflects the user pays model. However, costs for improvements of smaller wastewater schemes with low numbers of connections, can result in significant increases in wastewater rating charges. Therefore any proposals for new works in smaller schemes must take into account the impact of affordability.

All new works proposals require formal approval by Council. This is usually carried out as part of the program for the 3 yearly LTP reviews, but new proposals can also be approved as part of an AP, or alternatively as individual proposals subject to a Council report and resolution at any time.

Justification for any new works proposal requires development of a business case, to include a review of options considered, estimated capital and operational costs, and consideration of rating impact. For high value, complex or sensitive capital proposals, it is sometimes necessary to carry out a multi criteria assessment (MCA), as part of the options evaluation process. In some cases a cost benefit using whole of life costs is undertaken as part of the MCA.

Because the capital program has a direct impact on increases in customer rates, through loan charges and depreciation, it is essential that the total amount of capital spending remains within sustainable and affordable levels. Therefore new works programs undergo close scrutiny by Council during the review and approval process. In addition, Council's in house capacity to deliver is also a prime consideration for decisions during program development and approval. Project prioritisation is required as part of the business case development and program planning process. Project timing within the 10 year period of the LTP is subject to prioritisation.

5.4.2 New works planning

The initial planning stage for new works begins with the identification of a need for capital investment in response to a known issue or risk. A needs statement or business case is then produced setting out the basic issues, risk drivers, options and analysis, a notional solution and proposed funding options. A risk assessment and score is undertaken to assist in determination of project priority and timing.

For high value or complex projects, a value management or multi criteria process involving relevant stakeholders is undertaken before project sign off, ensuring decisions result in effective and efficient solutions with due consideration to whole life asset management.

Investigation and feasibility studies include stakeholder input together with consultation in line with the LGA. Concept design, resource and building consents, land purchase and easements where necessary, are arranged prior to moving into the Project delivery stage.

Council has recently established a Project Management Office (PMO), with the intention to improve and formalise project management planning and delivery procedures.

5.4.3 New works delivery

Project management is led by council staff using professional services assistance, and following Council's procurement strategy for delivery and implementation. Upon project completion, new assets are recorded on the council register, with responsibility for operation and maintenance passed to the Operations team.

Table 31 lists a summary of new works projects planned over the next 10 years, together with proposed budget forecasts and expected completion dates.

A further detailed breakdown of project forecast costs and cash flow requirements are discussed in Section 7.

Table 31: Wastewater activity new asset summary (2018-2028)

Community	New asset	Estimated capital expenditure	Expected completion date
Ahipara	Relocate retic Foreshore Road coastal erosion	200,000	2020/21
	Relocate retic Korora Street coastal erosion	200,000	2020/21
	Refurbish pump station 6	50,000	2020/21
	WWTP install UV on discharge	225,000	2021/22
East Coast	Pump station 3 upgrade	70,000	2020/21
	Pump station 11 odour control unit	30,000	2020/21
	Pump station 11 upgrade	70,000	2020/21
	Bush Point Road retic in slip area	400,000	2020/21
	Walters Way retic and pump station	100,000	2018/9
	WWTP upgrade discharge	685,799	2019/20
	WWTP new inlet screen	100,000	2018/19
	WWTP renew wavebands	100,000	2018/19
Hihi	New WWTP	1,889,212	2018/19
Kaeo	WWTP new shed	15,000	2019/20
	WWTP UV balance tank	25,000	2021/22
Kaikohe	Harold Avenue retic	40,000	2018/19
	Kowhai Retic	100,000	2018/19
	WWTP sludge septic tank	333,000	2022/23
Kaitaia	Renew retic	4,950,000	2018/22
	Pump station 5 refurbish	56,000	2021/22
	Pump station 6 easement access	54,000	2020/21
	Pump station 10 refurbish	105,000	2025/26
	Pump station 11 refurbish	56,000	2022/23
	Pump station 12 refurbish	59,000	2021/22
	Pump station 15 refurbish	65,000	2024/25
	Pump station 16 refurbish	57,000	2020/21
	WWTP algae prevention works	884,000	2022/24
	WWTP septage disposal	162,000	2020/21
Kawakawa	WWTP septage wash-down facility	20,000	2021/22
Kerikeri	Pump station 6 refurbish	20,000	2020/21
Kohukohu	WWTP discharge works	158,000	2021/22

Community	New asset	Estimated capital expenditure	Expected completion date
Opononi	WWTP improvements	940,000	2021/23
	WWTP replace aerators	50,000	2018/19
Paihia	Pump station 4 refurbish	61,000	2022/23
	Pump station 6 refurbish	65,000	2024/25
	Pump station 7 refurbish	61,000	2022/23
	Pump station 11 odour control unit	100,000	2020/21
	Pump station 12 emergency storage	500,000	2021/22
	Pump station 12 refurbish	279,000	2020/21
	Pump station 22 refurbish	57,000	2020/21
Rawene	Pump station 2 refurbish	50,000	2018/19
	New retic to 10 properties	100,000	2018/19
	Pump station 5 refurbish	75,000	2018/19
Russell	Pump station 1 refurbish	53,000	2018/19
	Pump station 3 refurbish	50,000	2021/22
	Renew Tapeka rising main	376,000	2022/24
	WWTP new effluent tanks	60,000	2018/19
	WWTP new backwash pumps	110,000	2018/19
	WWTP UV unit	60,000	2020/21
	WWTP disposal bores	350,000	2021/22
Whatuwhiwhi	Pump station 6 refurbish	50,000	2019/20
	Pump station 7 refurbish	50,000	2020/21

Further financial details and breakdown are given in the Section 7.

5.5. Disposal plan

Asset disposal is the retirement or sale of assets whether surplus or superseded by new or improved systems. Assets may become surplus to requirements due to obsolescence, underutilisation, changes in policy, etc.

Council Policy #2119 describes the formal process and financial delegations associated with disposal of significant assets, specifically in relation to the sale of assets.

Where an existing asset has reached the end of its useful life, in the case of the asset renewals program, the existing asset is simply removed or demolished as part of the renewal project. Data records are updated in the asset register to detail the disposal dates and attributes of replacement assets.

6. RISK MANAGEMENT

6.1. Overview

In 2017 Council adopted a new approach to risk management following the appointment of the Risk and Improvement team. A corporate level risk framework has been developed, after consultation with Council's CEO and Senior Leadership Team, to establish risk appetite and clarify specific impacts aligned to levels of risk.

Five categories of risk have been established:

- financial
- customer
- reputation
- compliance / legal
- health and safety.

The risk management process, procedures, and guidance are described in more detail in Parts A& B. This section focuses on significant risks which are specific to the water supply activity. These risks have been quantified and analysed using the procedures stated, and are summarised in the following registers.

6.2. Risk register

AMP risk dashboard –wastewater
Date: November 2017

Risk ID	Inherent risk score	Risk statement	Impact	Current treatment implemented	Treatment proposed	Residual risk score	Effectiveness
3W-19	25	Environmental pollution occurs as a result of undesirable items entering then blocking the network and/or compromising treatment process and/or pipework, this can lead to prosecution, public health issues and/or reputational damage	Financial, customer, reputational	No public education programme to make public aware of the risks. Trade waste discharges are not monitored or administered	Implement a public education programme to provide public awareness of te risks. Implement a Tradewaste Bylaw with Tradewaste monitoring and charging	15	Good
3W-20	23	Incorrect assumptions of FNDC assets lead to increased cost, reduced LoS and/or potential loss of life	Financial, reputational, legal	Reduced risk of incorrect assumptions	Employment of appropriately skilled personal to provide information. The use of documented procedures to ensure issues aren't missed	15	Good
3W-21	29	FNDC organisational structure is not optimised to support staff, institutional knowledge and efficient achievement of FNDC objectives to create value for the ratepayer	Financial, customer, reputational, legal, health and safety	Staff structure contains not resilient. Asset Management system partially used. Poor use of the corporate record keeping system	Refocus on IAM's staff structure to increase resilience. Greater used of the Asset Management software, Council's Objective filing systems and documentation of processes	19	Good
3W-22	29	FNDC lacks integrated systems, process and information services and technology, creating wastage and missed opportunities	Financial, customer, reputational, legal	The use of multiple systems that aren't linked, or poorly linked	Develop systems that have a greater linkage with easy access to information	19	Good

Risk ID	Inherent risk score	Risk statement	Impact	Current treatment implemented	Treatment proposed	Residual risk score	Effectiveness
3W-23	23	Loss of life, serious injury, and/or long term health affect to staff / contractors / public due to FNDC not meeting its obligations under the Health and Safety at Work Act 2015 such as risk identification, risk assessment and safety plans	Financial, customer, legal, health and safety	FNDC has a fragmented approach to H&S. Contractors are required to confirm Health and Safety via SiteWise web site. No public education around risks	Greater focus on H&S by FNDC. Increased H&S requirement in contracts. Introduce a public safety education programme	17	Poor
3W-24	15	Rate payer experiences increased costs and/or loss of services due to amplified rate of asset deterioration caused by poor asset management and/or lack of knowledge/condition assessment of the asset	Financial, customer	Asset life predominately determined through age. Minimal preventative maintenance undertaken. Some information kept is asset management system	Undertake condition assessment of the majority of assets. Implement programmes of preventative maintenance. Fully utilise the asset management system	9	Good
3W-25	31	Failure to comply to resource consent requirements and/or failure to meet our regulatory obligations such as the RMA leads to prosecution of FNDC resulting in unbudgeted cost and damaged reputation and potential public health issue (illness, injury and death)	Financial, customer, reputational, legal, health and safety	Most significant consents monitored, albeit lacking in formal processes. Water Safety Plans under development. Targeting for full compliance to Drinking water standards. Lacking in issue monitoring to predict failure	Development of a formal resource consent monitoring programme. Recording issues in AssetFindA. Ensuring adequate funding is programmed	13	Good to Excellent
3W-26	29	FNDC fails to meet its obligations due to a failure in contracted service delivery (in full, on time, to specification) resulting in a loss of service and/or failure to meet regulatory standards	Financial, customer, legal, health and safety	KPI's built into the Operational contract. Operations contract Alliance based so not to be adversarial. Poor linkage between customer issue recording systems	New 3 Water Alliance contract to be alliance based. Develop strategies and process to enable better integration of processes	13	Good

Risk ID	Inherent risk score	Risk statement	Impact	Current treatment implemented	Treatment proposed	Residual risk score	Effectiveness
3W-27	25	Sustainable schemes are difficult / not viable as affordability (as a % of households which stop paying rates) of services is an issue in the Far North due to small, low density (with reducing numbers), poor (low socio economic status) communities spread over a large geographical area	Financial, customer, reputational, legal	The funding of schemes is capital is scheme by scheme, and operational is a District-wide cost. While schemes overall in Northland are marginally affordable, the rating structure adversely affect the smaller schemes	A greater focus on Asset management. A changing the drivers from 'best for Council' to 'best for waters'. Moving to regional service delivery /management /funding to more equally share the costs	13	Good
3W-28	29	Lack of long-term strategic planning coupled with changing environmental standards and land use changes, leads to reactionary planning (consent to consent) increasing the risk of creating public health and/or environmental hazards	Financial, customer, reputational, legal	The current approach is predominantly reactionary aimed to do minimum and lacks long term strategy planning	The development of long term sustainable strategic plans for key water sources and resource consents. This includes improving resilience to cater for changing environments and standards	7	Excellent

	Financial risk			Customer risk			Reputational risk			Compliance / legal risk			Health and safety risk		
	Unlikely	Probable	Will happen	Unlikely	Probable	Will happen	Unlikely	Probable	Will happen	Unlikely	Probable	Will happen	Unlikely	Probable	Will happen
High - intolerable	20	21, 26	27, 28	19	26		27	21		23,			21, 23, 26		
Medium			19, 24, 25		21, 23,24	25, 28	23, 26		19, 20, 22	19	20, 21, 25, 28	22, 26	19, 20, 28		25
Low - none					20, 22	27	24		25, 28,	24,		27,	24, 27	22	

Residual risk after treatment

	Financial risk			Customer risk			Reputational risk			Compliance / legal risk			Health and safety risk		
	Unlikely	Probable	Will happen	Unlikely	Probable	Will happen	Unlikely	Probable	Will happen	Unlikely	Probable	Will happen	Unlikely	Probable	Will happen
High - intolerable													21, 23		
Medium	19,20,21, 22, 23, 24, 25, 26, 27, 28			23, 24, 25, 26			20, 22, 23, 27	19, 21		20, 21, 23, 25, 26	22		19, 20, 25, 26,	22	
Low - none				28	22, 27		24, 25, 26, 28			19, 24, 28	27		24, 27, 28		

6.3. Emergency response and business continuity

The effects of failure are frequently experienced on both a localised level usually due to plant breakdown, or alternatively may have a serious impact on multiple assets District-wide, such as during a severe storm event. The effects of plant failure are mitigated using the following methods outlined in Table 32.

Table 32: Mitigation measures for asset failure

Duty standby arrangements for critical plant	These arrangements exist where the timeframe required to replace a failed asset will not meet the requirements for continued service provision.
Critical spares	Asset procurement timeframes will not meet continued operational service requirements, but not necessary to implement formal standby provisions.
Telemetry alarm system	Automated monitoring and 24/7 alarm initiation for selected assets, enabling operator responses to meet business needs.
Fixed and mobile stand by power generation	Through a program of risk management a number of key sites upgraded to include standby generators. Provision of a small fleet of mobile generators to enable deployment across the District to smaller targeted sites.
Emergency response procedures	Theses have been produced by the operations contractor in order to efficiently respond to escalating incidents and emergency events. Provisions include resource management and responsibilities, subcontractor and procurement contact details and arrangements, principal 3rd party contacts and integration with council coordination team if required.
Council Emergency Response Centre	The Emergency Operating Centre is mobilised during times of civil defence alert or major incident with potential for widespread public impact. Key staff provide links between the Emergency Operating Centre and operational contract personnel.

The following Table 33 provides detail on fixed and mobile generators available across the District.

Table 33: Locations of fixed and mobile generators across the District

	Notes	Wastewater system name
Fixed generator	Kaeo	WWTP Kaeo ponds
	Kawakawa	PS 01 North Road
	Paihia - Waitangi	PS 01 (Baffin) Opua
	Paihia - Waitangi	PS 02 Ferry
	Paihia - Waitangi	PS 11 Waitangi major
	Paihia - Waitangi	PS 12 Haruru major
	Paihia - Waitangi	WWTP Paihia ponds
	Russell	PS 03 Hope Avenue
	Russell	WWTP Russell Plant
	Whatuwhiwhi	WWTP Whatuwhiwhi ponds
Mobile generator	District-wide	Generator, Powerlink power systems, model GMS60CS, s/n PLS1225/10, 60K VA
		Generator trailer L867C

6.3.1 Civil Defence Emergency Management

Where an event triggers mobilisation of the Emergency Operating Centre (EOC), there is likely to be an impact on the continuity of wastewater services, with a risk of widespread loss of service. Key staff provide communication links between the EOC and operational activities, and additional staff may need to be deployed

to assist. Response procedures have been developed by the operational contractor, which will integrate with the Council's own civil defence management team as part of the Coordinated Incident Management System (CIMS). Training and contingency planning is an ongoing process in order to complement existing response plans.

For further details on Civil Defence Emergency Management, refer to Parts A&B, page 44.

6.3.2 Lifelines

Staff from within the wastewater team attend multi-organisation meetings; there are 3 per year which discusses forward planning at a regional level for emergency events such as tsunamis, major cyclones and flooding.

For further details on lifelines, refer to Parts A&B, page 45.

6.3.3 Business continuity plan

Council has identified a key area of risk as being the threat of disruption to services resulting from loss of significant numbers of staff over a prolonged period. The scenario of dropping 30% below normal staffing levels for a period of eight weeks, for example a flu epidemic, has been tested with activity managers. The following questions are being addressed:

- what is the potential business impact?
- what core services / essential functions need to be maintained?
- what actions need to be taken to maintain core services and mitigate the impact of the risk?

For further details on the Business Continuity Plan, refer to Parts A&B – page 43.

6.4. Climate change and resilience

The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report 18 sets out that the prospect of global warming. Broadly, global warming will result in rising sea levels and marked changes in weather patterns.

These topics are also discussed in the AMP Parts A and B, and also in Council's 30 Year Infrastructure Strategy.

Key considerations are:

a. the impacts from flooding and subsidence associated with more intense rainfall events
b. the impact on infrastructure associated with sea level rise and increased storm surge
c. the increased risk of drought associated with lower rainfall levels.

Climate change will result in council core infrastructure located in low lying coastal areas and floodplains being exposed to increased erosion and inundation events. Wastewater pipe networks suffer from stormwater inflow and infiltration, and the effects will be exacerbated by increased frequency and intensity of storm events. Increased flooding frequency in low lying areas will affect pump station capacity and performance, leading to more frequent surcharging and overflow from the sewerage systems.

A number of mitigation measures have been identified and are discussed in more detail in the 30 Year Infrastructure Plan. The measures discussed include:

- increased investment in research and planning
- incorporation of resilience into asset renewals
- review and modification of LOS
- withdrawal of service provision to certain areas.

For more details on each of the measures refer to the 30 Year Infrastructure Strategy.

Additional planning activities identified have been included in the Asset Management Improvement Plan.

6.5. Wastewater management plans

The Wastewater Management Plan includes information on all wastewater schemes to supplement the operation and maintenance manuals. The plans are also a requirement included in the more recently issued discharge resource consents.

Critical assets, maintenance requirements and contingency measures form part of the Plan to help to mitigate operational risk. The current plan does require review and update, which is identified as part of the Asset Management Improvement Plan.

6.6. Water and sanitary assessment

The assessment of water and sanitary services within a council district is a requirement of the LGA. Although the legislative requirements were changed by an amendment to the LGA in 2010, Council regards the assessments to have considerable value and usefulness to both Council and the communities within the district.

The current assessment of sanitary services includes wastewater activities and was prepared as part of the 2015 LTP process. It is intended to provide an overview of how the services are meeting demand, and managing public health risk. It also identifies any plans to improve or upgrade those services and the likely future requirements for those services. The assessment covers existing services and considers areas where Council does not currently provide services.

The current assessment is intended as a first stage in a process to enhance the quality of sanitary services management in Council, and provides a basis for consultation with communities about the provision of the services.

Follow on actions from recommendations made in the stage 1 assessment will be included as part of the next stage 2 gap analyses, which will then enable final conclusions to be drawn.

Proposals to undertake the stage 2 review are included in the Asset Management Improvement Plan.

7. FINANCIAL PROJECTIONS

7.1. Overview

To undertake a sustainable, long-term approach to asset management, it is essential to prepare long-term financial forecasts. This allows a long term view of how the asset will be managed, how much this will cost and when additional funding may be required to meet expected service levels. These financial forecasts are a culmination of the previously discussed aspects of the Asset Management Plan such as:

- community consultation
- LoS
- demand management
- lifecycle management
- asset lives
- condition ratings
- asset valuation
- sustainability.

The above forms the basis of the long-term operations, maintenance and capital requirements. Funding requirements have also been included in the financial statements.

7.2. Operating expenditure summary

Operations and maintenance expenditure covers day to day operational activities, external services and professional fees, reactive and proactive maintenance, Council's corporate management and overheads, depreciation and loan interest payable.

Operations expenditure is estimated at approximately $14.2 million in 2018/19 (including corporate overheads, debt serving and depreciation). These projections increase over the 10 year period to $20.8 million.

Table 34 contains the wastewater operating and expenditure forecast for the period 2018-28.

Table 34: income and expenditure forecast

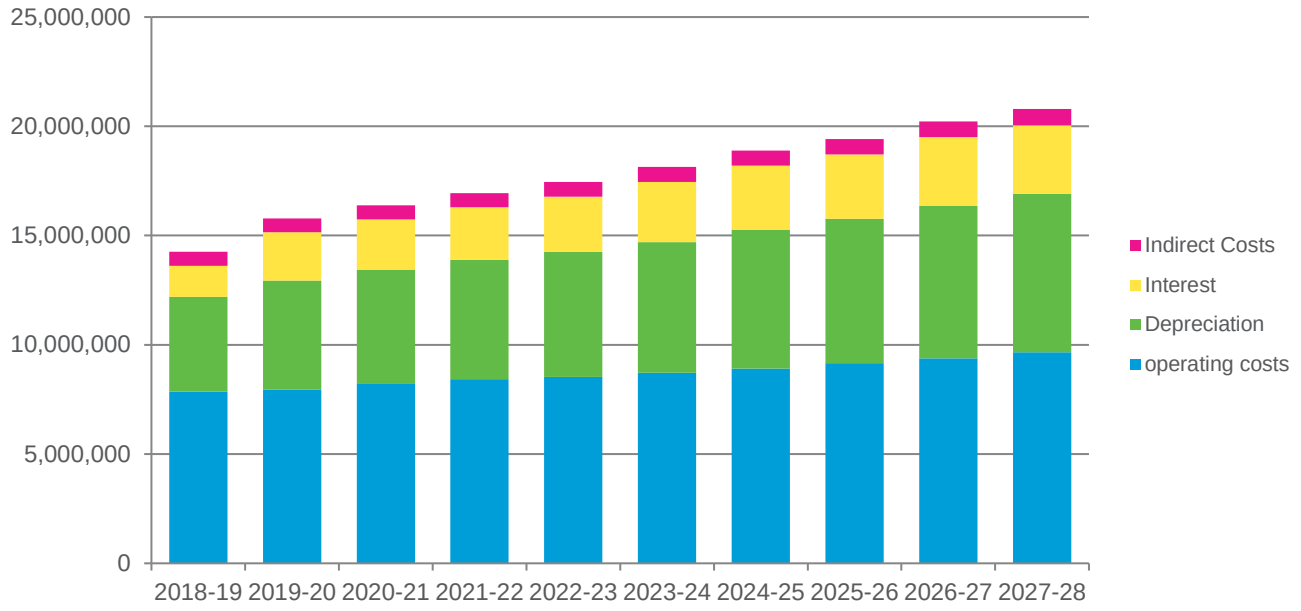
Water and wastewater District-wide Operating statement	2018/19 budget	2019/20 budget	2020/21 budget	2021/22 budget	2022/23 budget	2023/24 budget	2024/25 budget	2025/26 budget	2026/27 budget	2027/28 budget
Service rates	11,958,489	13,428,760	14,126,397	14,793,260	15,406,757	16,185,078	17,047,075	17,666,776	18,579,551	19,245,161
Rates penalties	320,442	320,442	320,442	320,442	320,442	320,442	320,442	320,442	320,442	320,442
Fees	240,000	240,000	240,000	240,000	240,000	240,000	240,000	240,000	240,000	240,000
Connections	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Recoveries	-	-	-	-	-	-	-	-	-	-
Total operating income	**12,520,431**	**13,990,702**	**14,688,339**	**15,355,202**	**15,968,699**	**16,747,020**	**17,609,017**	**18,228,718**	**19,141,493**	**19,807,103**
Wastewater administration	686,169	697,935	709,542	727,964	764,163	763,442	780,702	799,215	823,137	845,204
Wastewater schemes	3,783,565	3,892,781	3,967,446	4,081,903	4,155,868	4,280,157	4,362,072	4,501,242	4,592,113	4,743,257
Wastewater sludge management	2,037,961	2,084,832	2,137,000	2,186,114	2,238,486	2,292,287	2,349,552	2,410,688	2,473,455	2,540,297
Infrastructure planning - wastewater	344,116	351,002	358,104	365,674	266,500	270,953	277,128	283,538	290,713	297,867
3 waters operations - wastewater	123,968	126,452	128,452	131,248	138,323	137,809	140,843	144,175	148,552	152,579
Infrastructure capital works - wastewater	157,004	160,148	162,456	166,020	176,426	174,602	178,395	182,646	188,490	193,751
Infrastructure asset management - wastewater	720,852	633,269	750,175	766,025	785,528	799,990	818,268	837,158	857,997	878,932
Interest	1,420,221	2,203,076	2,301,551	2,405,248	2,517,491	2,760,319	2,940,437	2,944,561	3,145,890	3,138,384
Depreciation	4,338,903	4,997,003	5,219,663	5,462,645	5,730,673	5,980,509	6,357,974	6,606,773	6,980,111	7,257,839
Total direct operating expenditure	**13,612,760**	**15,146,499**	**15,734,390**	**16,292,841**	**16,773,458**	**17,460,067**	**18,205,371**	**18,709,996**	**19,500,459**	**20,048,111**
Indirect costs	643,541	640,310	648,194	654,743	685,761	675,610	690,441	703,654	724,104	740,199
Total indirect costs	**643,541**	**640,310**	**648,194**	**654,743**	**685,761**	**675,610**	**690,441**	**703,654**	**724,104**	**740,199**
Total operating expenditure	**14,256,301**	**15,786,809**	**16,382,584**	**16,947,584**	**17,459,219**	**18,135,677**	**18,895,812**	**19,413,650**	**20,224,563**	**20,788,310**
Net operating surplus / (deficit)	**(1,735,870)**	**(1,796,107)**	**(1,694,245)**	**(1,592,382)**	**(1,490,520)**	**(1,388,657)**	**(1,286,795)**	**(1,184,932)**	**(1,083,070)**	**(981,207)**

Water and wastewater District-wide Operating statement	2018/19 budget	2019/20 budget	2020/21 budget	2021/22 budget	2022/23 budget	2023/24 budget	2024/25 budget	2025/26 budget	2026/27 budget	2027/28 budget
Net profit/(loss)	(1,735,870)	(1,796,107)	(1,694,245)	(1,592,382)	(1,490,520)	(1,388,657)	(1,286,795)	(1,184,932)	(1,083,070)	(981,207)
External loans raised	2,037,250	2,037,250	2,037,250	2,037,250	2,037,250	2,037,250	2,037,250	2,037,250	2,037,250	2,037,250
Development contributions repaid	(183,922)	(183,922)	(183,922)	(183,922)	(183,922)	(183,922)	(183,922)	(183,922)	(183,922)	(183,922)
Depreciation renewal fund withdrawals	1,962,423	1,374,238	1,190,134	3,082,239	1,099,774	1,479,042	2,322,696	4,508,653	1,366,541	2,050,446
Depreciation debt funding withdrawal	2,517,205	3,379,729	3,515,856	3,740,204	3,924,200	3,922,899	4,184,581	4,116,422	4,456,157	4,342,393
Depreciation not funded withdrawal	-	162,100	162,100	162,100	162,100	162,100	162,100	162,100	162,100	162,100
Retained earnings generated (Opex)	1,735,870	1,634,007	1,532,145	1,430,282	1,328,420	1,226,557	1,124,695	1,022,832	920,970	819,107
Retained earnings withdrawals EB	(1,735,870)	(1,634,007)	(1,532,145)	(1,430,282)	(1,328,420)	(1,226,557)	(1,124,695)	(1,022,832)	(920,970)	(819,107)
Total capital expenditure	**4,597,086**	**4,973,288**	**5,027,173**	**7,245,489**	**5,548,882**	**6,028,712**	**7,235,910**	**9,455,571**	**6,755,056**	**7,427,060**
Capital projects new	18,316,871	3,198,467	4,703,300	5,207,243	3,200,277	7,444,926	2,762,458	6,904,735	2,995,493	730,965
Capital projects renewal	1,962,423	1,374,238	1,190,134	3,082,241	1,099,774	1,479,042	2,322,696	4,508,653	1,366,541	2,050,446
Debt repayment	(15,682,208)	400,583	(866,261)	(1,043,994)	1,248,831	(2,895,256)	2,150,756	(1,957,817)	2,393,022	4,645,649
Total capital expenditure	**4,597,086**	**4,973,288**	**5,027,173**	**7,245,490**	**5,548,882**	**6,028,712**	**7,235,910**	**9,455,571**	**6,755,056**	**7,427,060**
Net surplus / (deficit)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Figure 22 shows the total operating expense for the next 10 years including depreciation and Interest. The activity cost is estimated at $14.2 million in 2018/19 and increases to $20.8 million in 2027/28. This equates to an increase of approximately $6.6 million over the 10 year period. Interest values show the marginal cost of interest expense on the proposed programme.

Capital projects increase depreciation payable which when adjusted for inflation will impact on available funding and the depreciation included in this plan. Depreciation is estimated at $4.3 million in 2018/19 and increases to $7.3 million in 2027/28, equating to an increase of approximately $3 million over the 10 year period.

Figure 22: Operating expense forecast 2018-28



7.3. Capital expenditure summary

Table 35 outlines the new works forecast expenditure by project. Over the next 10 years Council has budgeted to spend $34.9 million on new assets.

Table 35: Budgeted capital works forecast expenditure by project

YEAR 1	Total loan	Total subsidy new	Total subsidy renewal	Total cost renewal	TOTAL COST YEAR 1
District-wide AssetFindA hardware and software	(20,000.00)	-	-	-	(20,000.00)
District-wide minor capital reactive works	(450,000.00)	-	-	-	(450,000.00)
District-wide sludge strategy	(300,000.00)	-	-	-	(300,000.00)
District-wide treatment plant instrumentation upgrade	(12,600.00)	-	-	-	(12,600.00)
East Coast PS Bush Point Road odour control	(25,200.00)	-	-	(4,800.00)	(30,000.00)
East Coast PS Leslie Road odour control	(26,100.00)	-	-	(3,900.00)	(30,000.00)
East Coast wastewater resource consent	(40,000.00)	-	-	-	(40,000.00)
Kaitaia reduction of wastewater overflows Part A	(70,000.00)	-	-	(30,000.00)	(100,000.00)
Kerikeri wastewater infrastructure reticulation	(10,130,927.00)	-	-	-	(10,130,927.00)
Kerikeri wastewater infrastructure treatment plant and enabling	(1,820,000.00)	-	-	(180,000.00)	(2,000,000.00)
Kerikeri wastewater resource consent	(20,000.00)	-	-	-	(20,000.00)
Paihia pump station 1 upgrade	(147,034.00)	-	-	-	(147,034.00)
Paihia treatment plant improvement	(2,551,545.00)	-	-	-	(2,551,545.00)
Rawene Grundy Street reticulation	(67,500.00)	-	-	(7,500.00)	(75,000.00)
Rawene reticulate un-serviced properties	(100,000.00)	-	-	-	(100,000.00)
Russell WWTP backwash operation	(110,000.00)	-	-	-	(110,000.00)
Russell WWTP effluent tanks for IDEA	(60,000.00)	-	-	-	(60,000.00)
	(15,950,906.00)	**-**	**-**	**(226,200.00)**	**(16,177,106.00)**

YEAR 2	Total loan	Total subsidy new	Total subsidy renewal	Total cost renewal	TOTAL COST YEAR 2
District-wide AssetFindA hardware and software	(20,400.00)	-	-	-	(20,400.00)
District-wide minor capital reactive works	(459,000.00)	-	-	-	(459,000.00)
District-wide sludge strategy	(578,000.00)	-	-	-	(578,000.00)
District-wide treatment plant instrumentation upgrade	(12,852.00)	-	-	-	(12,852.00)
East Coast upgrade to meet consent	(685,799.00)	-	-	-	(685,799.00)
Kaeo WWTP implement shed	(15,300.00)	-	-	-	(15,300.00)
Kaitaia reduction of wastewater overflows Part A	(742,900.00)	-	-	(107,100.00)	(850,000.00)
Rawene reticulate un-serviced properties	(102,000.00)	-	-	-	(102,000.00)
Waipapa roundabout disposal field	(306,000.00)	-	-	-	(306,000.00)
	(2,922,251.00)	**-**	**-**	**(107,100.00)**	**(3,029,351.00)**

YEAR 3	Total loan	Total subsidy new	Total subsidy renewal	Total cost renewal	TOTAL COST YEAR 3
Ahipara mains managed retreat Foreshore Road	(198,056.00)	-	-	(10,424.00)	(208,480.00)
Ahipara mains managed retreat Korora Street	(185,547.20)	-	-	(22,933.00)	(208,480.20)
District-wide AssetFindA hardware and software	(20,848.00)	-	-	-	(20,848.00)
District-wide minor capital reactive works	(469,080.00)	-	-	-	(469,080.00)
District-wide sludge strategy	(590,694.00)	-	-	-	(590,694.00)
District-wide treatment plant instrumentation upgrade	(13,134.00)	-	-	-	(13,134.00)
East Coast PS11 Mill Bay odour control	(31,272.00)	-	-	-	(31,272.00)
East Coast reticulation Bush Point Road	(312,720.00)	-	-	(104,240.00)	(416,960.00)
Kaitaia reduction of wastewater overflows Part A	(2,040,000.00)	-	-	-	(2,040,000.00)
Kaitaia WWTP installation of septage screening	(168,869.00)	-	-	-	(168,869.00)
Paihia pump station 11 odour control Waitangi major	(97,985.60)	-	-	(6,254.00)	(104,239.60)
Rangiputa WWTP inlet screen	(78,180.00)	-	-	-	(78,180.00)
	(4,206,385.80)	**-**	**-**	**(143,851.00)**	**(4,350,236.80)**

YEAR 4	Total loan	Total subsidy new	Total subsidy renewal	Total cost renewal	TOTAL COST YEAR 4
Ahipara WWTP UV treatment	(239,693.00)	-	-	-	(239,693.00)
District-wide inflow infiltration works	(74,571.00)	-	-	(31,959.00)	(106,530.00)
District-wide minor capital reactive works	(479,385.00)	-	-	-	(479,385.00)
District-wide sludge strategy	(603,670.00)	-	-	-	(603,670.00)
District-wide treatment plant instrumentation upgrade	(13,423.00)	-	-	-	(13,423.00)
East Coast installation of LPS Rangikapiti Road	(115,052.40)	-	-	(12,784.00)	(127,836.40)
East Coast installation of LPS State Highway 10	(115,052.40)	-	-	(12,784.00)	(127,836.40)
Kaeo WWTP flow balance tank UV	(26,633.00)	-	-	-	(26,633.00)
Kaitaia reduction of wastewater overflows Part A	(2,084,000.00)	-	-	-	(2,084,000.00)
Kohukohu treatment plant improvement	(168,317.00)	-	-	-	(168,317.00)
Opononi treatment plant improvement	(121,444.00)	-	-	-	(121,444.00)
Paihia pump station 12 emergency storage Haruru major	(532,650.00)	-	-	-	(532,650.00)
Paihia pumping capacity improvement	(213,273.20)	-	-	(91,403.00)	(304,676.20)
	(4,787,164.00)	**-**	**-**	**(148,930.00)**	**(4,936,094.00)**

YEAR 5	Total loan	Total subsidy new	Total subsidy renewal	Total cost renewal	TOTAL COST YEAR 5
District-wide inflow infiltration works	(76,209.00)	-	-	(32,661.00)	(108,870.00)
District-wide minor capital reactive works	(489,915.00)	-	-	-	(489,915.00)
District-wide treatment plant instrumentation upgrade	(13,718.00)	-	-	-	(13,718.00)
Kaeo seal floodable manholes	(23,951.00)	-	-	-	(23,951.00)
Kaikohe improvements associated with renewal of consent	(132,821.00)	-	-	-	(132,821.00)
Kaikohe sludge treatment facility	(362,537.00)	-	-	-	(362,537.00)
Kaitaia installation of algae reduction system	(54,435.00)	-	-	-	(54,435.00)
Opononi treatment plant improvement	(899,266.00)	-	-	-	(899,266.00)
Paihia pumping capacity improvement	(224,816.90)	-	-	(96,350.00)	(321,166.90)
Treatment plant	(601,016.00)	-	-	-	(601,016.00)
	(2,878,684.90)	**-**	**-**	**(129,011.00)**	**(3,007,695.90)**

YEAR 6	Total loan	Total subsidy new	Total subsidy renewal	Total cost renewal	TOTAL COST YEAR 6
District-wide inflow infiltration works	(77,959.00)	-	-	(33,411.00)	(111,370.00)
District-wide minor capital reactive works	(501,165.00)	-	-	-	(501,165.00)
Kaikohe improvements associated with renewal of consent	(3,509,269.00)	-	-	-	(3,509,269.00)
Kaitaia installation of algae reduction system	(928,826.00)	-	-	-	(928,826.00)
Paihia mains from Watea to Haruru Falls	(357,832.15)	-	-	(63,147.00)	(420,979.15)
Paihia pumping capacity improvement	(237,775.30)	-	-	(101,904.00)	(339,679.30)
Treatment plant	(1,313,739.00)	-	-	-	(1,313,739.00)
	(6,926,565.45)	**-**	**-**	**(198,462.00)**	**(7,125,027.45)**

YEAR 7	Total loan	Total subsidy new	Total subsidy renewal	Total cost renewal	TOTAL COST YEAR 7
District-wide inflow infiltration works	(79,828.00)	-	-	(34,212.00)	(114,040.00)
District-wide minor capital reactive works	(513,180.00)	-	-	-	(513,180.00)
Kaitaia improvements associated with renewal of consent	(143,690.00)	-	-	-	(143,690.00)
Paihia mains from Watea to Haruru Falls	(1,357,076.00)	-	-	(239,484.00)	(1,596,560.00)
Paihia pump station 6 upgrade Te Haumi Bridge	(63,007.10)	-	-	(11,119.00)	(74,126.10)
Paihia Treatment plant improvement	(149,392.00)	-	-	-	(149,392.00)
Rawene Treatment plant improvements	(149,392.00)	-	-	-	(149,392.00)
	(2,455,565.10)	**-**	**-**	**(284,815.00)**	**(2,740,380.10)**

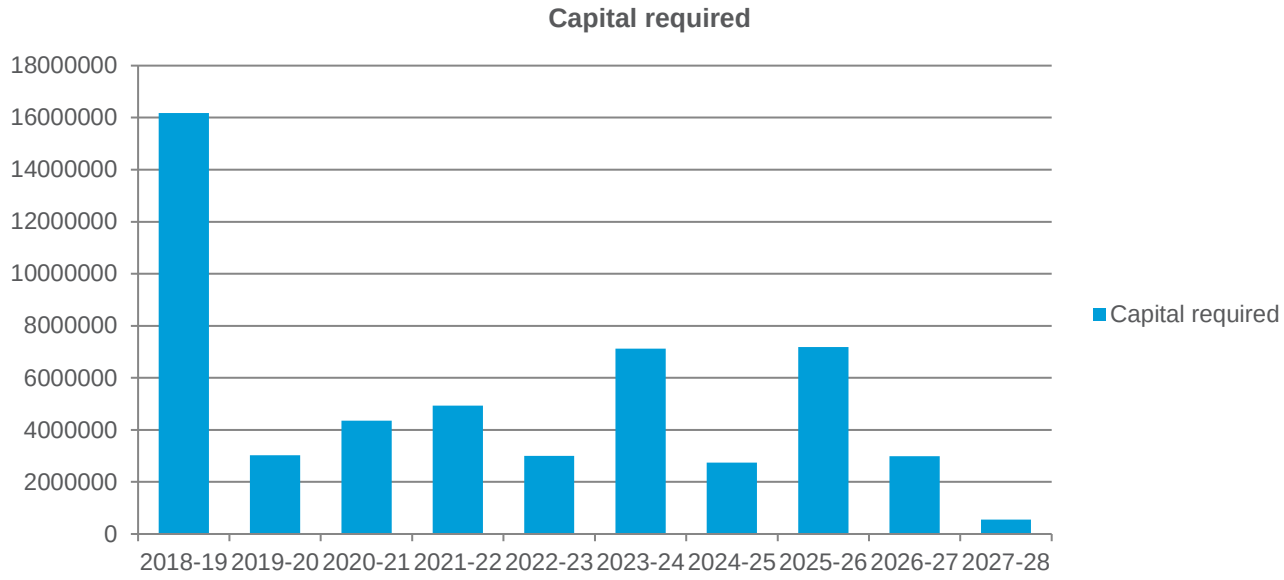
YEAR 8	Total loan	Total subsidy new	Total subsidy renewal	Total cost renewal	TOTAL COST YEAR 8
District-wide minor capital reactive works	(525,510.00)	-	-	-	(525,510.00)
Kaitaia improvements associated with renewal of consent	(5,839,000.00)	-	-	-	(5,839,000.00)
Paihia Davis Crescent reticulation	(233,560.00)	-	-	(350,340.00)	(583,900.00)
Whangaroa improved treatment and disposal options	(113,861.00)	-	-	-	(113,861.00)
Whatuwhiwhi treatment capacity expansion	(116,780.00)	-	-	-	(116,780.00)
	(6,828,711.00)	**-**	**-**	**(350,340.00)**	**(7,179,051.00)**

YEAR 9	Total loan	Total subsidy new	Total subsidy renewal	Total cost renewal	TOTAL COST YEAR 9
District-wide minor capital reactive works	(538,650.00)	-	-	-	(538,650.00)
Whangaroa improved treatment and disposal options	(661,343.00)	-	-	-	(661,343.00)
Whatuwhiwhi treatment capacity expansion	(1,795,500.00)	-	-	-	(1,795,500.00)
	(2,995,493.00)	**-**	**-**	**-**	**(2,995,493.00)**

YEAR 10	Total loan Year 10	Total subsidy new Year 10	Total subsidy renewal Year 10	Total cost renewal Year 10	Total cost Year 10
District-wide minor capital reactive works	(552,645.00)	-	-	-	(552,645.00)
	(552,645.00)	**-**	**-**	**-**	**(552,645.00)**

Figure 23 shows a peak in capital expenditure in 2018/19 due to works associated with the new Kerikeri Wastewater Treatment Plant. Smaller peaks in years 2023/24 and 2025/26 are due to expected upgrades required at Kaikohe and Kaitaia following resource consent renewals.

Figure 23: Budgeted new capital requirement



7.4. Renewals expenditure summary

Table 36 outlines the budgeted renewals expenditure by project. A total of $659,000 is budgeted for renewals over the 10-year period.

Table 36: Budgeted renewal expenditure by project

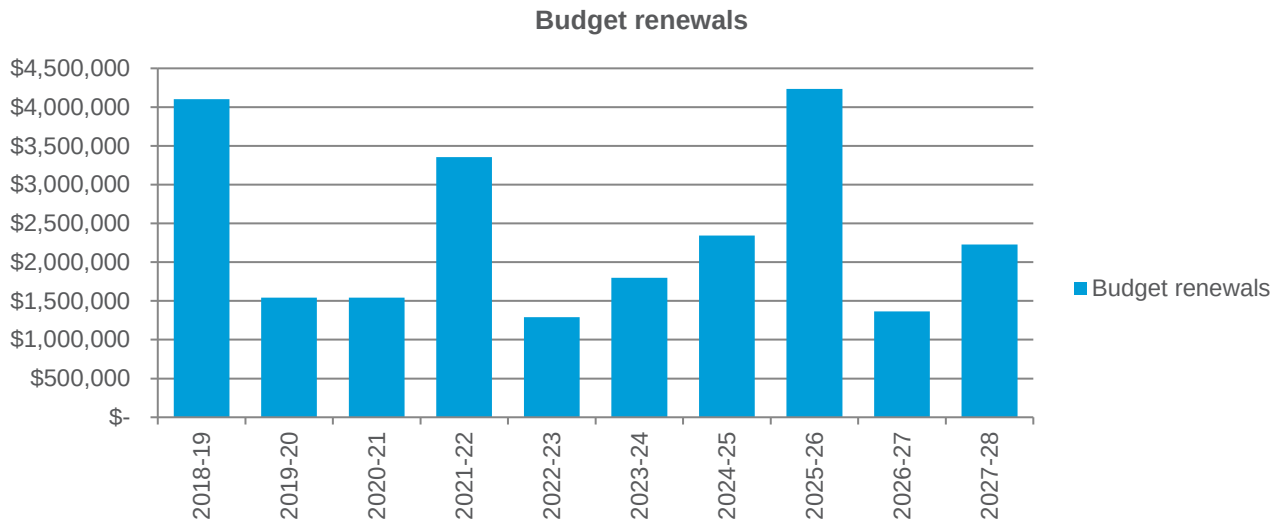
Project	18 /19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28
Kaeo wastewater renewals	32932	-	127401	-	73300	-	-	-	57940	138662
Kaeo wastewater resource consent renewals	-	-	-	43677	19597	-	-	-	-	-
Kawakawa wastewater renewals	2506	-	29649	-	-	165570	-	1052212	-	113889
Kawakawa wastewater reticulation renewals	344000	51000	-	-	-	-	-	-	-	-
Kawakawa wastewater treatment plant renewals	8000	-	-	21306	-	-	-	-	-	-
Sludge management renewals	-	-	-	39281	-	-	-	-	-	-
Kerikeri wastewater pump station renewals	80000	-	20848	-	-	-	-	-	-	-
Kerikeri wastewater renewals	138687	-	-	-	-	-	-	150693	18522	93246
Paihia wastewater pump station renewals	40000	-	350576	57526	132822	-	-	-	-	-
Paihia wastewater renewals	-	-	-	310972	46837	-	337838	341573	232692	414806
Paihia wastewater resource consent renewals	-	-	-	-	46814	49003	-	-	-	-
Paihia wastewater reticulation renewals	-	-	-	-	-	-	-	-	-	270182
Russell wastewater pump station renewals	62000	-	-	53265	-	-	-	-	-	-
Russell wastewater renewals	-	-	43346	875538	-	16917	503970	-	-	142797
Russell wastewater resource consent renewals	-	-	-	-	26129	70163	-	-	-	-
Russell wastewater reticulation renewals	-	-	-	-	66411	350816	-	-	-	-
Russell wastewater treatment plant renewals	-	-	62544	372855	-	-	-	-	-	-
Whangaroa wastewater renewals	-	10419	-	-	-	-	-	-	-	138497
District-wide wastewater renewals	24448	50000	-	-	-	170650	-	87309	344470	18299
District-wide wastewater telemetry upgrades	336000	226440	238710	251411	265643	280652	297644	-	-	-
Kaikohe wastewater pump station renewals	63000	-	-	-	-	-	74126	-	-	-
Kaikohe wastewater renewals	-	-	13841	31979	-	-	25743	1776783	62554	-
Kaikohe wastewater resource consent renewals	-	-	89646	31959	-	-	-	-	-	-
Kaikohe wastewater reticulation renewals	240000	-	-	-	-	-	-	-	-	-
Sludge management renewals	-	-	-	23912	-	-	-	-	-	-

Project	18 /19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28
Kohukohu wastewater pump station renewals	9000	-	-	-	-	-	-	-	-	-
Kohukohu wastewater renewals	11099	75779	-	-	-	43094	-	574924	83230	13020
Opononi wastewater pump station renewals	50000	-	-	-	-	-	-	-	-	-
Opononi wastewater renewals	-	40257	-	35082	-	-	-	28557	-	57534
Opononi wastewater resource consent renewals	61000	22440	-	-	-	-	-	-	-	-
Opononi wastewater treatment plant renewals	50000	-	-	-	-	-	-	-	-	-
Rawene wastewater pump station renewals	50000	-	-	-	-	-	-	-	-	-
Rawene wastewater renewals	-	-	-	105247	60999	171169	15709	-	-	71396
Rawene wastewater resource consent renewals	-	-	-	-	46814	49003	-	-	-	-
Sludge management renewals	-	-	-	19253	-	-	-	-	-	-
Ahipara wastewater pump station renewals	-	-	52120	-	-	-	-	-	-	-
Ahipara wastewater renewals	-	-	13841	88259	31322	-	-	38458	117889	191063
Ahipara wastewater treatment plant renewals	5000	-	-	-	-	70163	-	-	-	-
East coast wastewater pump station renewals	-	-	145936	-	-	-	-	-	-	-
East coast wastewater renewals	-	11357	-	524454	258512	13109	107142	49489	-	376152
East coast wastewater resource consent renewals	100000	-	-	-	-	-	-	-	-	-
East coast wastewater reticulation renewals	100000	-	-	-	-	-	-	-	-	-
East coast wastewater treatment plant renewals	200000	-	-	-	-	-	-	-	-	-
Hihi wastewater renewals	-	-	-	32438	-	-	20332	-	-	-
Hihi wastewater resource consent renewals	-	-	-	37286	26129	-	-	-	-	-
Hihi wastewater treatment plant renewals	1889212	-	-	-	-	-	-	-	-	-
Kaitaia wastewater pump station renewals	123000	-	115707	185363	60967	-	74126	122619	-	-
Kaitaia wastewater renewals	62304	730262	82677	122968	130059	15472	799193	11720	40188	13305
Kaitaia wastewater resource consent renewals	-	-	89646	31959	-	-	-	-	-	-
Kaitaia wastewater treatment plant renewals	15000	224400	-	-	-	-	-	-	-	-
Rangiputa wastewater renewals	-	-	14589	-	-	-	-	-	-	100228
Rangiputa wastewater treatment plant renewals	5000	-	-	-	-	-	-	-	-	-

Project	18 /19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28
Whatuwhiwhi wastewater pump station renewals	-	51000	52120	-	-	-	-	-	-	-
Whatuwhiwhi wastewater renewals	-	50000	-	57400	-	318682	-	-	409056	75690
Whatuwhiwhi wastewater resource consent renewals	-	-	-	-	-	14478	88951	-	-	-
Totals	**4102188**	**1543354**	**1543197**	**3353390**	**1292355**	**1798941**	**2344774**	**4234337**	**1366541**	**2228766**

Figure 24 shows the renewal budget forecast profile with significant expenditure planned for years 2018/19, 2021/22 and 2025/26 primarily associated with the Kerikeri, Paihia, Kaikohe and Kawakawa schemes.

Figure 24: Renewal expenditure forecast 2018-28



7.5. Risk to significant forecasting assumption

Table 37: Risks to significant forecasting assumptions

Assumption	Risk	Level of risk	Potential impact of risk	Potential financial impact	Mitigation
Level of inflow/infiltration remains unchanged or decreases	Increase in infiltration and inflow	Medium	Increased operational costs and risk of spills/overflows	Low	Programme of inflow/infiltration reduction measures
Resource consent renewals in line with expected quality requirements	New or higher quality requirements could be introduced	Medium	Additional system upgrades and financial investment required	Medium	Additional spending requirements would be balanced by re-planning the capital programme

8. IMPROVEMENT PLAN

The management of the wastewater activity and associated infrastructure assets is subject to a continual improvement process. The programme reflects the overall objectives for improving asset management practices, and delivering the service at lowest long-term cost to the community.

To aid the development of the water activity improvement plan, Council has adopted the National Infrastructure Unit's asset management maturity assessment tool to rank the asset management practice in the district. The methodology is aligned with the IIMM, and details of the assessment are included in Parts A&B, with summary in Table 38.

This section outlines the current status of asset management practices and details an improvement programme to prioritise process and quality enhancements in order to develop and progress Council's asset management maturity.

The three-year asset management improvement programme has been developed based on an assessment of asset management practice and the current status of the previous improvement programme. Council' staff have assessed the current practice and set a 3 year target for improvements, dependant on the availability of resources and funding allocation by Council. The plan is discussed further in Section 1.1.

The purpose of the Improvement Plan is to:

- identify and develop implementation of Asset Management planning processes
- identify and prioritise ways to cost-effectively improve the quality of Asset Management planning
- identify indicative time-scales, subject to availability of human and financial resources, required to achieve Asset Management planning objectives.

An improvement plan was included in the 2015 AMP and identified the improvements that could have been made during the subsequent 3 year period. Progress against the previous improvement plan is discussed in Section 8.2.

Table 38: Asset management maturity assessment tool

Reference	Question	Section	Questions	Why	Maturity Levels					Current score	Appropriate target
					Aware 0-20	Basic 21-40	Core 41-60	Intermediate 61-80	Advanced 81-100		
Understanding and defining requirements											
IIMM 2.1	1	AM Policy and Strategy	To what extent has your organisation's AM system (including AM Policy and Strategy) been articulated, approved, communicated and acted on? How consistent is the asset management policy and strategy with current government policies?	The asset management system is the co-ordinated set of activities that are undertaken to deliver the organisation's AM objectives. Plans and processes relating to the AM system must be clearly aligned from the strategic plan through to the detailed work programmes and procedures. The AM Policy supports an organisation's strategic objectives. It articulates the principles, requirements and responsibilities for asset management (AM). The AM Policy and Strategy may be incorporated into the AM Plan.	The organisation is aware of the benefits of asset management.	Corporate expectations are expressed in relation to the development of AM Plans and AM objectives.	AM Policy, Strategy and Objectives are developed, and are aligned to corporate goals and the strategic context.	AM System scope is defined and documented. Strategic context (internal, external, customer environment) is analysed and implications for AM System documented in the AMP / AM Strategy.	AM Policy and Strategy is fully integrated into the organisation's business processes and subject to defined audit, review and updating procedures.	50	90
IIMM 2.2	2	LoS and Performance Management	How does your organisation determine what is the appropriate LoS for its customers and then ensure that asset performance is appropriate to those service levels?	LoS are the cornerstone of asset management and provide the platform for all lifecycle decision making. LoS are the outputs a customer receives from the organisation, and are supported by performance measures. One of the first steps in developing AMPs or processes is to find out what LoS customers are prepared to pay for, then understand asset performance and capability to deliver those requirements.	The organisation recognises the benefits of defining LoS but they are not yet documented or quantified.	Basic LoS have been defined and agreed, along with the contribution of asset performance to the organisation's objectives. Customer Groups have been defined and requirements understood.	LoS and appropriate performance measures are in place covering a range of service attributes. There is annual reporting against targets. Customer Group needs analysed. LoS and cost relationship understood.	Customers are consulted on significant service levels and options.	Customer communications plan in place. Customer LoS and technical (i.e. asset performance) LoS are an integral part of decision making and business planning.	60	80
IIMM 2.3	3	Forecasting Demand	How robust is the approach your organisation uses to forecast demand for its services and the possible impact on its asset portfolios?	This AM activity involves estimating demand for the service over the life of the AM plan or the life of the asset. Demand is a measure of how much customers consume the services provided by the assets. The ability to predict demand enables an organisation to plan ahead and meet that demand, or manage risks of not meeting demand.	Future demand requirements generally understood but not documented or quantified.	Demand forecasts are based on experienced staff predictions, with consideration of known past demand trends and likely future growth patterns.	Demand Forecasts are based on robust projections of a primary demand factor (e.g. population growth) and extrapolation of historic trends. Risk associated with changes in demand is broadly understood and documented. Demand management is considered as an alternative to major project development.	A range of demand scenarios is developed (e.g. high/medium/ low). Demand management is considered in all strategy and project decisions.	Risk assessment of different demand scenarios, and mitigation actions are identified.	60	85
IIMM 2.4	4	Asset register data	What sort of asset-related information does the organisation collect, and how does it ensure the information has the requisite quality (accuracy, consistency, reliability)?	Asset data is the foundation for enabling most AM functions. Planning for asset renewal and maintenance activities cannot proceed until organisations know exactly what assets they own or operate and where they are located	The organisation has an awareness of need to collect asset data.	Basic physical information recorded in a spread sheet or similar (e.g. location, size, type), but may be based on broad assumptions or not complete.	Sufficient information to complete asset valuation (basis attributes, replacement cost and asset age/ life) and supports prioritisation of programmes (criticality). Asset hierarchy, identification and attribute systems documented. Metadata held as appropriate.	A reliable register of physical and financial attributes recorded in an information system with data analysis and reporting functionality. Systematic and documented data collection process in place. High level of confidence in critical asset data.	Information on work history type and cost, condition, performance, etc. recorded at asset component level. Systematic and fully optimised data collection programme with supporting metadata.	70	90

Reference	Question	Section	Questions	Why	Maturity Levels: Aware 0-20	Basic 21-40	Core 41-60	Intermediate 61-80	Advanced 81-100	Current score	Appropriate target
IIMM 2.5	5	Asset performance and condition	How does the organisation measure and manage the performance of its assets?	Timely and complete asset performance information (such as condition, utilisation and functionality) supports risk management, lifecycle decision-making and financial / performance reporting.	Condition and performance understood but not quantified or documented.	Adequate data and information to confirm current performance against AM objectives.	Condition and performance information is suitable to be used to plan maintenance and renewals over the short term.	Future condition and performance information is modelled to assess whether AM objectives can be met in the long term. Contextual information such as demand is used to estimate likely performance.	The type, quality and amount of data are optimised to the decisions being made. The underlying data collection programme is adapted to reflect the assets' lifecycle stage.	45	70
Lifecycle decision-making											
IIMM 3.1	6	Decision-making	How does your organisation go about making decisions on the replacement or refurbishment of existing assets or investment in new ones?	Decision techniques provide the best value for money form an organisation's expenditure programmes. These techniques reveal strategic choices, and balance the trade-off between LoS, cost and risk. ODM is a formal process to identify and prioritise all potential asset and non-asset solutions with consideration of financial viability, social and environmental responsibility and cultural outcomes.	AM decisions are based largely on staff judgement.	Corporate priorities incorporated into decision making.	Formal decision making techniques (e.g. using MCA/BCA) are applied to major projects and programmes, where criteria are based on the organisations' AM objectives.	Formal decision making and prioritisation techniques are applied to all operational and capital asset programmes within each main budget category/business unit. Critical assumptions and estimates are tested for sensitivity to results.	AM objectives/targets are set based on formal decision making techniques, supported by the estimated costs and benefits of achieving targets. The framework enables projects and programmes to be optimised across all activity areas. Formal risk-based sensitivity analysis is carried out.	50	70
IIMM 3.2	7	Managing risk	To what extent is risk management and resilience planning integrated into your asset management decision making?	Risk management helps identify higher risks, and identify actions to mitigate those risks. This process reduces the organisation's exposure to asset related risk, especially around critical assets, and drives renewal and rehabilitation programmes and decision making.	Risk management is identified as a future improvement.	Critical services and assets understood and considered by staff involved in maintenance / renewal decisions. Risk framework developed.	Critical assets and high risks identified. Documented risk management strategies for critical assets and high risks.	Current resilience level assessed and improvements identified. Systematic risk analysis to assist key decision-making. Risk register regularly monitored and reported. Risk managed and prioritised consistently across the organisation.	Resilience strategy and programme in place including defined LoS for resilience. A formal risk management policy in place. Risk is quantified and risk mitigation options evaluated. Risk is integrated into all aspects of decision making.	50	70
IIMM 3.3	8	Operational planning	How does the organisation plan and manage its operational activity (including maintenance planning and procedures) to keep assets in service and meet AM objectives?	Operational procedures are wide ranging and sometimes complex. The operations manager needs to have robust and documented procedures in place for cost and budget management, health and safety management, security, operational risk, reactive and preventative maintenance. A major challenge for the asset manager is striking the appropriate balance between planned maintenance (inspections and scheduled maintenance etc.) and unplanned maintenance (arising from unexpected failures)	Operational processes based on historical practices.	Operating procedures are available for critical operational processes. Operations organisational structure in place and roles assigned.	Operating procedures are available for all operational processes. Operational support requirements are in place.	Risk and opportunity planning completed. Operational objectives and intervention levels defined and implemented. Alignment with organisational objectives can be demonstrated.	Continual improvement can be demonstrated for all operational processes. Comparison with ISO 55001 requirements complete.	40	85

Reference	Question	Section	Questions	Why	Maturity Levels: Aware 0-20	Basic 21-40	Core 41-60	Intermediate 61-80	Advanced 81-100	Current score	Appropriate target
IIMM 3.4	9	Capital works planning	What processes and practices does the organisation have in place to plan and prioritise capital expenditure?	Capital investment includes the upgrade, creation or purchase of new assets, typically to address growth or changes in LoS requirements, or for the periodic renewal of existing assets, to maintain service levels. Agencies need to plan for the long term asset requirements relative to future LoS. The decision on whether to create a new asset is typically the time when there is the most opportunity to impact on the potential cost and LoS. Cabinet expects all capital-intensive agencies to disclose 10 year capital intentions and make appropriate use of the better business cases methodology for programmes and individual investment proposals.	Capital investment projects are identified during annual budget process.	There is a schedule of proposed capital projects and associated costs for the next 3-5 years, based on staff judgement of future requirements.	Projects have been collated from a wide range of sources and collated into a project register. Capital projects for the next three years are fully scoped and estimated. A prioritisation framework is in place to rank the importance of capital projects.	Formal options analysis and business case development has been completed for major projects in the 3-5 year period. Capital intentions reports identify all major capital projects for the next 10 or more years and broad estimates of the costs and benefits are available.	Long -term capital investment programmes are developed using advanced decision techniques, such as predictive renewal modelling.	60	85
IIMM 3.5	10	Financial planning	How does your organisation plan for the funding of its future capital expenditure and asset-related costs?	Poor financial management can lead to higher long run life cycle costs, inequitable fees and charges, and financial 'shocks'. Good collaboration between financial and asset managers is important, especially in relation to long term financial forecasts and asset revaluations. Asset valuation is required by International Accounting Standards, and can be used in lifecycle decision making. Robust financial budgets are a key output of any asset management planning process.	Financial planning is largely an annual budget process, but there is intention to develop longer term forecasts. The organisational focus is on the operating statement rather than the balance sheet.	Assets are re-valued in accordance with financial reporting and accounting standards. Five to nine year financial forecasts are based on extrapolation of past trends and broad assumptions about the future.	Asset revaluations based on reliable asset data. Ten year financial forecasts based on current comprehensive AMPs with detailed supporting assumptions/reliability factors. Significant assumptions are specific and well-reasoned. Expenditure captured at a level useful for AM analysis.	10 year plus financial forecasts based on current comprehensive AMPs with detailed supporting assumptions/reliability factors and high confidence in accuracy. Funding sources are fully understood and matched with expenditure forecasts over the long term. Alternative funding sources have been fully explored. Asset expenditure information is linked with asset performance information.	The organisation publishes reliable ten year+ financial forecasts based on comprehensive, advanced AMPs with detailed underlying assumptions and high confidence in accuracy. Advanced financial modelling provides sensitivity analysis, evidence-based whole of life costs and cost analysis for LoS options.	65	80
Asset management enablers											
IIMM 4.1	11	Asset management leadership and teams	What is the level of organisational commitment to asset management? How is this reflected in existing organisation structure, responsibilities and resourcing of AM competencies?	Effective asset management requires a committed and co-ordinated effort across all sections of an organisation. The organisational structure and AM roles need to be clearly defined and specifically allocated to people and teams.	The organisation recognises the benefits of an asset management function within the organisation, but has yet to implement a structure to support it.	Asset Management functions are performed by a small groups and roles reflect requirements.	Position descriptions incorporate AM roles. AM co-ordination processes established. Ownership and support of AM by the leadership. Awareness of AM across most of the organisation.	Organisational structure supports AM. Roles reflect AM resourcing requirements and reflected in position descriptions for key roles. Consistent approach to AM across the organisation. Internal communication plan established.	Formal documented assessment of AM capability and capacity requirements to achieve AM objectives. Demonstrable alignment between AM objectives, AM systems and individual responsibilities.	65	90

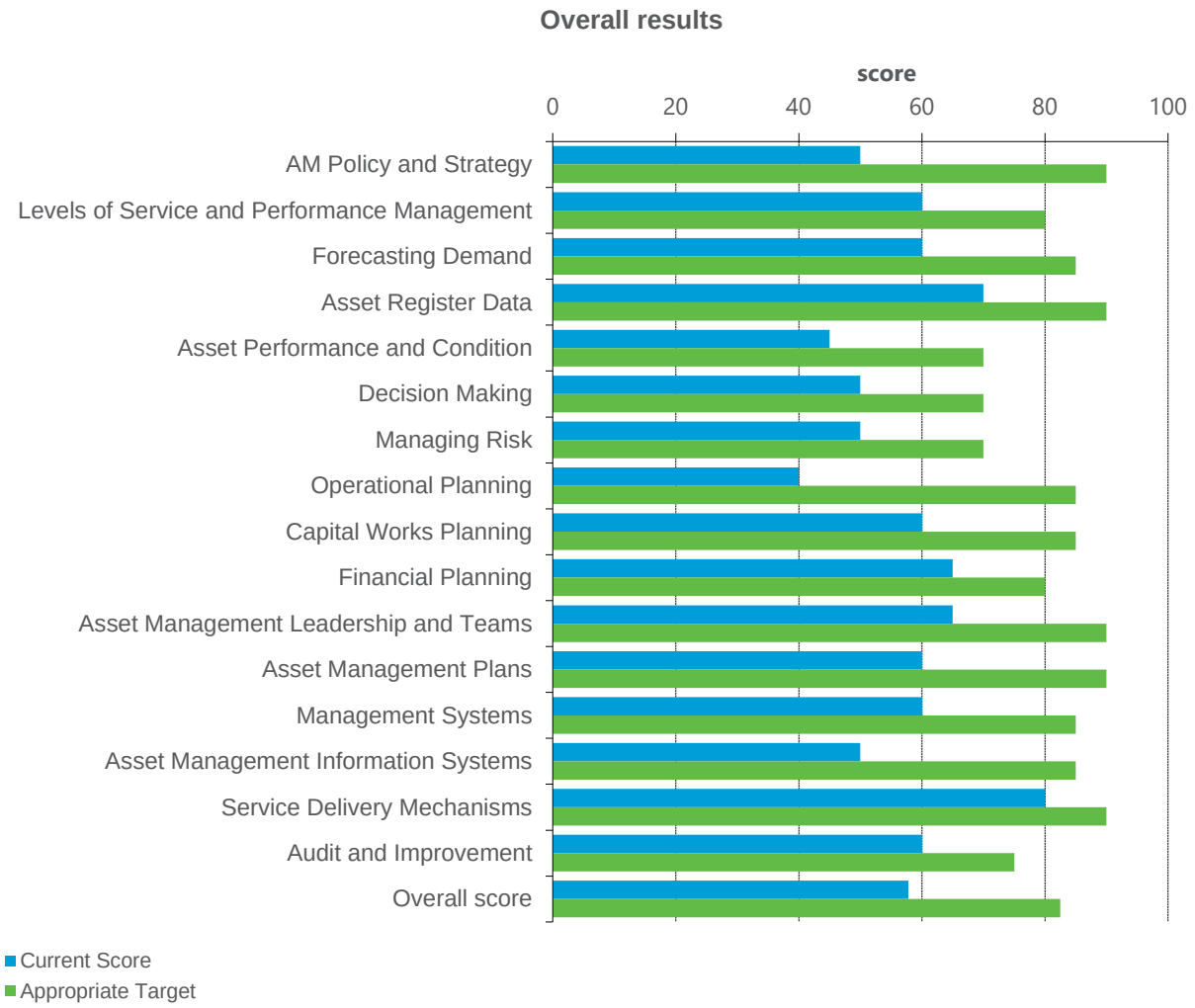
Reference	Question	Section	Questions	Why	Maturity Levels					Current score	Appropriate target
					Aware 0-20	Basic 21-40	Core 41-60	Intermediate 61-80	Advanced 81-100		
IIMM 4.2	12	AMPs	How does your organisation develop, communicate, resource and action the AMPs?	An AMP is a written representation of intended capital and operational programmes for its new and existing infrastructure, based on the organisations understanding of demand, customer requirements and its own network of assets. The AM Plan is often considered as the business case for the long term financial forecasts.	The organisation has a stated intention to develop AM plans.	AM Plans contain basic information on assets, service levels, planned works and financial forecasts (5-10 years), and future improvements	AM objectives are defined with consideration of strategic context. Approach to risk and critical assets described, top down condition and performance assessment, future demand forecasts, description of supporting AM processes, 10 year financial forecasts, 3 year AM improvement plan.	Analysis of asset condition and performance trends (past/future), effective customer engagement in setting LoS, ODM/risk techniques applied to major programmes. Strategic context analysed with risks, issues and responses described.	Evidence of programmes driven by comprehensive ODM techniques, risk management programmes and LoS / cost trade-off analysis. Improvement programmes are largely complete with focus on maintaining appropriate practices.	60	90
IIMM 4.3	13	Management systems	How does your organisation ensure that its asset management processes and practices are appropriate and effective?	Management systems are the procedures and interactions within an organisation that are needed to achieve its objectives. A robust management system enables the organisation to operate consistently and reliably, and provide evidence that what was planned was delivered. The processes should be appropriate, consistently applied and understood.	The organisation has an awareness of the need to formalise systems and processes.	Simple process documentation in place for service-critical AM activities.	Basic Quality Management System in place that covers all organisational activities. Critical AM processes are documented, monitored and are subject to review. AM system meets the requirements of ISO 55001.	Process documentation has been implemented in accordance with the AM system to appropriate level of detail. Internal management systems are aligned.	ISO certification to multiple standards for large asset intensive organisations, including ISO 55001. Strong integration of all management systems within the organisation.	60	85
IIMM 4.4	14	Asset management information systems	How does your organisation meet the information needs of those responsible for various aspects of asset management?	AM systems have become an essential tool for the management of assets in order to effectively deal with the extent of analysis required to support the size and complexity of assets and their operation, and the maturity of AM practices.	The organisation has an intention to develop an electronic asset register/AMIS.	Asset register can record core asset attributes - size, material, location, age etc. Asset information reports can be manually generated for AM Plan input.	Asset register enables hierarchal reporting (at component level to facility level). Customer service request tracking and planned maintenance functionality enabled. System enables manual reports to be generated for valuation and renewal forecasting.	Spatial relationship capability. More automated asset performance reporting on a wider range of information.	Financial, asset and customer service systems are integrated and all advanced AM functions are enabled. Asset optimisation analysis can be completed.	50	85
IIMM 4.5	15	Service delivery mechanisms	How does your organisation procure asset-related services like maintenance and consumables for different classes of assets? How does the organisation exercise control over any outsourced asset management services?	The effectiveness of asset management is proven in the efficient and effective delivery of services at an operational level. Organisations need to consider the relative costs, benefits and risks of alternative delivery mechanisms.	Asset management roles (owner and service delivery) are generally understood.	Service delivery roles are clearly allocated (internal and external) generally following historic approaches.	Core functions defined. Procurement strategy/policy in place. Internal service level agreements in place with the primary internal service providers and contract for the primary external service providers.	Risks, benefits and costs of various outsourcing options have been considered and determined. Competitive tendering practices applied with integrity and accountability.	All potential service delivery mechanisms have been reviewed and formal analysis carried out to identify the best delivery mechanism.	80	90

Reference	Question	Section	Questions	Why	Maturity Levels					Current score	Appropriate target
					Aware 0-20	Basic 21-40	Core 41-60	Intermediate 61-80	Advanced 81-100		
IIMM 4.6	16	Audit and improvement	How does your organisation ensure that it continues to develop its asset management capability towards an appropriate level of maturity?	Well performing agencies give careful consideration of the value that can be obtained from improving AM information, processes, systems and capability. The focus is on ensuring AM practices are 'appropriate' to the business objectives and government requirements.	The organisation recognises the benefits of improving asset management processes and practises, but has yet to develop an improvement plan.	Improvement actions have been identified and allocated to appropriate staff.	Current and future AM performance has been assessed and gaps used to drive the improvement actions. Improvement actions identified to close the gaps. Improvement plans identify objectives, timeframes, deliverables, resource requirements and responsibilities.	Formal monitoring and reporting on the improvement programme to the Executive Team. Project briefs have been developed for all key improvement actions.	Improvement plans specify key performance indicators (KPIs) for monitoring AM improvement and these are routinely reported.	60	75

Table 39: Summary results of asset management assessment tool

Reference	Question	Summary results	Current score	Appropriate target	Difference
IIMM 2.1	1	AM policy and strategy	50	90	40
IIMM 2.2	2	LoS and performance management	60	80	20
IIMM 2.3	3	Forecasting demand	60	85	25
IIMM 2.4	4	Asset register data	70	90	20
IIMM 2.5	5	Asset performance and condition	45	70	25
IIMM 3.1	6	Decision making	50	70	20
IIMM 3.2	7	Managing risk	50	70	20
IIMM 3.3	8	Operational planning	40	85	45
IIMM 3.4	9	Capital works planning	60	85	25
IIMM 3.5	10	Financial planning	65	80	15
IIMM 4.1	11	Asset management leadership and teams	65	90	25
IIMM 4.2	12	AMPs	60	90	30
IIMM 4.3	13	Management systems	60	85	25
IIMM 4.4	14	Asset management information systems	50	85	35
IIMM 4.5	15	Service delivery mechanisms	80	90	10
IIMM 4.6	16	Audit and improvement	60	75	15
		Overall score	**58**	**83**	**25**
Summary results					
Understanding and defining requirements			57	83	26
Developing asset management lifecycle strategies			53	78	25
Asset management enablers			63	86	23
Total			**58**	**83**	**25**
% variance from target					**30%**
ICR Score (out of 15)					**11**

Figure 25: Overall results of asset maturity assessment

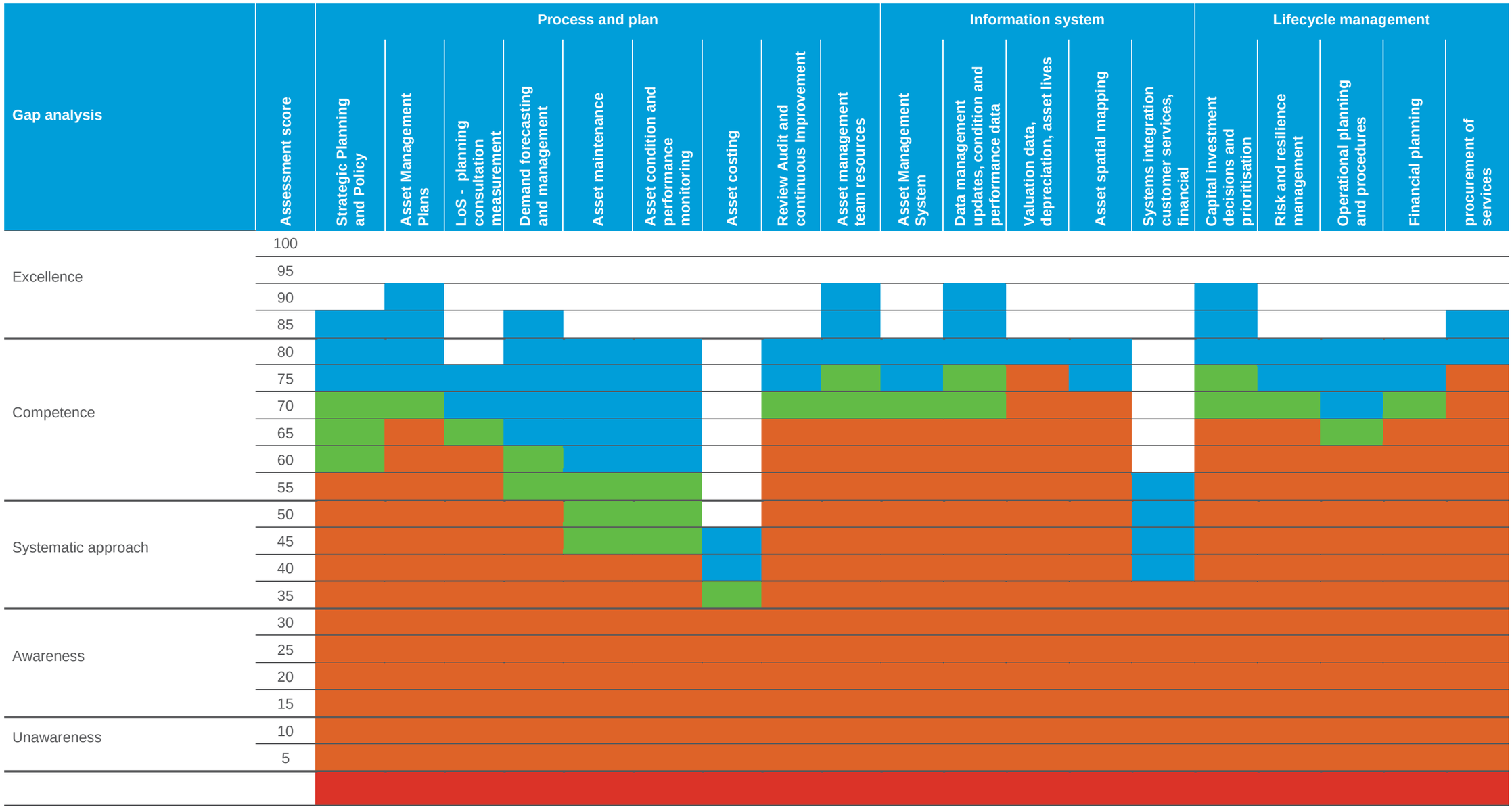


8.1. Asset management status

A specific GAP analysis has been undertaken for the wastewater services activity and is shown in Figure 26. The analysis indicates that the current AMP falls generally in the 'average competent' area for asset management. Council intends to progress to a high competent level over the next three years. It would be prohibitively expensive for an activity of this size to progress beyond this level.

The analysis helps to demonstrate the current level of asset management maturity and identifies priority areas for improvement. Outcomes of the gap analysis exercise have been used in development of the Asset Management Improvement Plan.

Figure 26: Gap analysis



Current score	55	65	60	50	40	40	30	65	65	65	65	80	75	40	65	65	60	65	75
Appropriate score	85	90	75	85	80	80	45	80	90	80	90	85	85	60	90	80	80	80	85
Gap	30	25	15	35	40	40	15	15	25	15	25	5	10	20	25	15	20	15	10
Weighting	3	2	1	2	3	3	1	1	2	1	3	1	1	2	3	2	2	1	1
Weighted gap	90	50	15	70	120	120	15	15	50	15	75	5	10	40	75	30	40	15	10
Priority for improvements	3	7	12	6	1	1	12	12	7	12	4	19	17	9	4	11	9	12	17

8.2. Achievements against the previous plan

Table 40 compares the improvement actions identified in 2015 Wastewater AMP.

Table 40: 2015 Wastewater AMP improvement actions – completion status

Item	Priority	Completed (Y/N/P)	Comments
Outstanding tasks from 2012 Wastewater AMP			
Development of processes for Sustainable Development Plan		N	Need to review requirements and priority against other improvements identified
District-wide sludge removal strategy		Partial	Development of a formal strategy is in progress
Hydraulic and process upgrading of treatment plants		Partial	Any works will depend on need, current proposals for Russel WWTP
Inflow and infiltration management programme		Partial	Strategy and Plan required. Issues at Kaitaia progressing
Develop processes and procedures for future designation and zoning of properties		N	This work required to carried out by District Plan team
Assess robustness of asset management data		Partial	Asset location data cleansing completed and some condition rating
2015 Wastewater AMP			
Develop systems to better predict underground asset life	1	N	Will be carried forward
Develop the rules defining critical assets, then defining a critical asset analysis of above and below ground assets	1	Partial	Further work required to clarify risk and mitigations.
Condition assessment of below ground assets in accordance to WaterNZ guidelines	2	N	Will be carried forward
Improvements to the planned maintenance procedures	2	Partial	Some work on business process and AMS functionality. Requires to be carried forward
Develop systems to record and display system performance	1	Partial	Some work on business process and AMS functionality. Requires to be carried forward
Determine operating capacity of each plant relative to demands	1	Partial	Some high level assessment carried out, requires further detailed review.
Update and Improve AssetFindA – field capture/verification	1	Partial	Trials carried out with field devices, further work required
Update and Improve AssetFindA – locate blockages and faults	1	Partial	As above
Update and Improve AssetFindA – confirm asset lives	2	Y	Asset lives are already confirmed as part of asset valuation process.
Update and Improve AssetFindA – insert asset values	3	Y	Functional location ID's added for above ground assets and Pump stations
Update and Improve AssetFindA – Asset Data Confidence	1	Y	Data cleansing exercise carried out for all STP's and pump stations

Item	Priority	Completed (Y/N/P)	Comments
Introduction of new systems to integrate all aspects of asset workflow	3	Partial	Development of business processes is in progress
Build processes for the prediction of failure modes based on asset condition, performance and historical maintenance records	3	N	AMS functionality is available but requires completion of asset condition data input
Develop processes for the recording of the unit rates from contractors, capturing, analysing and assessing asset lifecycle costs and assessing whole of life cost in capital works	3	N	Low priority in comparison to other requirements
Create a process that reviews current maintenance activities to ensure an efficient service is being provided and that there is an optimum balance between planned and unplanned maintenance costs	3	Partial	Reporting via MEX is available. Further development of internal processes and AMS is in progress
Build a risk evaluation, analysis and reduction process for the analysis of the capital and operational expenditure, monitoring and reporting processes, linkage to corporate risk profile. Ensure process in place to record, monitor and manage risks	3	Partial	Risk prioritisation tool developed and trialled as part of 2018 LTP planning
Prepare an asset disposal strategy	3	Y	Council policy in place
Ensure adequate budget and training is available and that a skill matrix is developed and maintained for all staff involved in the Asset Management activities	3	Partial	Budgets in place and training ongoing, further work required to develop future needs matrix

8.3. 2018-21 improvement plan

Key projects identified as a result of the Gap Analysis, or identified within other sections of the AMP, are shown in Table 41, Table 42 and Table 43. The list forms a prioritised program of improvements which need to be implemented over the next three years. Some of these improvements are already underway and will continue to be progressed during 2018/19.

Table 41: Process and planning

Item	Priority	Programme
Asset condition of underground assets – strategy and plan for data collection required	1	2018/19
Assessment of remaining life for underground assets – strategy and plan required	1	2018/19
Asset maintenance – strategy, business process and implementation plan required	1	2018/19
Asset maintenance – maintenance plans developed and input to asset management system	1	2018/19
Future bow wave of underground Assets renewals – strategy and plan required	2	2019/20
Demand management plan – develop action plans	2	2019/20
Develop growth plans for Kerikeri and Paihia	2	2019/20

Item	Priority	Programme
Climate change impact – more detailed assessment at scheme level required	3	2020/21
Peer review and update of water AMP	3	2021/22

Table 42: Information systems

Item	Priority	Programme
Asset condition, performance and lives attributes added	1	2018/19
Planned and reactive maintenance functions tested and in use	1	2018/19
Field devices tested and in use by staff and contractors	2	2019/20
System integration with Pathways customer services application	2	2020/21
Renewals program development using condition and performance prediction tool	2	2019/20
Asset values updated into asset management system	2	2019/20
Asset valuations tested in asset management system	2	2019/20

Table 43: Lifecycle management

Item	Priority	Programme
Renewals funding – analysis of source funding versus actual costs and recommendations required	1	2018/19
Asset fault recording – develop and implement data collection procedures	1	2018/19
Capital investment program – complete prioritisation tool, business cases and approvals	1	2018/19
Assessment and alignment of adequate asset management resources	1	2018/19
Hydraulic modelling – recalibration and verification of wastewater network models (commencing East Coast and Paihia)	1	2018/19
Critical assets – carry out review of asset status and draft contingency plans for district	2	2019/20
Treatment plant capacity and headroom – record hydraulic and process calculations	2	2019/20
Wastewater management plans – review and update plans	2	2019/20
Documented operational procedures in place including SOP's	2	2019/20
Sanitary services – carry out stage 2 detailed assessments	2	2019/20
Review demand forecasts and headroom capacity across all schemes	2	2019/20

8.4. Improvement monitoring

Regular monitoring of progress against the Asset Management Improvement Plan is essential to ensure that priorities are reviewed and updated, adequate resources and funding is in place, and specific actions have been allocated and are being planned or in progress. Quarterly reviews with asset managers allows monitoring to be recorded and any corrective measures put in place to ensure progress stays on track.

Table 44 provides a template to be used for managing improvement implementation and for quarterly progress monitoring.

Table 44: Improvement monitoring template

Activity	Activity area	AMP reference	Improvement action	Priority (relative urgency, 1-6, 6=least urgent)	Status	% complete estimate	Comment	Date that improvement action was identified	Original target completion date	Current target completion date	Forecast completion date	Procurement / delivery strategy	Council person responsible for managing to close	Cost estimate	Budget	Estimated contractor / consultant cost to complete	Actual contractor / consultant costs to date including accruals

9. GLOSSARY

Annual Plan	The Annual Plan provides a statement of the direction of Council and ensures consistency and coordination in both making policies and decisions concerning the use of Council resources. It is a reference document for monitoring and measuring performance for the community as well as the Council itself.
Asset Management (AM)	The combination of management, financial, economic, and engineering and other practices applies to physical assets with the objective of providing the required LoS in the most cost effective manner.
Asset Management System (AMS)	A system (usually computerised) for collecting, analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset register	A record or asset information considered worthy of separate identification including inventory, historical, financial, condition, and construction, technical and financial information about each.
Asset renewal	Major work, which restores an existing asset to its original capacity or the required condition (re-roofing, re-painting, replace heating)
Auditor-General	The Auditor General of the New Zealand Audit Office.
Capital expenditure (CAPEX)	Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Community Outcomes	Outcomes developed with the community, which outline the community's vision.
Components	Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.
Condition monitoring	Continuous or periodic inspection, assessment, measurement and interpretation of resulting data, to indicate the condition of a specific component so as to determine the need for some preventative or remedial action
Condition rating survey	Survey carried out to assess the condition of assets.
Critical assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.
Current replacement cost	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset.
Deferred maintenance	The shortfall in rehabilitation work required to maintain the service potential of an asset.
Depreciated replacement cost	The replacement cost of an asset spread over the expected lifetime of the asset.
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for the by historical cost (or re-valued amount) of the asset less its residual value over its useful life.
Disposal	Activities necessary to dispose of decommissioned assets.
Geographic Information System (GIS)	Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic database.
Level of Service (LoS)	A measure of a service that Council delivers e.g. a number of sports fields available for use, library opening hours, water quality etc.
Life cycle management	A process of managing an asset from initial construction through to disposal
Net Present Value (NPV)	The value of an asset to the organisation, derived from the continued use and subsequent disposal in present monetary values. It is the new amount of discounted total cash inflows arising from the continued use and subsequent disposal of the asset after deducting the value of the discounted total cast outflows.
Optimised renewal decision-making	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses NPV analysis and risk assessment.
Stakeholder	A person or organisation who has a legitimate interest in an activity e.g. community, Iwi, etc.
Sustainability	The process of meeting the needs of the present community without compromising the ability of future generations to meet their own needs

10. FULL ACTIVITY RISK REGISTER

Category risk	Risk ID#	Risk statement: " The Risk is that……	Potential consequence:	Issues:	Current treatment / improvement implemented:	Treatment / improvement recommended:	TOTAL					1. Financial						2. Customer						3. Reputational						4. Compliance						5. Health & Safety					
												Inherent				Residual						Inherent				Residual						Inherent				Residual						Inherent				Residual			
							Risk reviewed	Inherent risk	Residual risk	Effectiveness	% reduction	Impact	Probability	Score	Impact	Probability	Financial score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Legal score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Score
Compliance to regulatory standards	3W-19	Environmental pollution occurs as a result of undesirable items entering then blocking the network and/or compromising treatment process and/or pipework, this can lead to prosecution, public health issues and/or reputational damage	Financial, Customer, Reputational		No public education programme to make public aware of the risks. Trade waste discharges are not monitored or administered.	Implement a public education programme to provide public awareness of te risks. Implement a Tradewaste Bylaw with Tradewaste monitoring and charging.	21/11/2017	25	15	Good	40%	Medium	Will happen	7	Medium	Unlikely	3	High -Intolerable	Unlikely	5	Medium	Unlikely	3	Medium	Will happen	7	Medium	Probable	5	Medium	Unlikely	3	Low - none	Unlikely	1	Medium	Unlikely	3	Medium	Unlikely	3
Assumptions and confidence levels	3W-20	Incorrect assumptions of FNDC assets lead to increased cost, reduced level of service and/or potential loss of life.	Financial, Reputational, Legal	Increased wastewater overflows	Reduced risk of incorrect assumptions.	Employment of appropriately skilled personal to provide information. The use of documented procedures to ensure issues aren't missed	22/11/2017	23	15	Good	35%	High -Intolerable	Unlikely	5	Medium	Unlikely	3	Low - none	Probable	3	Medium	Unlikely	3	Medium	Will happen	7	Medium	Unlikely	3	Medium	Probable	5	Medium	Unlikely	3	Medium	Unlikely	3
Business continuity and knowledge management (people and systems)	3W-21	FNDC organisational structure is not optimised to support both staff, institutional knowledge and efficient achievement of FNDC objectives to create value for the ratepayer.	Financial, Customer, Reputational, Legal, Health and Safety	Capital works projects not delivered in full, on time to specification Staff turnover Number and distribution of roles Roles not filled	Staff structure contains not resilient. Asset Management system partially used. Poor use of the corporate record keeping system.	Refocus on IAM's staff structure to increase resilience. Greater used of the Asset management software, Council's Objective filing systems and documentation of processes	23/11/2017	29	19	Good	34%	High -Intolerable	Probable	7	Medium	Unlikely	3	Medium	Probable	5	Medium	Unlikely	3	High -Intolerable	Probable	7	Medium	Probable	5	Medium	Probable	5	Medium	Unlikely	3	High -Intolerable	Unlikely	5	High -Intolerable	Unlikely	5
Business continuity and knowledge management (people and systems)	3W-22	FNDC lacks integrated systems, process and information services and technology, creating wastage and missed opportunities.	Financial, Customer, Reputational, Legal	Systems don't talk to each other Missing data fragmented systems	The use of multiple systems that aren't linked, or poorly linked	Develop systems that have a greater linkage with easy access to information.	24/11/2017	29	19	Good	34%	Medium	Will happen	7	Medium	Unlikely	3	Low - none	Will happen	5	Low - none	Probable	3	Medium	Will happen	7	Medium	Unlikely	3	Medium	Will happen	7	Medium	Probable	5	Low - none	Probable	3	Medium	Probable	5

Category risk	Risk ID#	Risk statement: " The Risk is that……	Potential consequence:	Issues:	Current treatment / improvement implemented:	Treatment / improvement recommended:	Risk reviewed	TOTAL Inherent risk	TOTAL Residual risk	Effectiveness	% reduction	1. Financial Inherent Impact	1. Financial Inherent Probability	1. Financial Inherent Score	1. Financial Residual Impact	1. Financial Residual Probability	1. Financial Residual Financial score	2. Customer Inherent Impact	2. Customer Inherent Probability	2. Customer Inherent Score	2. Customer Residual Impact	2. Customer Residual Probability	2. Customer Residual Score	3. Reputational Inherent Impact	3. Reputational Inherent Probability	3. Reputational Inherent Score	3. Reputational Residual Impact	3. Reputational Residual Probability	3. Reputational Residual Score	4. Compliance Inherent Impact	4. Compliance Inherent Probability	4. Compliance Inherent Legal score	4. Compliance Residual Impact	4. Compliance Residual Probability	4. Compliance Residual Score	5. Health & Safety Inherent Impact	5. Health & Safety Inherent Probability	5. Health & Safety Inherent Score	5. Health & Safety Residual Impact	5. Health & Safety Residual Probability	5. Health & Safety Residual Score
Compliance to regulatory standards	3W-23	Loss of life, serious injury, and/or long term health affect to staff / contractors / public due to FNDC not meeting its obligations under the Health and Safety at Work Act 2015 such as risk identification, risk assessment and safety plans.	Financial, Customer, Legal, Health and Safety	How overlapping PCBU integrate	FNDC has a fragmented approach to H&S. Contractors required to confirm Health and Safety via SiteWise web site. No public education around risks.	Greater focus on H&S by FNDC. Increased H&S requirement in contracts. Introduce a public safety education programme.	25/11/2017	23	17	Poor	26%	High -Intolerable	Unlikely	5	Medium	Unlikely	3	Medium	Probable	5	Medium	Unlikely	3	Medium	Unlikely	3	Medium	Unlikely	3	High -Intolerable	Unlikely	5	Medium	Unlikely	3	High -Intolerable	Unlikely	5	High -Intolerable	Unlikely	5
Asset Capacity / Performance	3W-24	Rate payer experiences increased costs and/or loss of services due to amplified rate of asset deterioration caused by poor asset management and/or lack of knowledge/condition assessment of the asset.	Financial, Customer	Overflows affecting public health	Asset life predominately determined through age. Minimal preventative maintenance undertaken. Some information kept is asset management system.	Undertake condition assessment of the majority of assets. Implement programmes of preventative maintenance. Fully utilise the asset management system.	26/11/2017	15	9	Good	40%	Medium	Will happen	7	Medium	Unlikely	3	Medium	Probable	5	Medium	Unlikely	3	Low - none	Unlikely	1	Low - none	Unlikely	1	Low - none	Unlikely	1	Low - none	Unlikely	1	Low - none	Unlikely	1	Low - none	Unlikely	1
Compliance to regulatory standards	3W-25	Failure to comply to resource consent requirements and/or failure to meet our regulatory obligations such as the RMA leads to prosecution of FNDC resulting in unbudgeted cost and damaged reputation and potential public health issue (illness, injury and death)	Financial, Customer, Reputational, Legal, Health and Safety	NRC have advised will inforce consents. A environmental or community health event is likely to result in compensation and possibly court action. Not meeting regulatory requirements Abatement notices	Most significant consents monitored, albeit lacking in formal processes. Water Safety Plans under development. Targeting for full compliance to Drinking water standards. Lacking in issue monitoring to predict failure.	Development of a formal resource consent monitoring programme. Recording issues in AssetFindA. Ensuring adequate funding is programmed.	23/11/2017	31	13	Good to Excellent	58%	Medium	Will happen	7	Medium	Unlikely	3	Medium	Will happen	7	Medium	Unlikely	3	Low - none	Will happen	5	Low - none	Unlikely	1	Medium	Probable	5	Medium	Unlikely	3	Medium	Will happen	7	Medium	Unlikely	3

Category risk	Risk ID#	Risk statement: " The Risk is that…….	Potential consequence:	Issues:	Current treatment / improvement implemented:	Treatment / improvement recommended:	Risk reviewed	TOTAL Inherent risk	TOTAL Residual risk	TOTAL Effectiveness	TOTAL % reduction	1. Financial Inherent Impact	1. Financial Inherent Probability	1. Financial Inherent Score	1. Financial Residual Impact	1. Financial Residual Probability	1. Financial Residual Financial score	2. Customer Inherent Impact	2. Customer Inherent Probability	2. Customer Inherent Score	2. Customer Residual Impact	2. Customer Residual Probability	2. Customer Residual Score	3. Reputational Inherent Impact	3. Reputational Inherent Probability	3. Reputational Inherent Score	3. Reputational Residual Impact	3. Reputational Residual Probability	3. Reputational Residual Score	4. Compliance Inherent Impact	4. Compliance Inherent Probability	4. Compliance Inherent Legal score	4. Compliance Residual Impact	4. Compliance Residual Probability	4. Compliance Residual Score	5. Health & Safety Inherent Impact	5. Health & Safety Inherent Probability	5. Health & Safety Inherent Score	5. Health & Safety Residual Impact	5. Health & Safety Residual Probability	5. Health & Safety Residual Score
Operations	3W-26	FNDC fails to meet its obligations due to a failure in contracted service delivery (in full, on time, to specification) resulting in a loss of service and/or failure to meet regulatory standards	Financial, Customer, Legal, Health and Safety	Public adversely affects. Reactive maintenance not carried out. Failure to respond in sufficient time during events	KPI's built into the Operational contract. Operations contract Alliance based so not to be adversarial. Poor linkage between customer issue recording systems.	New 3 Water Alliance contract to be alliance based. Develop strategies and process to enable better integration of processes.	23/11/2017	29	13	Good	55%	High -Intolerable	Probable	7	Medium	Unlikely	3	High -Intolerable	Probable	7	Medium	Unlikely	3	Medium	Unlikely	3	Low - none	Unlikely	1	Medium	Will happen	7	Medium	Unlikely	3	High -Intolerable	Unlikely	5	Medium	Unlikely	3
Affordability	3W-27	Sustainable schemes are difficult / not viable as affordability (as a % of households which stop paying rates) of services is an issue in the Far North due to small, low density (with reducing numbers), poor (low socio economic status) communities spread over a large geographical area.	Financial, Customer, Reputational, Legal	Tourism/holiday home peaks (Opononi, Russell, Paihia, Kerikeri etc.) impact size service provision	The funding of schemes is capital is scheme by scheme, and operational is a district wide cost. While schemes overall in Northland are marginally affordable, the rating structure adversely affect the smaller schemes.	A greater focus on Asset management. A changing the drivers from "best for Council' to" Best for waters". Moving to regional service delivery/management/ funding to more equally share the costs.	23/11/2017	25	13	Good	48%	High -Intolerable	Will happen	9	Medium	Unlikely	3	Low - none	Will happen	5	Low - none	Probable	3	High -Intolerable	Unlikely	5	Medium	Unlikely	3	Low - none	Will happen	5	Low - none	Probable	3	Low - none	Unlikely	1	Low - none	Unlikely	1

Category risk	Risk ID#	Risk statement: " The Risk is that……	Potential consequence:	Issues:	Current treatment / improvement implemented:	Treatment / improvement recommended:	TOTAL					1. Financial								2. Customer								3. Reputational								4. Compliance								5. Health & Safety							
							Risk reviewed	Inherent risk	Residual risk	Effectiveness	% reduction	Inherent				Residual				Inherent				Residual				Inherent				Residual				Inherent				Residual				Inherent				Residual			
												Impact	Probability	Score	Impact	Probability	Financial score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Legal score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Score	Impact	Probability	Score
Sustainability	3W-28	Lack of long-term strategic planning coupled with changing environmental standards and land use changes, leads to reactionary planning (consent to consent) increasing the risk of creating public health and/or environmental hazards.	Financial, Customer, Reputational, Legal	Long-term lease in Waitangi Forest may not be renewed or may be challenged.	The current approach is predominantly reactionary aimed to do minimum and lacks long term strategy planning.	The development of long term sustainable strategic plans for key water sources and resource consents. This includes improving resilience to cater for changing environments and standards.	23/11/2017	29	7	Excellent	76%	High -Intolerable	Will happen	9	Medium	Unlikely	3	Medium	Will happen	7	Low - none	Unlikely	1	Low - none	Will happen	5	Low - none	Unlikely	1	Medium	Probable	5	Low - none	Unlikely	1	Medium	Unlikely	3	Low - none	Unlikely	1

Far North District Council

Te Kaunihera o Tai Tokerau ki te Raki

SIGNIFICANCE AND ENGAGEMENT POLICY

2018

HE WHENUA RANGATIRA

A DISTRICT OF SUSTAINABLE PROSPERITY & WELL-BEING

Background

For every decision that Council makes, we need to determine how important, or significant, it is to our community. We look at a number of factors, including who is affected by or interested in the decision, how the decision may impact levels of service, and what the costs will be.

These factors help us to work out how to engage with the community, i.e, whether to involve the community in making the decision, ask for community feedback on the decision, or simply tell the community what is happening.

The way we engage is often set by legislation, and there are many steps to follow. This policy guides how we determine the significance of a decision and how we engage the community based on that level of significance.

Objectives

The objectives of this policy are to:

- ensure consistency when determining the significance of proposals, assets and decisions;
- identify the extent and type of public engagement required before a decision is made;
- build positive relationships with stakeholders and the wider community, encouraging co-operation, respect and mutual understanding of other points of view; and
- comply with section 76AA of the Local Government Act 2002.

Definitions

CONSULTATION is the process of informing the community and seeking information or feedback to inform and assist decision-making. Consultation is a formal type of engagement, and is often prescribed by legislation and time bound.

ENGAGEMENT is a process which involves all or some of the community and is focused on better understanding views and preferences which are relevant to Council's decision-making or problem-solving. There is a continuum of engagement ranging from "inform" to empower".

SIGNIFICANCE has the same definition as section 5 of the Local Government Act 2002

STRATEGIC ASSET has the same definition as section 5 of the Local Government Act 2002

Policies

Determining Significance

1. Significance will be determined in the early stages of a proposal, before decision making occurs. If it becomes necessary to do so, the significance of a proposal may be re-assessed at any time.
2. In determining a proposal's degree of significance, Council will be guided by:
    - Legislative requirements;
    - Historic levels of community impact or interest in the proposal;
    - The likely impact on iwi/hapū/whānau and their culture and traditions with their ancestral land, water, sites, wāhi tapu, valued flora and fauna, and other taonga; and
    - Whether the decision is inconsistent with previous Council decisions, according to s80 of the LGA 2002.

Matters of High Significance

3. A decision will be considered to be of high significance by Council if one of the following applies:
    - It involves the transfer of the ownership or control of a strategic asset (Appendix A) to or from Council; or
    - It is inconsistent with Council plans or policies and meets one of the thresholds below:

Criteria	Threshold
Financial impacts	The proposal will incur net operational expenditure exceeding 2.5% of total rates in the year commenced or net capital expenditure exceeding 10% of total rates in the year commenced.
Level of public interest	The proposal will generate considerable interest or community views render the community deeply divided.
Effect on the district or ward	The proposal will create radically different effects on ratepayers
Effect on individuals or communities	The proposal will radically impact on specific demographics.
Levels of Service	The changes to the level of service will be major and long-term.

The process used to determine significance is outlined in Appendix B.

Determining Engagement

4. Once assessed, the level of significance will be used to determine the corresponding level of engagement (Appendix C).
5. Where necessary, Council will undertake engagement at the level prescribed by legislation.

Principles for Engagement

6. Council seeks to inform communities about decisions that affect them, provide an opportunity for meaningful community input into decisions, and promote a sense of ownership of its decisions by the people of the district. Council will do this by upholding the following principles:
    - Being genuine in our consultation and engagement.
    - Being open to community feedback before making decisions.
    - Giving our community a timely opportunity to have a say.
    - Empowering the community to give informed feedback and, wherever possible, enabling the community to consider options relating to the proposal.
    - Not treating consultation or engagement as a poll or a referendum; feedback will be weighted in accordance with other considerations.
    - Providing feedback to those who made the effort to give us their opinions and explaining our decisions.

Engaging with Tangata Whenua

7. When engaging with Tangata Whenua and Māori, Council will:
    - Acknowledge the unique perspective of Māori and recognise that Māori are more than an interest group or stakeholder;
    - Provide opportunities and capacity for Māori to contribute to its decision-making processes;
    - Ensure existing general and project-specific relationship processes between Council and Tangata Whenua will, where working well, remain as a starting point for engagement;
    - Recognise and empower existing formal relationships (i.e. MOUs) with iwi and hapū; and
    - Fulfil our obligations under any Treaty settlement legislation.

When Council May Choose not to Engage

8. There are times when Council may not consult the community. Things Council will generally not engage on include but are not limited to:
    - Operational matters that do not reduce a level of service
    - Emergency management activities
    - Those decisions made by delegation to Council staff

- Commercially sensitive decisions (e.g. awarding contracts)
- Decisions made to manage an urgent issue
- Decisions where action is necessary to:
    - comply with the law;
    - protect life, health, or amenity and infrastructure;
    - prevent serious damage to property; and
    - avoid, remedy, or mitigate an adverse effect on the environment.

Appendix A – Strategic Assets

Section 5 of the LGA provides that the following are strategic assets:

a. *"any asset or group of assets listed in accordance with section 76AA(3) by the local authority; and*

b. *any land or building owned by the local authority and required to maintain the local authority's capacity to provide affordable housing as part of its social policy; and*

c. *any equity securities held by the local authority in—*

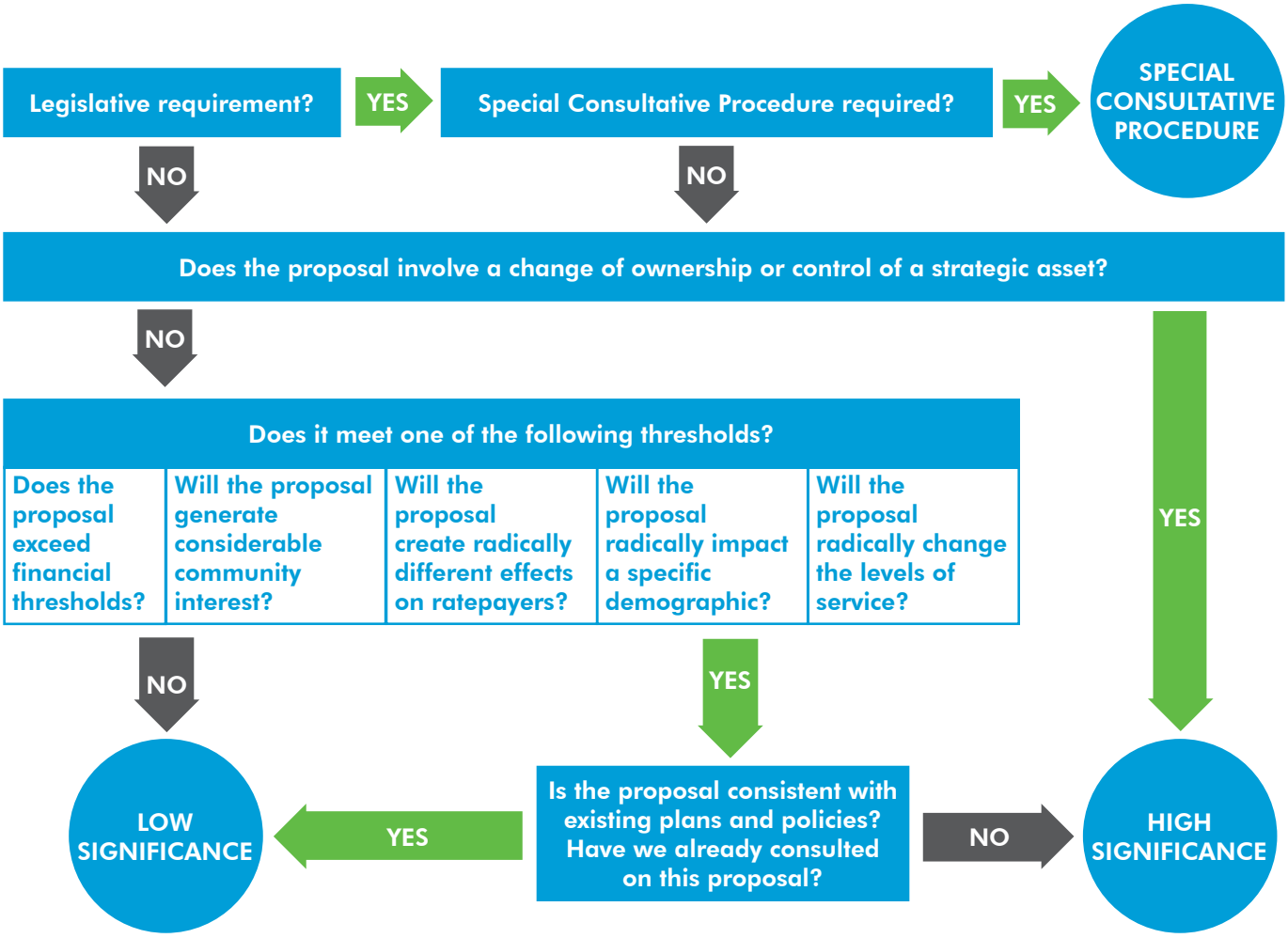
   i. *a port company within the meaning of the Port Companies Act 1988*

   ii. *an airport company within the meaning of the Airport Authorities Act 1966"*

The following list of assets are required to maintain capacity to achieve any outcome that determined to be important to the current and future needs of the community:

- Council Headquarters
- The roading network
- The stormwater network
- The wastewater network
- The water supply network
- The open space network, including parks, walkways and sports fields under the Reserves Act 1977
- Council-owned cemeteries
- Libraries
- Shares in Far North Holdings Limited
- Housing for the Elderly.

Appendix B – Significance Flowchart



Appendix C – Engagement Framework

Threshold Assessment

Does the proposal exceed financial thresholds?

Factors to consider:

1. The financial cost of the decision, in the short term, medium term and long term
2. The extent of the impact on rates and/or debt
3. The impacts on Council's capacity/capability to meet legislative requirements

Little impact		Medium impact	Large impact
INFORM	CONSULT	INVOLVE	COLLABORATE
Low engagement		Medium engagement	High engagement

Will the proposal generate considerable community interest?

Will the proposal create radically different effects on ratepayers?

Will the proposal radically impact a specific demographic?

Factors to consider:

1. The number of individuals, organisation, groups and sectors within the community that are affected
2. The extent of the impact on affected individuals, organisations, groups and sectors within the community
3. The potential for the issue to generate interest or controversy
4. The extent to which community opinion is divided on the matter

General community agreement			Divided community views
INFORM	CONSULT	INVOLVE	COLLABORATE
Low engagement			High engagement

Will the proposal/decision change the levels of service?

Factors to consider:

1. The effects of existing levels of service provided by FNDC for significant activities
2. The long-term social, economic, environmental and cultural impacts of the proposal/decision on the needs of current and future generations
3. The opportunity costs, the level of risk and how difficult it would be to reverse the effects of the decision

Little impact		Medium impact	Large impact
INFORM	CONSULT	INVOLVE	COLLABORATE
Low engagement		Medium engagement	High engagement

Engagement Assessment

Significance	LOW	MEDIUM		HIGH	MAXIMUM
Expectation	MINIMUM	Local Government Act 2002 s82 and s83			
Level of engagement	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
Engagement Focus	This is what we are doing	Tell us what you think	Help us decide	Let's work together	You make the decision
What does it involve?	One-way communication providing balanced and objective information to assist understanding about something that is going to happen or has happened.	Two-way communications designed to obtain public feedback about ideas on rationale, alternatives and proposals to inform decision-making.	Participatory process designed to help identify issues and views to ensure that concerns and aspirations are understood and considered prior to decision-making.	Working together to develop understanding of all issues and interests to work out alternatives and identify preferred solutions.	The final decision is in the hands of the public. Under the LGA, the Mayor and Councillors are elected to make decisions on behalf of their constituents.
Examples of when you would use this level of engagement	Operational matters; Annual Reports; Water restrictions	Annual Plan with significant changes	Bylaw reviews; Reserve Management Plans	Iwi MOUs; Community Plans	By-Election Referenda
When the community can expect to be involved	Council would generally advise the community once a decision is made.	Council would advise the community once a draft decision is made by Council and would generally provide the community with up to four weeks to participate and respond. Where desirable to meet the needs of affected parties or groups, and possible within timeframes available, Council may consider extending this period.	Council would generally provide the community with a greater lead-in time to allow them time to be involved in the process.	Council would generally involve the community at the start to scope the issue, again after information has been collected, and again when options are being considered.	Council would generally provide the community with a greater lead-in time to allow them time to be involved in the process, e.g. typically a month or more.
Tools Council can use	Website and publications Social media Media release	Surveys Focus groups Submissions	Formal Hearings Public meetings Drop-in Centres	External Working Groups MOUs	Referenda Elections Polls