Significant Natural Areas (SNAs)

Northland Region

2019

Wildlands

Wildland Consultants Ltd

- Rotorua 'Head Office'; other offices in Auckland, Hamilton, Tauranga, Whakatane, Wellington, Christchurch, Dunedin, Gisborne.
- Projects throughout New Zealand: ecological restoration, survey and monitoring, technical advice and solutions.

Mission Statement

Providing outstanding ecological services to sustain and improve our environments.

To provide high quality and cost-effective ecological information, advice, and technical services to enable clients to achieve sustainable management and enhancement of indigenous biodiversity, ecosystems, and resources.

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Overview

- Why are we identifying and mapping significant natural areas (SNAs)?
- Preliminary stages – literature review, prepare significance criteria guidelines
- Mapping:
  - collated existing Geographic Information Systems (GIS) layers as reference
  - inspecting aerial photographs
  - desktop mapping of all sites in the Northland Region.
- Assessing all sites against the criteria to determine if they meet the criteria – examples of sites, site sheets and maps, and attribute spreadsheet
- Next steps

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Northland's Biodiversity

- Parts of Northland have been extensively modified, although large tracts of indigenous forest remain together with threatened ecosystems such as dune lakes and gumlands.
- Northland supports many endemic invertebrate and plant species, and is a stronghold for North Island brown kiwi.
- Ongoing pressures from pest species, diseases (e.g. kauri dieback, myrtle rust), agriculture, and urban development. This reflects the general decline in biodiversity in Aotearoa/New Zealand. In rural landscapes, the losses are often small but cumulative – "death by a thousand cuts."
- Critical that significant indigenous habitats are identified to facilitate avoidance of further biodiversity loss.

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The purpose of this project

- Under the Resource Management Act (RMA) 1991 local councils are required to provide for "the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna" (RMA: Section 6(c)) as a matter of national importance.
- In order to address this matter, councils need to identify and assess the significance of areas of indigenous vegetation and areas of indigenous fauna habitat on private and publicly owned land, termed Significant Natural Areas (SNAs).
- Significant Natural Areas in Northland are areas of indigenous vegetation and habitat for indigenous fauna that meet criteria for significance within the Northland Regional Policy Statement (RPS).

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Kaipara District

- Covers 311,709 hectares on the south-west coast of the Northland Region. Includes all of Kaipara and Otamatea Ecological Districts and some of six other EDs: Rodney (Northland), Tangihua, Tokatoka, Tutamoe, Waipū, and Whāngārei
- Greatest losses of indigenous terrestrial ecosystems have occurred in the Kaipara District. Retains only 16% of its former indigenous cover; however, compared to most other parts of Northland, it has retained a relatively large area of wetland habitat (*c.*29%).
- Kaipara District has 34,219 hectares (11% of total area) classified at 'Acutely Threatened' and 63,468 hectares (20.4%) classified as 'Chronically Threatened' (Walker *et al.* 2015).
- Forty-seven 'Threatened' and 63 'At Risk' vascular plant species as per de Lange *et al.* (2018) are known from Kaipara District

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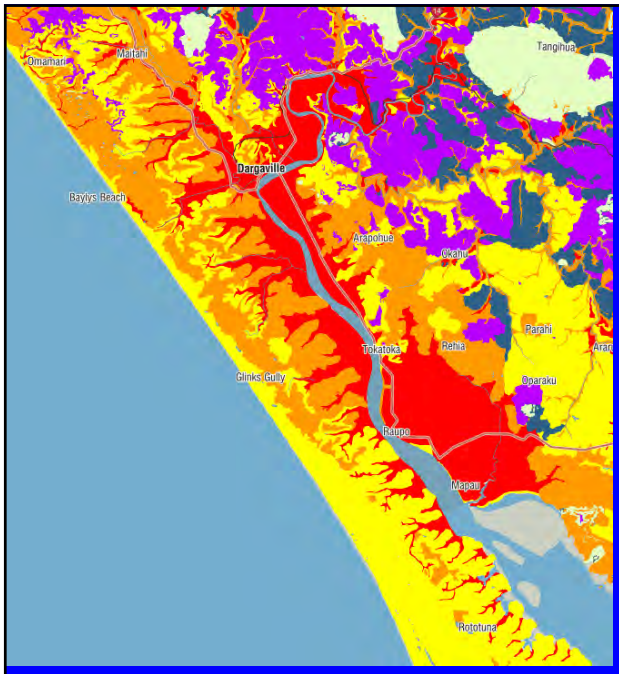

- Red areas = 'Acutely Threatened' land environments. Environments with < 10 % indigenous cover left. In these environments, the loss of habitats for indigenous species has been greatest in the past, e.g. alluvial flats. Little indigenous biodiversity remains in these environments.
- Orange areas = Chronically Threatened land environments. Environments with 10-20% indigenous cover left. Indigenous biodiversity in these environments has been severely reduced and remaining habitats are sparsely distributed in the landscape.

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SNAs within public and private ownership in the Northland region

- Area of SNAs on Council owned land = 3,531hectares
- Area of SNAs on land administered by the Department of Conservation = 177,830 hectares
- Area of SNAs on private owned land = 230,621 hectares

District	Private	Council	DOC
Far North District	152,693	2,704	105,012
Whangarei District	48,495	310	57,314
Kaipara District	29,432	494	15,277

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Kaipara's special natural features

Coastal forest. Maunganui Bluff, Aranga.

Dune lakes. Shag Lake, Omamari.

Kauri forest, Waipoua.

Wetlands (bogs) in consolidated dunes near Aranga.

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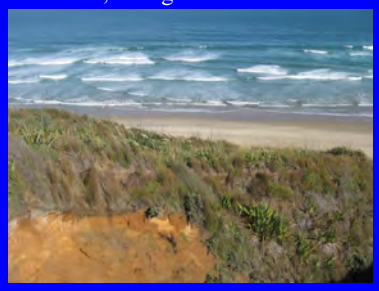
Kaipara's special natural features

Dune lake, Aranga.

Remnant of mature taraire forest, Aranga.



Duneland, Omamari.

Remnant kahikatea forest on alluvial flats near Dargaville.

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Literature Review

Prior to mapping and assessing potential significant natural areas, Wildlands has prepared a literature review on the Northland region.

The outcome of the literature review was an understanding of the ecological characteristics of the Northland region and identification of any information gaps.

The objectives of the review for each district were to:

- Prepare a list of informative sources for the project
- Describe the ecological characteristics
- Quantify the amount of different landcover types
- Break down each District into the five Threatened Land Environments as per Walker *et al*. (2015)
- Summarise the number of nationally and regionally significant taxa
- Identify information gaps
- Summary of biodiversity of each Ecological District.

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Key Knowledge Gaps

- Many of these reports are relatively old (20+ years), which means recent land use and modifications are not captured in these documents.
- Over the last 20-35 years many natural areas in Northland have been mapped and described in Protected Natural Area Programme reports, and these have been prepared for each ecological district.
- Some Protected Natural Area Programme sites have been cleared, drained or extensively modified. Conversely, some areas of pasture or gorse have reverted to indigenous vegetation.
- There are many natural areas that are not mapped or documented in any existing data sets.
- Limited knowledge of cryptic fauna, e.g. lizards, land snails and other invertebrates.
- Large areas likely to be under-surveyed for threatened taxa, e.g. lizards and long-tailed bats.
- Currently lacking up-to-date lists identifying regionally significant plants and animals.

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Significance Criteria

Significance criteria are based on Appendix 5 of the Northland Regional Policy Statement.

Four criteria are:

- Representativeness, e.g. indigenous vegetation that is typical of what would have existed circa 1840.
- Rarity/distinctiveness, e.g. presence of threatened habitat types or threatened indigenous taxa.
- Diversity and pattern, e.g. intact ecological sequences.
- Ecological context, e.g. site provides important ecological linkage or network, or provides and important buffering function.

Wildlands has provided a finalised version of the significance guidelines, which is currently being used to assess potential SNAs.

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Examples of Potential SNAs

Forest remnant identified in the PNAP survey for Tokatoka Ecological District.

Forest remnants identified in the PNAP survey for Waipu Ecological District.

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Mapping methodology

Wildlands GIS team prepares a series of A0 sized sheets (in PDF format) for each District.

Ecologists inspect each sheet and draw edits and make comments.

The GIS team makes those edits in QGIS, which are then checked by the ecologists before being finalised.

Mapping edits most commonly include:

- Boundary adjustments to include indigenous vegetation or exclude exotic vegetation.
- Adding smaller remnants to the same SNA as a larger 'parent site'.
- Identifying sites that would benefit from ground-truthing.

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Example of mapping edits

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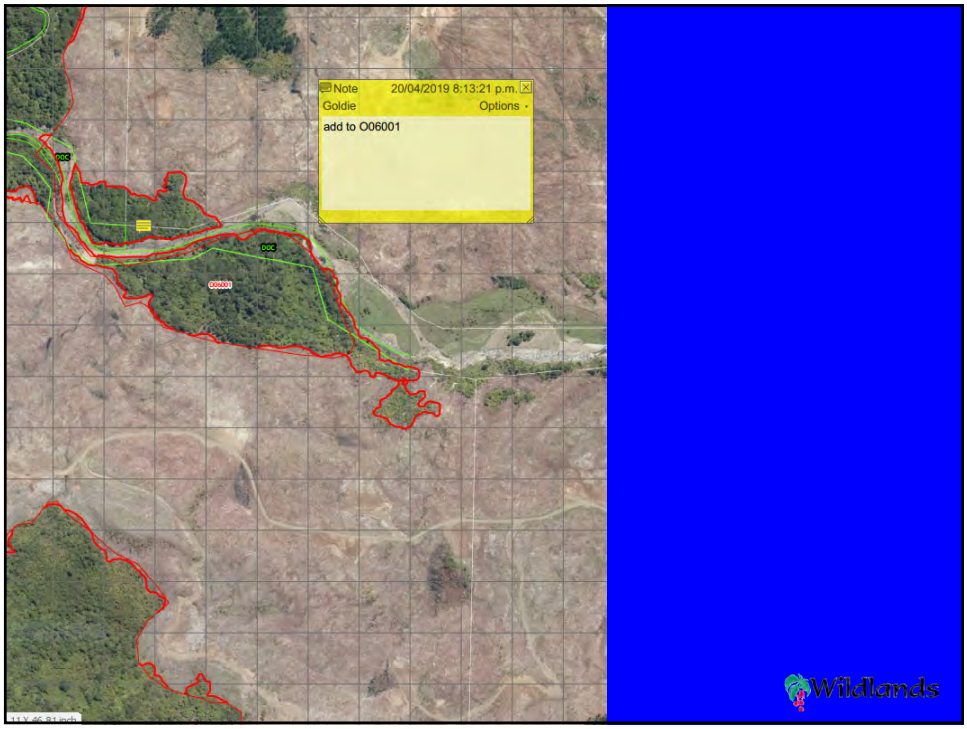
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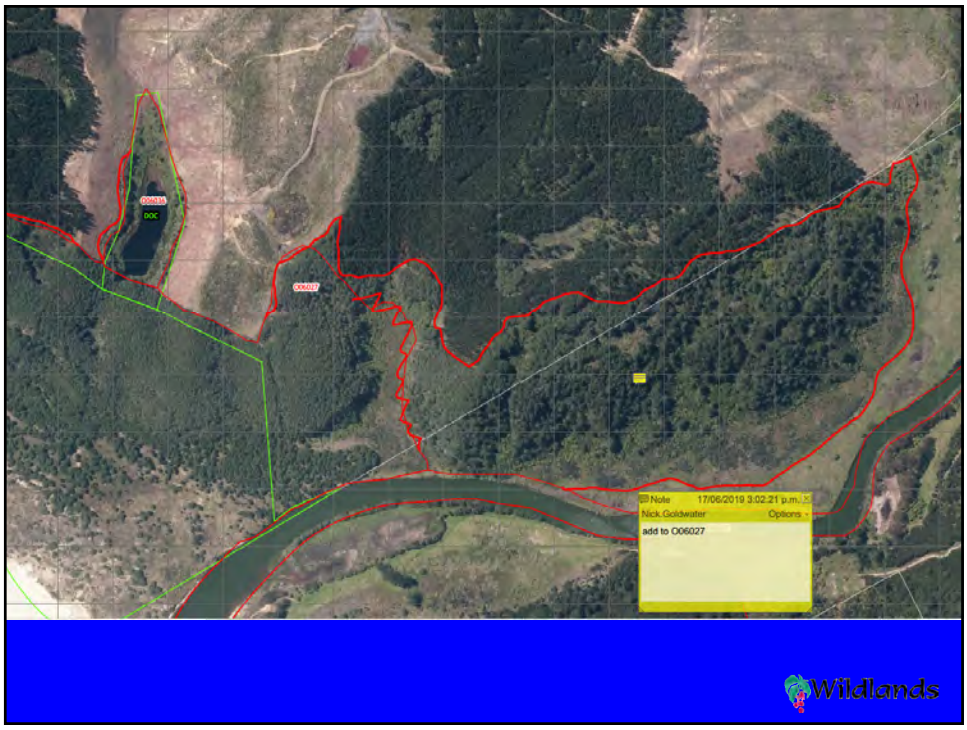
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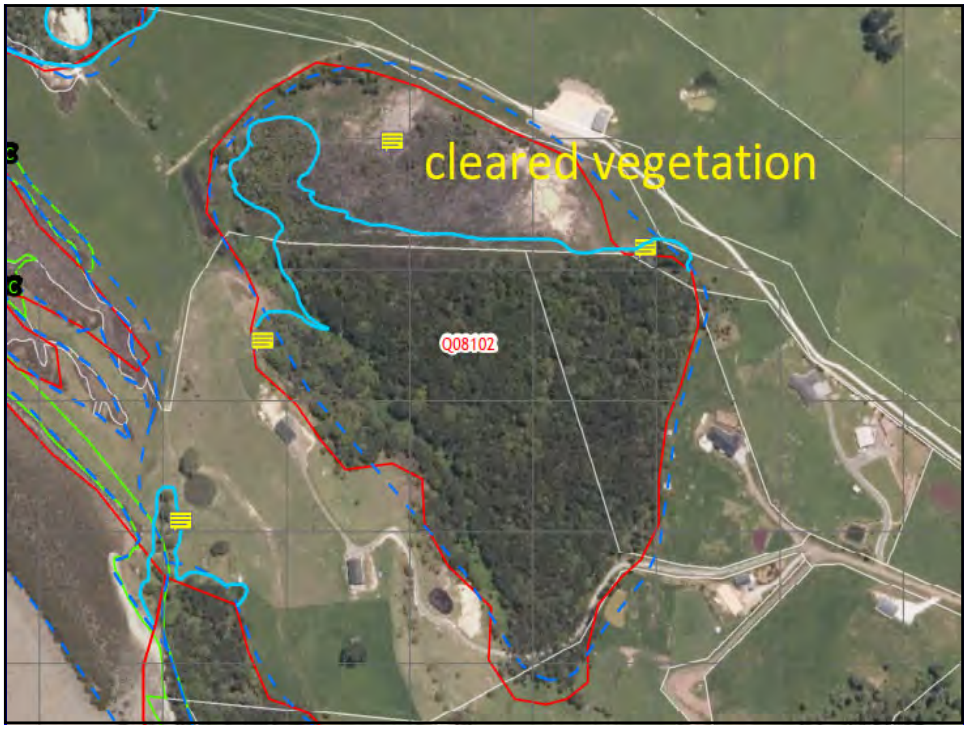

Assessing Significance in the Field

Degraded wetland with some indigenous component.

Small unfenced forest remnant.

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Assessing Significance in the Field

Small swamp dominated by indigenous plant species.

Not significant (<4,000 m²)

Degraded bog dominated by indigenous plant species.

Significant (>2,000 m²)

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Significant?
No. Not included as a Protected Natural Areas Programme in the Tutomoe Ecological District survey, but this could change as the indigenous vegetation develops.


Significant?
No. Patches of indigenous treeland are not included.

Drive by surveys

Objectives of the surveys:

(i) to check boundaries that may not look correct on the maps
(ii) to confirm new sites that may not currently be mapped as SNAs, (e.g. wetlands)
(iii) to confirm the status of existing SNAs that may have since been degraded by, for example, weeds and/or drainage, i.e. are they still SNAs?

Surveys completed for Kaipara and Far North in early June. Survey for Whangarei to be completed in July/August.

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What did we find?

- Wetlands and dune lakes not being mapped.
- Mature riverine forest (totara-dominated) not mapped.
- Remnants of mature broadleaved forest not mapped.
- Small but intact remnants of alluvial forest not mapped.
- Moderate-sized remnants of kanuka scrub not mapped.
- Lack of consistency between sites.

Indigenous wetland, Glinks Gully.

Riverine forest, Taipuha.

Alluvial kahikatea forest, near Matakohe.

Raupō reedland, Omamari.

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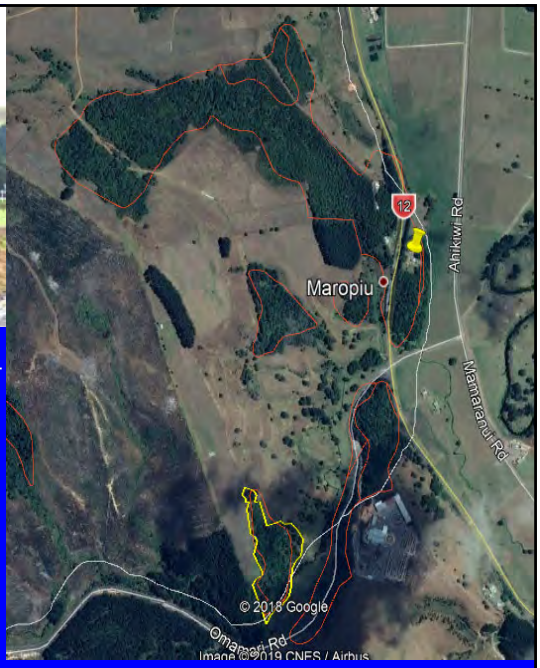
Representative example of kauri-podocarp-broadleaved forest that should be included as an SNA. State Highway 12, Maropiu.



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Next Steps …

- At the completion of the assessment, Wildlands will provide Councils with a GIS layer containing all potential significant natural areas.
- Process after this has yet to be determined by each Council, but could follow the steps outlined below:
- Layer overlaid onto properties, and property owners notified by each Council.
- Property owners can then get in touch with Council to request a site visit.
- On request of the owner, Wildlands to undertake ground-truthing surveys of sites or parts of sites that:
  - (a) cannot be properly assessed using aerial photography and background literature; or
  - (b) sites that property owners may disagree are significant natural areas (site visit will determine if site is significant and whether or not boundary changes are required).

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MCWWTP Upgrade
Project 918

KAIPARA DISTRICT

918 Contract

Plant Layout

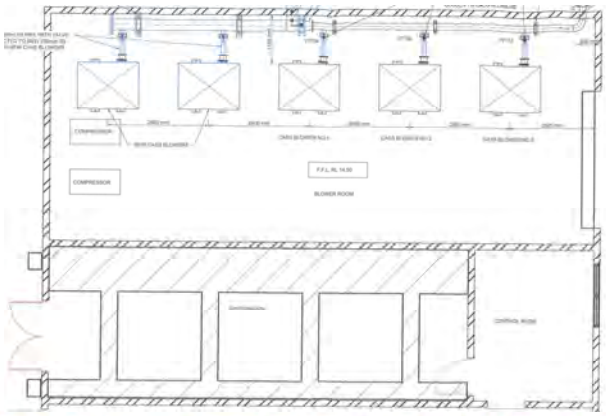
KAIPARA DISTRICT

918 Contract

Project Managed by Broad Spectrum (Water Northland)
Suppliers Mason Engineering, Howden Blowers, McKay Electrical

918 Contract

Mason Engineering to Install New Blowers



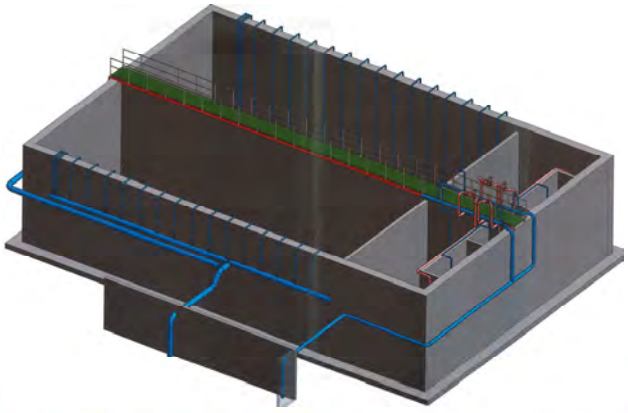
918 Contract

Mangawhai Treatment Plant Blower Room

Photo showing treatment plant blower room and area where new blowers will be installed in the foreground.

918 Contract

Mason Engineering to Fabricate New Blower and RAS Pipework

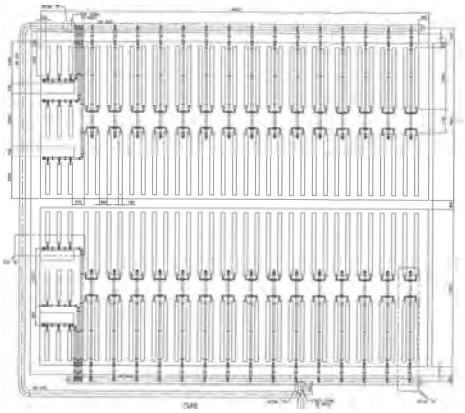


918 Contract

- Photo showing northern end of CASS tank. New aeration pipework to be attached to outside wall of CASS tank

918 Contract

Mason Engineering to Supply and Install New Diffusers in CASS Tanks



718 Contract

Additional Sand Filter Procurement in Process

Existing filters . Additional filters to be added to the Northern end. To be supplied as a package .

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Any Questions?

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We welcome your feedback!
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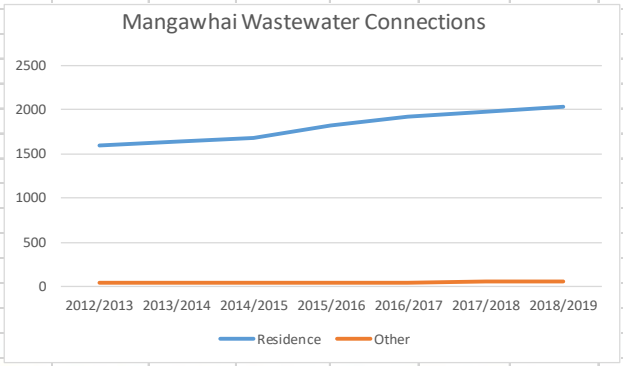
MCWWS Upgrade Notes

MCWWTP Upgrade Notes

- CASS peak aeration capacity (design setpoint for DO) is reached and there is a risk this will breach RC requirement in future.
- Growth numbers of 70 connections are based on growth model by Rob Bates (2017).
- When compared to actuals below, projections are that there was 13,332m^3/year over the 9 year period from 2010 to 2018.
- Work on the network to determine the management of peak volumes is underway- could be tank, instantaneous PS flow management, automated control at source – also downstream pipe capacity & disposal options

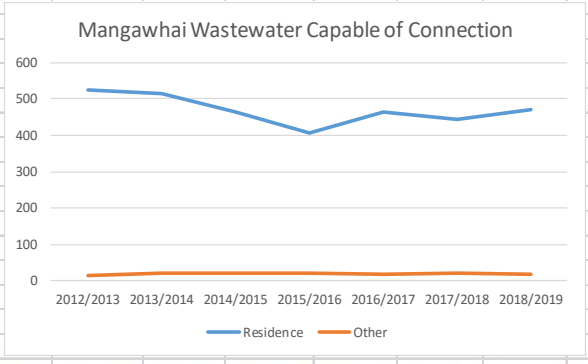
MCWWTP Upgrade Growth

Mangawhai Wastewater Connections							
	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Residence	1595	1637	1676	1815	1914	1983	2032
Other	41	43	41	43	48	52	52



MCWWTP Upgrade Growth

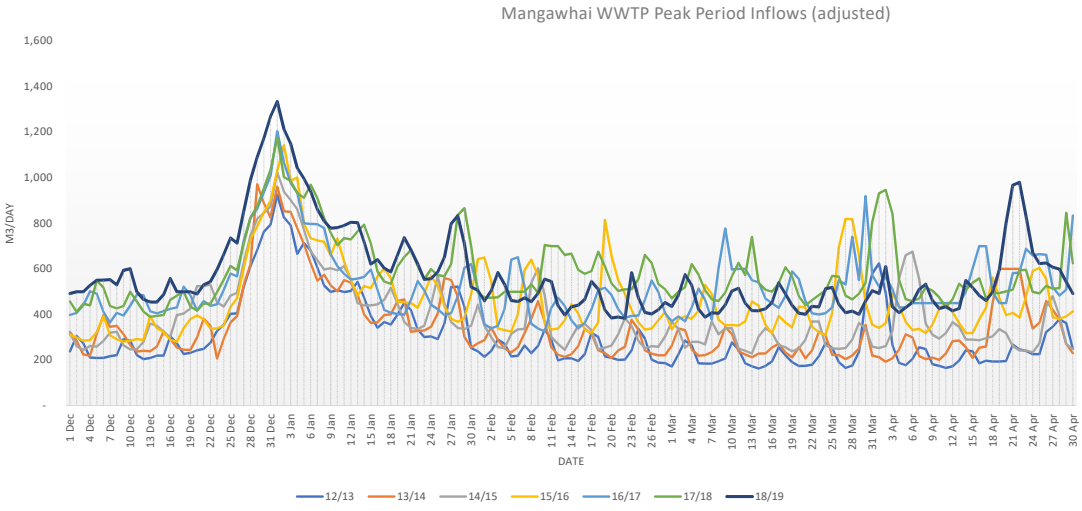
Mangawhai Capable of Connection							
	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Residence	526	516	466	407	465	443	471
Other	13	20	20	21	18	21	18



MCWWTP Upgrade Volumes

month	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	10,926	16,684	16,779	15,045	15,673	16,523	19,044	19,025	22,945	23,891
2	5,339	8,331	9,172	6,771	7,826	9,041	12,832	12,172	18,062	13,073
3	5,205	8,003	10,289	7,078	7,916	9,141	13,446	18,196	16,674	14,075
4	5,746	8,850	10,233	7,670	9,845	10,491	12,468	23,480	16,889	16,879
5	7,035	8,909	8,278	7,457	7,318	9,111	11,553	15,832	15,776	14,501
6	7,889	8,690	7,934	8,629	8,684	9,365	12,623	16,557	19,027	14,797
7	8,875	8,703	9,538	8,792	11,424	9,924	16,706	17,379	17,343	-
8	8,774	7,531	10,018	8,553	9,468	10,513	18,767	15,028	15,371	-
9	7,985	7,013	8,992	8,999	9,730	11,680	17,637	15,266	15,764	-
10	8,158	9,779	9,485	9,840	10,419	11,195	15,302	16,492	17,134	-
11	6,309	7,337	7,167	7,718	8,797	9,679	13,432	13,717	15,550	-
12	9,373	10,991	10,209	11,509	14,207	12,568	16,088	16,539	21,075	-
year total	91,614	110821	118,094	108,061	121,307	129,231	179,898	199,683	211,610	97,216

MCWWTP Upgrade Flows



MCWWTP Upgrade Scope

The Services to be provided are as follows:

1. Aeration upgrades including two additional blowers and upsizing of the air header for Zone 3 from DN150 to DN250 to accommodate the additional airflow, noting that a separate contractor (currently Mason's) will install a new diffuser system under a separate contract with KDC.
2. Air pipework modifications for improved accessibility for the air valves in Zones 1 and 2 and retrofitting of actuators for automatic control of those valves.
3. RAS pipework modifications including addition of flowmeters and control valves.
4. All electrical and control work associated with the new blowers, VSDs, RAS flowmeters, control valves, PLC and SCADA upgrades.
5. Updating the plant control philosophy and P&IDs to reflect the Upgrade.
6. Emptying and cleaning the CASS tanks in preparation for removing the old diffusers ahead of Mason's installing the new ones, including supply of all labour, scaffolding, pump hire and sludge disposal.
7. Labour and consumables to extend the compressed air supply to the new valves.
8. Project management resources including managing WHS aspects of the Upgrade.
9. Site clean-up at completion of the Upgrade.

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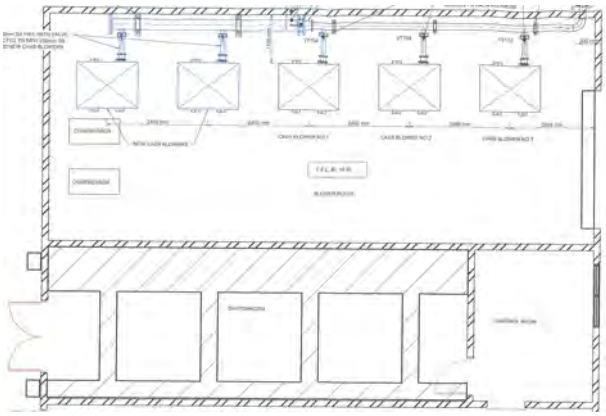
MCWWTP Upgrade Schematic

2 x Blower Units to be installed



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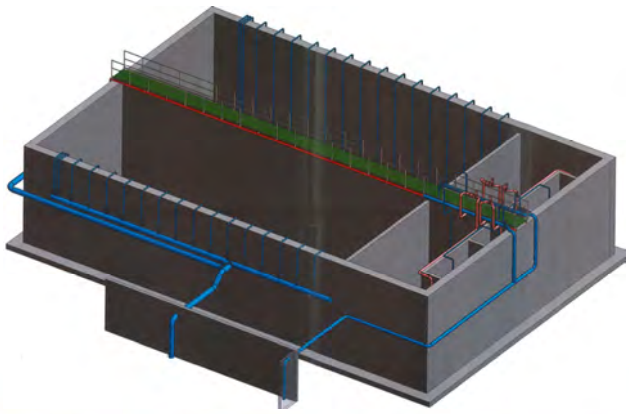
MCWWTP Upgrade Schematic

Blower room

MCWWTP Upgrade Schematic

Mason Engineering to Fabricate New Blower and RAS Pipework



MCWWTP Upgrade Costs

Item	BRS	Masons	Mckays	Howdens
Project Manage 918	54,461.24			
Misc Rubbish, Manuals				
Supply and Install Diffusers		149,210.00		
Variation Pipe Location Change		13,587.94		
Supply Blowers (arrive 12/7)				45,960.00
Install Blowers, Pipework		91,377.19		
Install RAS pipework		66,347.30		
Valves		-		
Flowmeters		-		
Empty clean desludge CASS 1	56,497.00			
Empty clean desludge CASS 2	56,497.00			
Sand Filter Supply				
Sand Filter INSTALL				
Electrical and Comms			102,483.08	
Totals	167,455.24	320,522.43	102,483.08	45,960.00
Recommended Totals Yellow	636,420.75			
BRS.Mas.Makay.Howden	**636,420.75**			