Minutes of Meeting

Project Name	HiHi WWTP Risk Workshop
Project Number	1-13191.02
Date	16/01/2020
Time	9 a.m. – 4 p.m.
Venue	FNDC office, Kaikohe
Subject	HiHi WWTP options review
Client	Far North District Council
Attendees	Bill Down (WD), Jody Kelly (JD), Tommy Gordon (TG), Greg Timperley (GT), Larey-Marié Mulder (LM), Andrew Springer (AS), Rueben Wylie (RW), Tanya Proctor (TP), Blair Houlihan (Northern Edge, Funding Apps) (BH)
Apologies	Mark Keehn
Distribution	Bill Down – FNDC

Overview

FMDC/WSP/Far North Waters developed a business risk assessment matrix in the workshop held for HiHi WWTP held on 4th December 2019, on the risks that are related to the performance failure and consenting issue of the WWTP. In the workshop, no options for upgrades were discussed at this stage. The risk workshop identified drivers, and key risks, and discussed and evaluated options for the replacement of the Hihi WWTP. These options and the risks relating to them were assessed and discussed with FNDC personnel to short-list the feasible options for business case and development of the discussed options

Discussion	Action	By Who/When
1 Recap of the main issues from previous workshop Major issues that impacts the performance of the WWTP during peak flows were discussed and the risks associated with them were addressed. Main issues were • Aging assets and capacity of the plant • Consent conditions for Ammonia and Dissolved Oxygen exceedance in the stream	Completed	

• Flow bypassing secondary treatment and sand filtration and UV are against consent conditions • Process capacity challenged by historic growth and holiday population • Condition of the wetland and embankments		
2. Constraints of the project Existing and future constraints of the plant and site were discussed with the attendees and constraints were recorded in a table and the options were reviewed against each of these constraints. The table is attached in this MOM for reference.	Completed	
3. Funding and budget Funding of the upgrades (or new WTTP) capex and opex were discussed for the proposed options and options were reviewed on a high level based on the budget and funding. Funding to be confirmed in March 2020 by FNDC and due to be released in December 2020, as per the discussion with FNDC finance team representative.	FNDC to confirm	March – December 2020 BH/JK/WD
4 Brain dump of developed options and their risks Ideas were captured on possible options. Options were discussed based on the feasibility, risks and constraints of each option. A table (see Table1 below) was formed to zero out any options for business case development Project Constraints identified as; • Time • Affordability • Land availability and designation • Neighbours • Climate change and innundation • Amenity • Land Use • New Consent • Nuisance • Construction (space and programme) • Operation/mainenance • Asset Life • Wetland • Safety	Completed	

• Whole Life Cost		
5 Preferred options • Previously WSP had developed options to meet future consent requirement that would fit the existing site boundary. These were presented. The constraints and the risks were identified, and the feasibility of options were discussed. The short-listed options were • Membrane Bioreactor • Activated Sludge Plant	Completed	
5a) Membrane Bio Reactor (MBR) The positives and negatives of MBR were discussed by Andrew Positives are as follows • Improves the quality of treatment • Provides stability to the treatment process • Modular in design • Meets time of delivery • Marginal increase in operational cost (due to the size of the plant) • No need for Sand Filters • UV treatment may not be needed unless if there is a need to treat viruses • No need for wetland (unless cultural) • All land options are inclusive • Low footrprint within site constraints • Improves maintenance accessibility Negatives are as follows • Higher capital cost • Need trained operators • Wetland site issue need to be addressed • Complexity of operation		
5b) Activated Sludge Plant (ASP) The positives and negatives of the Activated Sludge Plant were discussed by Andrew Positives are as follows: • ASP is a known technology • There will be little to no increase in operational expenditure	*Confirm Layout	AS

• ASP should fit within the site boundary* • Long retention time of the sludge • Improved quality of treatment • Improves site accessibility • ASP fits within the timeline • Maintenance of existing assets become feasible • Modular by design and can be linked to existing system • All Land options inclusive Negatives are as follows • Variable load and stability • Not resistant to Nocardia • Sand filter and UV is needed for tertiary treatment • Wetland must be upgraded • Very tight footprint within designation		
6) Other options 6a) Repair the existing faults One of the options discussed were to repair the existing faults in the plant. Andrew pointed out the constraints relating this option and there were a lot of potential failing criteria. The main one being failing the new consent. It was agreed that fixing the reactor did not sufficiently address risks and operational problems to be taken forward as an option (as can be seen in Table 1). All constraints, compliance issues, space limitations, safety issues would remain, and substantial expenditure is necessary. Bill Down mentioned that FNDC has budget for re-building the plant and. suggested to go ahead with the other options.		
6b) Pump to Mangonui Andrew proposed the option to pump the sewage to Manganui by directional drilling. On assessing this option with the constraints, the main issues addressed were affordability of the option, nuisance to public and time to obtain Resource Consent. Impact on the East Coast Network and Taipa WWTP are unknown.		

Rueben from FNDC planning team suggested that the time to obtain consent is going to be long and therefore, this option is not meeting the requirements of timeframe. Other constraints that didn't meet the requirements were • Community perception at Mangonui • Impact on Taipa system • HiHi Residents paying for Taipa upgrade • Taipa has lower treatment standard • Politics with Taipa • Affordable transfer for HiHi residents This option has not been taken forward due to time and potentially higher cost for the community.		
6e) Moving Bed Bio Reactor (MBBR) MBBR option was discussed and it was decided not to go ahead with the option on common grounds, since MBR is more efficient in terms of quality, liability and land use.	Completed	
Next Actions		
7) FNDC to discuss potential consent conditions with NRC	WD	TBA
8) FNDC to confirm land availability for new-builds	WD	TBA
9) FNDC to provide more information about reserve outside the boundary of WWTP	WD	TBA
10) Design for the developed options • Confirm Footprint of ASP and MBR • Provide estimate of costs for each option	AS	TBA
11) Provide Options report that summarises issues, risks, options and costs, and the process undertaken.	AS	

Table 1 Options and constraints assessment table

Constraints	Repair	Activated Sludge Plant	Pump to Mangonui	Moving Bed Bio Reactor	Membrane Bio Reactor	Notes
Affordability	✔	✔	X	✔	X	Affordability limited to $4M
Land	✔	✔	✔	✔	✔ ✔	
Neighbour	✔	✔	✔ ✔	✔	✔	
Inundation/Climate change	X	X	X	X	X	Existing site conditions does not support
New Consent	X	✔	✔	✔	✔	
Amenity	✔	✔	✔	✔	✔	
Land Use	X	✔	✔ ✔	✔	✔	
Nuisance	X	✔	X	✔	✔	
Time	✔	✔	X	✔	✔	Design and construction in less than 2 years
Construction Programme	✔	✔	✔	✔	✔	
Maintenance operations	X	✔	✔	✔	✔	
Asset Life	X	✔	✔	✔	✔	
Wetland	X	X	✔	X	X	V High Quality may bypass wetland if consent permits
Quality	X	✔	✔	✔	✔	
Safety	X	✔	✔	✔	✔	
Whole Life Cost	X	✔	✔	✔	✔	