Wairoa District Council Wastewater Discharge

Annex A- Common Bundle of Attachments

(Attached to the Evidence of Hamish Lowe 16 November 2020)

A – Figures
B – River Structure Installation Methodology
C – High Flow Condition Assessment
D – 1st S92 Request
E – 1st s92 Response
F – 1st s92 HBRC Feedback
G – 2nd s92 Request
H – 2nd s92 Response
I – WDC Information for s42A report
J – WDC Revised Conditions (V22)

Annex A – Figures

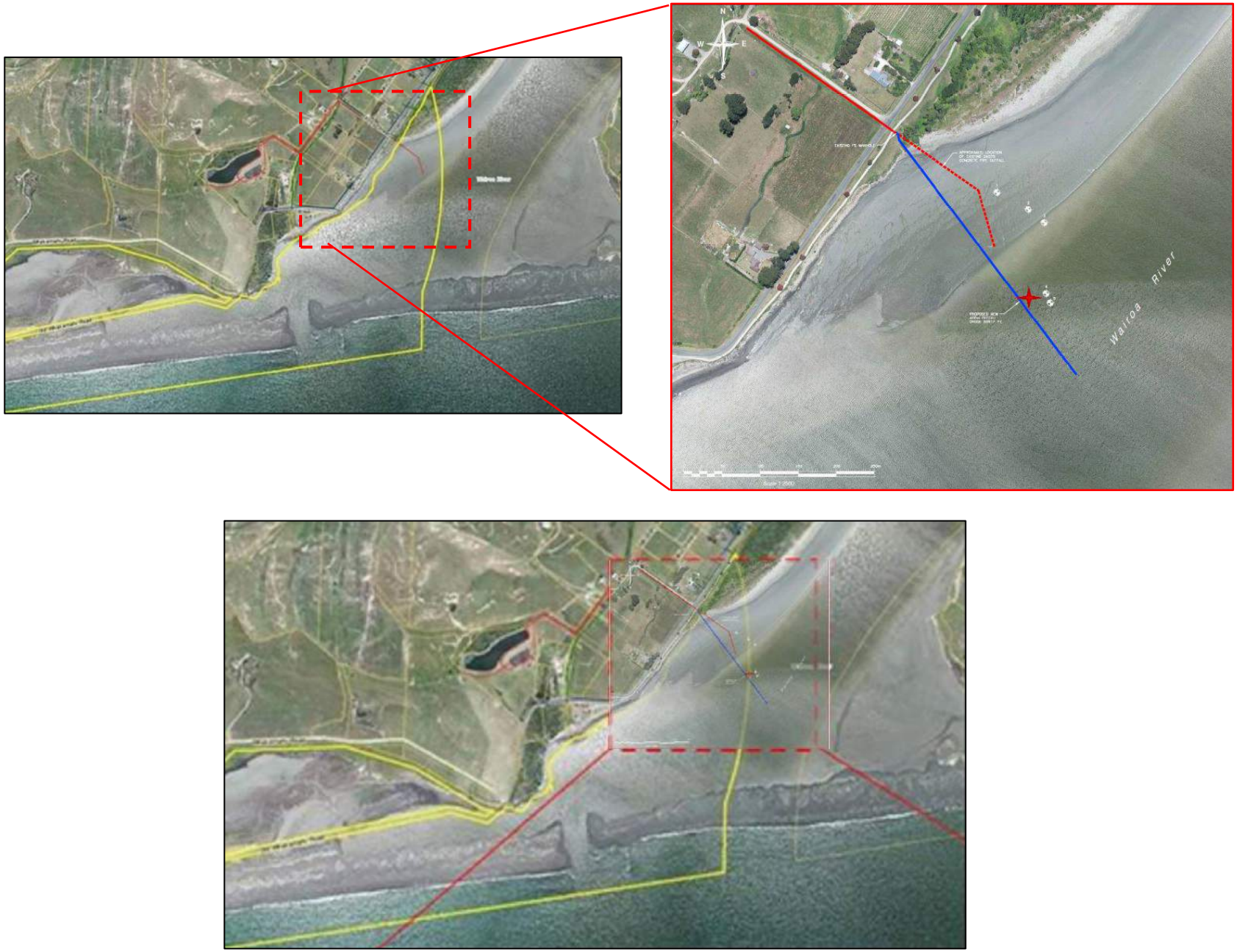

Figure 1: New Wairoa WWTP Outfall Location

Annex B – River Structure Installation Methodology

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WAIROA WWTP EFFLUENT OUTFALL INSTALLATION METHODOLOGY

1.0 INTRODUCTION

The Wairoa WWTP effluent outfall will extend 400 m out from the river bank into the Wairoa River Estuary downstream from the town to enable the outfall to discharge into the main river channel. The outfall replaces an existing shorter deteriorated outfall the outlet end of which is now stranded in shallow water well away from the main channel, the river having migrated east.

The replacement extended outfall will be fabricated from Polyethylene (PE) pipe joints 500 mm Outside Diameter (OD), SDR 17, PE 100 pipe. The pipe will be held down and stabilised by 1620 kg concrete ballast blocks clamped to the pipe at 5 m centres. Each ballast block will have two pile guides cast in, one either side of the outfall pipe, to accommodate 200 mm NB steel piles 6 m long driven through the pile guides. The pipeline will be installed in the bottom of a trench with a minimum top cover of 1.5 m. The piles, one per ballast block except for the pipeline end block adjacent to the diffuser structure which will have two, provide lateral stability to the pipeline in the event that it becomes exposed in a flood event.

The outfall pipe connects to a separate diffuser structure installed at the end of the outfall and held in position by 460 mm OD piles. The diffuser has two duckbill valves that discharge horizontally opposed cross current above the river bed, protected by the diffuser structure.

2.0 INSTALLATION METHODOLOGY OUTLINE

2.1 Pipestring Fabrication

The PE pipe joints, 15 m long will be delivered to the outfall location, offloaded and stored in a temporary pipestring fabrication/construction site. This can either be across Whakamahi Road on the road leading up to the WWTP, Fitzroy Road, in approximate alignment with the outfall alignment out onto the river mudflats, or on the riverbank itself adjacent to the Wairoa River walkway and parallel to the river. Either location has the capacity to accommodate a 400 m long pipestring.

For the in line location the pipestring will have to cross Whakamahi Road. Rather than close the road a low temporary overpass bridge could be put in place to carry traffic over the top while the pipestring is pulled through underneath. If a river bank construction site is used the pipestring would need to go through a 90^{o} bend to line up with the pipe alignment. A track system would be needed to achieve that, similar to that shown in figure no.1 as used for the Pan Pac pipestrings in 2019.

The pipe joints will be butt welded end to end at a fusion welding station then progressively pulled out in a straight line away from the welding station as the pipestring grows through the successive addition of pipe joints. The pipestring would be laid out to its full 400 m length then concrete ballast blocks would be attached at 5 m centres along the pipe using an excavator to lift and place the pipe into the receptor saddle on the concrete ballast block base. A steel half clamp is bolted down to secure the pipe to the ballast block. A wheeled trolley is used under each ballast weight to take the weight of the block and the pipe.

The pipestring will be hydrostatically tested prior to launch.

Figure no.1

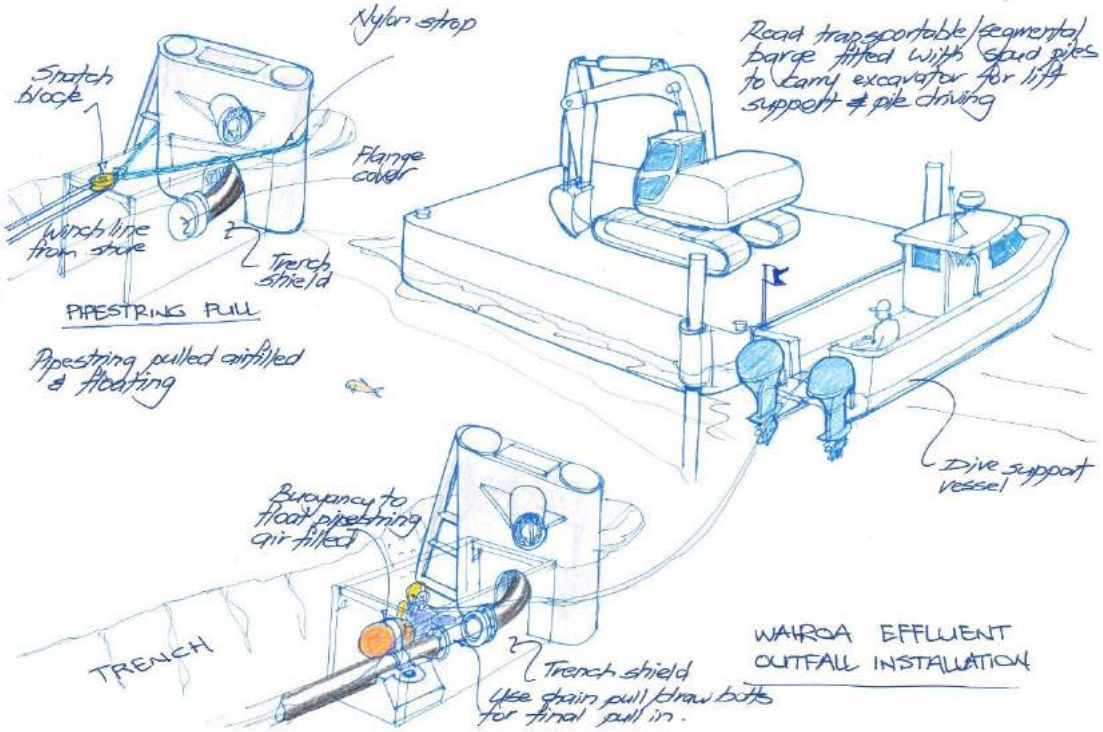
2.2 Diffuser Installation

The pipestring will be pulled into position floating in a dredged channel from shore with the diffuser structure already set and secured in place. This gives the pipestring a clear target to pull to and the diffuser structure itself can be used as a reaction/attachment point for the snatch block through which the pull winch rope will be run from the winch onshore, through the snatch block and back to the pullhead on the end of the pipestring. The pull force will need to be monitored using a load cell to ensure that it does not exceed the allowable lateral load for the diffuser piles – tonnes. If a higher pull force is necessary due to the installation methodology adopted by the contractor then two high holding power (HHP) need to be used The anchors to be set either side of the diffuser and connected by a rope bridle to which the snatch block is attached.

As a parallel activity during the pipestring fabrication the diffuser structure will be installed in position in the main river channel. The two 460 mm diameter piles supporting the diffuser structure will be driven to the finished top level using a pile template driving frame to set the piles at the correct spacing. A hole around the piles will be dredged in the riverbed to accommodate the diffuser structure, allowing it to be dropped in over the piles.

The diffuser will be installed with the internal pipe bend, riser and diffuser ports fitted with duckbills in place. Once in position with the top level and the structure itself vertical the diffuser will be secured in position and the annular space between the piles and the pile guides incorporated in the diffuser support grouted. The installation of the scour mat protection will take place after the pipestring has been connected to the diffuser. To keep the hole around the diffuser location open a protection shield similar to a trench shield used on surface will need to be placed as a temporary measure to stop the sides of the trench collapsing in.

The installation of the diffuser structure will be a diver assisted operation working off a small barge anchored at the location, either held by spud piles or mooring lines and anchors. Given the lack of access to the site from the sea, ruling out mobilisation of a barge by sea, a small road transportable segmental barge will be required either fitted with a Hiab crane or loaded with an excavator -12 to 15 tonne – and capable of driving piles. Sketch no.1 illustrates the diffuser installation operation.



Sketch no.1

2.3 Pipestring Installation

The pipestring will be pulled along on the inflatable tyre wheels attached to axles bolted to the bottom of the ballast weight support frames. An excavator can be used to pull and control the pipestring onshore. The rolling resistance should be well less than 5%. The pipestring will be pulled down a temporary launchway prepared in the river bank and into the water by a winch located on the river bank. The pull rope will run out to a snatch block either attached to the diffuser or to the apex of the bridle connecting two HHP anchors set either side of the diffuser.then back to the pull head on the pipestring.

The pipestring doesn't float airfilled so buoyancy will need to be attached at the ballast weight positions. A mussel float would provide sufficient buoyancy at each ballast weight position to float the pipe.

The pipestring would be floated in a trench prepared in advance and pulled at low tide to minimise the effect of the river flow pulling the pipeline sideways, to get the maximum visibility to see the pipestring as it is pulled along and to allow easier intervention – if required – from an amphibious excavator. The trench can be established in a number of ways using a plough, a dredge pump and water jetting but the use of an amphibious excavator appears to be the best solution on the river mudflats. This type of excavator has wide tracks and can work in soft mud riverbed conditions. The excavator can establish the trench required and maintain the trench efficiently. A silt curtain will be established downstream of where the excavator is working to intercept and capture any silt plume.

Riverbed silt and sand excavated to create the pipe trench will be placed parallel to and downstream of the pipestring.

The pipestring will be pulled until it is in line with and close to the end of the pipe bend projecting out horizontal from inside the diffuser. The flange on the diffuser end of the pipestring will be fitted with a spade flange plate to keep the pipestring sealed during the pull. With the two flange faces – the pipestring flange and the diffuser bend flange close the protection on the diffuser bend flange will be removed and flange bolts inserted to connect the flanges. At this point the pipestring can be flooded from the inshore end and the spade flange pulled out from between the mating flanges. The remaining flange bolts will then be installed and tightened to draw the flange faces together. The half clamps on the ballast blocks closest to the end of the pipestring which were slackened to allow the pipe to move longitudinally for the pull in can now be retightened.

2.4 Piling

The 219.1 mm OD steel tubular piles, 6 m long will be driven/jetted into the riverbed as soon as the pipestring is in position and the pipestring end flange bolted to the diffuser bend flange. As a first step the piles will be installed in the pile guides of the ballast blocks and left standing up to mark the block position. If the trench slumps and fills in, burying a ballast block before the pile can be driven, that is not a problem because the top of the pile can be accessed and driven. The pile tops will be driven to penetration to have the top of the pile flush with the top of the block.
Two piles will be driven for the end block next to the diffuser one pile per block for the rest of the ballast blocks. The minimum depth of cover to the top of the pipestring has been set at 1.5m, if this has not been achieved water jetting will be undertaken around the blocks that are high to lower them to get the 1.5 m top cover. A silt screen will be used downstream of the water jetting work to capture any sediment plume.

2.5 Reinstate Pipe Cover and Install Diffuser Scour Mat

Following the completion of the piling the pipe trench will be backfilled by the amphibious excavator, using the original material excavated out to create the trench, where it is still available, with additional material being skimmed off from the riverbed downstream of the pipe to complete the infill
The geotextile bags – Georock 2.1m x 1.2m x 0.4m sand filled bags - constituting the scour mat around the diffuser will be installed and stitched together to form one unit rather than several independent bags.

2.6 Onshore Connection

The starting point for the diffuser will be the effluent pipeline manhole on the river bank. The new PE outfall pipestring will be connected to the existing DN375 concrete outlet pipe at the base of the manhole, via a new Nova Siria Duo-fit coupling and PE 20^{o} mitred spool piece. Once the connection is established a concrete thrust block will be boxed up and cast against the mitred spool piece joint.

3.0 RIVER STATE

The state of the river in terms of flow speed and volume is an important consideration for the ease of construction. The work will need to be undertaken at the end of summer in low flow conditions. These were the conditions at the time OCEL staff surveyed the site and dived on the diffuser location. There were no issues with the divers being able to work at that time. The estuary was open to the sea but away west of the site behind the hills to the west. It is apparent from the eCoast survey results that the position of the opening to the sea relative to the outfall location is an important influence on the flow speed at the diffuser location – better if the opening is further west as it was at the time of the survey. The work will need to be coordinated with any scheduled opening through the beach barrier.

Annex C – High Flow Condition Assessment

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info@ecoast.co.nz

17 December 2019

Phil Lake
Lowe Environmental Impact

Dear Phil,

Re: Extreme Flooding Events for Scour Protection Calculation for the Wairoa WWTP Outfall

Introduction

This short report provides the results of hydrodynamic model simulations of the Wairoa River estuary, developed by eCoast (Greer and Mead, 2018), for scenarios of high river flow to inform the calculation of potential socur around the proposed outfall pipe and foundations.

eCoast were requested to run the model for 2 scenarios:

- An event with peak flow of 2,586 m^3/s (21 September 2015) and
- The overall largest flood event since 1988 which had a peak flow of 4,015 m^3/s (exTC Bola).

River flow boundary conditions for the 2015 event were generated from measured river stage data provided by Hawkes Bay Regional Council. For the 4,015 m^3/s event boundary conditions were created by modifying the 2015 event to produce a peak flow of 4,015 m^3/s.

Preliminary investigations of the model results showed that under high flow conditions, peak current speeds inside the river mouth were highly constrained by the cross-sectional area of the mouth. In reality the shape and position of the river mouth changes over time and is likely to erode under high flow conditions. Google Earth (GE) historical imagry was examined to establish the variability in the width of the mouth over time and under different conditions. In the baseline model that has been used to date to study dilution effects, the river mouth width is approximately 82 m. The widest river mouth was found on an aerial image from 12 February 2011 where the mouth reached a width of 200 m and two large flood events occurred in the weeks prior to the GE image time stamp.

Based on this information, the model bathymetry was altered to reflect the wider river mouth morphology. An additional bathymetry grid was created where the depth in the channel was increased from 1.75 m to 2.5 m deep (below MSL) in order to provide an upper boundary in the modelling based on observation[1]. An additional set of model bathymetries were created based on a hypothetical 400 m wide river mouth (also with 1.75 and 2.5 m depth through the channel) to examine the effect of increased erosion due to a large flood event. A summary of the model runs is presented in Table 1.

[1] The exact morphology of the entrance during extreme flooding conditions is unknown, however, widening and deepening with some direction from historical events provides more confidence than leaving the river mouth at lower flow dimensions.

Table 1: Details of the high flow model scenarios.

Scenario	Peak Flow (m^3/s)	Mouth Width (m)	Mouth Depth (m below MSL)
1	2,586	82	1.75
2	2,586	200	1.75
3	2,586	200	2.5
4	4,015	82	1.75
5	4,015	200	1.75
6	4,015	200	2.5
7	2,586	400	1.75
8	2,586	400	2.5
9	4,015	400	1.75
10	4,015	400	2.5

Figure 1: The Wairoa River mouth on 12 February 2011 showing a river mouth width of approximately 200 m

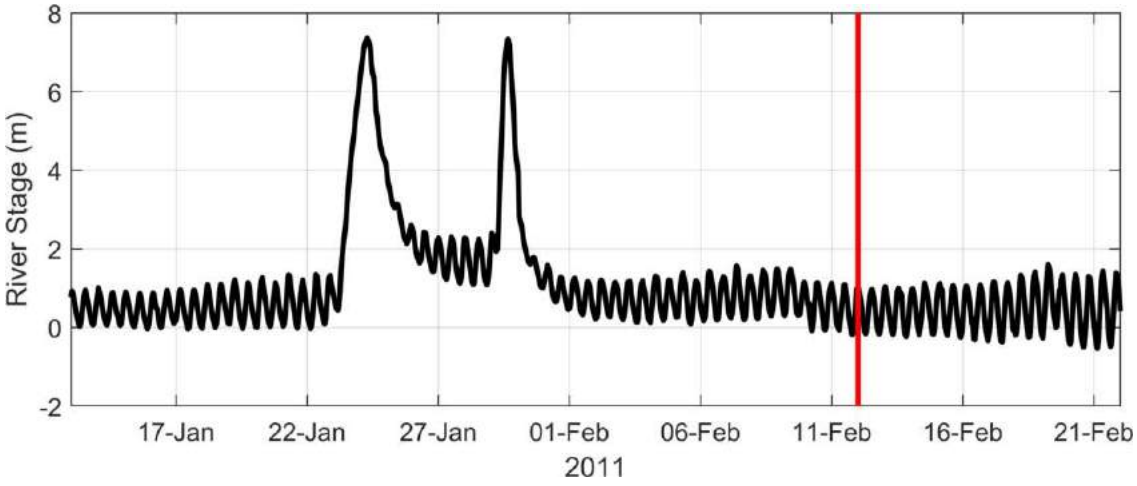


Figure 2: River stage for the weeks prior to 12 February 2011 showing 2 large flood events. The red line indicates thetime of the Google Earth image shown in Figure 1.

Results

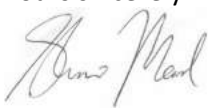
Graphical results of scenarios 1 to 10 are presented in Figure 3 to Figure 12 and show the peak flow over the model domain and along a transect along the proposed outfall. On the spatial plots note that the colour scale is saturated at 5 m/s to highlight current speeds at the proposed outfall. As expected, higher flows, and a larger river mouth cross sectional area, lead to larger peak current speeds around the proposed outfall. Maximum current speeds along the transect and over the whole model domain are summarized in Table 2. The largest velocities in the model domain always occur in the river mouth. The cross-sectional area of the river mouth largely constrains the maximum flow speed. For the 200 m wide river mouth, the largest current speed along the transect was seen in Scenario 6 which had a peak of 2.88 m/s. When the river mouth width was increased to a hypothetical 400 m, the largest current speed along the transect increased to a maximum of 4.03 m/s.

Table 2: Maximum current speeds along the length of the proposed outfall for each scenario.

Scenario	Max Current Speed on Transect (m/s)	Max Overall Current Speed(m/s)
1	0.73	11.93
2	2.10	9.54
3	2.84	8.36
4	0.83	13.21
5	2.28	11.89
6	2.88	11.39
7	3.08	7.27
8	3.60	5.62
9	3.48	9.52
10	4.03	9.01

Please let me know if you require further details.

Yours sincerely



Dr Shaw Mead
Managing Director

Reference:

Greer, D., and S. T. Mead, 2018. *Wairoa WTTP Outfall: 3D Hydrodynamic Numerical Modelling.* Prepared for Wairoa District Council, September 2018.

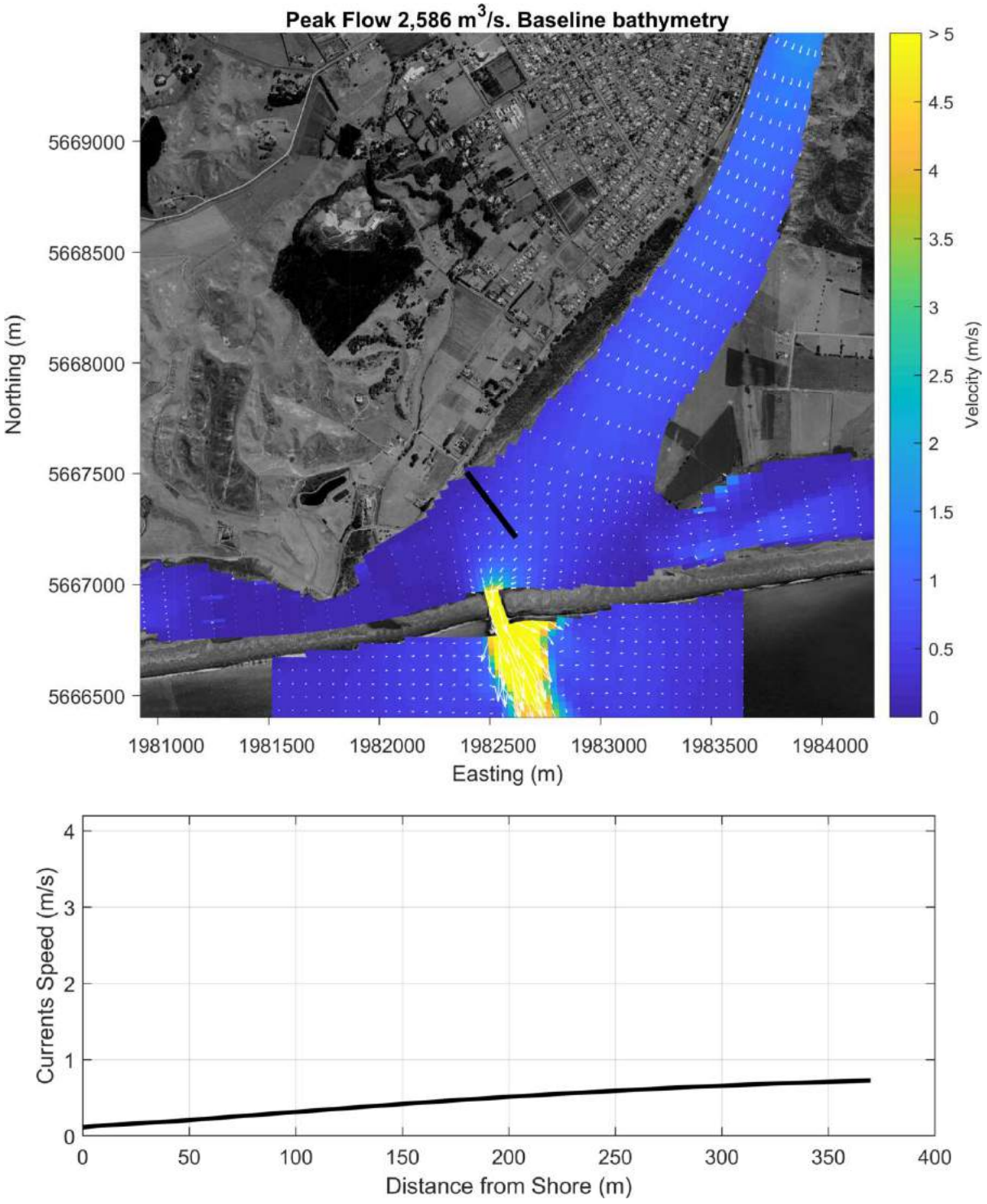


Figure 3: Scenario 1. Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

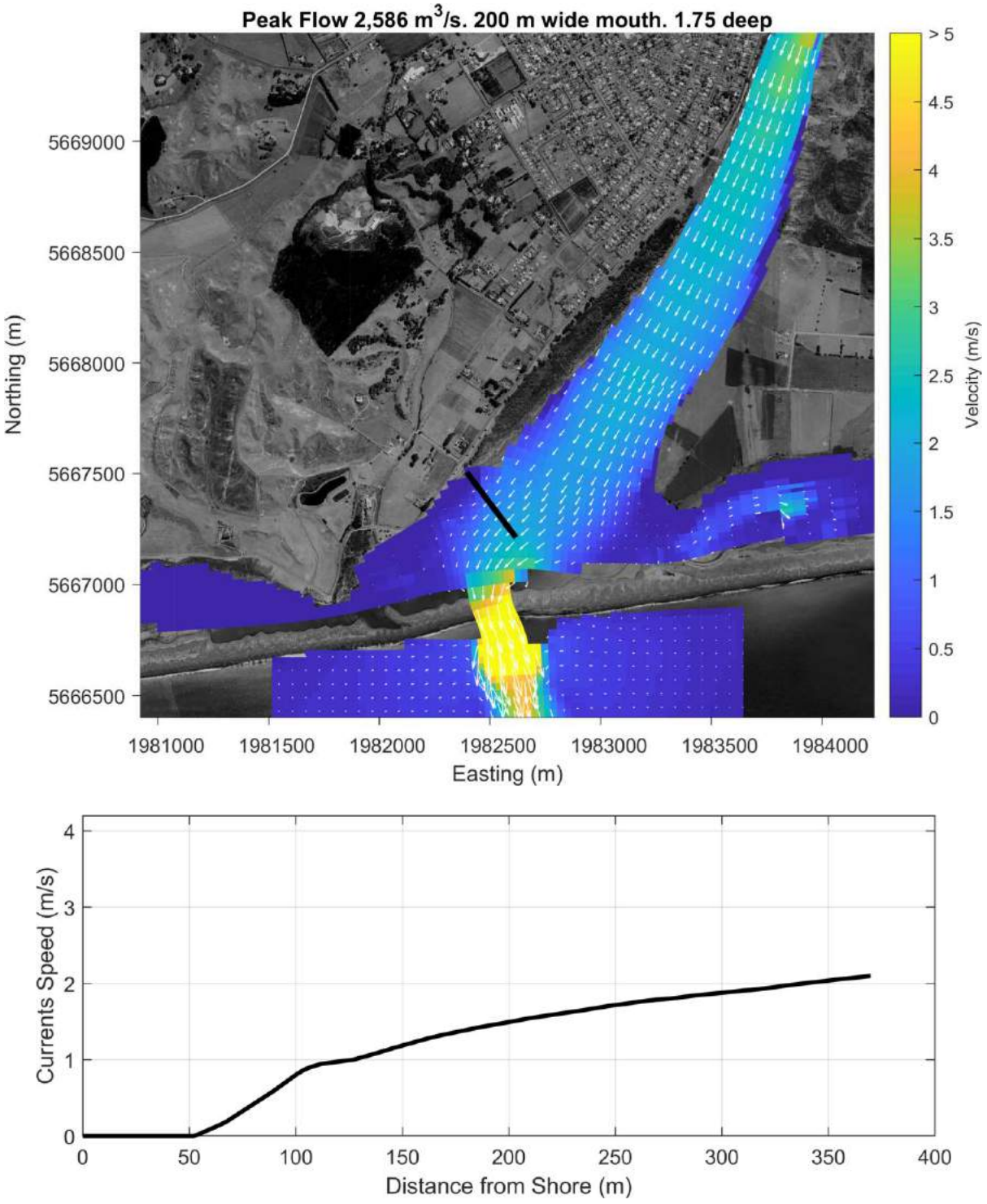


Figure 4: Scenario 2.Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

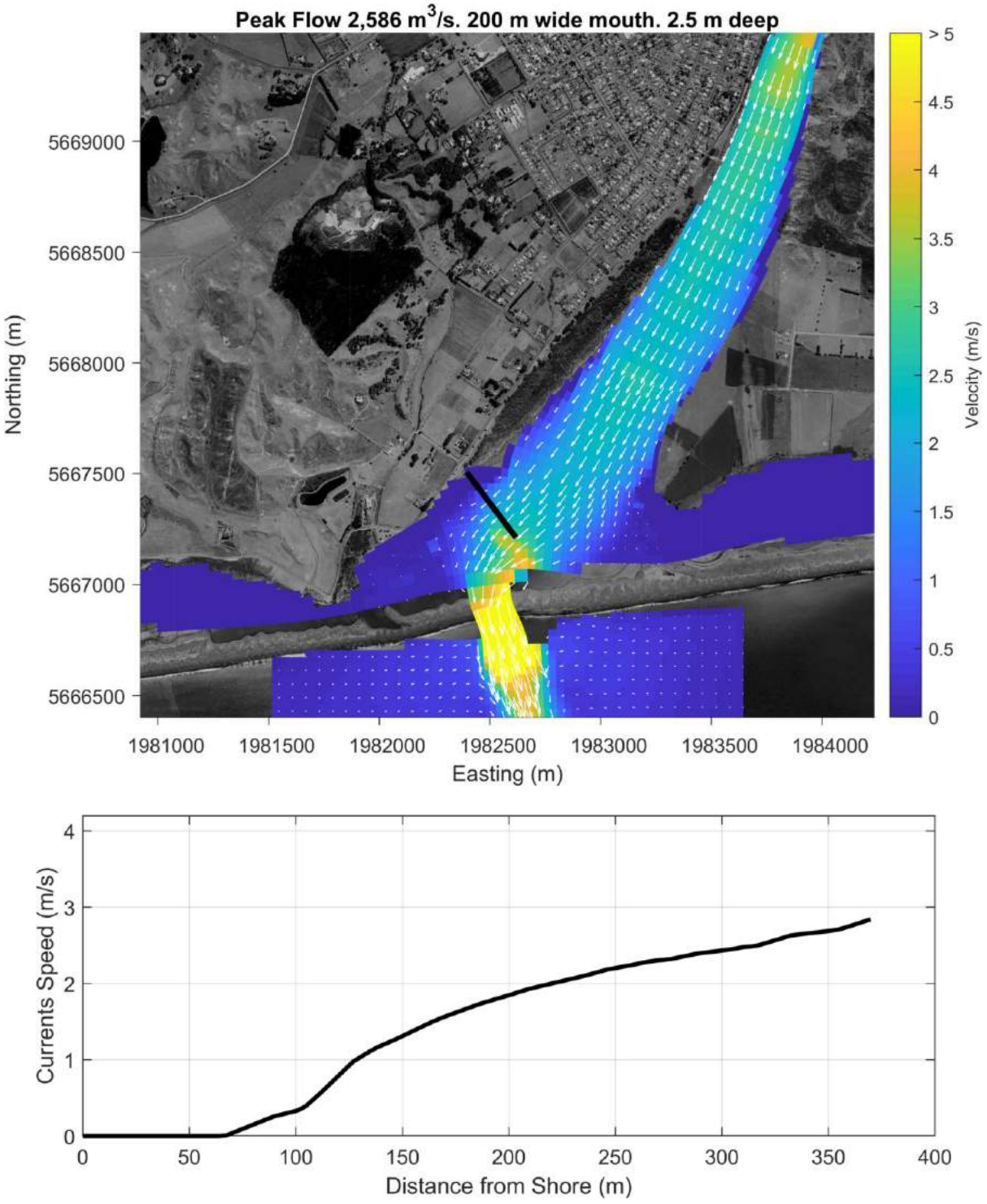


Figure 5: Scenario 3. Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

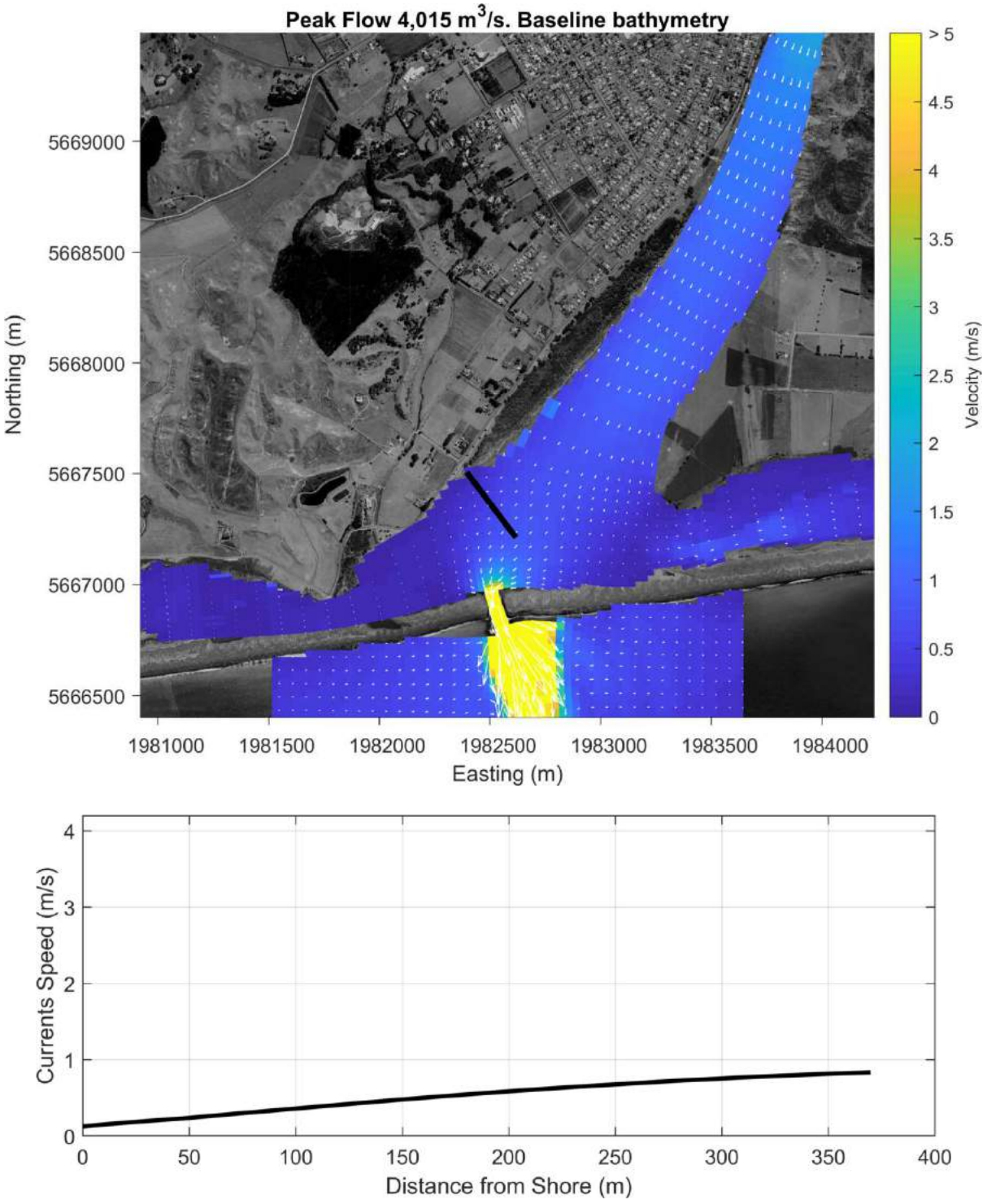


Figure 6: Scenario 4. Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

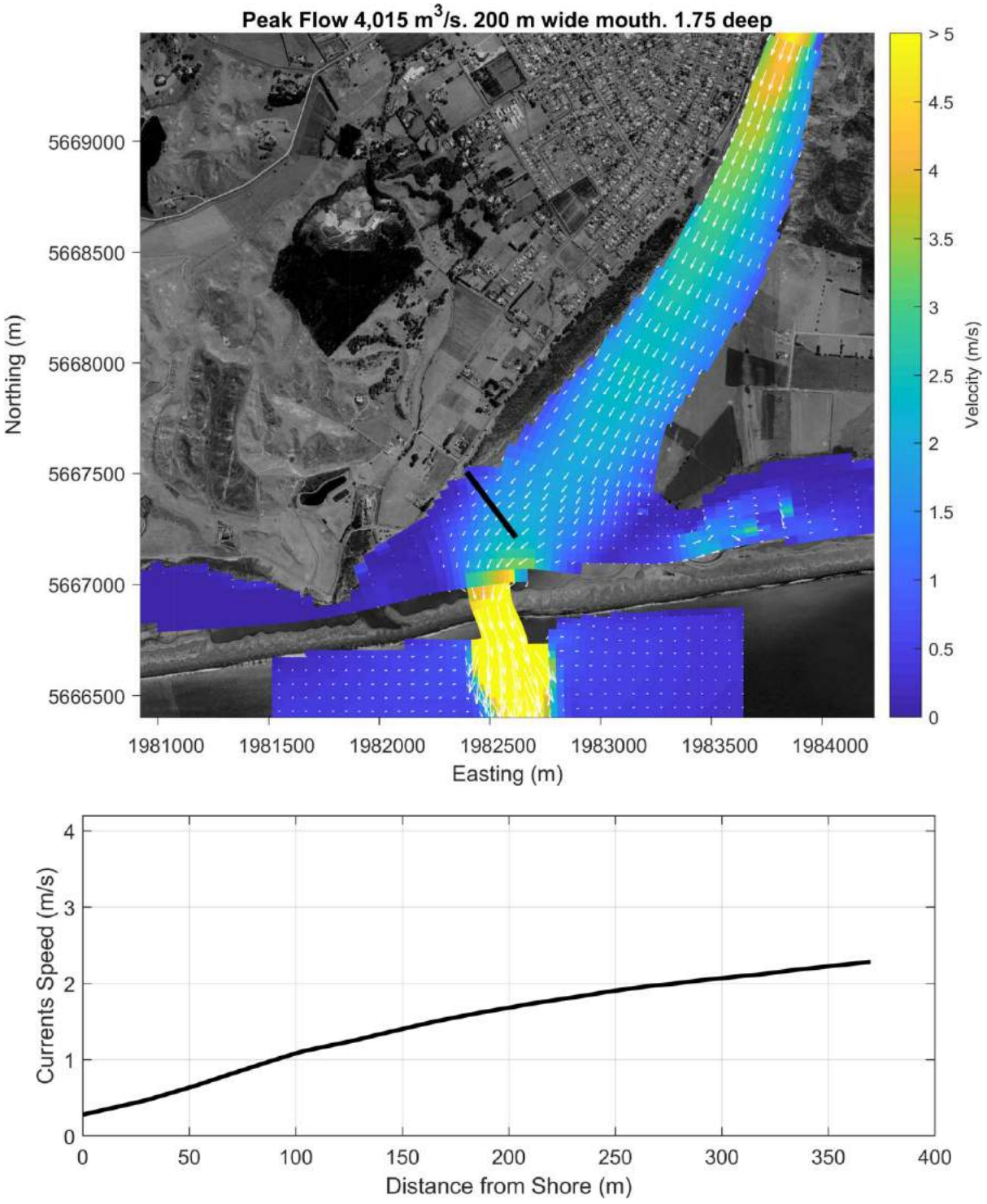


Figure 7: Scenario 5. Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

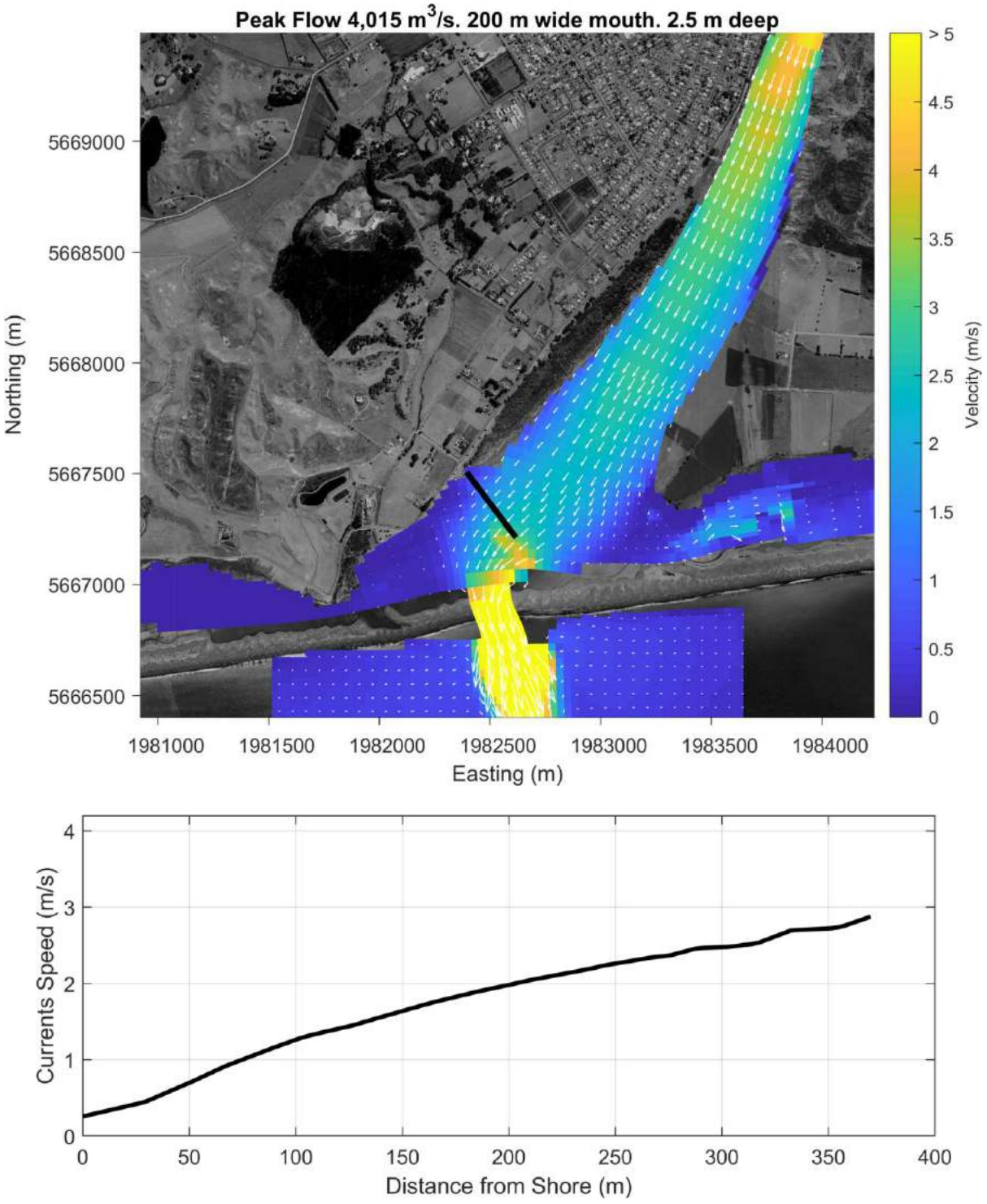


Figure 8: Scenario 6. Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

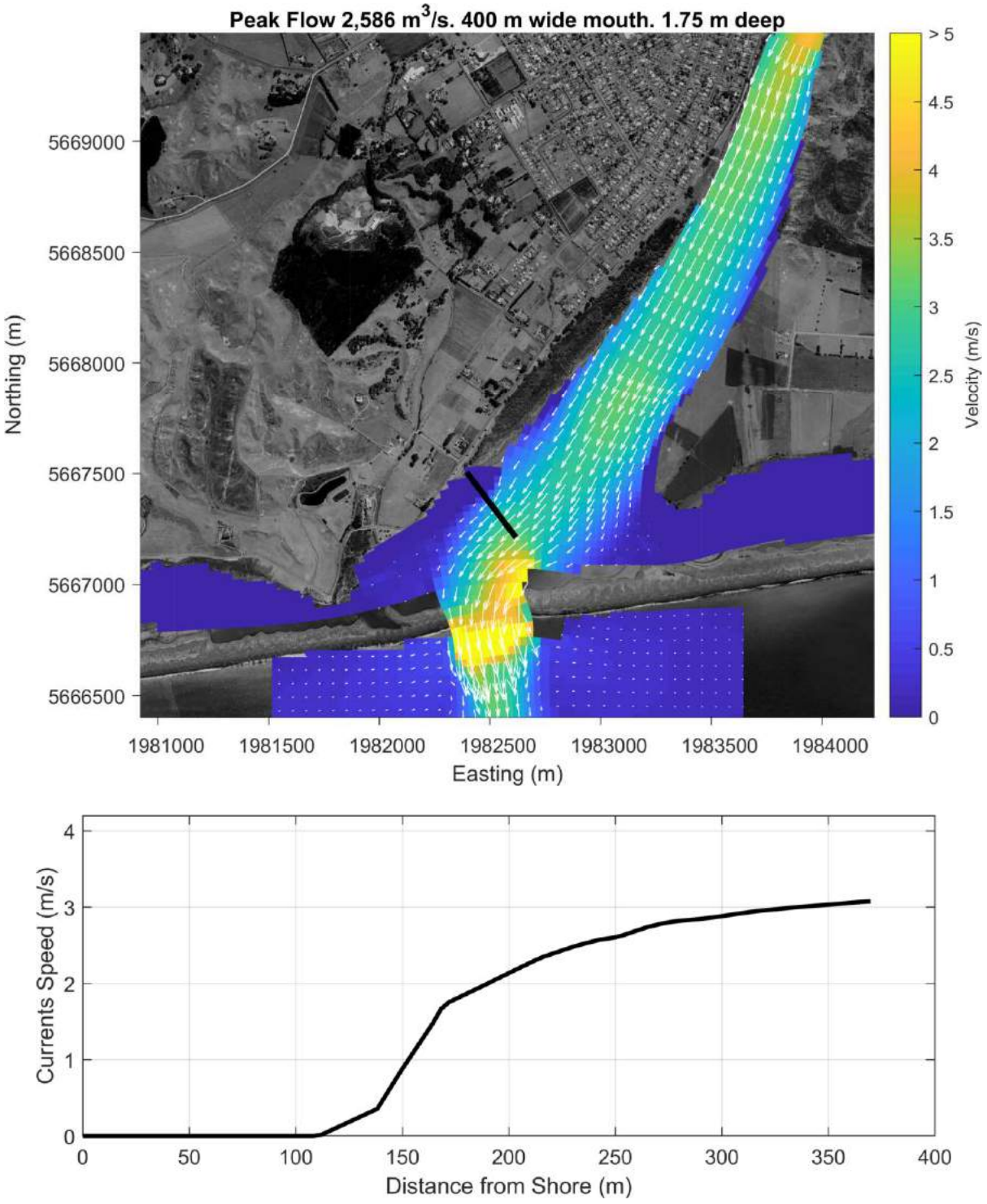


Figure 9: Scenario 7. Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

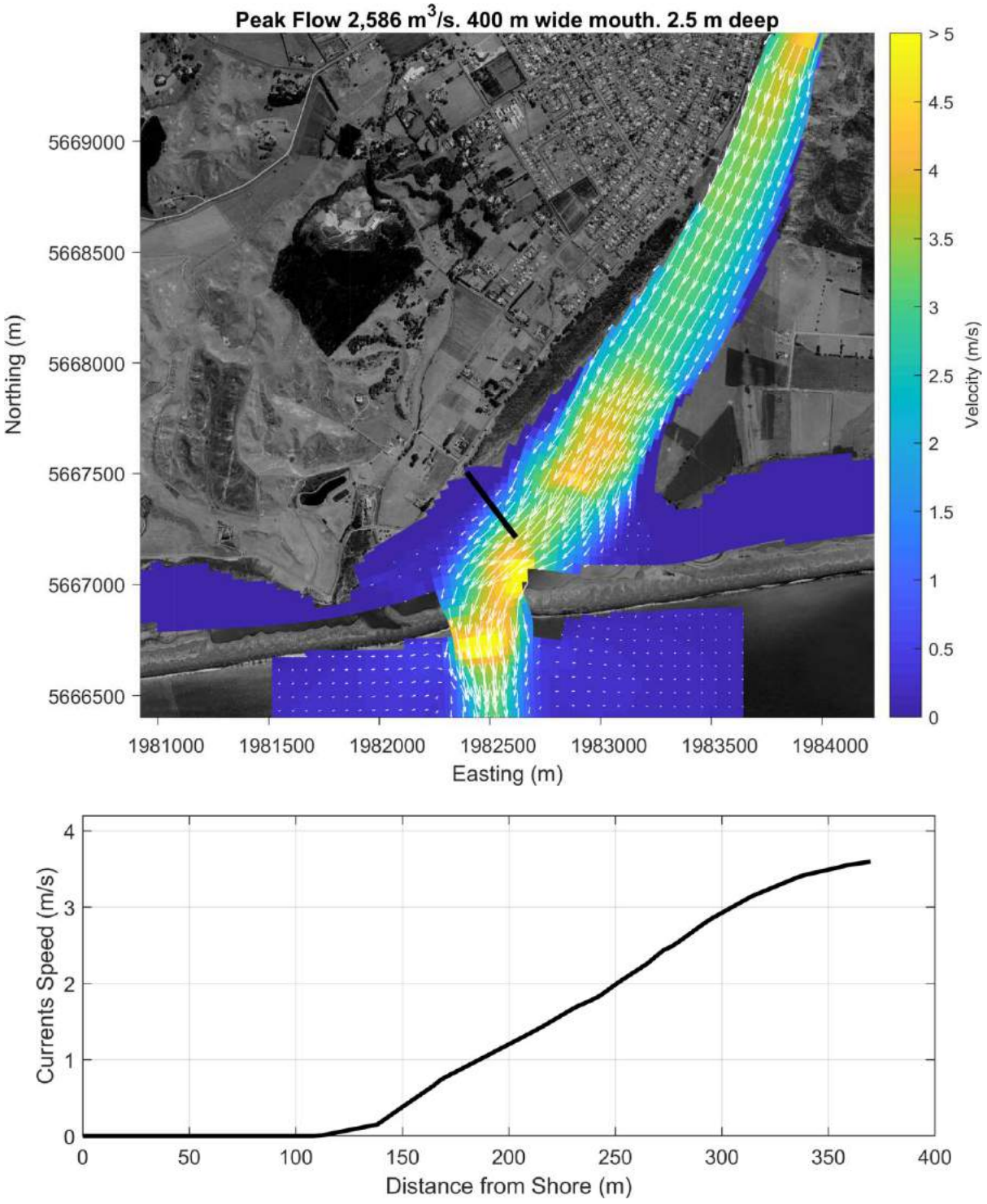


Figure 10: Scenario 8. Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

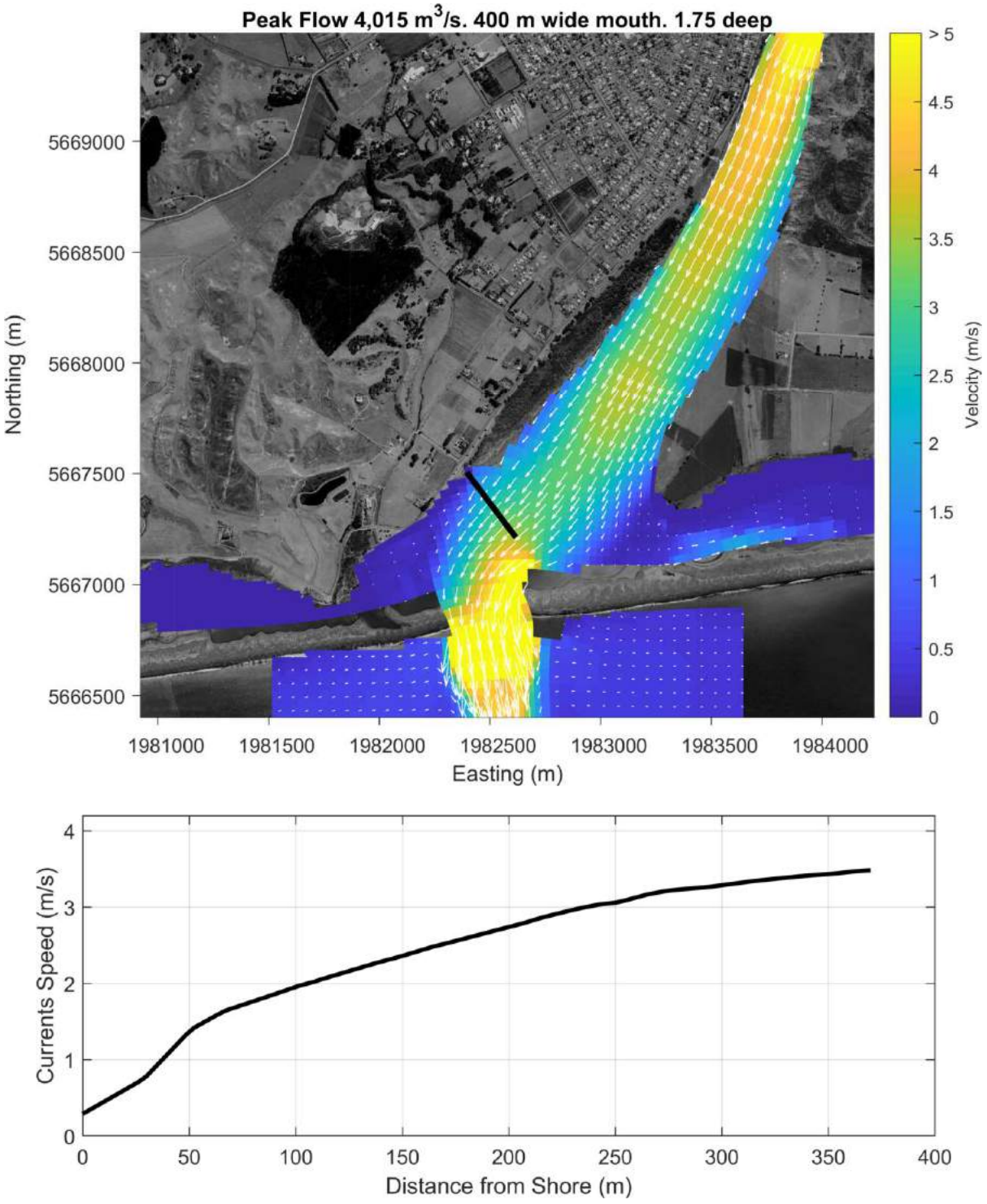


Figure 11: Scenario 9. Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

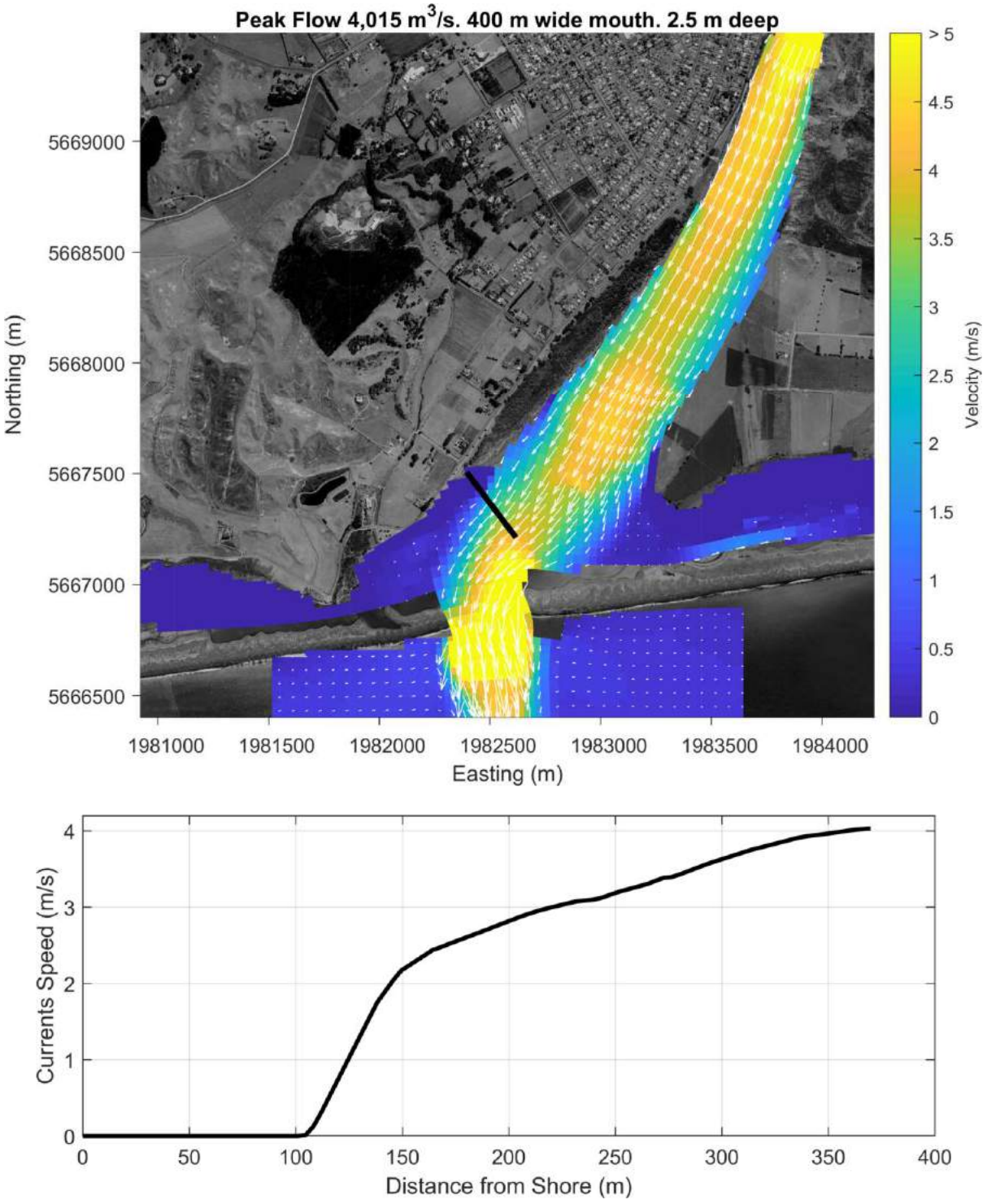


Figure 12: Scenario 10. Spatial distribution of currents at peak flow (upper) with the proposed outfall shown by a black line and variation in current speed with distance from the shore along the proposed outfall (lower).

Annex D – 1st S92 Request

Our Ref: APP-123774 *(quote this number when discussing application with HBRC staff)*

26 March 2019

Wairoa District Council
C/- Lowe Environmental Impact
P O Box 4667
Palmerston North 4442

For the attention of: Hamish Lowe

Dear Sir

REQUEST FOR FURTHER INFORMATION

We have reviewed your resource consent application APP-123774 – the activities and discharges associated with the receipt, treatment, storage and general management of wastewater received at the Wairoa Wastewater Treatment Plant.

In conjunction with the application documents and information provided in the table of questions sent to you on 22 February 2019 (see attached Appendix 1 – which includes the original table of questions, your responses received 19 March 2019 and our review as at 25 March 2019), more information is needed so that our technical experts and I can better understand your proposed discharge and its potential effects.

In accordance with Section 92 of the Resource Management Act (1991) (RMA) I request the following information is provided as we believe the questions have not been answered satisfactorily (as per appendix 1 column 4):

Questions not satisfactorily answered from appendix 1	**Recommended response/clarification**
1a) Please confirm how sensitive are the model results likely to be to changes in the geomorphology of the river mouth or position of the outfall (given it is proposed this structure can be moved).	The response received suggests the model sensitivity to the geomorphology of the river mouth and position of the outfall is not an issue. In contrast the modelling report concludes "The morphology of the river mouth regularly changes over time and this will have some influence over hydrodynamics of the area which will in turn influence the pattern of dilution of the outfall". Therefore more information is required to support the response provided. That should take into account the wide and rapid variation in mouth position (including occasional closures), the fact that fishing activities are carried out in the area that may be affected by the plume, and that, modelling was used to support the development of the discharge regime and the design of the proposed benthic monitoring programme (and potentially other decisions).
1b) Please confirm what, if any, key decisions were predicted on the model outputs and if so, what, if any, contingencies have been put in place to manage uncertainties.	The response provided answers the question, however further information sought under Point 1a (above) is required to determine if the response is reasonable.

1c) Please provide confirmation of how the dispersal and dilution patterns should be interpreted for different types of contaminants.	The response received suggests discharged contaminants will be largely soluble and unlikely to bind to the riverbed sediments or settle out within the estuary, so the modelled plumes will fairly represent the behaviour of all of these contaminants. Yet the assessment of effects is largely based on benthic sediments and communities, which suggests eCoast (and earlier science providers) believed there is potential for benthic impacts. This discrepancy needs to be addressed.
1d) Please provide bubbleplots of silt values overlaid on the sheer stress plots. This will assist with interpreting the relationship between these parameters given there are a number of anomalies that do not make intuitive sense.	The response received seems to imply that the modelling is not a good predictor of physical benthic processes in the lower river. If so, should related modelling results related to shear stress be disregarded? Please confirm.
1e) Please provide information/advice on the potential influence of changes in the mouth morphology on shear stress, and potential areas of sediment and contaminant accumulation.	The response received seems to imply that the modelling is not a good predictor of physical benthic processes in the lower river. If so, should related modelling results related to shear stress be disregarded? Please confirm.
2c) Please confirm whether nuisance macroalgae blooms are present in the lower Wairoa River and if so please provide information regarding this.	The response received seems to be focussed on freshwater blooms, whereas we were primarily seeking information on whether nuisance macroalgae blooms are present in the lower Wairoa River (perhaps the question should have been more specific and said the estuarine section around the outfall). Please provide a response to suit.
2d) Please provide information regarding the potential effects on the benthic marcofauna and sediment quality as a result of the re-positioning of the WWTP outfall.	We agree that relocating the outfall is likely to relocate the localised area of organic enrichment of the sediment and any effects on macrofauna. What we don't know is whether the benthic values are the same across the proposed outfall site. For instance, are there any shellfish beds that should be avoided?
3a) Please provide a copy of the procedure for the handling of unearthed human remains, taonga tuturu, and artefacts that WDC is going to adopt and provide an amended copy of the proposed consent conditions that includes this requirement.	Can you please confirm when this document is likely to available for Council staff to review? Our preference is prior to the drafting of the section 42A report.
3c) Please confirm if there were discussions with tangata whenua around the proposed stages of the BPO being "aspirational" only and that there is a possibility that the discharge into the Wairoa River may continue similar to the current practice (with better treatment)? The Cultural Impact Assessment states that the discharge to the river is culturally offensive and discusses the need to move to a land application discharge method to reduce the effects on Maori cultural values.	It is recognised from your response that the intension is there for WDC to work towards a reduction in the discharge into the Wairoa River, however the potential that this may not occur is not reflected in the Cultural Impact Assessment. There is no application document that we can refer to confirming tangata whenua have acknowledged that the proposal is "aspirational". Please provide written confirmation (meeting minutes or records or similar) when and what discussions have been had with tangata whenua regarding this matter.
4a) Please provide evidence that the data set modifications prescribed in Report A2I1 do not significantly modify the resultant summary data.	Modification of the data sets to remove erroneous data is acceptable, but by replacing erroneous data with values that lie within the existing consent parameters (rather than deleting the data point), this skews the data set. Please provide evidence that the data set modifications prescribed in Report A2I1 do not

	significantly modify the resultant summary data, preferably by comparing median and percentile values for original data.
4b)Provide full data sets and summary calculations, including graphical and statistical representations of performance, that form the basis of AEE table 5.3: i. Historical performance flow and load/concentration data for the WWTP; ii. Historical influent parameter records (flows and loads). iii. Confirm whether there is any treatment plant influent and effluent performance data for 2017 and 2018.	The proposed solution relies on network improvements to maintain effluent quality. However there is no quantification of the expected flow improvements, or analysis of treatment plant performance based on the revised flows to the plant. Given that the plant is currently likely to be experiencing significant benefit from dilution within the network, evidence is required that the treatment plant performance expected after the proposed upgrades will maintain or improve the discharge loads into the environment. Please provide evidence that the pond treatment performance after the proposed network and other upgrades has been assessed to be the same or better than the current discharge load, and the basis influent flow and load data (existing and post upgrade) used to form this evaluation.
4c) Provide technical assessment of the pond treatment capacity against established pond design parameters. This should cover at least historical kgBOD/ha.day, and assessment of changes to performance due to reduced I&I in the network, and changes to the treatment process.	Section 5.4 of LEI 2017:A2I1 provides a brief explanation of the pond loadings currently experienced in the WWTP. However these reference a pond loading rate of 84 kgBOD/ha/d which is not relevant to the partially aerated pond. In addition, cBOD values are used, which are different to BOD loadings (BOD is typically 1.1 to 1.3 times higher). Taking into account estimates of BOD loadings, and aerated pond discharge values, the facultative pond is likely to be 1.5 to 1.8x overloaded when compared to the design loading rate provided. Given the current apparent overloading, and time since desludging the facultative pond, please provide evidence that the capacity of the aerated and facultative ponds are effectively analyised to confirm the effect of the proposed network and WWTP changes, demonstrate that effluent quality will be no worse on a load and concentration basis.
4f) Provide median and other percentile performance data for the existing pond such that ongoing median values can be considered for consent conditions.	Please provide median and 10th and 90th percentile performance data for the existing pond to assist with developing consent conditions.
6a) Please provide details (including a map) identifying what and where edible species of kaimoana can be gathered around the river mouth.	Information provided indicates that: the estuary is not conducive to shellfish thriving and no shellfish harvesting occurs, but flounder are caught. However, a map of where fishing occurs is not provided (because it is considered to be a significant task, and WDC are unsure of its value and relevance for this consent application). We consider knowing what and where kai moana are harvested to be a key consideration for a wastewater outfall in an enclosed estuary such as this. It would also seem a relatively simple exercise for the Council to (at least) map its understanding of where harvesting occurs.

6b) Please confirm what funding options WDC has investigated in assisting with the costs associated with the BPO and if purchasing of land was included in this investigation.	Evidence of other funding options has not been provided, please provide or is WDC solely waiting on the three waters review? Please confirm.
7a) Please provide a monitoring plan which is to include the following; a. The objectives of monitoring, b. The actual issues of concern, the monitoring required to detect trends and ensure adverse effects remain within acceptable ranges (parameters, sites, times and sampling methods), c. Confirm how in-river monitoring will be integrated with discharge monitoring, include how discharge volumes and loads will be determined, d. Confirm how the results will be used to inform and adapt the management of the wastewater network and treatment plant over the duration of the consent.	Can you please confirm when this document is likely to available for Council staff to review? Our preference is prior to the drafting of the section 42A report.
9a) Given the Wairoa Wastewater Stakeholder Group (WWSG) was formed in late 2016 with terms of reference established in early 2017, consent conditions 19 and 20 do not seem necessary or is WDC proposing another stakeholder group be created? Can you please confirm the status of the WWSG plus submit a copy of all meeting minutes held for the WWSG and terms of reference.	A copy of all of the meeting minutes is considered in important in confirming what discussions were had during these meetings and with whom. Please provide a copy of all meeting minutes held for the WWSG.
9c) Council has concerns regarding the 35 year duration sought for this application, particularly as after the 10th year stages 3 and 4 of the BPO are considered to be aspirational only with no certainty given that additional storage and irrigation will actually occur. Can you please advise what certainties WDC can give in regards to additional storage, irrigation areas, reduced incidences of emergency overflows and river discharge volumes, as it is not clear in the application or consent conditions that a 35 year duration can be justified.	The response provided does not provide any certainty therefore does not reflect the 35 year duration that WDC is seeking. Unless further justification can be provided (i.e. proposed consent conditions) then it is recommended that the applicant reviews/amends their proposed consent duration to ensure it reflects the treatment and mitigation measures they are proposing (excluding the aspirational land discharge and associated storage component).
9d) - Please provide further treatment options/mitigation measures if the discharge into the Wairoa River is to continue at the stage 1 level proposed of the BPO.	Council disagrees with the response provided and suggest that WDC reassess this question. The further treatment options requested could be/should be appropriate to reduce adverse effects on Maori cultural values and mitigate other effects/concerns regarding the continued discharge to the river.
9e) Please confirm whether there has been any sensitivity testing of the proposed 60m³/s median flow in the Wairoa River. If the actual median flows of the river change over time, what will impact will this have on either effects, or ability to achieve conditions.	The discharge triggers have been linked arbitrarily to a median river flow of 60m3/s. Given the consent term being sought, and potential population and climate change over that time, could a link be provided in the consent conditions such that the flows at the trigger values are updated with changing median river flows and discharge flows?

9g) Please confirm why soluble carbonaceous five-day Biochemical Oxygen Demand (ScBOD5) is proposed for the consent measurement? Has there been any performance data for the existing plant been collected to date for this parameter?	Please confirm why soluble carbonaceous five-day Biochemical Oxygen Demand (scBOD5) is proposed for the consent measurement? Has there been any performance data for the existing plant been collected to date for this parameter?
10) The cultural values outlined in the CIA should underpin the proposed consent conditions of this proposal. Removing the discharge from the Wairoa River is paramount (to provide for the cultural values set out in the CIA) and the BPO sets out stages where this can be gradually improved overtime. Stages 3 and 4 of the BPO have been described as aspirational, which is of concern to Council. This however is not mirrored in the CIA which states *"…by year 30 The Package will have delivered an achievable, positive result for the river's cultural values and health in a manner which has been well consulted upon and which is realistically achievable, acceptable and, with good planning, affordable for the Wairoa Community".* Council also have concerns regarding the difficulty in finding and securing appropriate land to irrigate on, particularly as this is wholly reliant on a 3rd party (long term) participation. Therefore, to reflect the cultural values identified in the CIA, the existing resource consent (previously known as WP180173 – applicant P I and J R Mucalo) could be amended to reflect the proposed BPO (which is likely to be publically notified) or alternatively could be included in this application with proposed consent conditions amended to suit. Alternatively, please provide a pathway/amended consent conditions so give Council certainty that land application options will be explored and implemented. **We note the effects on cultural values, particularly tangata whenua, are effects that we need to consider as the discharge of treated wastewater into the Wairoa are likely to remain. Nigel How confirmed in the CIA "The effects of the current discharge regime on the river's cultural values are at odds with tangata wheuna worldviews and is culturally offensive", unless the wastewater is treated to a 100% drinkable quality then this view would apply even with the proposed filtration and UV treatment proposed in stage 1.**	Council does not consider this question appropriately addressed and would have thought that the CIA would have been amended prior to this application being made to include any discussions that have been made with tangata whenua confirming that land discharge and associated storage are aspirational and may not occur (question 3). Therefore Council are seeking the section 92 issues identified in the letter dated 7 May 2018 for application DP180173L - P I and J R Mucalo be provided as soon as possible, this information was due on 30 May 2018 (see attached copy for your reference). This information is required so Council can assess both applications simultaneously/bundle the applications for processing if it is considered the best option. A copy of this letter and previous correspondence will also be sent to Paul Mucalo.

You must respond in writing to this request, before Tuesday 16 April 2019 and do one of the following:

a) Provide the information.
b) Tell us that you agree to provide the information, but propose an alternative reasonable date (suggest a date).
c) Tell us that you refuse to provide the information.

It is important that you respond to this request, otherwise your application can be declined for a lack of information. We may also decline your application if you refuse to provide the information.

Please use the attached form to respond to this information request. If you prefer you can email your response to tania.diack@hbrc.govt.nz .

I have put processing of your application on hold until we receive your response.

Please contact me on (06) 833 8091 if you have any questions.

Yours faithfully

TANIA DIACK – SENIOR CONSENTS PLANNER
REGULATION GROUP
PH (06) 833-8091
tania.diack@hbrc.govt.nz

To: Tania Diack

Hawke's Bay Regional Council
Private Bag 6006
Napier

In response to the Council's request for further information dated 26 March 2019 relating to the activities and discharges associated with the receipt, treatment, storage and general management of wastewater received at the Wairoa Wastewater Treatment Plant.

Please tick your response.

☐ the information requested is attached

☐ I'm unable to provide the information by 16 April 2019, but could send it to you by

_____

☐ I refuse to provide the information.

Signature of applicant or authorised agent: _____

Name: _____ Date: _____
Please print full name of person who signed above.

Wairoa Wastewater Treatment Plant and Reticulation Network Discharges – APPENDIX 1

Following the site visit with both HBRC and WDC representatives on 8 February 2019, a number of matters were raised by HBRC staff and technical experts. The following table of questions are to be resolved prior to a formal section 92 information request being sought (if necessary and potentially section 91 if necessary) with clarification provided by WDC; **(Updated 25 March 2019 as per column 4)**

Key points of discussion and who has requested the further information	Question(s) to applicant & request for further information	Clarification provided by Wairoa District Council	Answer satisfies/does not satisfy HBRC's information requirement
1) Hydrodynamic modelling: (Shane Kelly – pages 2 and 3 of memo)	1a) Please confirm how sensitive are the model results likely to be to changes in the geomorphology of the river mouth or position of the outfall (given it is proposed this structure can be moved).	We don't consider this to be an issue, as the primary control for dispersion of the discharge plume is the nearby river channel flow, not the location of the river mouth. Changes in the river mouth location will not affect the initial rapid dispersion within 100 m of the discharge to an extent that requires changes to methods used for managing or avoiding adverse effects in the estuary. The intention is for the outfall to be able to be moved to a location that is no further away from (and preferably much closer to) the active river channel so that the rate of dispersion and extent of the plume before 100-fold dilution is at least as good as currently achieved and modelled. The discharge is set back some 500 m from the coastal dune/mouth/bar while the primary mixing zone is within 100 m of the discharge. At the time of eCoast's modelling the river mouth was about 500 m from the discharge, but at the time of our February site visit it was about 1 km away, between Rangihoua and Whakamahi Lagoon. The modelling was based on the measured channel morphology and river flows, so any changes in the river mouth location will alter the flows near the coastal dune/bar. It will also affect the eddies and mixing zones on each side of the river mouth. However, the eCoast information suggests the discharge will have already diluted 250 times before encountering these eddy zones.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 1 of the section 92 letter**
	1b) Please confirm what, if any, key decisions were predicted on the model outputs and if so, what, if any, contingencies have been put in place to manage uncertainties.	Section 5.3.4 of the Conceptual Design report summarises the development of the discharge regime. There was some circular decision-making and checking of effects from possible discharge regimes for model scenarios and the conceptual design. The scale of uncertainties and environmental effects were conservatively calculated by using the worst-case upper limits on daily discharge volumes into lower limits on river flows plus upper ranges of discharged contaminant concentrations. The 99th percentile plumes predicted by the model were also used to represent the worst-case	**This answer satisfies HBRC's information requirement – however further information is sought under question 1a) to determine if the response is reasonable**

		events. The typical plumes and concentrations will be less than the 99th percentiles so this approach allows plenty of room for contingencies and uncertainties.	
	1c) Please provide confirmation of how the dispersal and dilution patterns should be interpreted for different types of contaminants.	All contaminant concentrations at any location within the plume can be simply estimated by multiplying the initial contaminant concentration by the dilution factor predicted by the hydrodynamic model at a specific location. After filtration and disinfection systems have been installed at the WWTP, the discharged contaminants will all be largely soluble and unlikely to bind to the riverbed sediments or settle out within the estuary, so the modelled plumes will fairly represent the behaviour of all of these contaminants. The assessment is also conservative because it assumes no attenuation or transformation effects upon entering the river. In reality, any remaining E. coli (and most pathogens) will die off rapidly due to contact with seawater and sunlight UV, and some chemical reactions in the river environment may transform some of the discharged contaminants into other compounds (which may be more inert and less environmentally concerning).	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 2 of the section 92 letter**
	1d) Please provide bubbleplots of silt values overlaid on the sheer stress plots. This will assist with interpreting the relationship between these parameters given there are a number of anomalies that do not make intuitive sense.	Note that the river mouth migrates randomly and frequently so the sediment layers and compositions that have accumulated over long timeframes don't necessarily reflect the river mouth location at the times of surveys. Also, the river mouth locations and rates of silt accumulation between surveys are not monitored, so it's difficult to correlate sediment compositions with changes in shear stress and river mouth location.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 2 of the section 92 letter**
	1e) Please provide information/advice on the potential influence of changes in the mouth morphology on shear stress, and potential areas of sediment and contaminant accumulation.	Historic Google Earth imagery of the estuary with the benthic ecological studies, show how the sedimentation and river channel patterns have changed in response to changing shear stress patterns. The building out of the mudflats between Fitzroy Street and Rangihoua is obvious over only a few years (5-10 years). Over a much longer time scale, the erosion of Rangihoua is apparent in its receding eastern cliff face and undermining of WWII gun bunkers that were originally on hilltops but are now adjacent to or submerged in the estuary.	**This answer does not satisfy Council's requirements and this information is still sought, see comment page 2 of the section 92 letter**
2) Ecological Assessment: (Shane Kelly – pages 3 and 4 of memo)	2a) Please provide confirmation as to the source(s) of the high sediment concentrations of lead present around the Fitzroy Street pump station overflow.	The source is unknown but clearly is unlikely to be related to the treated wastewater, as lead is not a feature near the main outfall and there are no lead sources in Wairoa. It is most likely that these lead results relate to dumped materials or perhaps some historic stormwater events. The lab results show huge variation of lead over several individual samples and sediment depths at this location, so it is clearly related to a very localised lead deposit, and not on-going lead discharges and general accumulation in the sediments.	**This answer satisfies HBRC's information requirement**

	2b) Please provide the original laboratory results referenced in report eCoast 2018:C5 – Assessment of Environmental Effects – Marine Ecology.	See attached (originally for eCoast 2018:A3D3).	**This answer satisfies HBRC's information requirement**
	2c) Please confirm whether nuisance macroalgae blooms are present in the lower Wairoa River and if so please provide information regarding this.	HBRC's 2016 report on river water quality trends at SOE sites upstream of Wairoa indicated that "DIN/DRP ratios indicate that … most sites in the Wairoa catchment have nutrient ratios indicative of co-limited conditions. Given that concentrations of both DIN and DRP are low to moderate at these sites, this means that both nutrients are likely to partially limit periphyton growth." and "Periphyton biomass levels across the catchment are generally low, and … are below both the 120 mg/m3 'recreational' and 50 mg/m3 'biodiversity' thresholds."	**This answer does not satisfy Council's requirements and this information is still sought, see comment page 2 of the section 92 letter**
	2d) Please provide information regarding the potential effects on the benthic marcofauna and sediment quality as a result of the re-positioning of the WWTP outfall.	Relocating the outfall will potentially relocate the localised area of organic enrichment of the sediment and any effects on macrofauna. The reductions in discharge events and modified discharge regimes resulting from potential irrigation and storage expansion will ensure that future outfall locations will have negligible adverse effects on sediment quality and macrofauna within ever-smaller zones around the outfall.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 2 of the section 92 letter**
	2e) Please provide additional comment on the potential effects of emerging contaminants of concern.	These are unlikely to be of any greater concern for Wairoa than for any other town's wastewater discharges. The discharge into a comparatively large river flow, rapid dilution, and proximity to the coast mean that there is minimal opportunity for EOC's to remain at potentially harmful concentrations and potentially affect fish.	**This answer satisfies HBRC's information requirement**
3) Cultural Values: (Tania Diack – reference material Cultural Impact Assessment and Tanagata Wheuna Worldviews for Wastewater Management in Wairoa)	3a) Please provide a copy of the procedure for the handling of unearthed human remains, taonga tuturu, and artefacts that WDC is going to adopt and provide an amended copy of the proposed consent conditions that includes this requirement.	WDC are developing these proteocols based on standard heritage/archaeological and Maori protocols. We will provide them to HBRC prior to the Hearing. The protocols need to address the interests and expectations of all interested parties and authorities including iwi, hapu, HBRC, DOC, and Heritage NZ Pouhere Taonga.	**This answer satisfies HBRC's information requirement – however please see comment on page 2 regarding this matter**
	3b) Please confirm if during the relocation of any structure within the river bed is it envisaged approval will be obtained by tangata whenua or if the works will be overseen by a tangata whenua representative?	Tangata whenua will be represented on the reserve management board which will need to be providing approval for this too. Tangata whenua could be informed prior to works commencing each time and could be entitled to have an observer. Overall however, the activity itself will be reflective of the existing situation i.e. an outfall structure in the area will not be a foreign concept, while comprehensive conditions are proposed around certification and construction to ensure effects will be less than minor.	**This answer satisfies HBRC's information requirement**

	3c) Please confirm if there were discussions with tangata whenua around the proposed stages of the BPO being "aspirational" only and that there is a possibility that the discharge into the Wairoa River may continue similar to the current practice (with better treatment)? The Cultural Impact Assessment states that the discharge to the river is culturally offensive and discusses the need to move to a land application discharge method to reduce the effects on Maori cultural values.	Yes, tangata whenua were a key group involved in the Stakeholder group. Iwi views were integral with and drivers of the BPO selection including the acknowledgement of the aspirational nature of the longer-term developments. They agreed that the improvements over time will be better than the existing situation. They agreed that time was required for implementing steps towards the ideal goal of 100% land treatment and acknowledged that this goal may not be achievable within the next 30 years. They also understood that this meant there was a delay in achieving that aim but it allowed costs to be spread more affordably (potentially with external funding), allowed for reticulation improvements to reduce flows, and provided certainty that steps would continue to be taken by WDC. Also refer to the answers below to question 10 regarding the CIA. Further, although acknowledged to be aspirational, this doesn't mean there isn't an intent to work towards these outcomes. Indeed, this is the very purposes of the proposed condition framework.	**This answer does not satisfy Council's requirements and this information is still sought, see comment page 2 of the section 92 letter**
4) Existing WWTP, reticulation network and BPO:	4a) Please provide evidence that the data set modifications prescribed in Report A2I1 do not significantly modify the resultant summary data.	Some of the data modifications had large effects on the average (mean) and upper percentile values. Deleting the clearly unrealistically high results would have had a similar effect to the adjustments we made to achieve more realistic results. It was very important to ensure that such high erroneous results did not skew the statistics relied upon for all future aspects of this project. The original means and maxima were unrealistically high, which is what triggered us looking for the individual results responsible for these unrealistic statistics.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on pages 2 and 3 of the section 92 letter**
(Nick Dempsey – page 11 of memo)	4b)Provide full data sets and summary calculations, including graphical and statistical representations of performance, that form the basis of AEE table 5.3: i. Historical performance flow and load/concentration data for the WWTP; ii. Historical influent parameter records (flows and loads). iii. Confirm whether there is any treatment plant influent and effluent performance data for 2017 and 2018.	We do not believe that this information is directly relevant to the discharge consents. While performance has a bearing on effluent quality and loads, the future I & I and treatment enhancements will ensure that the future treatment performance and discharge quality will be better than historic data. i. We haven't calculated these apart from the overall means in Table 5.2 and section 5.4 of LEI, 2017:A2I1. ii. See Table 5.2 of LEI, 2017:A2I1. iii. Monthly influent quality sampling ceased in December 2017. Monthly effluent quality sampling continues to occur.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 3 of the section 92 letter**
	4c) Provide technical assessment of the pond treatment capacity against established pond design parameters. This should cover at least historical kgBOD/ha.day, and assessment of changes to performance due to reduced I&I in the network, and changes to the treatment process.	The final paragraphs of section 5.4 of LEI, 2017:A2I1 provided this. It noted that BOD had never been monitored but, based on CBOD, the load on the surface area of the entire WWTP is 394 kg CBOD/ha/d which is 4.7 times the NZ recommended guideline value of 84 kg BOD/ha/d. However, it should be noted that the aerated lagoon reduces CBOD by about 75%, so the load on the main oxidation pond is only slightly above this guideline value. Reductions	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 3 of the section 92 letter**

		in I & I will reduce flow rates, reduce dilutions, and increase BOD concentrations, but the overall load will remain unchanged.	
	4d) Confirm when the two ponds were last desludged, and what are the measured sludge levels at present.	The aerated lagoon was most recently de-sludged in April 2018, with about 517 m3 (dry basis) removed. The maturation pond was most recently de-sludged in May to September 2010. We do not believe that this information is directly relevant to the discharge consents but is simply an operational matter that WDC need to keep on top of in order to maintain the WWTP's treatment performance and discharge quality.	**This answer satisfies HBRC's information requirement**
	4e) Only four compliance reports are included in the assessment in A2I1, up to the year 2014. Were additional compliance reports available for inclusion in the assessment and if so, what is their impact on A2I1 Table 7.1. **Previous compliance reports for the compliance years 2008-2009, 2009-2010 and 2012-2013 are available from Council if needed.**	At the time of gathering information for this report, only those four compliance reports were available from HBRC and WDC staff. More recent reports have not been sought but instead WDC's monitoring data was relied on. WDC have acknowledged that rates of compliance with daily discharge volumes and timing have continued to be problematic during and immediately after storm events. It was not considered of any benefit to seek or review older reports, especially as flow characteristics are changing as a result of reticulation improvements.	**This answer satisfies HBRC's information requirement – HBRC to provide copies of previous compliance reports to Nick Dempsey for reference**
	4f) Provide median and other percentile performance data for the existing pond such that ongoing median values can be considered for consent conditions.	Median values were presented in Table 5.2 of LEI, 2017:A2I1. 90th percentile values are pH = 8.3, DO = 14.7, COD = 260, NH3-N = 28, TSS = 118, cBOD = 55, and E. coli = 135,000.	**This answer does not satisfy Council's requirements and this information is still sought, see comment page 3 of the section 92 letter**
	4g) Confirm whether membrane filtration was considered in the BPO long list of options in lieu of filtration and UV.	Sand filtration was selected in consultation with iwi and the community partly because it involves contact with minerals and geological matter which reflect Maori tikanga that human wastes can only have their mauri restored through contact with Papatuanuku. Further, sand filtration would assist in algae removal to allow more effective UV treatment. Membrane filtration would have served no benefit over and above the proposed solution, and would not have had any positive cultural value.	**This answer satisfies HBRC's information requirement**
	4h) Does the proposed programme to improve network conditions quantify the expected improvements in influent wastewater?	No. Historic data when flows were lower and population was higher guides expectations for future flow reductions. Overall, not much changes in the treated wastewater quality because the load remains static or declines with declining population.	**This answer satisfies HBRC's information requirement**
5) Emergency overflow pipes (Tania Diack)	5a) Please confirm if the treated discharge pipeline overflow for the main discharge still discharges into an adjacent stormwater channel or is now	Details in the AEE for consent application DP180254L and WDC's infrastructure records indicate that the main outfall's emergency overflow currently uses a dedicated 375 mm pipe that is not connected to any stormwater drain near the coast, and it will continue	**This answer satisfies HBRC's information requirement**

	discharging into a separate overflow pipe. Please provide plans that show the pipeline configuration (for both sewer and stormwater for the Fitzroy pump station and WWTP going into the main outlet discharge and overflow).	to do so until the outfall pipeline can be moved and perhaps have its diameter enlarged. I & I reductions will also assist.	
	5b) Please confirm if the Fitzroy Pump Station gets inundated during storm events similar to the other three pump stations and where does this overflow discharge to.	Yes it has in the past, but only during one very large storm since December 2017. These overflows will be mainly stormwater with a small wastewater component. The wet well's emergency overflow feeds into the main outfall pipeline and out to the river discharge structure. The treated wastewater from the WWTP will mix with the Fitzroy Street overflows within the pipe before discharging into the river.	**This answer satisfies HBRC's information requirement**
	5c) Please confirm if investigations into removing the emergency overflows has been done in conjunction with the proposed upgrades and network improvements, particularly as they will be discharging less diluted wastewater into the river. Please provide information regarding this work.	Yes, the reticulation proposals have been designed in an integrated manner. The emergency overflow pipes won't be removed at any stage, as they will always be needed for protecting the reticulation from excessive pressure. Overflows will still require the same flow rate and volume of stormwater to trigger such events, so the dilution will be very similar to historic dilutions. What will change is the intensity of storm (mm/h and its duration) and the frequency of events that will need to occur in order to trigger overflows – larger and longer storms that occur less frequently will be needed.	**This answer satisfies HBRC's information requirement**
6) Other (Shane Kelly – page 8 of memo)	6a) Please provide details (including a map) identifying what and where edible species of kaimoana can be gathered around the river mouth.	As consistently shown by the benthic surveys, and eCoast's spatially broader study, the estuary is not conducive to shellfish thriving. Surveys and feedback from local residents indicated that there is no harvesting of shellfish here. Flounder are caught in the estuary, but otherwise all fishing activities occur in the marine area. Producing a map is a significant task, and we are unsure of its value and relevance for this consent application.	**This answer does not satisfy Council's requirements and this information is still sought, see comment page 3 of the section 92 letter**
(Tania Diack)	6b) Please confirm what funding options WDC has investigated in assisting with the costs associated with the BPO and if purchasing of land was included in this investigation.	Yes purchasing land was considered but that's not preferred, as leasing is cheaper while retaining a farm manager who has a vested interest in the land and animal health. Other central government funding options have been explored, and there is hope that funding may ultimately become available as a result of the three waters review.	**This answer does not satisfy Council's requirements and this information is still sought, see comment page 4 of the section 92 letter**
7) Discharge Monitoring parameters (Shane Kelly pages 6 and 7 of memo)	7a) Please provide a monitoring plan which is to include the following; a. The objectives of monitoring, b. The actual issues of concern, the monitoring required to detect trends and ensure adverse effects remain	Proposed condition 34 already proposed this to be developed within 3 months of granting consents and implemented within 12 months of granting. We can instead aim to develop this plan soon and re-draft monitoring conditions to reflect these details before the Hearing. We intend collaborating with Shaw and Shane to develop this plan.	**This answer satisfies HBRC's information requirement – however please see comment on page 4 regarding this matter**

	within acceptable ranges (parameters, sites, times and sampling methods), c. Confirm how in-river monitoring will be integrated with discharge monitoring, include how discharge volumes and loads will be determined, d. Confirm how the results will be used to inform and adapt the management of the wastewater network and treatment plant over the duration of the consent. 7b) Alternatively provide a consent condition to give certainty that this monitoring plan will be provided in a timely manner.		
8) Staging (Shane Kelly – page 7 of memo)	8) Please provide confirmation as to the rationale for the proposed changes and selection of discharge criteria, including an assessment of environmental implications (particularly for human health), this is in relation to the relaxation of the discharging at night requirement.	The BPO and Conceptual Design reports provided the rationale for these changes. Human health effects are driven by pathogens. Once filtration and UV have been installed the treated wastewater discharge will be cleaner than the river for a large number of parameters. It can therefore be discharged at any time without causing human health concerns. Despite this, under lower flows we have chosen to maintain discharges only during out-going river flows (which require out-going tides when river flows are below 3 x median). Discharging during daytime as well as night allows slower discharge speeds which will more readily remain within the outfall pipe's capacity and will be a smaller proportion of the river flow, thus having potential for greater dilution upon full mixing with the river. The adopted discharge regime also avoids the need to upgrade discharge pipe capacity and reduces surcharging of the treatment ponds.	**This answer satisfies HBRC's information requirement**
9) Consent conditions/Duration (Tania Diack 9a) to 9d))	9a) Given the Wairoa Wastewater Stakeholder Group (WWSG) was formed in late 2016 with terms of reference established in early 2017, consent conditions 19 and 20 do not seem necessary or is WDC proposing another stakeholder group be created? Can you	The intention is the formation of a new stakeholder group with a focus on reviewing Council's progress with implementing the proposed changes and to assist Council to understand the community's preferences for direction and next steps over rolling 5year periods. The WWSG has been discontinued because it has fulfilled its roles of providing the community's values and aspirations and guiding	**This answer does not satisfy Council's requirements and this information is still sought, see comment page 4 of the section 92 letter**

(Nick Dempsey 9d) to 9o) – pages 11 and 12 of memo)	please confirm the status of the WWSG plus submit a copy of all meeting minutes held for the WWSG and terms of reference.	WDC's selection of the BPO for consenting. Why do you need all WWSG meeting minutes and terms of reference? The consultation summary and Way Forward report provide these.	
	9b) Please amend the proposed consent conditions to include conditions that clearly state the role the WWSG will hold during the term of this consent.	Its role is described above and provided for in conditions. We feel these clearly set out the role of the group over the term of consent.	**This answer satisfies HBRC's information requirement.**
	9c) Council has concerns regarding the 35 year duration sought for this application, particularly as after the 10th year stages 3 and 4 of the BPO are considered to be aspirational only with no certainty given that additional storage and irrigation will actually occur. Can you please advise what certainties WDC can give in regards to additional storage, irrigation areas, reduced incidences of emergency overflows and river discharge volumes, as it is not clear in the application or consent conditions that a 35 year duration can be justified.	Firstly, WDC are confident that the reticulation programme will significantly reduce the frequencies and volumes of pump station overflows and assist with reducing storage requirements and avoiding/minimising river discharges. The daily flows are about twice the flows recorded in the 1990's and early 2000's, so reticulation improvements should eventually be able to revert flows to those historic levels. In terms of irrigation, WDC can't be certain of the extent of irrigation at this early stage. The implementation relies on farmers agreeing to irrigate wastewater and being within an economically affordable distance for reticulation from the WWWTP to their farm, and their farm soils and topography being suitable. This uncertainty should not detract from the willingness or intent to work towards it over time, however, and the condition framework clearly provides for this direction of travel. Regardless of the extent and rate of adoption of both irrigation and storage, the effects associated with the river discharge regime, including river flow discharge rate and filtration and UV disinfection, are considered to be less than minor. Any adoption of land application would only serve to enhance and delivery on the community aspiration to avoid river discharges.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 4 of the section 92 letter.**
	9d) - Please provide further treatment options/mitigation measures if the discharge into the Wairoa River is to continue at the stage 1 level proposed of the BPO.	Putting cultural values aside, no further treatment or mitigation options in our view would be necessary, as the discharge will have negligible effects (as is currently the case) on the environment upon achievement of Stage 1. The condition framework would however provide for further consideration of options with the WWSG under Conditions 21 and 22, with the System Improvement Plan framework occurring thereafter.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 4 of the section 92 letter**
	9e) Please confirm whether there has been any sensitivity testing of the proposed 60m³/s median flow in the Wairoa River. If the actual median flows of the river change over time, what will impact will this have on either effects, or ability to achieve conditions.	No, but it is clear that the river flows are far in excess of the discharge flows. We do not expect changes in river median flows to have any significant impacts on scale of effects or ability to achieve conditions.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 4 of the section 92 letter**

	9f) Please consider rewording of Condition 8 to reflect a median (i.e. 6 of 12 samples) and higher percentile parameter that are aligned with the current treatment plant performance data and realistic performance of the upgraded plant (and network).	We need some time to work these out, perhaps in collaboration with Nick. We suggest these can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**
	9g) Please confirm why soluble carbonaceous five-day Biochemical Oxygen Demand (ScBOD5) is proposed for the consent measurement? Has there been any performance data for the existing plant been collected to date for this parameter?	CBOD5 has been monitored, and we need to check if it's only the soluble portion. It has shown a range of 5.9-190 g/m3 with a median of 23 g/m3.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 5 of the section 92 letter**
	9h) Please confirm why BOD is being proposed as the oxygen demand parameter, as opposed to COD in the previous consent?	COD seems unusual for municipal wastewater that has no industrial inputs, so we changed it to cBOD to be similar to/consistent with other consents for similar discharges.	**This answer satisfies HBRC's information requirement**
	9i) Please confirm why such lenient percentiles (e.g. for scBOD5, 4/12 = 220mg/L 33% of the time, and 10/12 = 224mg/L 83% of the time) are being proposed. However, "current" treated wastewater median is ~23mg/L for cBOD. Current consent is for COD <220mg/L. Note COD will always be significantly higher than ScBOD5.	At the last minute scBOD5 was stated instead of the current COD but the values were unchanged from the existing COD limits, partly because we expected these to be negotiated during consent processing anyway. We are happy to adjust the proposed limits to reflect the actual historic cBOD5 concentrations, which are about 1/10th of the COD concentrations. A greater difference will also be introduced for the two limits. We suggest that tweaking of these limits can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**
	9j) Please explain why such narrow bands are to be met between the 33% and 83% trigger values.	All values were simply rolled over from the existing consent limits and changed the criteria to reflect the 8/12 and 10/12 limits which have been applied to more recent consent conditions elsewhere. We suggest that tweaking of these limits can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**
	9k) Please provide treated wastewater consent parameters for pre and post upgrade to the network and treatment plant.	We would also like to understand why such parameters would be needed, as we see no environmental effects rationale for imposing future more stringent limits when the current effects are no more than minor. Again, we suggest that working through this issue can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – covered in question 4c)**

	9l) Provide proposed consent conditions for E Coli.	We need some time to work out appropriate limits pre and post UV.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**
	9m) Conditions 21 and 22. Confirm who the System Review Data Reports are intended to be issued to at 5, 10, 20, and 30 years.	The work and processes involved are intended to assist the WWSG and ultimately WDC to make decisions around the options to achieve the outcomes stated in the conditions. Once the option or approach has been determined, this will be presented to HBRC under the System Improvement Plan framework.	**This answer satisfies HBRC's information requirement**
	9n) Conditions 25 & 26. Confirm whether measurement of influent wastewater to the treatment plant is possible, as this will be the key gauge of success of the I&I programmes (Condition 15, Network Management Plan).	Yes, this is routinely measured already (flow at Fitzroy St pump station and quality at WWTP inlet). Each pump station's flows are continuously monitored and can readily be used to gauge the success of the I & I programmes. Some reductions have already been observed in terms of daily total flows and frequency of pump station overflows.	**This answer satisfies HBRC's information requirement**
	9o) Condition 42. Is the intention that these reports be issued annually or biennially	Every 2 years.	**This answer satisfies HBRC's information requirement**
10) Land Discharge (Tania Diack)	10) The cultural values outlined in the CIA should underpin the proposed consent conditions of this proposal. Removing the discharge from the Wairoa River is paramount (to provide for the cultural values set out in the CIA) and the BPO sets out stages where this can be gradually improved overtime. Stages 3 and 4 of the BPO have been described as aspirational, which is of concern to Council. This however is not mirrored in the CIA which states *"…by year 30 The Package will have delivered an achievable, positive result for the river's cultural values and health in a manner which has been well consulted upon and which is realistically achievable, acceptable and, with good planning, affordable for the Wairoa Community".* Council also have concerns regarding the difficulty in finding and securing appropriate land to irrigate on, particularly as this is wholly reliant on a	When drafting the CIA Nigel acknowledged and understood the need for time to implement the stages proposed. The installation of filtration and UV is a significant step towards drinking water quality for the discharge while avoiding a very expensive process that will eventually become redundant. The CIA provides a cultural assessment of the discharge when each stage is achieved, regardless of whether it is achieved within the aspirational timeframe or at a later stage. The conclusion that there are cultural concerns until full implementation has occurred will provide WDC with a strong driver to continue implementing irrigation over larger land areas, and this will be no doubt reiterated by the WWSG. With strong community support and successful demonstration schemes such as the Mucalo farm, WDC hope to gain much wider buy-in from the rural community for expanding the irrigation, and perhaps this will occur faster than anticipated if all goes well. Requesting notification will provide an opportunity for greater understanding around how the proposal provides for cultural values, and we would look to digest and consider any matters raised in submissions, which may result in changes or specific actions.	**This answer does not satisfy Council's requirements and this information is still sought, see comment on page 5 of the section 92 letter**

	3rd party (long term) participation. Therefore, to reflect the cultural values identified in the CIA, the existing resource consent (previously known as WP180173 – applicant P I and J R Mucalo) could be amended to reflect the proposed BPO (which is likely to be publically notified) or alternatively could be included in this application with proposed consent conditions amended to suit. Alternatively, please provide a pathway/amended consent conditions so give Council certainty that land application options will be explored and implemented. **We note the effects on cultural values, particularly tangata whenua, are effects that we need to consider as the discharge of treated wastewater into the Wairoa are likely to remain. Nigel How confirmed in the CIA "The effects of the current discharge regime on the river's cultural values are at odds with tangata wheuna worldviews and is culturally offensive", unless the wastewater is treated to a 100% drinkable quality then this view would apply even with the proposed filtration and UV treatment proposed in stage 1.**		
11) Stormwater (Tania Diack)	11) A search of our records indicates that there is no resource consent to discharge stormwater from the municipal system in to the Wairoa River. There is confirmation in the application that very little is known about the status of the current stormwater system (LEI2015A1I1 – section 7 Stormwater Management Issues), however it is clear that wastewater is getting into the stormwater system and possibly contaminants from other land uses within the catchments. Therefore, resource consent would be required for those stormwater discharges that do not meet	Wastewater is not entering stormwater; stormwater is entering the wastewater system. The only known exception is where the treated wastewater outfall pipe is surcharging and then overflowing via the emergency pressure relief weir into the last few metres of stormwater drain between Kopu Road and the coastline. Once the main discharge structure is modified and I & I issues are reduced this will become a much less common event. WDC and HBRC's consent compliance staff have discussed consenting needs for Wairoa's stormwater for several years now and WDC have been gathering information to support a future consent application. Grey Wilson of Good Earth Matters has had preliminary discussions with HBRC regarding preparation of a WDC global stormwater consent application.	**This answer satisfies HBRC's information requirement – HBRC staff have been advised of the application that is in the process of being prepared, in conjunction with the investigation work being undertaken by WDC which is identifying and remediating illegal stormwater connections into the sewer network**

	Rule 163 as per the Regional Coastal Environmental Plan (RCEP) and Rule 42 of the Regional Resource Management Plan (RRMP), the relevant rule is dependent on the location of the discharge pipe into the Wairoa River. If resource consent approval is needed then the current investigations that WDC are currently undertaken will be integral to that application. The HBRC Consents section suggests that WDC meets with HBRC staff for a pre-application meeting to discuss the appropriate steps in ensuring that, if an application is needed that it is applied for in due course. This matter will be passed onto the Incidents and Enforcement section if necessary.	In any case, we do not believe that the treated wastewater consent application should be delayed or related to the stormwater consents because the reticulation and discharges are not directly linked. 12	
12) WDC resource consent approval (Tania Diack – Reference Page 36 of Stradegy, 2018:C9)	12) Please confirm the likelihood Rule 26.5.6 for the Operative Wairoa District Plan would trigger the need for public notification given it is a Discretionary Activity? Can you please provide clarification regarding this matter from WDC Planning staff? It may be in the best interests for WDC to have a joint hearing (if needed) to avoid incurring additional costs associated with having two separate hearings.	We would not expect public notification from a land use perspective, particularly given effects on the receiving water body would have been addressed under this process. We are in the process of discussing this with WDC planning staff.	**This answer satisfies HBRC's information requirement – this question was more of a "heads up" to WDC to make provision for perhaps a joint hearing if needed.**

Annex E – 1st s92 Response

Wairoa Wastewater Treatment Plant and Reticulation Network Discharge Resource Consent Applications

Applicant's Responses to HBRC's Requests for Further Information Dated 26 March 2019

Following the site visit with both HBRC and WDC representatives on 8 February 2019, a number of matters were raised by HBRC staff and technical experts. A table of questions was sent on 22 February 2019 and the Applicant responded on 19 March 2019. A number of responses did not satisfy HBRC's experts and required further clarification, so HBRC issued a formal s92 request for further information on 26 March 2019 as presented in the table below. The Applicant's responses to the s92 request are presented in the table below.

HBRC's Question(s) to the Applicant on 22 February 2019	The Applicant's Responses on 19 March 2019	HBRC's s92 Requests for Further Information on 26 March 2019	The Applicant's Responses to HBRC's s92 Requests
1a) Please confirm how sensitive are the model results likely to be to changes in the geomorphology of the river mouth or position of the outfall (given it is proposed this structure can be moved).	We don't consider this to be an issue, as the primary control for dispersion of the discharge plume is the nearby river channel flow, not the location of the river mouth. Changes in the river mouth location will not affect the initial rapid dispersion within 100 m of the discharge to an extent that requires changes to methods used for managing or avoiding adverse effects in the estuary. The intention is for the outfall to be able to be moved to a location that is no further away from (and preferably much closer to) the active river channel so that the rate of dispersion and extent of the plume before 100-fold dilution is at least as good as currently achieved and modelled. The discharge is set back some 500 m from the coastal dune/mouth/bar while the primary mixing zone is within 100 m of the discharge. At the time of eCoast's modelling the river mouth was about 500 m from the discharge, but at the time of our February site visit it was about 1 km away, between Rangihoua and Whakamahi Lagoon. The modelling was based on the measured channel morphology and river flows, so any changes in the river mouth location will alter	The response received suggests the model sensitivity to the geomorphology of the river mouth and position of the outfall is not an issue. In contrast the modelling report concludes "The morphology of the river mouth regularly changes over time and this will have some influence over hydrodynamics of the area which will in turn influence the pattern of dilution of the outfall". Therefore more information is required to support the response provided. That should take into account the wide and rapid variation in mouth position (including occasional closures), the fact that fishing activities are carried out in the area that may be affected by the plume, and that, modelling was used to support the development of the discharge regime and the design of the proposed benthic monitoring programme (and potentially other decisions).	Although there is initial rapid dilution at the outfall, as noted in the modelling report, *"The morphology of the river mouth regularly changes over time and this will have some influence over hydrodynamics of the area which will in turn influence the pattern of dilution of the outfall."* Considered in simple terms, when the river mouth is in line with the main river channel (that is, close to the Whakamahi lagoon to the western end of the barrier spit), discharge/dilution is less effected in comparison to when the river mouth is further to the east (towards the Ngamotu lagoon), which is less effected than when the river mouth is closed. This is because an anti-clockwise eddy is formed in the western part of the estuary at the entrance to the Whakamahi lagoon when the river entrance is more offset to the east. This is shown in Figures 3.14 and 3.15 of the modelling report. The extent of the eddy will increase as the river entrance moves further to the east. This means direct dilution is reduced and retention time is increased when the river entrance is orientated further to the east.

	the flows near the coastal dune/bar. It will also affect the eddies and mixing zones on each side of the river mouth. However, the eCoast information suggests the discharge will have already diluted 250 times before encountering these eddy zones.		To put this into context with respect to effects on the plume, the best-case scenario with respect to entrance location (western entrance) and the worst-case scenario (eastern entrance) can be considered by reviewing the historical aerial and satellite images which show how often they occur and how far west the entrance meanders. Images from 1939 to 2012 indicate that the configuration modelled is similar to the most eastern in the records (comparable to 1983), and so may be considered the worst-case scenario for the river entrance location. This is especially due to the small sand island present on the western side of the entrance during field data collection that further compounds plume retention in the western part of the lower estuary (i.e. the modelling was conservative). A situation with the entrance closed was not modelled; it is understood that should the entrance be closed for more than a few days, it is mechanically opened (and of course no discharge occurs for at least part of the time when the river entrance is closed). It should also be noted that fishing is less likely to occur during overnight out-going tides than during daylight hours. Further, the strong currents close to the river mouth are too fast and dangerous for safe fishing.
1b) Please confirm what, if any, key decisions were predicated on the model outputs and if so, what, if any, contingencies have been put in place to manage uncertainties.	Section 5.3.4 of the Conceptual Design report summarises the development of the discharge regime. There was some circular decision-making and checking of effects from possible discharge regimes for model scenarios and the conceptual design. The scale of uncertainties and environmental effects were conservatively calculated by using the worst-case upper limits on daily discharge volumes into lower limits on	The response provided answers the question, however further information sought under Point 1a (above) is required to determine if the response is reasonable.	The Applicant trusts that the response to 1a above demonstrates that their earlier response to 1b is reasonable; i.e. modelling with the river entrance in its current location is considered conservative.

	river flows plus upper ranges of discharged contaminant concentrations. The 99th percentile plumes predicted by the model were also used to represent the worst-case events. The typical plumes and concentrations will be less than the 99th percentiles so this approach allows plenty of room for contingencies and uncertainties.		
1c) Please provide confirmation of how the dispersal and dilution patterns should be interpreted for different types of contaminants.	All contaminant concentrations at any location within the plume can be simply estimated by multiplying the initial contaminant concentration by the dilution factor predicted by the hydrodynamic model at a specific location. After filtration and disinfection systems have been installed at the WWTP, the discharged contaminants will all be largely soluble and unlikely to bind to the riverbed sediments or settle out within the estuary, so the modelled plumes will fairly represent the behaviour of all of these contaminants. The assessment is also conservative because it assumes no attenuation or transformation effects upon entering the river. In reality, any remaining *E. coli* (and most pathogens) will die off rapidly due to contact with seawater and sunlight UV, and some chemical reactions in the river environment may transform some of the discharged contaminants into other compounds (which may be more inert and less environmentally concerning).	The response received suggests discharged contaminants will be largely soluble and unlikely to bind to the riverbed sediments or settle out within the estuary, so the modelled plumes will fairly represent the behaviour of all of these contaminants. Yet the assessment of effects is largely based on benthic sediments and communities, which suggests eCoast (and earlier science providers) believed there is potential for benthic impacts. This discrepancy needs to be addressed.	The benthic effects mostly relate to chronic exposure of benthic organisms to pathogens and some nutrient enrichment (ammonia and/or DRP) and perhaps, in the immediate vicinity of the outfall, toxic effects of ammonia. The treated wastewater discharge's contributions of suspended solids and turbulence from the flow into the river also have potential to affect sedimentation patterns and benthic sediment stability around the outfall, which can have consequential effects on the compositions and sustainability of benthic communities in the immediate area of the outfall. With respect to the dilution and dispersion patterns of soluble materials in the discharge, as found with the modelling, these are diluted relatively quickly and mostly within 100 m of the outfall. As a result, there is the potential for impacts on the benthic community close to the outfall which have been indicated in the results of the biological investigations. eCoast's AEE recommended that monitoring at sites closer than 100 m from the discharge are included going forwards to determine if the proposed reductions are having a localised positive effect. Once disinfection has been implemented at the WWTP, and when irrigation reduces the frequency and volume of discharges, these possible effects on benthic communities will reduce.

			In terms of effects due to the settlement of suspended sediments from the discharge, although these were not modelled directly, settlement can only occur where shear stress is low and water currents are <0.1 m/s (this is why there is a correlation between low current speeds/shear stress and high fine silt content in sediment samples). This is confirmed in the recent monitoring at the sites close to the outfall (i.e. 100 m) that show signs of impacts from the outfall that may be associated with settlement of fines discharged. However, it is also due to the outfall being currently located in a deposition zone (i.e. low shear stress). It should be noted that the deposition sites are continually shifting due to the changes to the estuary entrance location and the positions of various moving sand banks (e.g. the sand island on the western side of the entrance during the field data collection). It is noted that the Wairoa Estuary mud content (and not just around the WWTP discharge) is classified to be broadly in the "sensitive species are likely being lost" (as found in the sampling), with a positive trend to less fine silt contents as stated in HBRC's 2014-2015 State of the Environment Report. But it should be noted there is a trend of increasing silt/turbidity in the HBRC 2016 report (HBRC Report No. RM16-12 – 4793). Either way, Wairoa River and Estuary have some of the highest silt content and turbidity levels in the Hawke's Bay Region due to its soft sedimentary geology, a phenomenon which is unrelated to the WWTP discharge. It should also be noted that all of the previous benthic studies were concerned with the current/historic discharge which has potential for causing adverse benthic effects. These

			studies were not intended to indicate how the future discharges may affect the estuary; instead they provide a baseline for future comparisons, and WDC expects future benthic surveys to show that the proposed regime will have a more positive impact.
1d) Please provide bubble plots of silt values overlaid on the shear stress plots. This will assist with interpreting the relationship between these parameters given there are a number of anomalies that do not make intuitive sense.	Note that the river mouth migrates randomly and frequently so the sediment layers and compositions that have accumulated over long timeframes don't necessarily reflect the river mouth location at the times of surveys. Also, the river mouth locations and rates of silt accumulation between surveys are not monitored, so it's difficult to correlate sediment compositions with changes in shear stress and river mouth location.	The response received seems to imply that the modelling is not a good predictor of physical benthic processes in the lower river. If so, should related modelling results related to shear stress be disregarded? Please confirm.	No, the modelling results related to shear stress should not be disregarded, as they are informative to indicate how the river channel and mouth contribute to shear stress patterns across the estuary, including near the outfall. The results of the modelling of shear stress and silt content at the locations of sediment samples compare well i.e. the model is a good predictor of the physical benthic processes of the lower river. As stated in the eCoast modelling report *"When the results of the sediment grain size analysis are compared to the modelled shear stress, it can be seen that the samples with the highest percentage of fine sediment are located where the shear stress is lowest, and vice versa. For example, shear stress at Site G remains at or around zero throughout the tidal cycle and so is a deposition zone for fine sediments and has high silt content, while Site J experiences high shear stress throughout most of the tidal cycle and consequently has the lowest silt fraction".* Also, as described in the modelling report, the apparent anomalies of site B and the overflow are due to high shear stress at site B (i.e. it is not an anemology, it is just counter-intuitive since site B lies between two low shear stress sites). In addition, the overflow is influenced and flushed by the fast flowing stream during overflow and so has mostly gravel (the sediment sampling at this location was mainly to consider geochemistry and contaminants). Site B's location in a high shear stress zone is

			clear in the attached shear stress outputs with bubble plots overlaid. Only site H may be considered slightly anomalous; as it is in a moderate shear stress zone during out-going tides. Site H is on the edge of a high shear stress area, although the fine sediment content is some 87%. This is likely due to the exact configuration of the entrance during the surveys and how closely that has been replicated in the model domain (no current satellite image was available for digitizing); i.e. the site was just outside the area of higher shear stress at the time of sampling. The main reasons for this are: a) due to the time constraints, the sample collection was done prior to modelling (i.e., we did not have the model outputs to direct us, although these have now been used to identify monitoring sites in the future), and b) we could not get too close to the river entrance during the bathymetry surveying due to the high currents in the area and associated H&S concerns.
1e) Please provide information/advice on the potential influence of changes in the mouth morphology on shear stress, and potential areas of sediment and contaminant accumulation.	Historic Google Earth imagery of the estuary, combined with the benthic ecological studies, show how the sedimentation and river channel patterns have changed in response to changing shear stress patterns. The building out of the mudflats between Fitzroy Street and Rangihoua is obvious over only a few years (5-10 years). Over a much longer time scale, the erosion of Rangihoua is apparent in its receding eastern cliff face and undermining of WWII gun bunkers that were originally on hilltops but are now adjacent to or submerged in the estuary.	The response received seems to imply that the modelling is not a good predictor of physical benthic processes in the lower river. If so, should related modelling results related to shear stress be disregarded? Please confirm.	See the response to 1d) above. The potential areas of sedimentation and contaminant accumulation are modified by the entrance location (and to a lesser extent by sand bar locations within the lower estuary), and when the entrance location is more eastward these are increased because the river outflow is not direct and disrupted into an anti-clockwise eddy. Based on the available historical information, the configuration that was modelled is likely conservative.
2a) Please provide confirmation as to the source(s) of the high sediment concentrations of lead present around the Fitzroy Street pump station overflow.	The source is unknown but clearly is unlikely to be related to the treated wastewater, as lead is not a feature near the main outfall and there are no lead sources in Wairoa. It is most likely that these lead results relate to dumped materials or perhaps some historic stormwater events. The lab results show huge variation of	**This answer satisfies HBRC's information requirement**	

	lead over several individual samples and sediment depths at this location, so it is clearly related to a very localised lead deposit, and not on-going lead discharges and general accumulation in the sediments.		
2b) Please provide the original laboratory results referenced in report eCoast 2018:C5 – Assessment of Environmental Effects – Marine Ecology.	See attached (originally for eCoast 2018:A3D3).	**This answer satisfies HBRC's information requirement**	
2c) Please confirm whether nuisance macroalgae blooms are present in the lower Wairoa River and if so please provide information regarding this.	HBRC's 2016 report on river water quality trends at SOE sites upstream of Wairoa indicated that "DIN/DRP ratios indicate that … most sites in the Wairoa catchment have nutrient ratios indicative of co-limited conditions. Given that concentrations of both DIN and DRP are low to moderate at these sites, this means that both nutrients are likely to partially limit periphyton growth." and "Periphyton biomass levels across the catchment are generally low, and … are below both the 120 mg/m^3 'recreational' and 50 mg/m^3 'biodiversity' thresholds."	The response received seems to be focussed on freshwater blooms, whereas we were primarily seeking information on whether nuisance macroalgae blooms are present in the lower Wairoa River (perhaps the question should have been more specific and said the estuarine section around the outfall). Please provide a response to suit.	No periphyton growth was observed during field data collection and HBRC (2016) states *"It should also be noted that periphyton require hard substrate to attach to, which means that excessive periphyton growth is unlikely to develop in soft-bottomed rivers such as the lower Wairoa River, regardless of dissolved nutrient concentrations."* This in combination with the occasionally high water flow rates and poor water quality in terms of light penetration (very turbid), indicate that periphyton blooms are unlikely to occur in the Wairoa estuary.
2d) Please provide information regarding the potential effects on the benthic macrofauna and sediment quality as a result of the re-positioning of the WWTP outfall.	Relocating the outfall will potentially relocate the localised area of organic enrichment of the sediment and any effects on macrofauna. The reductions in discharge events and modified discharge regimes resulting from potential irrigation and storage expansion will ensure that future outfall locations will have negligible adverse effects on sediment quality and macrofauna within ever-smaller zones around the outfall.	We agree that relocating the outfall is likely to relocate the localised area of organic enrichment of the sediment and any effects on macrofauna. What we don't know is whether the benthic values are the same across the proposed outfall site. For instance, are there any shellfish beds that should be avoided?	The estuary has not been studied to this level of detail. eCoast's 2018 benthic survey is the first study that WDC is aware of that sampled a wide range of sites within the estuary. WDC considers that eCoast's data can be used to indicate the likely extent, health, and diversity of benthic communities in the estuary. The outfall is likely to be relocated well within 100-200 m of its current location to match river channel migrations, and the types of benthic communities have consistently been similar within 100 m of the outfall over the years. Repositioning of the outfall 100-200 m into the main channel (i.e. eastward) will result in distribution of suspended materials further away from the outfall. However, the patterns of sedimentation will be modified by the river

			migration prior to relocation of the outfall, and this will be controlled and further modified by changes in the location of the entrance and sand bars in the lower estuary. Further, the impacts on benthic communities with respect to chronic exposure to contaminants will be related to the quality of treatment and the volumes of discharge – i.e. improving the level of treatment and reducing discharge volumes will have a positive impact. With respect to local shellfish beds and impacts of relocating the outfall within 100-200 m of the current outfall, based on the results of the 2018 investigations, there is no clear pattern with respect to the presence of shellfish and sediment grain size or current speeds/shear stress. It is likely that these juvenile pipi beds are partially ephemeral and move in response to the changes to the channel, sand bar and entrance location. As a result, it is expected that Impacts on these beds due to relocation of the outfall can be considered to be localised and temporary.
2e) Please provide additional comment on the potential effects of emerging contaminants of concern.	These are unlikely to be of any greater concern for Wairoa than for any other town's wastewater discharges. The discharge into a comparatively large river flow, rapid dilution, and proximity to the coast mean that there is minimal opportunity for EOC's to remain at potentially harmful concentrations and potentially affect fish.	**This answer satisfies HBRC's information requirement**	
3a) Please provide a copy of the procedure for the handling of unearthed human remains, taonga tuturu, and artefacts that WDC is going to adopt and provide an amended copy of the proposed consent conditions that includes this requirement.	WDC are developing these protocols based on standard heritage/archaeological and Maori protocols. We will provide them to HBRC prior to the Hearing. The protocols need to address the interests and expectations of all interested parties and authorities including iwi, hapu, HBRC, DOC, and Heritage NZ Pouhere Taonga.	Can you please confirm when this document is likely to available for Council staff to review? Our preference is prior to the drafting of the section 42A report.	A procedure for the handling of unearthed human remains, taonga tuturu, and artefacts will be made available to HBRC before 30 July 2019. WDC note that this is only relevant to disturbance of the riverbank and perhaps the riverbed for relocating and maintaining the outfall pipeline. Given the scale of coastline erosion and silt deposition since human occupation, it is unlikely that any artefacts will be discovered. In lieu of this procedure, WDC

			considers that standard accidental discovery protocols address this concern.
3b) Please confirm if during the relocation of any structure within the river bed is it envisaged approval will be obtained by tangata whenua or if the works will be overseen by a tangata whenua representative?	Tangata whenua will be represented on the reserve management board which will need to be providing approval for this too. Tangata whenua could be informed prior to works commencing each time and could be entitled to have an observer. Overall however, the activity itself will be reflective of the existing situation i.e. an outfall structure in the area will not be a foreign concept, while comprehensive conditions are proposed around certification and construction to ensure effects will be less than minor.	**This answer satisfies HBRC's information requirement**	
3c) Please confirm if there were discussions with tangata whenua around the proposed stages of the BPO being "aspirational" only and that there is a possibility that the discharge into the Wairoa River may continue similar to the current practice (with better treatment)? The Cultural Impact Assessment states that the discharge to the river is culturally offensive and discusses the need to move to a land application discharge method to reduce the effects on Maori cultural values.	Yes, tangata whenua were a key group involved in the Stakeholder Group. Iwi views were integral with and drivers of the BPO selection including the acknowledgement of the aspirational nature of the longer-term developments. They agreed that the improvements over time will be better than the existing situation. They agreed that time was required for implementing steps towards the ideal goal of 100% land treatment and acknowledged that this goal may not be achievable within the next 30 years. They also understood that this meant there was a delay in achieving that aim but it allowed costs to be spread more affordably (potentially with external funding), allowed for reticulation improvements to reduce flows, and provided certainty that steps would continue to be taken by WDC. Also refer to the answers below to question 10 regarding the CIA. Further, although acknowledged to be aspirational, this doesn't mean there isn't an intent to work towards these outcomes. Indeed, this is the very purposes of the proposed condition framework.	It is recognised from your response that the intension is there for WDC to work towards a reduction in the discharge into the Wairoa River, however the potential that this may not occur is not reflected in the Cultural Impact Assessment. There is no application document that we can refer to confirming tangata whenua have acknowledged that the proposal is "aspirational". Please provide written confirmation (meeting minutes or records or similar) when and what discussions have been had with tangata whenua regarding this matter.	WDC's records of consultation are attached, in response to question 9a below. There was no documentation provided by iwi; all feedback was verbal. Consultation included direct iwi engagement, the stakeholder group, public meetings, hui, LTP consultation (which highlighted this proposal as a key aspect of the LTP for feedback), WDC's Maori Standing Committee, and DOC. WDC also note that all MACA claimants were sent a summary of the proposed package of changes for future consenting and subsequently sent a copy of the AEE and there has been very limited feedback. All feedback from tangata whenua has been supportive and acknowledged the aspirational nature of the proposals as a necessary means of making the project affordable and practicable for implementation. Further specific feedback is included in the response to 9a below.
4a) Please provide evidence that the data set modifications prescribed in Report A2I1 do not	Some of the data modifications had large effects on the average (mean) and upper percentile values. Deleting the clearly	Modification of the data sets to remove erroneous data is acceptable, but by replacing erroneous data with values that lie within the	Only one pH reading for effluent quality was modified, and this had no effect on compliance with consent conditions because pH is not one

significantly modify the resultant summary data.	unrealistically high results would have had a similar effect to the adjustments we made to achieve more realistic results. It was very important to ensure that such high erroneous results did not skew the statistics relied upon for all future aspects of this project. The original means and maxima were unrealistically high, which is what triggered us looking for the individual results responsible for these unrealistic statistics.	existing consent parameters (rather than deleting the data point), this skews the data set. Please provide evidence that the data set modifications prescribed in Report A2I1 do not significantly modify the resultant summary data, preferably by comparing median and percentile values for original data.	of the parameters limited by the consent. If the erroneous reading of 464 had been deleted instead of replaced with its transposed reading of 7.7, none of the reported statistics changed. The original dataset including this 464 reading generated a mean of 12.1 instead of 7.7, and a 95th percentile of 8.8 instead of 8.6. Most of the data errors related to the influent quality. This is not a consent compliance issue, but changes in these statistics can influence the calculated treatment performance rates. If the erroneous influent pH reading of 18.2 had been deleted instead of replaced with its transposed reading of 7.7, none of the reported statistics changed. The original dataset including this 18.2 reading generated a mean of 7.6 instead of 7.5 but did not affect the 95th percentile or median pH. If the erroneous influent TKN and TN readings had been deleted instead of replaced with more realistic results, the average TKN would have been 23.8 g/m^3 instead of 23.7 g/m^3, the 95th percentile TKN would have been 40.5 g/m^3 instead of 40.3 g/m^3, the 5th percentile TN would have been 10.7 g/m^3 instead of 10.8 g/m^3 , and the 95th percentile TN would have been 40.4 g/m^3 instead of 40.2 g/m^3. If the erroneous TKN and TN readings had been included, the 5th percentile for TN would have been 10.8 g/m^3, both means would have been 28.5 g/m^3, the medians for TKN and TN would have been 23.0 g/m^3 and 22.5 g/m^3 respectively instead of 22.0 g/m^3, the 95th percentiles for TKN and TN would have been 43.2 g/m^3 and 43.1 g/m^3 respectively, and both of the maxima would have been 220 g/m^3 instead of 56 g/m^3. If the erroneous TP readings had been deleted instead of replaced with more realistic results,

			the mean would have been 3.4 g/m^3 instead of 3.5 g/m^3, the median would have been 3.2 g/m^3 instead of 3.3 g/m^3, the 95th percentile would have been 5.8 g/m^3 instead of 6.0 g/m^3, and the other statistics would have been identical. If the erroneous TP results had been included, the mean would have been 4.4 g/m^3, the median would have been 3.3 g/m^3 (the same as the modified dataset), the 95th percentile would have been 6.9 g/m^3, and the maximum would have been 60 g/m^3. The dataset for the primary treated effluent also has no consent compliance implications and the changes to the dataset did not skew the statistics that resulted from deleting the two erroneous results except for a very small reduction in the 95th percentile from 4.9 g/m^3 for the modified dataset to 4.8 g/m^3 for deleted results. If the two erroneous readings had been included, the mean would have been 3.2 g/m^3 instead of 3.0 g/m^3, the 95th percentile would have been 5.0 g/m^3, and the maximum would have been 14 g/m^3 instead of 6.1 g/m^3. In all cases, the comparisons above show that there were no significant effects on any of the statistics when the few erroneous results were deleted instead of being replaced with more realistic results. The median effluent quality was compared with the median influent quality to gauge the WWTP's treatment performance, and the assessment in LEI, 2017:A2I1 remains unchanged by deleting the erroneous results.
4b)Provide full data sets and summary calculations, including graphical and statistical representations of performance, that form the basis of AEE table 5.3:	We do not believe that this information is directly relevant to the discharge consents. While performance has a bearing on effluent quality and loads, the future I & I and treatment enhancements will ensure that the future treatment performance and discharge quality will be better than historic data.	The proposed solution relies on network improvements to maintain effluent quality. However there is no quantification of the expected flow improvements, or analysis of treatment plant performance based on the revised flows to the plant. Given that the plant is currently likely to be experiencing significant	Table 5.2 of the AEE provided estimates of the anticipated future daily flows, and this was a copy of Table 4.2 of the Conceptual Design report (LEI, 2018:C1.0). The rationale for these future flows is provided in Section 4.3.2 of LEI, 2018:C1.0. The overall aim is for 2050 flows to be similar to 1997 flows with some allowance

i. Historical performance flow and load/concentration data for the WWTP; ii. Historical influent parameter records (flows and loads). iii. Confirm whether there is any treatment plant influent and effluent performance data for 2017 and 2018.	i. We haven't calculated these apart from the overall means in Table 5.2 and section 5.4 of LEI, 2017:A2I1. ii. See Table 5.2 of LEI, 2017:A2I1. iii. Monthly influent quality sampling ceased in December 2017. Monthly effluent quality sampling continues to occur.	benefit from dilution within the network, evidence is required that the treatment plant performance expected after the proposed upgrades will maintain or improve the discharge loads into the environment. Please provide evidence that the pond treatment performance after the proposed network and other upgrades has been assessed to be the same or better than the current discharge load, and the basis influent flow and load data (existing and post upgrade) used to form this evaluation.	for population growth. Table 5.1 of the AEE shows the significant reductions in daily flows for winter months of 2018 (less apparent for summer) due to reticulation and rainfall. The treated wastewater quality in 1995-98 was similar to more recent years despite the recent considerable increase in I & I dilution and some sludge accumulation variations. This indicates that the dilution rate balances with the WWTP hydraulic residence times to maintain similar treatment performance and effluent quality. Based on this historic data, WDC expect that as flows revert towards 1990's levels, the WWTP's treatment performance will remain similar and will stabilise because of less peaky flow pulses through the WWTP. Note that discharge *concentrations* are more important in the river than *loads* of ammonia and pathogens. This is because there are lower risks of adverse effects when discharging lower concentrations that benthic communities can tolerate. WDC acknowledge that the loads of suspended solids and phosphorus may be more important than their concentrations because of their potential to deposit onto the riverbed, but the intention of locating the outfall on the edge of the main river channel is to ensure that river flow rates prevent any deposition of these contaminants before entering Hawke Bay. Once UV and filtration have been added to the outlet, the discharged concentrations and loads of suspended solids and pathogens are likely to reduce by about 90 %.
4c) Provide technical assessment of the pond treatment capacity against established pond design parameters. This should cover at least historical kgBOD/ha.day, and	The final paragraphs of section 5.4 of LEI, 2017:A2I1 provided this. It noted that BOD had never been monitored but, based on CBOD, the load on the surface area of the entire WWTP is 394 kg CBOD/ha/d which is 4.7 times the NZ	Section 5.4 of LEI 2017:A2I1 provides a brief explanation of the pond loadings currently experienced in the WWTP. However these reference a pond loading rate of 84 kgBOD/ha/d which is not relevant to the	As noted earlier, cBOD was used because BOD has not been monitored at the inlet or outlet of WWWTP. The difference between BOD and cBOD was not considered to be crucial for the assessment of its treatment performance or

assessment of changes to performance due to reduced I&I in the network, and changes to the treatment process.	recommended guideline value of 84 kg BOD/ha/d. However, it should be noted that the aerated lagoon reduces CBOD by about 75%, so the load on the main oxidation pond is only slightly above this guideline value. Reductions in I & I will reduce flow rates, reduce dilutions, and increase BOD concentrations, but the overall load will remain unchanged.	partially aerated pond. In addition, cBOD values are used, which are different to BOD loadings (BOD is typically 1.1 to 1.3 times higher). Taking into account estimates of BOD loadings, and aerated pond discharge values, the facultative pond is likely to be 1.5 to 1.8x overloaded when compared to the design loading rate provided. Given the current apparent overloading, and time since desludging the facultative pond, please provide evidence that the capacity of the aerated and facultative ponds are effectively analysed to confirm the effect of the proposed network and WWTP changes, demonstrate that effluent quality will be no worse on a load and concentration basis.	loading rate. The 84 kg BOD/ha/d guideline was developed in 1974 and is conservative to account for cold winters with little wind. Wairoa's climate is more conducive to good treatment performance. Regardless of whether the BOD entering the second pond is theoretically overloading it, the final treated wastewater quality has been indicating that the degree of treatment is similar to the expected performance of a typically loaded WWTP of this design. Desludging and reduced I & I fluctuations in flows will clearly assist with stabilising the WWTP's treatment performance and should reduce the 90-95th percentile discharge concentrations. WDC believe that the WWTP's treatment performance and resulting effluent quality in recent years probably represent "worst case" conditions. See also WDC's previous response to 4h) below which is relevant too.
4d) Confirm when the two ponds were last desludged, and what are the measured sludge levels at present.	The aerated lagoon was most recently de-sludged in April 2018, with about 517 m^3 (dry basis) removed. The maturation pond was most recently de-sludged in May to September 2010. We do not believe that this information is directly relevant to the discharge consents but is simply an operational matter that WDC need to keep on top of in order to maintain the WWTP's treatment performance and discharge quality.	**This answer satisfies HBRC's information requirement**	
4e) Only four compliance reports are included in the assessment in A2I1, up to the year 2014. Were additional compliance reports available for inclusion in the assessment and if so, what is their impact on A2I1 Table 7.1.	At the time of gathering information for this report, only those four compliance reports were available from HBRC and WDC staff. More recent reports have not been sought but instead WDC's monitoring data was relied on. WDC have acknowledged that rates of compliance with daily discharge volumes and	**This answer satisfies HBRC's information requirement – HBRC to provide copies of pervious compliance reports to Nick Dempsey for reference**	

Previous compliance reports for the compliance years 2008-2009, 2009-2010 and 2012-2013 are available from Council if needed.	timing have continued to be problematic during and immediately after storm events. It was not considered of any benefit to seek or review older reports, especially as flow characteristics are changing as a result of reticulation improvements.		
4f) Provide median and other percentile performance data for the existing pond such that ongoing median values can be considered for consent conditions.	Median values were presented in Table 5.2 of LEI, 2017:A2I1. 90th percentile values are pH = 8.3, DO = 14.7, COD = 260, NH_3-N = 28, TSS = 118, cBOD = 55, and *E. coli* = 135,000.	Please provide median and 10th and 90th percentile performance data for the existing pond to assist with developing consent conditions.	WDC is not sure why the 10th percentiles are relevant, nor how they would assist with the development of the consent conditions which the original question stated would be based on median values, but the 10th and 90th percentile performance (influent vs effluent quality) for 2008-16 are as follows: **Parameter** **10th** **Median** **90th** COD 59% 46% 30% $CBOD_5$ 71% 71% 71% NH_3-N 11% 4% 17% TN/NH_3-N 41% 29% 34%
4g) Confirm whether membrane filtration was considered in the BPO long list of options in lieu of filtration and UV.	Sand filtration was selected in consultation with iwi and the community partly because it involves contact with minerals and geological matter which reflect Maori tikanga that human wastes can only have their mauri restored through contact with Papatuanuku. Further, sand filtration would assist in algae removal to allow more effective UV treatment. Membrane filtration would have served no benefit over and above the proposed solution, and would not have had any positive cultural value.	**This answer satisfies HBRC's information requirement**	
4h) Does the proposed programme to improve network conditions quantify the expected improvements in influent wastewater?	No. Historic data when flows were lower and population was higher guides expectations for future flow reductions. Overall, not much changes in the treated wastewater quality because the load remains static or declines with declining population.	**This answer satisfies HBRC's information requirement**	
5a) Please confirm if the treated discharge pipeline overflow for the main discharge still discharges into an adjacent stormwater channel or	Details in the AEE for consent application DP180254L and WDC's infrastructure records indicate that the main outfall's emergency overflow currently uses a dedicated 375 mm	**This answer satisfies HBRC's information requirement**	

is now discharging into a separate overflow pipe. Please provide plans that show the pipeline configuration (for both sewer and stormwater for the Fitzroy pump station and WWTP going into the main outlet discharge and overflow).	pipe that is not connected to any stormwater drain near the coast, and it will continue to do so until the outfall pipeline can be moved and perhaps have its diameter enlarged. I & I reductions will also assist.		
5b) Please confirm if the Fitzroy Pump Station gets inundated during storm events similar to the other three pump stations and where does this overflow discharge to.	Yes it has in the past, but only during one very large storm since December 2017. These overflows will be mainly stormwater with a small wastewater component. The wet well's emergency overflow feeds into the main outfall pipeline and out to the river discharge structure. The treated wastewater from the WWTP will mix with the Fitzroy Street overflows within the pipe before discharging into the river.	**This answer satisfies HBRC's information requirement**	
5c) Please confirm if investigations into removing the emergency overflows has been done in conjunction with the proposed upgrades and network improvements, particularly as they will be discharging less diluted wastewater into the river. Please provide information regarding this work.	Yes, the reticulation proposals have been designed in an integrated manner. The emergency overflow pipes won't be removed at any stage, as they will always be needed for protecting the reticulation from excessive pressure. Overflows will still require the same flow rate and volume of stormwater to trigger such events, so the dilution will be very similar to historic dilutions. What will change is the intensity of storm (mm/h and its duration) and the frequency of events that will need to occur in order to trigger overflows – larger and longer storms that occur less frequently will be needed.	**This answer satisfies HBRC's information requirement**	
6a) Please provide details (including a map) identifying what and where edible species of kaimoana can be gathered around the river mouth.	As consistently shown by the benthic surveys, and eCoast's spatially broader study, the estuary is not conducive to shellfish thriving. Surveys and feedback from local residents indicated that there is no harvesting of shellfish here. Flounder are caught in the estuary, but otherwise all fishing activities occur in the marine area. Producing a map is a significant task, and we are unsure of its value and relevance for this consent application.	Information provided indicates that: the estuary is not conducive to shellfish thriving and no shellfish harvesting occurs, but flounder are caught. However, a map of where fishing occurs is not provided (because it is considered to be a significant task, and WDC are unsure of its value and relevance for this consent application). We consider knowing what and where kai moana are harvested to be a key consideration for a wastewater outfall in an	In terms of gathering kaimoana around the river mouth, such as shellfish in the sediment and/or on hard substrate, none are gathered due to river water quality being too poor (in terms of high levels of *E. coli* that would make them inedible). More importantly, it is because there are few there, and they don't grow to maturity.

		enclosed estuary such as this. It would also seem a relatively simple exercise for the Council to (at least) map its understanding of where harvesting occurs.	Local experienced fishers and the benthic surveys have indicated that the most common shellfish found in the Wairoa River estuary are pipi, but they are not gathered for human consumption. The areas close to the mouth of the Wairoa River are a known pipi nursery. However, pipis are known from the benthic surveys and local residents to not reach maturity in this area. This could be due to a couple of processes as recognised by local tangata whenua. These processes include the to and fro nature of the river mouth location (the taniwha brothers arguing) creating a change in river current and intertidal strength resulting in an unfavourable and unstable habitat, rather than the presence of the outfall. Pipi are tolerant of moderate wave action and commonly inhabit coarse shell sand substrata in bays and at the mouths of estuaries where silt has been removed by waves and currents (Morton & Miller, 1968). They have a broad tidal range tolerance, occurring inter tidally and sub tidally in high current harbour channels to water depths of at least 7 m (Dickie, 1986; Hooker, 1995). Because the Wairoa River current and silt loading is ever changing, this could inhibit a large portion of pipi reaching maturity. Because pipi do not reach maturity, they are not gathered within this area. It is noted in the eCoast report that “Previous monitoring reports (Smith 2007, 2011) have suggested that the presence of species like pipi (*Paphies australis*), at sites around the outfall were evidence that any potential effects emanating from the outfall were not large enough to constitute an undue adverse effect. While pipi were encountered at the majority of sites in 2018 (including A, B and C), when the potential impact sites are evaluated against the new sites it is apparent that pipi numbers are significant lower at sites A, B and C, at least

			relative to sites E, F, G and H. This trend appears unrelated to silt content, however it must be stressed that all pipi enumerated were <30 mm in size, therefore are likely to be stressed at all sites where they are encountered. Again, comparisons of trends detected here are consistent with those derived from SoE monitoring." Further inland, the Wairoa River is an important source of food, including inanga (whitebait), mohoao (flounder), kanae (mullet), tuna (eel), kākahi (fresh water mussels) and koura (fresh water crayfish) (HBRC, 2018). Local residents and their families who recreationally fish and represent several decades' experience have confirmed that shellfish are not collected anywhere in the estuary because of public health warnings, shellfish population declines, and the small sizes of pipi and mussel spat. They noted that a range of fish are caught in the estuary, such as mullet, inanga, whitebait, paraki (smelts), flounder, kahawai, and occasionally snapper. However, most fishing is in the ocean (popular around the Mahia Peninsula) or in the pristine upper Wairoa catchment (eels and trout). It should also be noted that all MACA claimants were sent a summary of the proposed package of changes for future consenting and were subsequently sent a copy of the AEE. Their complete absence of feedback suggests that kaimoana and mahinga kai are not valued and perhaps do not exist in the vicinity of the WWTP discharge pipeline or its plume.
6b) Please confirm what funding options WDC has investigated in assisting with the costs associated with the BPO and if purchasing of	Yes purchasing land was considered but that's not preferred, as leasing is cheaper while retaining a farm manager who has a vested interest in the land and animal health. Other central government funding options have been	Evidence of other funding options has not been provided, please provide or is WDC solely waiting on the three waters review? Please confirm.	It is anticipated that funding and resource support will be sought from sources outside Council, including HBRC, central government, and community grants. Other sources that were suggested during consultation included

land was included in this investigation.	explored, and there is hope that funding may ultimately become available as a result of the three waters review.		local philanthropists and Trusts, industries, businesses, Eastland/Genesis Energy, Lotteries, farmers, Marae – PSGE (post settlement governance entities), tourists, Rocket Lab, and NASA. Successful funding may bring forward the implementation of some actions. In addition, community, tangata whenua, and environmental groups are expected to assist with seeking funding and providing manpower to help to expedite the delivery of some tasks. There is a limitation on rates funding. Loans also need community servicing through rates. Currently there is no government funding available, but some government funding could occur in future. Mahia Beach received Ministry of Health sanitary scheme funding, but this scheme no longer exists. Current government funding sources include the Provincial Growth Fund (PGF), Freshwater Improvement Fund (FIF), and the Tourism Infrastructure Investment Fund (TIIF). The FIF requires projects to achieve "significant water quality improvement" which Wairoa won't achieve due to the WWTP discharge's less than minor contribution. The PGF doesn't fund this type of infrastructure project. The TIIF could be used but it is only used in high tourism pressure areas and requires 10's-100's of millions of dollar projects. Wairoa fails to meet these criteria. Government funding needs to help Wairoa. WDC's programme allows for and encourages seeking outside funding. It should also be noted that future governments will change policies and so there may become new avenues of obtaining government funding over the next 20-30 years.

			WDC is committed to continually reviewing funding options and seeking funding throughout the project.
7a) Please provide a monitoring plan which is to include the following; i. The objectives of monitoring, ii. The actual issues of concern, the monitoring required to detect trends and ensure adverse effects remain within acceptable ranges (parameters, sites, times and sampling methods), iii. Confirm how in-river monitoring will be integrated with discharge monitoring, include how discharge volumes and loads will be determined, iv. Confirm how the results will be used to inform and adapt the management of the wastewater network and treatment plant over the duration of the consent. 7b) Alternatively provide a consent condition to give certainty that this monitoring plan will be provided in a timely manner.	Proposed condition 34 already proposed this to be developed within 3 months of granting consents and implemented within 12 months of granting. We can instead aim to develop this plan soon and re-draft monitoring conditions to reflect these details before the Hearing. We intend collaborating with Shaw and Shane to develop this plan.	Can you please confirm when this document is likely to available for Council staff to review? Our preference is prior to the drafting of the section 42A report.	WDC and HBRC experts will collaborate to develop a draft benthic monitoring plan during the public notification period. If they are unsuccessful in this endeavour prior to HBRC drafting their s42A reports, WDC will modify the draft consent conditions to specify the relevant monitoring plan requirements and timeframe for its preparation following granting of the consents. The conditions will also reflect adaptive monitoring plan changes that can occur during the consent term.
8) Please provide confirmation as to the rationale for the proposed changes and selection of discharge criteria, including an assessment of environmental implications (particularly for human health), this is in relation to the relaxation of the discharging at night requirement.	The BPO and Conceptual Design reports provided the rationale for these changes. Human health effects are driven by pathogens. Once filtration and UV have been installed the treated wastewater discharge will be cleaner than the river for a large number of parameters. It can therefore be discharged at any time without causing human health concerns. Despite this, under lower flows we have chosen to maintain discharges only during	**This answer satisfies HBRC's information requirement**	

	out-going river flows (which require out-going tides when river flows are below 3 x median). Discharging during daytime as well as night allows slower discharge speeds which will more readily remain within the outfall pipe's capacity and will be a smaller proportion of the river flow, thus having potential for greater dilution upon full mixing with the river. The adopted discharge regime also avoids the need to upgrade discharge pipe capacity and reduces surcharging of the treatment ponds.		
9a) Given the Wairoa Wastewater Stakeholder Group (WWSG) was formed in late 2016 with terms of reference established in early 2017, consent conditions 19 and 20 do not seem necessary or is WDC proposing another stakeholder group be created? Can you please confirm the status of the WWSG plus submit a copy of all meeting minutes held for the WWSG and terms of reference.	The intention is the formation of a new stakeholder group with a focus on reviewing Council's progress with implementing the proposed changes and to assist Council to understand the community's preferences for direction and next steps over rolling 5-year periods. The WWSG has been discontinued because it has fulfilled its roles of providing the community's values and aspirations and guiding WDC's selection of the BPO for consenting. Why do you need all WWSG meeting minutes and terms of reference? The consultation summary and Way Forward report provide these.	A copy of all of the meeting minutes is considered in important in confirming what discussions were had during these meetings and with whom. Please provide a copy of all meeting minutes held for the WWSG.	Copies of the WWSG terms of reference and all available minutes from the WWSG and hui-a-iwi are attached. Unfortunately, some of these meetings were not captured in notes or formal minutes. The verbal feedback was generally as follows: • The focus for the wastewater system was on eliminating wastewater overflows due to I&I entering reticulation. • The key values used for determining the preferred discharge option were overall affordability and cultural values. • The overriding objective is to improve the health of the Wairoa River • There was a strong desire for removing the wastewater from the river and for some form of land treatment. • "…We want to see the wastewater out of the river and we should start that process so future generations don't have a bigger problem to deal with…" • "…We are a community of limited financial means and our solutions – and the timing of implementing those solutions – needs to be affordable…" • "…It is not just the wastewater discharge – we want to see progress on the overall health of the river from the mountains to the sea…"

			• "…Other stakeholders should contribute including Regional Council, DoC, Central Government…" • Contributors that affect river quality such as point source discharges (eg stormwater, AFFCO) and diffuse discharges such as runoff from farmland need to improve too.
9b) Please amend the proposed consent conditions to include conditions that clearly state the role the WWSG will hold during the term of this consent.	Its role is described above and provided for in conditions. We feel these clearly set out the role of the group over the term of consent.	**This answer satisfies HBRC's information requirement**	
9c) Council has concerns regarding the 35 year duration sought for this application, particularly as after the 10th year stages 3 and 4 of the BPO are considered to be aspirational only with no certainty given that additional storage and irrigation will actually occur. Can you please advise what certainties WDC can give in regards to additional storage, irrigation areas, reduced incidences of emergency overflows and river discharge volumes, as it is not clear in the application or consent conditions that a 35 year duration can be justified.	Firstly, WDC are confident that the reticulation programme will significantly reduce the frequencies and volumes of pump station overflows and assist with reducing storage requirements and avoiding/minimising river discharges. The daily flows are about twice the flows recorded in the 1990's and early 2000's, so reticulation improvements should eventually be able to revert flows to those historic levels. In terms of irrigation, WDC can't be certain of the extent of irrigation at this early stage. The implementation relies on farmers agreeing to irrigate wastewater and being within an economically affordable distance for reticulation from the WWWTP to their farm, and their farm soils and topography being suitable. This uncertainty should not detract from the willingness or intent to work towards it over time, however, and the condition framework clearly provides for this direction of travel. Regardless of the extent and rate of adoption of both irrigation and storage, the effects associated with the river discharge regime, including river flow discharge rate and filtration and UV disinfection, are considered to be less than minor. Any adoption of land application	The response provided does not provide any certainty therefore does not reflect the 35 year duration that WDC is seeking. Unless further justification can be provided (i.e. proposed consent conditions) then it is recommended that the applicant reviews/amends their proposed consent duration to ensure it reflects the treatment and mitigation measures they are proposing (excluding the aspirational land discharge and associated storage component).	WDC understand that cultural and community values are the key driver for the development of irrigation. WDC prefers for public and iwi submissions and future stakeholder group oversight to direct the acceptance of the project and its consent duration. It is not possible to provide certainty of irrigation development when the land areas have not been formally identified and landowners directly involved. WDC will continue to seek a 35-year term with a robust review process which will avoid stop-start for implementation that would result from having to seek renewed or amended short-term resource consents. WDC see no justification for being forced to invest into very expensive further treatment for no detectable environmental improvement in the river as well as investing into land treatment which will ultimately make the additional treatment obsolete. WDC also believe that a series of short-term consents would be inefficient and work against directing future stages, speed of implementation, and momentum for WDC's programme of ceasing discharges to the river.

	would only serve to enhance and delivery on the community aspiration to avoid river discharges.		The conditions have been crafted to establish a regulatory framework to require the work associated with the BPO to be undertaken in a sound and logical sequence with key milestones set down in an enforceable manner, and for certification processes to also occur. Overall, the solution aspired to by the community will take time and will involve a number of work streams. If this consent application failed to provide any milestones then perhaps a 35-year consent duration would not be justified. This consent application does in fact set down a clear and enforceable path to realising reduced and ultimately ceased discharge to the river. The regular progress reviews and oversight by a Stakeholder Group will maintain pressure on WDC to continually implement the proposed actions.
9d) - Please provide further treatment options/mitigation measures if the discharge into the Wairoa River is to continue at the stage 1 level proposed of the BPO.	Putting cultural values aside, no further treatment or mitigation options in our view would be necessary, as the discharge will have negligible effects (as is currently the case) on the environment upon achievement of Stage 1. The condition framework would however provide for further consideration of options with the WWSG under Conditions 21 and 22, with the System Improvement Plan framework occurring thereafter.	Council disagrees with the response provided and suggest that WDC reassess this question. The further treatment options requested could be/should be appropriate to reduce adverse effects on Maori cultural values and mitigate other effects/concerns regarding the continued discharge to the river.	In addition to the response to 9c) the primary mechanism for addressing cultural values is the transition to land treatment (irrigation) if and when possible. However, the proposed disinfection treatment is a significant step to addressing cultural values for continued discharges to the river, and as such is identified as mitigation in the CIA. Stakeholder Group, iwi, and public meeting feedback all confirmed that the proposed filtration and UV treatment were acceptable for continuing to discharge to the river. The feedback generally did not support any additional or alternative treatment, especially if it was not going to produce environmental or public health benefit. WDC and their community believe it is unrealistic and unaffordable to treat Wairoa's wastewater to a potable standard. This level of treatment would ultimately become redundant

			when river discharges occur less frequently and when river discharges ultimately cease. The investment would then be a completely wasteful and inefficient use of public funds. Stakeholder Group, iwi, and public meeting feedback consistently indicated that the community preferred investment into other urban and rural projects that would gain greater and more widespread water quality improvements for a longer length of the river. One of the roles of the WWSG could be to review potential treatment options, including new or more affordable treatment options that may have become available in the meantime, and to guide WDC with deciding whether to consider implementing any further treatment.
9e) Please confirm whether there has been any sensitivity testing of the proposed 60m³/s median flow in the Wairoa River. If the actual median flows of the river change over time, what will impact will this have on either effects, or ability to achieve conditions.	No, but it is clear that the river flows are far in excess of the discharge flows. We do not expect changes in river median flows to have any significant impacts on scale of effects or ability to achieve conditions.	The discharge triggers have been linked arbitrarily to a median river flow of 60m3/s. Given the consent term being sought, and potential population and climate change over that time, could a link be provided in the consent conditions such that the flows at the trigger values are updated with changing median river flows and discharge flows?	The selection of median (and half median and 3 x median) flow was not arbitrary. Median flows are the trigger used by Policy 72 of the RRMP for the application of Policy 71's river water quality limits for all of the specified environmental guidelines except suspended solids. Half median flow is commonly used as a cut-off for State of the Environment reporting of water quality and for setting rules limiting river abstractions and discharges. 3 x median is shown on HBRC's river flow monitoring graphs as indicative of flood conditions which reflects its common use for this definition. The river flows above about 3 x median have also been shown to be roughly the flow rate that prevents seawater intrusion into the estuary via the river mouth during in-coming tides and is therefore useful as a trigger for discharges to switch between continuous and only during out-going tides. The hydrodynamic modelling of discharge scenarios also showed how the discharges

			would disperse differently at each of these river flow rates. The Wairoa River's median and low flows are influenced by the wet weather retention and dry weather supplementation provided by the hydroelectric dams upstream (Waikaretaheke and Waiau Rivers). Any changes in long-term median flow will be of little consequence for discharge dilutions, particularly as discharges will generally avoid summer flows once irrigation is implemented. The definitions on the cover page of the conditions included the methodology to calculate the river flow for the lower Wairoa River. The median flow of 60 m^3/s will be amended to add "or as may be determined from time to time by HBRC." The conditions could also incorporate reviews of river flow rates and the associated regime of treated wastewater discharge rates as an integral part of the WWSG review processes. This ensures that this is clear, and also that it can be updated/reviewed should changes in actual river flows, climate patterns, data collection, HBRC calculation methodology etc occur. If median river flows increase, the dispersion and dilution of the discharged wastewater will only improve, assuming that the limits on discharge volumes remain unchanged. If median river flows decrease (which would seem more likely than decreases based on NIWA's long term climate change projections for precipitation and dry days), then this merely reinforces WDC's plans for irrigation development and restrictions on low river flow discharges. However, flows would have to reduce significantly (median 50 m^3/s or less) for dispersion to change much, as can be seen

			through comparisons of modelled scenario 2 against 3 and scenario 4 against 5. WDC do not believe the consent conditions need to be modified in response to population changes because the reduction in I & I will far outweigh any population growth and, in any case, should population expand during years 20-35, the storage and irrigation available by that time as the potential to accommodate most of those flows instead of discharging to the river. In any case, wastewater flows will be one of the factors that the WWSG and WDC will review during the term of the consents.
9f) Please consider rewording of Condition 8 to reflect a median (i.e. 6 of 12 samples) and higher percentile parameter that are aligned with the current treatment plant performance data and realistic performance of the upgraded plant (and network).	We need some time to work these out, perhaps in collaboration with Nick. We suggest these can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**	
9g) Please confirm why soluble carbonaceous five-day Biochemical Oxygen Demand (ScBOD5) is proposed for the consent measurement? Has there been any performance data for the existing plant been collected to date for this parameter?	CBOD5 has been monitored, and we need to check if it's only the soluble portion. It has shown a range of 5.9-190 g/m^3 with a median of 23 g/m^3.	Please confirm why soluble carbonaceous five-day Biochemical Oxygen Demand (scBOD5) is proposed for the consent measurement? Has there been any performance data for the existing plant been collected to date for this parameter?	*Soluble* $CBOD_5$ hasn't been measured for WWWTP so WDC is happy to adopt $CBOD_5$ which *has* been routinely monitored. Tables 5.2 and 5.3 of LEI, 2017:A2I1 presented the influent and effluent $CBOD_5$ concentrations which indicate its performance has been 84 % reduction based on mean $CBOD_5$.
9h) Please confirm why BOD is being proposed as the oxygen demand parameter, as opposed to COD in the previous consent?	COD seems unusual for municipal wastewater that has no industrial inputs, so we changed it to cBOD to be similar to/consistent with other consents for similar discharges.	**This answer satisfies HBRC's information requirement**	
9i) Please confirm why such lenient percentiles (e.g. for scBOD5, 4/12 = 220mg/L 33% of the time, and 10/12 = 224mg/L 83% of the time) are being proposed. However, "current" treated wastewater median is ~23mg/L for cBOD. Current	At the last minute $scBOD_5$ was stated instead of the current COD but the values were unchanged from the existing COD limits, partly because we expected these to be negotiated during consent processing anyway. We are happy to adjust the proposed limits to reflect the actual historic $cBOD_5$ concentrations, which are about 1/10^{th} of the COD concentrations. A	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**	

consent is for COD <220mg/L. Note COD will always be significantly higher than ScBOD5.	greater difference will also be introduced for the two limits. We suggest that tweaking of these limits can be done as we progress with the application and do not need to be sorted/agreed at this time.		
9j) Please explain why such narrow bands are to be met between the 33% and 83% trigger values.	All values were simply rolled over from the existing consent limits and changed the criteria to reflect the 8/12 and 10/12 limits which have been applied to more recent consent conditions elsewhere. We suggest that tweaking of these limits can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**	
9k) Please provide treated wastewater consent parameters for pre and post upgrade to the network and treatment plant.	We would also like to understand why such parameters would be needed, as we see no environmental effects rationale for imposing future more stringent limits when the current effects are no more than minor. Again, we suggest that working through this issue can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – covered in question 4c)**	
9l) Provide proposed consent conditions for E Coli.	We need some time to work out appropriate limits pre and post UV.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**	
9m) Conditions 21 and 22. Confirm who the System Review Data Reports are intended to be issued to at 5, 10, 20, and 30 years.	The work and processes involved are intended to assist the WWSG and ultimately WDC to make decisions around the options to achieve the outcomes stated in the conditions. Once the option or approach has been determined, this will be presented to HBRC under the System Improvement Plan framework.	**This answer satisfies HBRC's information requirement**	
9n) Conditions 25 & 26. Confirm whether measurement of influent wastewater to the treatment plant is possible, as this will be the key gauge of success of the I&I	Yes, this is routinely measured already (flow at Fitzroy St pump station and quality at WWTP inlet). Each pump station's flows are continuously monitored and can readily be used to gauge the success of the I & I programmes. Some reductions have already	**This answer satisfies HBRC's information requirement**	

programmes (Condition 15, Network Management Plan).	been observed in terms of daily total flows and frequency of pump station overflows.		
9o) Condition 42. Is the intention that these reports be issued annually or biennially	Every 2 years.	**This answer satisfies HBRC's information requirement**	
10) The cultural values outlined in the CIA should underpin the proposed consent conditions of this proposal. Removing the discharge from the Wairoa River is paramount (to provide for the cultural values set out in the CIA) and the BPO sets out stages where this can be gradually improved overtime. Stages 3 and 4 of the BPO have been described as aspirational, which is of concern to Council. This however is not mirrored in the CIA which states *"…by year 30 The Package will have delivered an achievable, positive result for the river's cultural values and health in a manner which has been well consulted upon and which is realistically achievable, acceptable and, with good planning, affordable for the Wairoa Community".* Council also have concerns regarding the difficulty in finding and securing appropriate land to irrigate on, particularly as this is wholly reliant on a 3rd party (long term) participation. Therefore, to reflect the cultural values identified in the CIA, the existing resource consent (previously known as WP180173 – applicant P I and J R Mucalo) could be amended to reflect the proposed BPO (which is likely to be publically notified) or alternatively could be included in this	When drafting the CIA Nigel acknowledged and understood the need for time to implement the stages proposed. The installation of filtration and UV is a significant step towards drinking water quality for the discharge while avoiding a very expensive process that will eventually become redundant. The CIA provides a cultural assessment of the discharge when each stage is achieved, regardless of whether it is achieved within the aspirational timeframe or at a later stage. The conclusion that there are cultural concerns until full implementation has occurred will provide WDC with a strong driver to continue implementing irrigation over larger land areas, and this will be no doubt reiterated by the WWSG. With strong community support and successful demonstration schemes such as the Mucalo farm, WDC hope to gain much wider buy-in from the rural community for expanding the irrigation, and perhaps this will occur faster than anticipated if all goes well. Requesting notification will provide an opportunity for greater understanding around how the proposal provides for cultural values, and we would look to digest and consider any matters raised in submissions, which may result in changes or specific actions.	Council does not consider this question appropriately addressed and would have thought that the CIA would have been amended prior to this application being made to include any discussions that have been made with tangata whenua confirming that land discharge and associated storage are aspirational and may not occur (question 3). Therefore Council are seeking the section 92 issues identified in the letter dated 7 May 2018 for application DP180173L - P I and J R Mucalo be provided as soon as possible, this information was due on 30 May 2018 (see attached copy for your reference). This information is required so Council can assess both applications simultaneously/bundle the applications for processing if it is considered the best option. A copy of this letter and previous correspondence will also be sent to Paul Mucalo.	The CIA **does** reflect the aspirational nature of irrigation and storage expansion in Stage 4, and the assessment conclusion for Stage 4 includes "*very significant increases in storage capacity and irrigation are projected which will have a corresponding positive effect on the river's cultural values*" and ***"The 21-30 year stage continues to greatly improve the operations of the WWWTP in a manner which incorporates tangata whenua worldviews, but does not fulfil them completely by removing wastewater discharge to waterways completely nor delivering 100% drinkable quality water to the river."*** In section 7.3 of the CIA Nigel observes: "*During the 30-year implementation of The Package a significant amount of wastewater will be discharged to land, but waterways discharge will not be completely discontinued. The impact of the discharges will be less and thus more acceptable than the current situation, but remains culturally inappropriate to a lesser extent than the current situation."* The CIA's conclusions repeat these views for Stage 4. Nigel How has also provided the following response: The Oxford definition of the word 'plan' includes: • A detailed proposal for doing or achieving something. • An intention or decision about what one is going to do. By the above definition it is the proposed intention of WDC to implement the 30 year plan, which was my understanding when I wrote both reports. Whether or not the 30

application with proposed consent conditions amended to suit. Alternatively, please provide a pathway/amended consent conditions so give Council certainty that land application options will be explored and implemented. **We note the effects on cultural values, particularly tangata whenua, are effects that we need to consider as the discharge of treated wastewater into the Wairoa are likely to remain. Nigel How confirmed in the CIA "The effects of the current discharge regime on the river's cultural values are at odds with tangata whenua worldviews and is culturally offensive", unless the wastewater is treated to a 100% drinkable quality then this view would apply even with the proposed filtration and UV treatment proposed in stage 1.**			year plan can be achieved with any percentage of certainty is an impossible question to answer. However, recent community activism requires delivery of the plan. The willingness of WDC to positively respond is a strong indicator that the 30 Year Plan will be implemented. WDC also note that all MACA claimants were sent a summary of the proposed package of changes for future consenting and they were subsequently sent a copy of the AEE and there has been very limited feedback. WDC do not consider consent bundling to be appropriate as neither discharge consent actually relies on the other to be implemented. Each discharge can be managed independently in accordance with operating parameters and in compliance with separate consent conditions without triggering compliance or operational issues for the other. The Mucalo consent is an example of the process that would be required to enable land irrigation. Future irrigation consents need to be able to be processed independently of the Mucalo and river discharge consents without triggering s128 reviews of those prior consents' conditions. In WDC's view bundling is not appropriate because the Mucalo consent does not require the river discharge consent to be assessed or exercised in order for the Mucalo irrigation to be assessed and exercised in compliance with its separate discharge consent conditions i.e. it is a land discharge that does not rely on a river discharge to be able to operate. Likewise, the proposed river discharge consent does not require the Mucalo consent or any other irrigation consent to be assessed or

			exercised in order for the river consent to be assessed and exercised in compliance with its discharge consent conditions. WDC can appreciate HBRC's desire to assess them together because of their related reliance on the Wairoa WWTP as their shared treated wastewater source, however WDC believe that the separate or co-ordinated implementation of each consent is simply not inextricably linked, and therefore bundling of their consent processing is not necessary. The Mucalo s92 response will also be progressed separately from the WWTP consents.
11) A search of our records indicates that there is no resource consent to discharge stormwater from the municipal system in to the Wairoa River. There is confirmation in the application that very little is known about the status of the current stormwater system (LEI2015A1I1 – section 7 Stormwater Management Issues), however it is clear that wastewater is getting into the stormwater system and possibly contaminants from other land uses within the catchments. Therefore, resource consent would be required for those stormwater discharges that do not meet Rule 163 as per the Regional Coastal Environmental Plan (RCEP) and Rule 42 of the Regional Resource Management Plan (RRMP), the relevant rule is dependent on the location of the discharge pipe into the Wairoa River. If resource consent approval is needed then the current	Wastewater is not entering stormwater; stormwater is entering the wastewater system. The only known exception is where the treated wastewater outfall pipe is surcharging and then overflowing via the emergency pressure relief weir into the last few metres of stormwater drain between Kopu Road and the coastline. Once the main discharge structure is modified and I & I issues are reduced this will become a much less common event. WDC and HBRC's consent compliance staff have discussed consenting needs for Wairoa's stormwater for several years now and WDC have been gathering information to support a future consent application. Grey Wilson of Good Earth Matters has had preliminary discussions with HBRC regarding preparation of a WDC global stormwater consent application. In any case, we do not believe that the treated wastewater consent application should be delayed or related to the stormwater consents because the reticulation and discharges are not directly linked.	**This answer satisfies HBRC's information requirement – HBRC staff have been advised of the application that is in the process of being prepared, in conjunction with the investigation work being undertaken by WDC which is identifying and remediating illegal stormwater connections into the sewer network**	

investigations that WDC are currently undertaken will be integral to that application. The HBRC Consents section suggests that WDC meets with HBRC staff for a pre-application meeting to discuss the appropriate steps in ensuring that, if an application is needed that it is applied for in due course. This matter will be passed onto the Incidents and Enforcement section if necessary.			
12) Please confirm the likelihood Rule 26.5.6 for the Operative Wairoa District Plan would trigger the need for public notification given it is a Discretionary Activity? Can you please provide clarification regarding this matter from WDC Planning staff? It may be in the best interests for WDC to have a joint hearing (if needed) to avoid incurring additional costs associated with having two separate hearings.	We would not expect public notification from a land use perspective, particularly given effects on the receiving water body would have been addressed under this process. We are in the process of discussing this with WDC planning staff.	**This answer satisfies HBRC's information requirement – this question was more of a "heads up" to WDC to make provision for perhaps a joint hearing if needed.**	

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25 June 2019

Hawke's Bay Regional Council
Private Bag 6006
NAPIER 4142

Attention: Tania Diack

Dear Tania

FURTHER INFORMATION REQUEST RESPONSE AND INTENT OF CONSENT APPLICATION APP-123774

Subsequent to Wairoa District Council (WDC) lodging resource consents for wastewater discharges in November 2018, Hawke's Bay Regional Council (HBRC) have requested clarification on a number of issues and also sought clarification on the scope and intent of the consent applications lodged.

This letter provides a response to the further information sought and also provides clarification of the intent of the consent applications.

Also provided is additional wording relating to a further suggested condition regarding the outfall structure in response to current consent non-compliance.

FURTHER INFORMATION

Attached to this letter is a response to specific information sought by HBRC. With questions and responses there have been iterations that have enabled both WDC and HBRC to have a common understanding of the purpose of the question and clarification needed as it relates to the information available and how it relates to the wider wastewater programme WDC are working on. Please see the attached Response Table.

INTENT OF CONSENT APPLICATIONS

The applications for resource consent are limited in scope as defined and set out in the Form 9 applications that accompanied the bundle of consent documents. Further, the main consent application document, in the Executive Summary and at other places, clearly sets out that the applications were specifically for discharges of wastewater to surface water, and directly associated activities. They do not include applications for land application or commit to having land application achieved by a particular date, nor could they as further consents would be required.

The surface water discharge consents sought are part of a wider wastewater programme (Package), that has been informed and guided by community input. The ability of the wider programme to be implemented to the degree intended will be a function of a number of programmed design,

investigation and financing outcomes. Success of the wider programme will ultimately see less wastewater discharged to the Wairoa River over time.

Key Intentions of Consent Applications

The intentions of the resource consent application APP-123774 are to:

1. Replace resource consent CD940404W that currently authorises the WWTP discharges of treated wastewater to the Wairoa River,
2. Authorise pump station overflow structures and discharge events, that may remain to occur, which appear to have never been authorised under the RMA despite their existence and operation since the 1940's,
3. Authorise the modifications and operation of the riverbank overflow structure for the main outfall pipeline,
4. Respond to the existing overflow issue at the main outlet by allowing for rapid construction and operation of the specific main outfall design provided to HBRC on 14 June 2019 and reduce overflow discharges at this point,
5. Enable greater flexibility to manage the effectiveness of the outlet by allowing for future relocations and design modifications to be readily made to the main outfall pipeline and its overflow structure and main outlet as necessary to respond to riverbed migration or effects of siltation on its discharge capacity (without further consent applications but instead with HBRC certification of designs),
6. Modify the river discharge regime to better ensure system performance and reduce adverse effects on the river environment by restricting discharges during low river flows and enabling increased discharge volumes over longer daily durations as river flows increase, and
7. Improve the quality and reduce the volume and frequency of wastewater discharge during low river flows.

The primary goals of these resource consents are to:

1. Obtain a long-term discharge consent for certainty of Wairoa's WWTP discharges to the river while enforcing a programme to investigate and, where possible, implement a transition to land discharges, reducing river discharges, and regular reviews of progress towards ceasing river discharges,
2. Resolve RMA compliance concerns regarding unauthorised pump station overflow discharge structures,
3. Resolve RMA compliance concerns regarding unauthorised modifications and discharges from the main outfall pipeline's overflow structure and outlet,
4. Provide a framework to reduce the volume of wastewater discharged to the river over time as opportunities are developed, and
5. Resource and work towards recognising and providing for social and cultural values.

Wider Context

The wider context of these consent applications is that WDC and their community seek to improve the health of the Wairoa River. Proposed consent conditions have therefore been developed around a programme of action to transition over time if and where possible from a river based wastewater discharge system to a land discharge system. The ultimate aspirational goal is to cease wastewater discharges to the river and instead rely entirely on storage and land discharges (such as irrigation). However, implementation of a land discharge system may need to occur over several decades due to cost, land availability, land suitability, storage capacity, design, consenting, and procurement constraints. As progress is made towards ceasing the river discharges, the discharge regime will be progressively restricted to only allow river discharges when storage capacity is nearly full and river flows are above thresholds that, over time, are progressively increased.

WDC and the community (as assessed through community participation) recognise, from a cultural, environmental, and social perspective, that wastewater discharges to the Wairoa River must be reduced and if possible avoided. They also recognise that the river's health and water quality are degraded by rural hill country inputs to a much greater extent than the discharge of Wairoa's treated

wastewater near the river mouth to Hawke's Bay. As a result, WDC and the community are determined to work together, with support from a wide range of local through to national organisations, to improve the health and water quality of the entire Wairoa River catchment. This process has started with funding already being committed through WDC's Long Term Planning Process and collaboration with HBRC's catchment management planning team based in Wairoa.

WDC and the community also recognise that old, leaky reticulation is a common underlying cause of pump station overflows, treatment performance variability, storage capacity challenges, discharge volumes, and potential adverse effects on the receiving environment. Improvements in the reticulation are therefore crucial and fundamental to achieving desired environmental outcomes. The physical and financial constraints on the practicable rate of reticulation upgrades require WDC and the community to expect that significant changes will require some years to achieve. In the meantime, WDC wish to avoid investment into expanding the capacity of downstream wastewater system components where they would become redundant as wastewater flows reduce in future as a result of undertaking networks upgrades.

Consent Condition Framework

To achieve these contributions towards an overall enhancement in Wairoa River's water quality, while keeping in mind the social, economic, and cultural wellbeing of the community, a condition framework setting parameters for the discharge, specifying specific upgrades over the short term and committing WDC to a programme of action to work towards a reduction in river discharge is proposed. This will keep the momentum towards achieving the ultimate goal of no wastewater discharge to the river. In summary, the framework:

1. Prescribes upgrades and work to be undertaken within the first 6 years of granting consent, including:
    a. Installation of sand filtration and UV disinfection to improve effluent quality – primarily intended to at least partly address public health, river health, social, and cultural values,
    b. Preparation of a Network Management Plan including specific upgrades to specific pump stations to avoid overflow discharges,
    c. A specific project to establish a 50 ha land application area to assist in reducing discharge volumes to the river, particularly during summer/low flows,
    d. Preparation of a Wastewater Education Plan designed to increase the public's understanding and awareness of how their [the public's] actions/activities can influence wastewater volumes and reticulation reliability, and the ways in which the public can reduce water use and unnecessary burdens on the sewer reticulation and treatment plant,
    e. Preparation of a Catchment Enhancement Plan to facilitate the involvement of WDC and their community in activities that improve the quality of freshwater within the wider Wairoa River Catchment,
2. Establishes a discharge regime, that once UV treatment has been installed, allows greater flexibility to discharge during greater portions of the day when river flows are elevated so as to avoid pressure and storage capacity issues in the system that could lead to overflow discharges elsewhere, or force larger discharges during subsequent periods of lower river flows,
3. Sets out a clear framework to be followed in the event that the outlet structure requires upgrading or relocating, with a certification process embodied within it. Initially, and to respond to the immediate overflow issue, a replacement outfall with a specific design and location is proposed for construction as soon as is reasonably practicable after consents are granted,
4. Upon undertaking the above upgrades/work (to improve system performance, reduce overflow discharges and improve effluent quality), and primarily in response to social and cultural values, sets out a framework for WDC and the community to do ongoing work and refinement to investigate further ways of reducing discharges to the river during low flows. This includes investigating, and where possible, developing land application and increasing storage via a System Review exercise at years 5, 10 and 20, followed by the preparation of

System Improvements Plans to give effect to further actions agreed between WDC and the community. Specific review topics and outcomes will include ongoing network management works, treatment technologies, expanded storage capacity, expanded land discharge areas, modified river discharge regimes, and catchment enhancement initiatives,

5. Establishes a programme to enable ongoing community collaboration with WDC in decision making and implementation through the System Review and System Improvement exercises,
6. Enables adaptive monitoring of the river environment to reflect changes to the river discharge system and/or observations of effects. The Monitoring Plan will be certified by the Regional Council prior to implementing any changes to monitoring programmes,
7. Provides opportunity for cultural monitoring and advice, and
8. Provides for improved record keeping and notification around overflow events with this information being considered through the successive System Review exercises so as to maintain the focus of reducing overflow discharges.

Initial Actions

The first 6 years of the consent term focus on resolving matters that are currently before the WDC i.e. high inflow and infiltration, overflow discharges and poor background river water quality. It does this via a multifaceted approach involving physical works to the reticulation system, improving effluent quality to enable flexibility around discharge times so as to reduce constraints on the system, and attempting to develop small to modest storage and irrigation operations. WDC will also continue working with the community to ensure that their views are reflected in decisions for future expansion of irrigation and taking a wider catchment view with associated actions around improving the whole river's health and water quality.

Key points to note are:

- UV treatment is expected to enable discharge on outgoing tides regardless of the time of day during flows greater than ½ median (during flows less than ½ median discharge will still be limited to the night time hours),
- Having more time to discharge will avoid pressure building up in the system,
- Avoiding pressure building up in the system is expected to reduce the potential for overflow discharges at the outlet, further assisted by the proposed upgrades to the outlet structure,
- Reducing inflows and infiltration and undertaking the specific upgrades to the reticulation system will reduce the potential for overflow discharges at the pump stations.

Subsequent Future Actions

Having focused initially on more natural environmental matters during the initial 6 years of consent, the framework moves to a phase with a greater focus on social and cultural values through the System Review and System Improvements Plan exercises.

Although not prescribing particular upgrades, which is not possible at this point in time, the intent of the System Review exercise, as detailed in the Draft Consent Conditions, is to maintain progress towards ceasing discharges to the river. While the exact solutions and timing to achieve this are not prescribed or certain, the Draft Consent Conditions still seek to place a regulatory and enforceable programme around working to this outcome; noting that this goes beyond the requirement of conditions to control the effects of the activity for which consent is sought.

This approach is seen by WDC to be preferable to taking a shorter-term view where such a vision is not provided for in a regulatory manner, which would arguably be a less certain approach; being a series of shorter-term consents would generate uncertainty while each consent renewal application was processed, which would in turn likely halt or delay WDC's progress on implementing alternatives to the river discharge. Further, the costs of the repetitive consenting processes would also be cumulatively greater and would divert the limited funds from implementation into consenting processes; this is particularly inefficient when a clear roadmap for the outcomes generally sought by the community is already proposed to be locked into enforceable consent conditions.

A key aspect of the progressive implementation programme is the System Review exercises undertaken at years 5, 10 and 20. It could be argued that this is a wastewater asset management function and should not be connected with a particular resource consent. However, WDC have elected to link the ongoing System Review exercise to the surface water discharge consent so that it shows a clear community commitment to seriously investigate and, where possible, implement actions to cease discharges to the Wairoa River. Specifically, the System Review will:

1. Review work undertaken to reduce inflow and infiltration,
2. Summarise trends in wastewater quality, any changes that have been made to the wastewater treatment plant, potentially feasible additional and alternative treatment technologies and processes including their implications that have been considered, and details of any changes proposed,
3. Provide an analysis of discharge volume, frequency, and river flow and tidal conditions, and opportunities to lessen the frequency and volume of any discharges below 3 x median river flow,
4. Provide an analysis of frequencies, durations, volumes (if possible), rainfall, and river flow conditions of overflow discharges from the pump stations or outlet overflow structure. This will include a commentary around how works undertaken to reduce inflow and infiltration have reduced the frequency of overflow discharges, including an analysis of any trends in discharge frequency and rainfall depths that generate overflows. Based on this analysis, it will include a list of actions proposed to be taken to further reduce overflows,
5. Provide a summary of potentially feasible irrigation locations and systems that have been considered and plans or opportunities to increase the irrigation areas,
6. Provide a summary of potential storage sizes, locations, and designs that have been considered and plans or opportunities to increase storage volume, and
7. Outline key contributions considered, made, or potentially feasible to improve the river water quality across the wider Wairoa River Catchment.

The purpose of this programme is to facilitate discussion on the options available at the time of each review to reduce the volume of wastewater that needs to be discharged to the Wairoa River, with the aim being to develop and update programmes that will progressively transition to land discharges. Direction, or targets, around the volume of storage and the land area required for land application as options to achieve this are embodied in the conditions such that consideration is focused around achieving these outcomes.

The strength of this approach is not in its certainty of details and timing, but in its direction and embodiment within an enforceable but adaptable regulatory framework so as to maintain commitment and resourcing. It is this, rather than a prescribed outcome, that is suggested to provide for cultural and social values to the best extent possible in the context.

FURTHER DISCHARGE CONSENT CONDITION

The existing wastewater discharge structure is not operating as intended. Its capacity has been compromised by siltation of the river channel and an emergency overflow structure has been used more often than intended.

Modifications already made and yet to be made to the overflow and outfall require resource consent. Discharge flow restrictions have recently largely resolved the overflows. The non-compliance and resulting abatement notices that have been served on WDC have required cessation of overflows and requested design detail be provided. WDC have provided a design as required. Once consent has been granted, the following process will be followed in order to expediently complete modifications to avoid discharges at locations other than the nominated outfall:

1. The design will be finalised with all relevant details and specifications,
2. A design report and related documents including a proposed construction timeline will be prepared and submitted to HBRC for certification as required by Condition 10,
3. HBRC will need to certify the plans as described in Condition 11,

4. WDC will complete procurement processes for the proposed works, and
5. Construction will be programmed to account for supply of materials, availability of staff and equipment, and suitability of river flow conditions and tidal cycles.

To assist with committing to urgent action once consents have been granted a new Draft Consent Condition is proposed:

9a Within 3 months of the commencement date of this consent, a Structure Design Report, according to the requirements of Condition 10, shall be prepared and provided to the Council to give effect to the Plans labelled 'Offshore Coastal Engineering Limited, Wairoa River Outfall Replacement General Details, Drawing No, 190504-001, Rev 1'. Commencement of work shall follow the process and requirements of Conditions 11-13.

Advice Note: For avoidance of doubt, this condition only relates to the modifications to the outfall pipeline and its overflow and outlet structures that are to be implemented as expediently as possible to resolve existing overflow concerns following granting of these consents. Construction shall adhere to the timeframes included with the Structure Design Report, subject to any adjustments authorised by HBRC.

It is anticipated that further refinement of the Draft Consent Conditions will occur, and these will hopefully reflect input from other parties, including submitters following consent notification.

Hopefully the attached response to the questions asked and the above summary provide the clarification sought. Please contact Hamish Lowe at Lowe Environmental Impact (phone 06 359 3099 or email hamish@lei.co.nz) if you require any further information.

Yours sincerely

Stephen Heath
Group Manager Community Assets and Services
Wairoa District Council

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Encl

Further Information Response Table

Wairoa Wastewater Treatment Plant and Reticulation Network Discharge Resource Consent Applications

Applicant's Responses to HBRC's Requests for Further Information Dated 26 March 2019

Following the site visit with both HBRC and WDC representatives on 8 February 2019, a number of matters were raised by HBRC staff and technical experts. A table of questions was sent on 22 February 2019 and the Applicant responded on 19 March 2019. A number of responses did not satisfy HBRC's experts and required further clarification, so HBRC issued a formal s92 request for further information on 26 March 2019 as presented in the table below. The Applicant's responses to the s92 request are presented in the table below. These responses were initially provided on 19 May 2019 but were amended and resubmitted to HBRC on 25 June 2019 to address further issues raised by HBRC.

HBRC's Question(s) to the Applicant on 22 February 2019	The Applicant's Responses on 19 March 2019	HBRC's s92 Requests for Further Information on 26 March 2019	The Applicant's Responses to HBRC's s92 Requests on 19 May and 25 June 2019
1a) Please confirm how sensitive are the model results likely to be to changes in the geomorphology of the river mouth or position of the outfall (given it is proposed this structure can be moved).	We don't consider this to be an issue, as the primary control for dispersion of the discharge plume is the nearby river channel flow, not the location of the river mouth. Changes in the river mouth location will not affect the initial rapid dispersion within 100 m of the discharge to an extent that requires changes to methods used for managing or avoiding adverse effects in the estuary. The intention is for the outfall to be able to be moved to a location that is no further away from (and preferably much closer to) the active river channel so that the rate of dispersion and extent of the plume before 100-fold dilution is at least as good as currently achieved and modelled. The discharge is set back some 500 m from the coastal dune/mouth/bar while the primary mixing zone is within 100 m of the discharge. At the time of eCoast's modelling the river mouth was about 500 m from the discharge, but at the time of our February site visit it was about 1 km away, between Rangihoua and Whakamahi Lagoon. The modelling was based on the measured channel morphology and river flows, so any	The response received suggests the model sensitivity to the geomorphology of the river mouth and position of the outfall is not an issue. In contrast the modelling report concludes "The morphology of the river mouth regularly changes over time and this will have some influence over hydrodynamics of the area which will in turn influence the pattern of dilution of the outfall". Therefore more information is required to support the response provided. That should take into account the wide and rapid variation in mouth position (including occasional closures), the fact that fishing activities are carried out in the area that may be affected by the plume, and that, modelling was used to support the development of the discharge regime and the design of the proposed benthic monitoring programme (and potentially other decisions).	Although there is initial rapid dilution at the outfall, as noted in the modelling report, *"The morphology of the river mouth regularly changes over time and this will have some influence over hydrodynamics of the area which will in turn influence the pattern of dilution of the outfall."* Considered in simple terms, when the river mouth is in line with the main river channel (that is, close to the Whakamahi lagoon to the western end of the barrier spit), discharge/dilution is less effected in comparison to when the river mouth is further to the east (towards the Ngamotu lagoon), which is less effected than when the river mouth is closed. This is because an anti-clockwise eddy is formed in the western part of the estuary at the entrance to the Whakamahi lagoon when the river entrance is more offset to the east. This is shown in Figures 3.14 and 3.15 of the modelling report. The extent of the eddy will increase as the river entrance moves further to the east. This means direct dilution is reduced and retention time is increased when the river entrance is orientated further to the east.

	changes in the river mouth location will alter the flows near the coastal dune/bar. It will also affect the eddies and mixing zones on each side of the river mouth. However, the eCoast information suggests the discharge will have already diluted 250 times before encountering these eddy zones.		To put this into context with respect to effects on the plume, the best-case scenario with respect to entrance location (western entrance) and the worst-case scenario (eastern entrance) can be considered by reviewing the historical aerial and satellite images which show how often they occur and how far west the entrance meanders. Images from 1939 to 2012 indicate that the configuration modelled is similar to the most eastern in the records (comparable to 1983), and so may be considered the worst-case scenario for the river entrance location. This is especially due to the small sand island present on the western side of the entrance during field data collection that further compounds plume retention in the western part of the lower estuary (i.e. the modelling was conservative). Relocation of the outfall so that it remains near the edge of the main river channel will help maintain optimum plume dispersion regardless of river mouth location. A situation with the entrance closed was not modelled; it is understood that should the entrance be closed for more than a few days, it is mechanically opened (and of course no discharge occurs for at least part of the time when the river entrance is closed). It should be noted that while the river mouth might be physically blocked for navigation, river water can flow through the foreshore, albeit slowly, causing the river level to increase. In early November 1995 a dye testing study of the discharge plume dispersion was undertaken while the river mouth was closed. It clearly showed that the discharge dispersed much more slowly and took a longer time to

			travel across the enclosed lagoon area, through the foreshore gravels, to the coastal bar. WDC, the community, and HBRC have all acknowledged this adverse effect since at least the 1990's, and this is the primary reason why the discharge is required to cease for as long as possible when the river mouth is closed, and then to issue public health warnings when the discharge needs to resume despite the river mouth remaining closed. WDC intend to continue avoiding discharges to the river, for as long as possible, when the river mouth is closed. WDC will be able to extend the duration of zero discharges once additional storage has been installed and/or irrigation is available. WDC's reticulation works that are reducing I & I flows will also help extend the number of days of inflows that can be retained by the storage capacity. River mouth closures occur most often during low summer river flow conditions, and this coincides with reduced I & I flows and favourable irrigation conditions. WDC note that the proposed filtration and UV treatment will also dramatically reduce public health risks when discharges can no longer be avoided while the river mouth is closed (which should be rare in future years). Opening the river mouth is outside WDC's control, as this is a function of HBRC's river management and flood control team. It should also be noted that fishing is less likely to occur during closed river mouth conditions because fish are unable to enter the estuary from the sea. Also, when the river mouth is open, fishing is less likely during overnight out-going tides than during daylight hours. Further, the strong currents close to the river mouth are too fast and dangerous for safe fishing.

1b) Please confirm what, if any, key decisions were predicated on the model outputs and if so, what, if any, contingencies have been put in place to manage uncertainties.	Section 5.3.4 of the Conceptual Design report summarises the development of the discharge regime. There was some circular decision-making and checking of effects from possible discharge regimes for model scenarios and the conceptual design. The scale of uncertainties and environmental effects were conservatively calculated by using the worst-case upper limits on daily discharge volumes into lower limits on river flows plus upper ranges of discharged contaminant concentrations. The 99th percentile plumes predicted by the model were also used to represent the worst-case events. The typical plumes and concentrations will be less than the 99th percentiles so this approach allows plenty of room for contingencies and uncertainties.	The response provided answers the question, however further information sought under Point 1a (above) is required to determine if the response is reasonable.	The Applicant trusts that the response to 1a above demonstrates that their earlier response to 1b is reasonable; i.e. modelling with the river entrance in its current location is considered conservative.
1c) Please provide confirmation of how the dispersal and dilution patterns should be interpreted for different types of contaminants.	All contaminant concentrations at any location within the plume can be simply estimated by multiplying the initial contaminant concentration by the dilution factor predicted by the hydrodynamic model at a specific location. After filtration and disinfection systems have been installed at the WWTP, the discharged contaminants will all be largely soluble and unlikely to bind to the riverbed sediments or settle out within the estuary, so the modelled plumes will fairly represent the behaviour of all of these contaminants. The assessment is also conservative because it assumes no attenuation or transformation effects upon entering the river. In reality, any remaining *E. coli* (and most pathogens) will die off rapidly due to contact with seawater and sunlight UV, and some chemical reactions in the river environment may transform some of the discharged contaminants into other compounds (which may be more inert and less environmentally concerning).	The response received suggests discharged contaminants will be largely soluble and unlikely to bind to the riverbed sediments or settle out within the estuary, so the modelled plumes will fairly represent the behaviour of all of these contaminants. Yet the assessment of effects is largely based on benthic sediments and communities, which suggests eCoast (and earlier science providers) believed there is potential for benthic impacts. This discrepancy needs to be addressed.	The benthic effects mostly relate to chronic exposure of benthic organisms to pathogens and some nutrient enrichment (ammonia and/or DRP) and perhaps, in the immediate vicinity of the outfall, toxic effects of ammonia. The treated wastewater discharge's contributions of suspended solids and turbulence from the flow into the river also have potential to affect sedimentation patterns and benthic sediment stability around the outfall, which can have consequential effects on the compositions and sustainability of benthic communities in the immediate area of the outfall. With respect to the dilution and dispersion patterns of soluble materials in the discharge, as found with the modelling, these are diluted relatively quickly and mostly within 100 m of the outfall. As a result, there is the potential for impacts on the benthic community close to the outfall which have been indicated in the results of the biological investigations. eCoast's AEE recommended that monitoring at sites closer than 100 m from the discharge are

			included going forwards to determine if the proposed reductions are having a localised positive effect. Once disinfection has been implemented at the WWTP, and when irrigation reduces the frequency and volume of discharges, these possible effects on benthic communities will reduce. In terms of effects due to the settlement of suspended sediments from the discharge, although these were not modelled directly, settlement can only occur where shear stress is low and water currents are <0.1 m/s (this is why there is a correlation between low current speeds/shear stress and high fine silt content in sediment samples). This is confirmed in the recent monitoring at the sites close to the outfall (i.e. 100 m) that show signs of impacts from the outfall that may be associated with settlement of fines discharged. However, it is also due to the outfall being currently located in a deposition zone (i.e. low shear stress). It should be noted that the deposition sites are continually shifting due to the changes to the estuary entrance location and the positions of various moving sand banks (e.g. the sand island on the western side of the entrance during the field data collection). It is noted that the Wairoa Estuary mud content (and not just around the WWTP discharge) is classified to be broadly in the "sensitive species are likely being lost" (as found in the sampling), with a positive trend to less fine silt contents as stated in HBRC's 2014-2015 State of the Environment Report. But it should be noted there is a trend of increasing silt/turbidity in the HBRC 2016 report (HBRC Report No. RM16-12 – 4793). Either way, Wairoa River and Estuary have some of the

			highest silt content and turbidity levels in the Hawke's Bay Region due to its soft sedimentary geology, a phenomenon which is unrelated to the WWTP discharge. It should also be noted that all of the previous benthic studies were concerned with the current/historic discharge which has potential for causing adverse benthic effects. These studies were not intended to indicate how the future discharges may affect the estuary; instead they provide a baseline for future comparisons, and WDC expects future benthic surveys to show that the proposed regime will have a more positive impact.
1d) Please provide bubble plots of silt values overlaid on the shear stress plots. This will assist with interpreting the relationship between these parameters given there are a number of anomalies that do not make intuitive sense.	Note that the river mouth migrates randomly and frequently so the sediment layers and compositions that have accumulated over long timeframes don't necessarily reflect the river mouth location at the times of surveys. Also, the river mouth locations and rates of silt accumulation between surveys are not monitored, so it's difficult to correlate sediment compositions with changes in shear stress and river mouth location.	The response received seems to imply that the modelling is not a good predictor of physical benthic processes in the lower river. If so, should related modelling results related to shear stress be disregarded? Please confirm.	No, the modelling results related to shear stress should not be disregarded, as they are informative to indicate how the river channel and mouth contribute to shear stress patterns across the estuary, including near the outfall. The results of the modelling of shear stress and silt content at the locations of sediment samples compare well i.e. the model is a good predictor of the physical benthic processes of the lower river. As stated in the eCoast modelling report *"When the results of the sediment grain size analysis are compared to the modelled shear stress, it can be seen that the samples with the highest percentage of fine sediment are located where the shear stress is lowest, and vice versa. For example, shear stress at Site G remains at or around zero throughout the tidal cycle and so is a deposition zone for fine sediments and has high silt content, while Site J experiences high shear stress throughout most of the tidal cycle and consequently has the lowest silt fraction".* Also, as described in the modelling report, the apparent anomalies of site B and the overflow are due to high shear stress at site B (i.e. it is

			not an anemology, it is just counter-intuitive since site B lies between two low shear stress sites). In addition, the overflow is influenced and flushed by the fast flowing stream during overflow and so has mostly gravel (the sediment sampling at this location was mainly to consider geochemistry and contaminants). Site B's location in a high shear stress zone is clear in the attached shear stress outputs with bubble plots overlaid. Only site H may be considered slightly anomalous; as it is in a moderate shear stress zone during out-going tides. Site H is on the edge of a high shear stress area, although the fine sediment content is some 87%. This is likely due to the exact configuration of the entrance during the surveys and how closely that has been replicated in the model domain (no current satellite image was available for digitizing); i.e. the site was just outside the area of higher shear stress at the time of sampling. The main reasons for this are: a) due to the time constraints, the sample collection was done prior to modelling (i.e., we did not have the model outputs to direct us, although these have now been used to identify monitoring sites in the future), and b) we could not get too close to the river entrance during the bathymetry surveying due to the high currents in the area and associated H&S concerns.
1e) Please provide information/advice on the potential influence of changes in the mouth morphology on shear stress, and potential areas of sediment and contaminant accumulation.	Historic Google Earth imagery of the estuary, combined with the benthic ecological studies, show how the sedimentation and river channel patterns have changed in response to changing shear stress patterns. The building out of the mudflats between Fitzroy Street and Rangihoua is obvious over only a few years (5-10 years). Over a much longer time scale, the erosion of Rangihoua is apparent in its receding eastern cliff face and undermining of WWII gun	The response received seems to imply that the modelling is not a good predictor of physical benthic processes in the lower river. If so, should related modelling results related to shear stress be disregarded? Please confirm.	See the response to 1d) above. The potential areas of sedimentation and contaminant accumulation are modified by the entrance location (and to a lesser extent by sand bar locations within the lower estuary), and when the entrance location is more eastward these are increased because the river outflow is not direct and disrupted into an anti-clockwise eddy. Based on the available historical information, the configuration that was modelled is likely conservative.

	bunkers that were originally on hilltops but are now adjacent to or submerged in the estuary.		
2a) Please provide confirmation as to the source(s) of the high sediment concentrations of lead present around the Fitzroy Street pump station overflow.	The source is unknown but clearly is unlikely to be related to the treated wastewater, as lead is not a feature near the main outfall and there are no lead sources in Wairoa. It is most likely that these lead results relate to dumped materials or perhaps some historic stormwater events. The lab results show huge variation of lead over several individual samples and sediment depths at this location, so it is clearly related to a very localised lead deposit, and not on-going lead discharges and general accumulation in the sediments.	**This answer satisfies HBRC's information requirement**	
2b) Please provide the original laboratory results referenced in report eCoast 2018:C5 – Assessment of Environmental Effects – Marine Ecology.	See attached (originally for eCoast 2018:A3D3).	**This answer satisfies HBRC's information requirement**	
2c) Please confirm whether nuisance macroalgae blooms are present in the lower Wairoa River and if so please provide information regarding this.	HBRC's 2016 report on river water quality trends at SOE sites upstream of Wairoa indicated that "DIN/DRP ratios indicate that … most sites in the Wairoa catchment have nutrient ratios indicative of co-limited conditions. Given that concentrations of both DIN and DRP are low to moderate at these sites, this means that both nutrients are likely to partially limit periphyton growth." and "Periphyton biomass levels across the catchment are generally low, and … are below both the 120 mg/m^3 'recreational' and 50 mg/m^3 'biodiversity' thresholds."	The response received seems to be focussed on freshwater blooms, whereas we were primarily seeking information on whether nuisance macroalgae blooms are present in the lower Wairoa River (perhaps the question should have been more specific and said the estuarine section around the outfall). Please provide a response to suit.	No periphyton growth was observed during field data collection and HBRC (2016) states *"It should also be noted that periphyton require hard substrate to attach to, which means that excessive periphyton growth is unlikely to develop in soft-bottomed rivers such as the lower Wairoa River, regardless of dissolved nutrient concentrations."* This in combination with the occasionally high water flow rates and poor water quality in terms of light penetration (very turbid), indicate that periphyton blooms are unlikely to occur in the Wairoa estuary.
2d) Please provide information regarding the potential effects on the benthic macrofauna and sediment quality as a result of the re-positioning of the WWTP outfall.	Relocating the outfall will potentially relocate the localised area of organic enrichment of the sediment and any effects on macrofauna. The reductions in discharge events and modified discharge regimes resulting from potential irrigation and storage expansion will ensure that future outfall locations will have negligible adverse effects on sediment quality and	We agree that relocating the outfall is likely to relocate the localised area of organic enrichment of the sediment and any effects on macrofauna. What we don't know is whether the benthic values are the same across the proposed outfall site. For instance, are there any shellfish beds that should be avoided?	The estuary has not been studied to this level of detail. eCoast's 2018 benthic survey is the first study that WDC is aware of that sampled a wide range of sites within the estuary. WDC considers that eCoast's data can be used to indicate the likely extent, health, and diversity of benthic communities in the estuary. The outfall is likely to be relocated well within 100-200 m of its current location to match river

	macrofauna within ever-smaller zones around the outfall.		channel migrations, and the types of benthic communities have consistently been similar within 100 m of the outfall over the years. Repositioning of the outfall 100-200 m into the main channel (i.e. eastward) will result in distribution of suspended materials further away from the outfall. However, the patterns of sedimentation will be modified by the river migration prior to relocation of the outfall, and this will be controlled and further modified by changes in the location of the entrance and sand bars in the lower estuary. Further, the impacts on benthic communities with respect to chronic exposure to contaminants will be related to the quality of treatment and the volumes of discharge – i.e. improving the level of treatment and reducing discharge volumes will have a positive impact. With respect to local shellfish beds and impacts of relocating the outfall within 100-200 m of the current outfall, based on the results of the 2018 investigations, there is no clear pattern with respect to the presence of shellfish and sediment grain size or current speeds/shear stress. It is likely that these juvenile pipi beds are partially ephemeral and move in response to the changes to the channel, sand bar and entrance location. As a result, it is expected that impacts on these beds due to relocation of the outfall can be considered to be localised and temporary. WDC note that there is a lower confidence of predicting future effects when relying on a single detailed benthic study of the riverbed as the basis for assessing long-term effects of outfall relocations on potentially ephemeral and/or juvenile shellfish beds.
2e) Please provide additional comment on the potential effects of emerging contaminants of concern.	These are unlikely to be of any greater concern for Wairoa than for any other town's wastewater discharges. The discharge into a comparatively large river flow, rapid dilution,	**This answer satisfies HBRC's information requirement**	

	and proximity to the coast mean that there is minimal opportunity for EOC's to remain at potentially harmful concentrations and potentially affect fish.		
3a) Please provide a copy of the procedure for the handling of unearthed human remains, taonga tuturu, and artefacts that WDC is going to adopt and provide an amended copy of the proposed consent conditions that includes this requirement.	WDC are developing these protocols based on standard heritage/archaeological and Maori protocols. We will provide them to HBRC prior to the Hearing. The protocols need to address the interests and expectations of all interested parties and authorities including iwi, hapu, HBRC, DOC, and Heritage NZ Pouhere Taonga.	Can you please confirm when this document is likely to available for Council staff to review? Our preference is prior to the drafting of the section 42A report.	A procedure for the handling of unearthed human remains, taonga tuturu, and artefacts will be made available to HBRC before 30 July 2019. WDC note that this is only relevant to disturbance of the riverbank and perhaps the riverbed for relocating and maintaining the outfall pipeline. Given the scale of coastline erosion and silt deposition since human occupation, it is unlikely that any artefacts will be discovered. In lieu of this procedure, WDC considers that standard accidental discovery protocols address this concern.
3b) Please confirm if during the relocation of any structure within the river bed is it envisaged approval will be obtained by tangata whenua or if the works will be overseen by a tangata whenua representative?	Tangata whenua will be represented on the reserve management board which will need to be providing approval for this too. Tangata whenua could be informed prior to works commencing each time and could be entitled to have an observer. Overall however, the activity itself will be reflective of the existing situation i.e. an outfall structure in the area will not be a foreign concept, while comprehensive conditions are proposed around certification and construction to ensure effects will be less than minor.	**This answer satisfies HBRC's information requirement**	
3c) Please confirm if there were discussions with tangata whenua around the proposed stages of the BPO being "aspirational" only and that there is a possibility that the discharge into the Wairoa River may continue similar to the current practice (with better treatment)? The Cultural Impact Assessment states that the discharge to the river is culturally offensive and discusses the need to move to a land application discharge method	Yes, tangata whenua were a key group involved in the Stakeholder Group. Iwi views were integral with and drivers of the BPO selection including the acknowledgement of the aspirational nature of the longer-term developments. They agreed that the improvements over time will be better than the existing situation. They agreed that time was required for implementing steps towards the ideal goal of 100% land treatment and acknowledged that this goal may not be achievable within the next 30 years. They also understood that this meant there was a delay in achieving that aim but it allowed costs to be	It is recognised from your response that the intension is there for WDC to work towards a reduction in the discharge into the Wairoa River, however the potential that this may not occur is not reflected in the Cultural Impact Assessment. There is no application document that we can refer to confirming tangata whenua have acknowledged that the proposal is "aspirational". Please provide written confirmation (meeting minutes or records or similar) when and what discussions have been had with tangata whenua regarding this matter.	Consultation included direct iwi engagement, the stakeholder group, public meetings, hui, LTP consultation (which highlighted this proposal as a key aspect of the LTP for feedback), WDC's Maori Standing Committee, and DOC. WDC also note that all MACA claimants were sent a summary of the proposed package of changes for future consenting and subsequently sent a copy of the AEE. There has been very limited feedback. There was no documentation provided by iwi; all feedback was verbal. WDC's records of

to reduce the effects on Maori cultural values.	spread more affordably (potentially with external funding), allowed for reticulation improvements to reduce flows, and provided certainty that steps would continue to be taken by WDC. Also refer to the answers below to question 10 regarding the CIA. Further, although acknowledged to be aspirational, this doesn't mean there isn't an intent to work towards these outcomes. Indeed, this is the very purposes of the proposed condition framework.		consultation are attached, in response to question 9a below. Although WDC's records unfortunately did not provide the level of detail sought by the s92 questions 3c and 9a, this in no way diminishes the value of input received from the WWSG, tangata whenua, and the community. Their views directly drove the development of the proposed package which included the continued river discharge as an essential core component and 100% land discharge as the ultimate goal. As outlined in relation to 9(a) below, it is WDC's understanding that the nature of the proposal was well understood and supported by tangata whenua and the public. WDC consider that submissions generated by public notification of the consent applications is the most appropriate means of checking / validating WDC's understanding of the views of tangata whenua and the wider community. The focus and popularity of any opposition will become apparent from an analysis of submissions.
4a) Please provide evidence that the data set modifications prescribed in Report A2I1 do not significantly modify the resultant summary data.	Some of the data modifications had large effects on the average (mean) and upper percentile values. Deleting the clearly unrealistically high results would have had a similar effect to the adjustments we made to achieve more realistic results. It was very important to ensure that such high erroneous results did not skew the statistics relied upon for all future aspects of this project. The original means and maxima were unrealistically high, which is what triggered us looking for the individual results responsible for these unrealistic statistics.	Modification of the data sets to remove erroneous data is acceptable, but by replacing erroneous data with values that lie within the existing consent parameters (rather than deleting the data point), this skews the data set. Please provide evidence that the data set modifications prescribed in Report A2I1 do not significantly modify the resultant summary data, preferably by comparing median and percentile values for original data.	Only one pH reading for effluent quality was modified, and this had no effect on compliance with consent conditions because pH is not one of the parameters limited by the consent. If the erroneous reading of 464 had been deleted instead of replaced with its transposed reading of 7.7, none of the reported statistics changed. The original dataset including this 464 reading generated a mean of 12.1 instead of 7.7, and a 95th percentile of 8.8 instead of 8.6. Most of the data errors related to the influent quality. This is not a consent compliance issue, but changes in these statistics can influence the calculated treatment performance rates. If the

			erroneous influent pH reading of 18.2 had been deleted instead of replaced with its transposed reading of 7.7, none of the reported statistics changed. The original dataset including this 18.2 reading generated a mean of 7.6 instead of 7.5 but did not affect the 95th percentile or median pH. If the erroneous influent TKN and TN readings had been deleted instead of replaced with more realistic results, the average TKN would have been 23.8 g/m^3 instead of 23.7 g/m^3, the 95th percentile TKN would have been 40.5 g/m^3 instead of 40.3 g/m^3, the 5th percentile TN would have been 10.7 g/m^3 instead of 10.8 g/m^3 , and the 95th percentile TN would have been 40.4 g/m^3 instead of 40.2 g/m^3. If the erroneous TKN and TN readings had been included, the 5th percentile for TN would have been 10.8 g/m^3, both means would have been 28.5 g/m^3, the medians for TKN and TN would have been 23.0 g/m^3 and 22.5 g/m^3 respectively instead of 22.0 g/m^3, the 95th percentiles for TKN and TN would have been 43.2 g/m^3 and 43.1 g/m^3 respectively, and both of the maxima would have been 220 g/m^3 instead of 56 g/m^3. If the erroneous influent TP readings had been deleted instead of replaced with more realistic results, the mean would have been 3.4 g/m^3 instead of 3.5 g/m^3, the median would have been 3.2 g/m^3 instead of 3.3 g/m^3, the 95th percentile would have been 5.8 g/m^3 instead of 6.0 g/m^3, and the other statistics would have been identical. If the erroneous TP results had been included, the mean would have been 4.4 g/m^3, the median would have been 3.3 g/m^3 (the same as the modified dataset), the 95th percentile would have been 6.9 g/m^3, and the maximum would have been 60 g/m^3.

			The dataset for the primary treated effluent also has no consent compliance implications and the changes to the dataset did not skew the statistics that resulted from deleting the two erroneous results except for a very small reduction in the 95th percentile from 4.9 g/m^3 for the modified dataset to 4.8 g/m^3 for deleted results. If the two erroneous readings had been included, the mean would have been 3.2 g/m^3 instead of 3.0 g/m^3, the 95th percentile would have been 5.0 g/m^3, and the maximum would have been 14 g/m^3 instead of 6.1 g/m^3. In all cases, the comparisons above show that there were no significant effects on any of the statistics when the few erroneous results were deleted instead of being replaced with more realistic results. The median effluent quality was compared with the median influent quality to gauge the WWTP's treatment performance, and the assessment in LEI, 2017:A2I1 remains unchanged by deleting the erroneous results.
4b) Provide full data sets and summary calculations, including graphical and statistical representations of performance, that form the basis of AEE table 5.3: i. Historical performance flow and load/concentration data for the WWTP; ii. Historical influent parameter records (flows and loads). iii. Confirm whether there is any treatment plant influent and effluent performance data for 2017 and 2018.	We do not believe that this information is directly relevant to the discharge consents. While performance has a bearing on effluent quality and loads, the future I & I and treatment enhancements will ensure that the future treatment performance and discharge quality will be better than historic data. i. We haven't calculated these apart from the overall means in Table 5.2 and section 5.4 of LEI, 2017:A2I1. ii. See Table 5.2 of LEI, 2017:A2I1. iii. Monthly influent quality sampling ceased in December 2017. Monthly effluent quality sampling continues to occur.	The proposed solution relies on network improvements to maintain effluent quality. However there is no quantification of the expected flow improvements, or analysis of treatment plant performance based on the revised flows to the plant. Given that the plant is currently likely to be experiencing significant benefit from dilution within the network, evidence is required that the treatment plant performance expected after the proposed upgrades will maintain or improve the discharge loads into the environment. Please provide evidence that the pond treatment performance after the proposed network and other upgrades has been assessed to be the same or better than the current discharge load, and the basis influent flow and load data (existing and post upgrade) used to form this evaluation.	Table 5.2 of the AEE provided estimates of the anticipated future daily flows, and this was a copy of Table 4.2 of the Conceptual Design report (LEI, 2018:C1.0). The rationale for these future flows is provided in Section 4.3.2 of LEI, 2018:C1.0. The overall aim is for 2050 flows to be similar to 1997 flows with some allowance for population growth. Table 5.1 of the AEE shows the significant reductions in daily flows for winter months of 2018 (less apparent for summer) due to reticulation and rainfall. The treated wastewater quality in 1995-98 was similar to that of more recent years despite the recent considerable increase in I & I dilution and some sludge accumulation variations. This indicates that the dilution rate balances with the WWTP hydraulic residence times to

		[Nick Dempsey has subsequently clarified his concern that the flow reductions may not be achievable, and that resulting treatment plant performance and effluent quality changes have not been robustly quantified. This is also relevant to whether the proposed limits for the effluent quality and the resulting effects of the discharges on the river environment will be achievable.]	maintain similar treatment performance and effluent quality (concentrations). Based on this historic data, WDC expect that as flows revert towards 1990's levels, the WWTP's treatment performance and resulting effluent quality (concentrations) will remain similar and will stabilise because of less peaky flow pulses through the WWTP. WDC expect that the annual discharge loads will reduce as a direct result of reducing flows. Note that discharge *concentrations* are more important in the river than *loads* of ammonia and pathogens. This is because there are lower risks of adverse effects when discharging lower concentrations that benthic communities can tolerate. WDC acknowledge that the loads of suspended solids and phosphorus may be more important than their concentrations because of their potential to deposit onto the riverbed, but the intention of locating the outfall on the edge of the main river channel is to ensure that river flow rates prevent any deposition of these contaminants before entering Hawke Bay. Once UV and filtration have been added to the outlet, the discharged concentrations and loads of suspended solids and pathogens are likely to reduce by about 90 %. WDC did not undertake a detailed assessment of the WWTP's past and future performance because the effluent quality was believed to be acceptable for discharges to the river (in terms of its effects on water quality after dispersion) and to land. WDC's primary concern was the flow generated by I & I which was the cause of a number of problems. Further, the additional treatment proposed (filtration and UV) was in response to community perceptions and desires to have cleaner water quality (including

			cultural mitigation) and not based on mitigating any adverse effect. During preparation of consenting documents the scale and rate of flow reductions was not able to be reliably predicted. The recent works on reticulation have since been shown to have significantly reduced flows. Further changes are expected over the next 1-2 years, after which the rate of change is expected to slow down. Questions 9f and 9g below discuss using WDC's historic effluent quality data for determining appropriate limits for future discharges to the river. It is proposed that these limits can be developed later in the consenting process, as typically occurs. The concerns raised in question 4b are also directly related to setting those limits. WDC were comfortable to set effluent quality limits during the consenting process and then use those limits to specify performance limits for future changes to the WWTP design and operation. WDC were intending to reassess flows and effluent quality prior to designing the sand filtration and UV system, as these key parameters are crucial for correctly sizing the disinfection system. However, given the more rapid than expected reductions in flows and the need to set realistic effluent quality limits for the future consent conditions, WDC can more confidently undertake this assessment now during the consent process instead of later during implementation. WDC will now undertake this assessment during the public notification period so that effluent quality limits can be set with more confidence of future compliance and for design of the future disinfection system.

			WDC do not believe that robust statistics and proposed limits for these parameters need to be refined and agreed prior to notification of the consent applications. HBRC had agreed to this approach for 9f and 9g. WDC also note that the receiving environment is not sensitive to any changes in discharge quality because of the rapid and high rate of dilution in the river. For example, a 50% increase in the concentration of a parameter in the treated wastewater would result in no significant change in the assessed effects on the environment.
4c) Provide technical assessment of the pond treatment capacity against established pond design parameters. This should cover at least historical kgBOD/ha.day, and assessment of changes to performance due to reduced I&I in the network, and changes to the treatment process.	The final paragraphs of section 5.4 of LEI, 2017:A2I1 provided this. It noted that BOD had never been monitored but, based on CBOD, the load on the surface area of the entire WWTP is 394 kg CBOD/ha/d which is 4.7 times the NZ recommended guideline value of 84 kg BOD/ha/d. However, it should be noted that the aerated lagoon reduces CBOD by about 75%, so the load on the main oxidation pond is only slightly above this guideline value. Reductions in I & I will reduce flow rates, reduce dilutions, and increase BOD concentrations, but the overall load will remain unchanged.	Section 5.4 of LEI 2017:A2I1 provides a brief explanation of the pond loadings currently experienced in the WWTP. However these reference a pond loading rate of 84 kgBOD/ha/d which is not relevant to the partially aerated pond. In addition, cBOD values are used, which are different to BOD loadings (BOD is typically 1.1 to 1.3 times higher). Taking into account estimates of BOD loadings, and aerated pond discharge values, the facultative pond is likely to be 1.5 to 1.8x overloaded when compared to the design loading rate provided. Given the current apparent overloading, and time since desludging the facultative pond, please provide evidence that the capacity of the aerated and facultative ponds are effectively analysed to confirm the effect of the proposed network and WWTP changes, demonstrate that effluent quality will be no worse on a load and concentration basis.	As noted earlier, cBOD was used because BOD has not been monitored at the inlet or outlet of WWWTP. The difference between BOD and cBOD was not considered to be crucial for the assessment of its treatment performance or loading rate. The 84 kg BOD/ha/d guideline was developed in 1974 and is conservative to account for cold winters with little wind. Wairoa's climate is more conducive to good treatment performance. Regardless of whether the BOD entering the second pond is theoretically overloading it, the final treated wastewater quality has been indicating that the degree of treatment is similar to the expected performance of a typically loaded WWTP of this design. Desludging and reduced I & I fluctuations in flows will clearly assist with stabilising the WWTP's treatment performance and should reduce the 90-95th percentile discharge concentrations. WDC believe that the WWTP's treatment performance and resulting effluent quality in recent years probably represent "worst case" conditions. See also WDC's previous response to 4h) below which is relevant too.
4d) Confirm when the two ponds were last desludged, and what are	The aerated lagoon was most recently de-sludged in April 2018, with about 517 m^3 (dry	**This answer satisfies HBRC's information requirement**	

the measured sludge levels at present.	basis) removed. The maturation pond was most recently de-sludged in May to September 2010. We do not believe that this information is directly relevant to the discharge consents but is simply an operational matter that WDC need to keep on top of in order to maintain the WWTP's treatment performance and discharge quality.		
4e) Only four compliance reports are included in the assessment in A2I1, up to the year 2014. Were additional compliance reports available for inclusion in the assessment and if so, what is their impact on A2I1 Table 7.1. **Previous compliance reports for the compliance years 2008-2009, 2009-2010 and 2012-2013 are available from Council if needed.**	At the time of gathering information for this report, only those four compliance reports were available from HBRC and WDC staff. More recent reports have not been sought but instead WDC's monitoring data was relied on. WDC have acknowledged that rates of compliance with daily discharge volumes and timing have continued to be problematic during and immediately after storm events. It was not considered of any benefit to seek or review older reports, especially as flow characteristics are changing as a result of reticulation improvements.	**This answer satisfies HBRC's information requirement – HBRC to provide copies of pervious compliance reports to Nick Dempsey for reference**	
4f) Provide median and other percentile performance data for the existing pond such that ongoing median values can be considered for consent conditions.	Median values were presented in Table 5.2 of LEI, 2017:A2I1. 90th percentile values are pH = 8.3, DO = 14.7, COD = 260, NH_3-N = 28, TSS = 118, cBOD = 55, and *E. coli* = 135,000.	Please provide median and 10th and 90th percentile performance data for the existing pond to assist with developing consent conditions.	WDC is not sure why the 10th percentiles are relevant, nor how they would assist with the development of the consent conditions which the original question stated would be based on median values, but the 10th and 90th percentile performance (influent vs effluent quality) for 2008-16 are as follows: **Conc.** **Percent Reductions** **Parameter** **10th** **10th** **Median** **90th** COD 116 59% 46% 30% $CBOD_5$ 32 71% 71% 71% NH_3-N 8.4 11% 4% 17% TN/NH_3-N 12.7 41% 29% 34% Note that for all responses to 4f, the same set of 2008-16 data has been relied upon.
4g) Confirm whether membrane filtration was considered in the	Sand filtration was selected in consultation with iwi and the community partly because it involves contact with minerals and geological	**This answer satisfies HBRC's information requirement**	

BPO long list of options in lieu of filtration and UV.	matter which reflect Maori tikanga that human wastes can only have their mauri restored through contact with Papatuanuku. Further, sand filtration would assist in algae removal to allow more effective UV treatment. Membrane filtration would have served no benefit over and above the proposed solution, and would not have had any positive cultural value.		
4h) Does the proposed programme to improve network conditions quantify the expected improvements in influent wastewater?	No. Historic data when flows were lower and population was higher guides expectations for future flow reductions. Overall, not much changes in the treated wastewater quality because the load remains static or declines with declining population.	**This answer satisfies HBRC's information requirement**	
5a) Please confirm if the treated discharge pipeline overflow for the main discharge still discharges into an adjacent stormwater channel or is now discharging into a separate overflow pipe. Please provide plans that show the pipeline configuration (for both sewer and stormwater for the Fitzroy pump station and WWTP going into the main outlet discharge and overflow).	Details in the AEE for consent application DP180254L and WDC's infrastructure records indicate that the main outfall's emergency overflow currently uses a dedicated 375 mm pipe that is not connected to any stormwater drain near the coast, and it will continue to do so until the outfall pipeline can be moved and perhaps have its diameter enlarged. I & I reductions will also assist.	**This answer satisfies HBRC's information requirement**	
5b) Please confirm if the Fitzroy Pump Station gets inundated during storm events similar to the other three pump stations and where does this overflow discharge to.	Yes it has in the past, but only during one very large storm since December 2017. These overflows will be mainly stormwater with a small wastewater component. The wet well's emergency overflow feeds into the main outfall pipeline and out to the river discharge structure. The treated wastewater from the WWTP will mix with the Fitzroy Street overflows within the pipe before discharging into the river.	**This answer satisfies HBRC's information requirement**	
5c) Please confirm if investigations into removing the emergency overflows has been done in conjunction with the proposed upgrades and network	Yes, the reticulation proposals have been designed in an integrated manner. The emergency overflow pipes won't be removed at any stage, as they will always be needed for protecting the reticulation from excessive	**This answer satisfies HBRC's information requirement**	

improvements, particularly as they will be discharging less diluted wastewater into the river. Please provide information regarding this work.	pressure. Overflows will still require the same flow rate and volume of stormwater to trigger such events, so the dilution will be very similar to historic dilutions. What will change is the intensity of storm (mm/h and its duration) and the frequency of events that will need to occur in order to trigger overflows – larger and longer storms that occur less frequently will be needed.		
6a) Please provide details (including a map) identifying what and where edible species of kaimoana can be gathered around the river mouth.	As consistently shown by the benthic surveys, and eCoast's spatially broader study, the estuary is not conducive to shellfish thriving. Surveys and feedback from local residents indicated that there is no harvesting of shellfish here. Flounder are caught in the estuary, but otherwise all fishing activities occur in the marine area. Producing a map is a significant task, and we are unsure of its value and relevance for this consent application.	Information provided indicates that: the estuary is not conducive to shellfish thriving and no shellfish harvesting occurs, but flounder are caught. However, a map of where fishing occurs is not provided (because it is considered to be a significant task, and WDC are unsure of its value and relevance for this consent application). We consider knowing what and where kai moana are harvested to be a key consideration for a wastewater outfall in an enclosed estuary such as this. It would also seem a relatively simple exercise for the Council to (at least) map its understanding of where harvesting occurs.	In terms of gathering kaimoana around the river mouth, such as shellfish in the sediment and/or on hard substrate, none are gathered due to river water quality being too poor (in terms of high levels of *E. coli* that would make them inedible). More importantly, it is because there are few there, and they don't grow to maturity. Local experienced fishers and the benthic surveys have indicated that the most common shellfish found in the Wairoa River estuary are pipi, but they are not gathered for human consumption. The areas close to the mouth of the Wairoa River are a known pipi nursery. However, pipis are known from the benthic surveys and local residents to not reach maturity in this area. This could be due to a couple of processes as recognised by local tangata whenua. These processes include the to and fro nature of the river mouth location (the taniwha brothers arguing) creating a change in river current and intertidal strength resulting in an unfavourable and unstable habitat, rather than the presence of the outfall. Pipi are tolerant of moderate wave action and commonly inhabit coarse shell sand substrata in bays and at the mouths of estuaries where silt has been removed by waves and currents (Morton & Miller, 1968). They have a broad tidal range tolerance, occurring inter tidally and sub tidally in high current harbour channels to water depths of at least 7 m (Dickie, 1986;

			Hooker, 1995). Because the Wairoa River current and silt loading is ever changing, this could inhibit a large portion of pipi reaching maturity. Because pipi do not reach maturity, they are not gathered within this area. It is noted in the eCoast report that "Previous monitoring reports (Smith 2007, 2011) have suggested that the presence of species like pipi (*Paphies australis*), at sites around the outfall were evidence that any potential effects emanating from the outfall were not large enough to constitute an undue adverse effect. While pipi were encountered at the majority of sites in 2018 (including A, B and C), when the potential impact sites are evaluated against the new sites it is apparent that pipi numbers are significant lower at sites A, B and C, at least relative to sites E, F, G and H. This trend appears unrelated to silt content, however it must be stressed that all pipi enumerated were <30 mm in size, therefore are likely to be stressed at all sites where they are encountered. Again, comparisons of trends detected here are consistent with those derived from SoE monitoring." Further inland, the Wairoa River is an important source of food, including inanga (whitebait), mohoao (flounder), kanae (mullet), tuna (eel), kākahi (fresh water mussels) and koura (fresh water crayfish) (HBRC, 2018). Local residents and their families who recreationally fish and represent several decades' experience have confirmed that shellfish are not collected anywhere in the estuary because of public health warnings, shellfish population declines, and the small sizes of pipi and mussel spat. They noted that a range of fish are caught in the estuary, such as mullet, inanga, whitebait, paraki (smelts),

			flounder, kahawai, and occasionally snapper. However, most fishing is in the ocean (popular around the Mahia Peninsula) or in the pristine upper Wairoa catchment (eels and trout). It should also be noted that all MACA claimants were sent a summary of the proposed package of changes for future consenting and were subsequently sent a copy of the AEE. Their complete absence of feedback suggests that kaimoana and mahinga kai are not valued and perhaps do not exist in the vicinity of the WWTP discharge pipeline or its plume.
6b) Please confirm what funding options WDC has investigated in assisting with the costs associated with the BPO and if purchasing of land was included in this investigation.	Yes purchasing land was considered but that's not preferred, as leasing is cheaper while retaining a farm manager who has a vested interest in the land and animal health. Other central government funding options have been explored, and there is hope that funding may ultimately become available as a result of the three waters review.	Evidence of other funding options has not been provided, please provide or is WDC solely waiting on the three waters review? Please confirm.	It is anticipated that funding and resource support will be sought from sources outside Council, including HBRC, central government, and community grants. Other sources that were suggested during consultation included local philanthropists and Trusts, industries, businesses, Eastland/Genesis Energy, Lotteries, farmers, Marae – PSGE (post settlement governance entities), tourists, Rocket Lab, and NASA. Successful funding may bring forward the implementation of some actions. In addition, community, tangata whenua, and environmental groups are expected to assist with seeking funding and providing manpower to help to expedite the delivery of some tasks. There is a limitation on rates funding. Loans also need community servicing through rates. Currently there is no government funding available, but some government funding could occur in future. Current government funding sources include the Provincial Growth Fund (PGF), Freshwater Improvement Fund (FIF), and the Tourism Infrastructure Investment Fund (TIIF). The FIF requires projects to achieve "significant water quality improvement" which Wairoa won't achieve due to the WWTP discharge's less than

			minor contribution. The PGF doesn't fund this type of infrastructure project. The TIIF could be used but it is only used in high tourism pressure areas and requires 10's-100's of millions of dollar projects. Wairoa fails to meet these criteria. Government funding needs to help Wairoa. WDC's programme allows for and encourages seeking outside funding. It should also be noted that future governments will change policies and so there may become new avenues of obtaining government funding over the next 20-30 years. WDC is committed to continually reviewing funding options and actively seeking funding throughout the project. WDC have successfully been awarded funding for their Mahia Beach scheme through the Ministry of Health Sanitary Works Sewage Subsidy Scheme. This scheme no longer exists. The Provincial Growth Fund does not fund wastewater projects. The Freshwater Improvement Fund may contribute some funding, but this would be minimal compared to that needed for significant change. Regardless, funding is based on need and where there is either clear public or environmental health implications; neither of which exist at Wairoa. All funding applications require certainty of implementation and a strong case giving reasons why the external funder should invest in Wairoa's infrastructure, including why WDC funds are not available and how it meets funding criteria and is good value. In any case, WDC do not believe that identifying potential funding options now is a matter for consenting assessment, and it is not a relevant RMA effect (other than perhaps as a means of reducing the financial burden on the community).

7a) Please provide a monitoring plan which is to include the following; i. The objectives of monitoring, ii. The actual issues of concern, the monitoring required to detect trends and ensure adverse effects remain within acceptable ranges (parameters, sites, times and sampling methods), iii. Confirm how in-river monitoring will be integrated with discharge monitoring, include how discharge volumes and loads will be determined, iv. Confirm how the results will be used to inform and adapt the management of the wastewater network and treatment plant over the duration of the consent. 7b) Alternatively provide a consent condition to give certainty that this monitoring plan will be provided in a timely manner.	Proposed condition 34 already proposed this to be developed within 3 months of granting consents and implemented within 12 months of granting. We can instead aim to develop this plan soon and re-draft monitoring conditions to reflect these details before the Hearing. We intend collaborating with Shaw and Shane to develop this plan.	Can you please confirm when this document is likely to available for Council staff to review? Our preference is prior to the drafting of the section 42A report.	WDC and HBRC experts will collaborate to develop a draft benthic monitoring plan during the public notification period. If they are unsuccessful in this endeavour prior to HBRC drafting their s42A reports, WDC will modify the draft consent conditions to specify the relevant monitoring plan requirements and timeframe for its preparation following granting of the consents. The conditions will also reflect adaptive monitoring plan changes that can occur during the consent term.
8) Please provide confirmation as to the rationale for the proposed changes and selection of discharge criteria, including an assessment of environmental implications (particularly for human health), this is in relation to the relaxation of the discharging at night requirement.	The BPO and Conceptual Design reports provided the rationale for these changes. Human health effects are driven by pathogens. Once filtration and UV have been installed the treated wastewater discharge will be cleaner than the river for a large number of parameters. It can therefore be discharged at any time without causing human health concerns. Despite this, under lower flows we have chosen to maintain discharges only during out-going river flows (which require out-going tides when river flows are below 3 x median). Discharging during daytime as well as night	**This answer satisfies HBRC's information requirement**	

	allows slower discharge speeds which will more readily remain within the outfall pipe's capacity and will be a smaller proportion of the river flow, thus having potential for greater dilution upon full mixing with the river. The adopted discharge regime also avoids the need to upgrade discharge pipe capacity and reduces surcharging of the treatment ponds.		
9a) Given the Wairoa Wastewater Stakeholder Group (WWSG) was formed in late 2016 with terms of reference established in early 2017, consent conditions 19 and 20 do not seem necessary or is WDC proposing another stakeholder group be created? Can you please confirm the status of the WWSG plus submit a copy of all meeting minutes held for the WWSG and terms of reference.	The intention is the formation of a new stakeholder group with a focus on reviewing Council's progress with implementing the proposed changes and to assist Council to understand the community's preferences for direction and next steps over rolling 5-year periods. The WWSG has been discontinued because it has fulfilled its roles of providing the community's values and aspirations and guiding WDC's selection of the BPO for consenting. Why do you need all WWSG meeting minutes and terms of reference? The consultation summary and Way Forward report provide these.	A copy of all of the meeting minutes is considered in important in confirming what discussions were had during these meetings and with whom. Please provide a copy of all meeting minutes held for the WWSG.	Copies of the WWSG terms of reference and all available minutes from the WWSG and hui-a-iwi are attached. Unfortunately, some of these meetings were not captured in any notes or formal minutes. The level of detail provided by the available records unfortunately did not provide the level of detail sought by the s92 questions 3c and 9a. This in no way diminishes the value of input received from the WWSG, tangata whenua, and the community, and which directly drove the development of the proposed package which included the continued river discharge as an essential core component and 100% land discharge as the ultimate aspirational goal. The verbal feedback was generally as follows: • The focus for the wastewater system was on eliminating wastewater overflows due to I&I entering reticulation. • The key values used for determining the preferred discharge option were overall affordability and cultural values. • The overriding objective is to improve the health of the Wairoa River • There was a strong desire for removing the wastewater from the river and for some form of land treatment. • "…We want to see the wastewater out of the river and we should start that process so future generations don't have a bigger problem to deal with…" • "…We are a community of limited financial means and our solutions – and the timing

			of implementing those solutions – needs to be affordable…" • "…It is not just the wastewater discharge – we want to see progress on the overall health of the river from the mountains to the sea…" • "…Other stakeholders should contribute including Regional Council, DoC, Central Government…" • Contributors that affect river quality such as point source discharges (eg stormwater, AFFCO) and diffuse discharges such as runoff from farmland need to improve too. In reviewing the proposed condition frameworks it should be very clear as to how their structure and anticipated outcomes provide for these very matters.
9b) Please amend the proposed consent conditions to include conditions that clearly state the role the WWSG will hold during the term of this consent.	Its role is described above and provided for in conditions. We feel these clearly set out the role of the group over the term of consent.	**This answer satisfies HBRC's information requirement**	
9c) Council has concerns regarding the 35 year duration sought for this application, particularly as after the 10th year stages 3 and 4 of the BPO are considered to be aspirational only with no certainty given that additional storage and irrigation will actually occur. Can you please advise what certainties WDC can give in regards to additional storage, irrigation areas, reduced incidences of emergency overflows and river discharge volumes, as it is not clear in the application or consent conditions that a 35 year duration can be justified.	Firstly, WDC are confident that the reticulation programme will significantly reduce the frequencies and volumes of pump station overflows and assist with reducing storage requirements and avoiding/minimising river discharges. The daily flows are about twice the flows recorded in the 1990's and early 2000's, so reticulation improvements should eventually be able to revert flows to those historic levels. In terms of irrigation, WDC can't be certain of the extent of irrigation at this early stage. The implementation relies on farmers agreeing to irrigate wastewater and being within an economically affordable distance for reticulation from the WWWTP to their farm, and their farm soils and topography being suitable. This uncertainty should not detract	The response provided does not provide any certainty therefore does not reflect the 35 year duration that WDC is seeking. Unless further justification can be provided (i.e. proposed consent conditions) then it is recommended that the applicant reviews/amends their proposed consent duration to ensure it reflects the treatment and mitigation measures they are proposing (excluding the aspirational land discharge and associated storage component).	It is hoped that the preceding overview of the condition framework will assist HBRC to understand the long-term approach that the applicant is seeking to establish for wastewater management through this consent. In terms of land application in particular, although it is not possible to provide certainty of irrigation development when the land areas have not been formally identified and their owners directly involved, WDC understand that cultural and community values are the key driver for this. In response WDC has crafted a condition framework to require the work associated with the BPO to be undertaken in a sound and logical sequence with a series of key milestones set down in an enforceable manner to work towards reduced river discharges and

	from the willingness or intent to work towards it over time, however, and the condition framework clearly provides for this direction of travel. Regardless of the extent and rate of adoption of both irrigation and storage, the effects associated with the river discharge regime, including river flow discharge rate and filtration and UV disinfection, are considered to be less than minor. Any adoption of land application would only serve to enhance and delivery on the community aspiration to avoid river discharges.		ultimately transition towards full land application. The solution aspired to by the community will take time and will involve a number of work streams. A plan and programme of action is required, and this is exactly what the condition framework seeks to establish. The time is representative of the transformation planned and in this regard the proposed duration should not be judged on the level of certainty throughout, but rather the ability of the overall approach to deliver an improved outcome. WDC is very aware of the risk and disadvantages of short-term consents. Short-term consents can be inefficient and work against directing long term visions and can compromise momentum and speed/co-ordination of implementation of WDC's programme of ceasing discharges to the river. WDC see no benefit in a series of short-term consents in this case where a long-term view can be taken and provided for. An approach involving a series of short-term consents would merely require WDC to direct time and funds towards consent replacement processes as opposed to working towards reduced discharge to the river. This would also potentially delay development of land discharge schemes due to uncertainty of the consent renewal outcomes. Overall, a long-term approach is considered the best course of action for addressing this issue. WDC therefore continue to seek a 35-year term with a robust review and milestone process. WDC also note that the s128 consent condition review process available to HBRC allows for HBRC to change and/or impose new conditions to respond to any significant issues that may arise.

			Against the background of a comprehensive and enforceable framework embodied within the consent conditions to work towards reduced river discharges and transition to land application, taking comfort in the review option rather than a short consent duration is considered by WDC to be the more appropriate response. This will be assisted with regular progress reviews and oversight by a Stakeholder Group which will maintain pressure on WDC to continually implement the proposed actions.
9d) - Please provide further treatment options/mitigation measures if the discharge into the Wairoa River is to continue at the stage 1 level proposed of the BPO.	Putting cultural values aside, no further treatment or mitigation options in our view would be necessary, as the discharge will have negligible effects (as is currently the case) on the environment upon achievement of Stage 1. The condition framework would however provide for further consideration of options with the WWSG under Conditions 21 and 22, with the System Improvement Plan framework occurring thereafter.	Council disagrees with the response provided and suggest that WDC reassess this question. The further treatment options requested could be/should be appropriate to reduce adverse effects on Maori cultural values and mitigate other effects/concerns regarding the continued discharge to the river.	In addition to the response to 9c) the primary mechanism for addressing cultural values is the transition to land treatment (irrigation) if and when possible. However, the proposed disinfection treatment is a significant step to addressing cultural values for continued discharges to the river, and as such is identified as mitigation in the CIA. Stakeholder Group, iwi, and public meeting feedback all confirmed that the proposed filtration and UV treatment were acceptable for continuing to discharge to the river. The feedback generally did not support any additional or alternative treatment, especially if it was not going to produce environmental or public health benefit. WDC and their community believe it is unrealistic and unaffordable to treat Wairoa's wastewater to a potable standard. This level of treatment would ultimately become redundant when river discharges occur less frequently and when river discharges ultimately cease. The investment would then be a completely wasteful and inefficient use of public funds. Stakeholder Group, iwi, and public meeting feedback consistently indicated that the community preferred investment into other urban and rural projects that would gain

			greater and more widespread water quality improvements for a longer length of the river. One of the roles of the WWSG could be to review potential treatment options, including new or more affordable treatment options that may have become available in the meantime, and to guide WDC with deciding whether to consider implementing any further treatment. It is therefore possible that WDC could be forced by the review processes to implement additional or alternative measures, in the event that WDC does not implement changes rapidly enough to satisfy the community or alternative options become feasible and favourable. WDC do not wish to pre-empt that possibility now.
9e) Please confirm whether there has been any sensitivity testing of the proposed 60m³/s median flow in the Wairoa River. If the actual median flows of the river change over time, what will impact will this have on either effects, or ability to achieve conditions.	No, but it is clear that the river flows are far in excess of the discharge flows. We do not expect changes in river median flows to have any significant impacts on scale of effects or ability to achieve conditions.	The discharge triggers have been linked arbitrarily to a median river flow of 60m3/s. Given the consent term being sought, and potential population and climate change over that time, could a link be provided in the consent conditions such that the flows at the trigger values are updated with changing median river flows and discharge flows?	The selection of median (and half median and 3 x median) flow was not arbitrary. Median flows are the trigger used by Policy 72 of the RRMP for the application of Policy 71's river water quality limits for all of the specified environmental guidelines except suspended solids. Half median flow is commonly used as a cut-off for State of the Environment reporting of water quality and for setting rules limiting river abstractions and discharges. 3 x median is shown on HBRC's river flow monitoring graphs as indicative of flood conditions which reflects its common use for this definition. The river flows above about 3 x median have also been shown to be roughly the flow rate that prevents seawater intrusion into the estuary via the river mouth during in-coming tides and is therefore useful as a trigger for discharges to switch between continuous and only during out-going tides. The hydrodynamic modelling of discharge scenarios also showed how the discharges would disperse differently at each of these river flow rates. As expected, river flows below

			the median flow are the most sensitive to any changes in discharge volumes and tidal timing. The Wairoa River's median and low flows are influenced by the wet weather retention and dry weather supplementation provided by the hydroelectric dams upstream (Waikaretaheke and Waiau Rivers). Any changes in long-term median flow will be of little consequence for discharge dilutions, particularly as discharges will generally avoid summer flows once irrigation is implemented. The definitions on the cover page of the conditions included the methodology to calculate the river flow for the lower Wairoa River. The median flow of 60 m^3/s will be amended to add "or as may be determined from time to time by HBRC." The conditions relating to the System Review Exercises could also incorporate reviews of river flow rates and the associated regime of treated wastewater discharge rates This ensures that this is clear, and also that it can be updated/reviewed should changes in actual river flows, climate patterns, data collection, HBRC calculation methodology etc occur. So yes, a link can be provided in the consent conditions such that the flows at the trigger values are updated with changing median river flows and discharge flows. If median river flows increase, the dispersion and dilution of the discharged wastewater will only improve, assuming that the limits on discharge volumes remain unchanged. If median river flows decrease (which would seem more likely than increases based on NIWA's long term climate change projections for precipitation and dry days), then this merely reinforces WDC's plans for irrigation

			development and restrictions on low river flow discharges. However, flows would have to reduce significantly (median 50 m^3/s or less) for dispersion to change much, as can be seen through comparisons of modelled scenario 2 against 3 and scenario 4 against 5. WDC do not believe the consent conditions need to be modified in response to population changes because the reduction in I & I will far outweigh any population growth and, in any case, should population expand during years 20-35, the storage and irrigation available by that time has the potential to accommodate most of those flows instead of discharging to the river. In any case, wastewater flows will be one of the factors that the WWSG and WDC will review during the term of the consents.
9f) Please consider rewording of Condition 8 to reflect a median (i.e. 6 of 12 samples) and higher percentile parameter that are aligned with the current treatment plant performance data and realistic performance of the upgraded plant (and network).	We need some time to work these out, perhaps in collaboration with Nick. We suggest these can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**	
9g) Please confirm why soluble carbonaceous five-day Biochemical Oxygen Demand (ScBOD5) is proposed for the consent measurement? Has there been any performance data for the existing plant been collected to date for this parameter?	CBOD5 has been monitored, and we need to check if it's only the soluble portion. It has shown a range of 5.9-190 g/m^3 with a median of 23 g/m^3.	Please confirm why soluble carbonaceous five-day Biochemical Oxygen Demand (scBOD5) is proposed for the consent measurement? Has there been any performance data for the existing plant been collected to date for this parameter?	*Soluble* $CBOD_5$ hasn't been measured for WWWTP so WDC is happy to adopt $CBOD_5$ which *has* been routinely monitored since early 2008. Tables 5.2 and 5.3 of LEI, 2017:A2I1 presented the influent and effluent $CBOD_5$ concentrations which indicate its performance has been 84 % reduction based on mean $CBOD_5$. It should be straightforward to use this data to generate appropriate consent limits.
9h) Please confirm why BOD is being proposed as the oxygen demand parameter, as opposed to COD in the previous consent?	COD seems unusual for municipal wastewater that has no industrial inputs, so we changed it to cBOD to be similar to/consistent with other consents for similar discharges.	**This answer satisfies HBRC's information requirement**	
9i) Please confirm why such lenient percentiles (e.g. for scBOD5, 4/12 = 220mg/L 33% of	At the last minute $scBOD_5$ was stated instead of the current COD but the values were unchanged from the existing COD limits, partly	**This answer satisfies HBRC's information requirement – and agree that collaboration**	

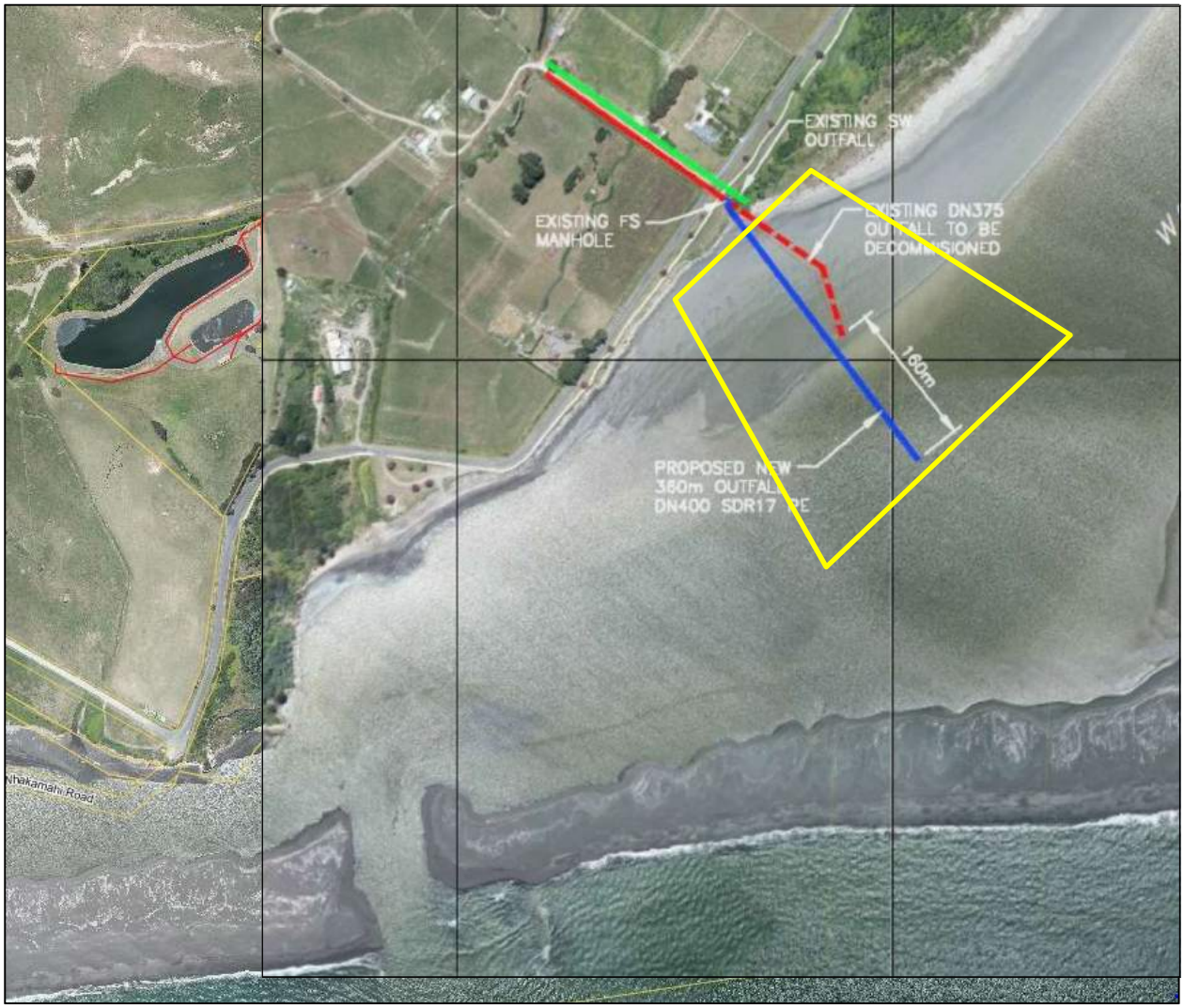
the time, and 10/12 = 224mg/L 83% of the time) are being proposed. However, "current" treated wastewater median is ~23mg/L for cBOD. Current consent is for COD <220mg/L. Note COD will always be significantly higher than ScBOD5.	because we expected these to be negotiated during consent processing anyway. We are happy to adjust the proposed limits to reflect the actual historic $cBOD_5$ concentrations, which are about $1/10^{th}$ of the COD concentrations. A greater difference will also be introduced for the two limits. We suggest that tweaking of these limits can be done as we progress with the application and do not need to be sorted/agreed at this time.	**with Nick Dempsey can occur at a later stage to address this issue**	
9j) Please explain why such narrow bands are to be met between the 33% and 83% trigger values.	All values were simply rolled over from the existing consent limits and changed the criteria to reflect the 8/12 and 10/12 limits which have been applied to more recent consent conditions elsewhere. We suggest that tweaking of these limits can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**	
9k) Please provide treated wastewater consent parameters for pre and post upgrade to the network and treatment plant.	We would also like to understand why such parameters would be needed, as we see no environmental effects rationale for imposing future more stringent limits when the current effects are no more than minor. Again, we suggest that working through this issue can be done as we progress with the application and do not need to be sorted/agreed at this time.	**This answer satisfies HBRC's information requirement – covered in question 4c)**	
9l) Provide proposed consent conditions for E Coli.	We need some time to work out appropriate limits pre and post UV.	**This answer satisfies HBRC's information requirement – and agree that collaboration with Nick Dempsey can occur at a later stage to address this issue**	
9m) Conditions 21 and 22. Confirm who the System Review Data Reports are intended to be issued to at 5, 10, 20, and 30 years.	The work and processes involved are intended to assist the WWSG and ultimately WDC to make decisions around the options to achieve the outcomes stated in the conditions. Once the option or approach has been determined, this will be presented to HBRC under the System Improvement Plan framework.	**This answer satisfies HBRC's information requirement**	

9n) Conditions 25 & 26. Confirm whether measurement of influent wastewater to the treatment plant is possible, as this will be the key gauge of success of the I&I programmes (Condition 15, Network Management Plan).	Yes, this is routinely measured already (flow at Fitzroy St pump station and quality at WWTP inlet). Each pump station's flows are continuously monitored and can readily be used to gauge the success of the I & I programmes. Some reductions have already been observed in terms of daily total flows and frequency of pump station overflows.	**This answer satisfies HBRC's information requirement**	
9o) Condition 42. Is the intention that these reports be issued annually or biennially	Every 2 years.	**This answer satisfies HBRC's information requirement**	
10) The cultural values outlined in the CIA should underpin the proposed consent conditions of this proposal. Removing the discharge from the Wairoa River is paramount (to provide for the cultural values set out in the CIA) and the BPO sets out stages where this can be gradually improved overtime. Stages 3 and 4 of the BPO have been described as aspirational, which is of concern to Council. This however is not mirrored in the CIA which states *"…by year 30 The Package will have delivered an achievable, positive result for the river's cultural values and health in a manner which has been well consulted upon and which is realistically achievable, acceptable and, with good planning, affordable for the Wairoa Community".* Council also have concerns regarding the difficulty in finding and securing appropriate land to irrigate on, particularly as this is wholly reliant on a 3rd party (long term) participation. Therefore, to reflect the cultural values identified in the CIA, the existing resource consent	When drafting the CIA Nigel acknowledged and understood the need for time to implement the stages proposed. The installation of filtration and UV is a significant step towards drinking water quality for the discharge while avoiding a very expensive process that will eventually become redundant. The CIA provides a cultural assessment of the discharge when each stage is achieved, regardless of whether it is achieved within the aspirational timeframe or at a later stage. The conclusion that there are cultural concerns until full implementation has occurred will provide WDC with a strong driver to continue implementing irrigation over larger land areas, and this will be no doubt reiterated by the WWSG. With strong community support and successful demonstration schemes such as the Mucalo farm, WDC hope to gain much wider buy-in from the rural community for expanding the irrigation, and perhaps this will occur faster than anticipated if all goes well. Requesting notification will provide an opportunity for greater understanding around how the proposal provides for cultural values, and we would look to digest and consider any matters raised in submissions, which may result in changes or specific actions.	Council does not consider this question appropriately addressed and would have thought that the CIA would have been amended prior to this application being made to include any discussions that have been made with tangata whenua confirming that land discharge and associated storage are aspirational and may not occur (question 3). Therefore Council are seeking the section 92 issues identified in the letter dated 7 May 2018 for application DP180173L - P I and J R Mucalo be provided as soon as possible, this information was due on 30 May 2018 (see attached copy for your reference). This information is required so Council can assess both applications simultaneously/bundle the applications for processing if it is considered the best option. A copy of this letter and previous correspondence will also be sent to Paul Mucalo.	The CIA **does** reflect the aspirational nature of irrigation and storage expansion in Stage 4, and the assessment conclusion for Stage 4 includes "*very significant increases in storage capacity and irrigation are projected which will have a corresponding positive effect on the river's cultural values*" and ***"The 21-30 year stage continues to greatly improve the operations of the WWWTP in a manner which incorporates tangata whenua worldviews, but does not fulfil them completely by removing wastewater discharge to waterways completely nor delivering 100% drinkable quality water to the river."*** In section 7.3 of the CIA Nigel observes: "*During the 30-year implementation of The Package a significant amount of wastewater will be discharged to land, but waterways discharge will not be completely discontinued. The impact of the discharges will be less and thus more acceptable than the current situation, but remains culturally inappropriate to a lesser extent than the current situation."* The CIA's conclusions repeat these views for Stage 4. Nigel How has also provided the following response in relation to this request: "The Oxford definition of the word 'plan' includes: • A detailed proposal for doing or achieving something.

(previously known as WP180173 – applicant P I and J R Mucalo) could be amended to reflect the proposed BPO (which is likely to be publically notified) or alternatively could be included in this application with proposed consent conditions amended to suit. Alternatively, please provide a pathway/amended consent conditions so give Council certainty that land application options will be explored and implemented. **We note the effects on cultural values, particularly tangata whenua, are effects that we need to consider as the discharge of treated wastewater into the Wairoa are likely to remain. Nigel How confirmed in the CIA "The effects of the current discharge regime on the river's cultural values are at odds with tangata whenua worldviews and is culturally offensive", unless the wastewater is treated to a 100% drinkable quality then this view would apply even with the proposed filtration and UV treatment proposed in stage 1.**			• An intention or decision about what one is going to do. By the above definition it is the proposed intention of WDC to implement the 30 year plan, which was my understanding when I wrote both reports. Whether or not the 30 year plan can be achieved with any percentage of certainty is an impossible question to answer. However, recent community activism requires delivery of the plan. The willingness of WDC to positively respond is a strong indicator that the 30 Year Plan will be implemented." WDC also note that all MACA claimants were sent a summary of the proposed package of changes for future consenting and they were subsequently sent a copy of the AEE and there has been very limited feedback. WDC would like public notification to proceed without delay as the best course of action to confirm views around the efficacy of the proposal in providing for cultural values. It may be that the subsequent engagement and the Hearing process can be used to further develop and refine the draft consent conditions WDC do not consider consent bundling to be appropriate as neither discharge consent actually relies on the other to be implemented. Each discharge can be managed independently in accordance with operating parameters and in compliance with separate consent conditions without triggering compliance or operational issues for the other. The Mucalo consent is an example of the process that would be required to enable land irrigation. Future irrigation consents need to be able to be processed independently of the Mucalo and river discharge consents without

			triggering s128 reviews of those prior consents' conditions. In WDC's view bundling is not appropriate because the Mucalo consent does not require the river discharge consent to be assessed or exercised in order for the Mucalo irrigation to be assessed and exercised in compliance with its separate discharge consent conditions i.e. it is a land discharge that does not rely on a river discharge to be able to operate. Likewise, the proposed river discharge consent does not require the Mucalo consent or any other irrigation consent to be assessed or exercised in order for the river consent to be assessed and exercised in compliance with its discharge consent conditions. WDC can appreciate HBRC's desire to assess them together because of their related reliance on the Wairoa WWTP as their shared treated wastewater source, however WDC believe that the separate or co-ordinated implementation of each consent is simply not inextricably linked, and therefore bundling of their consent processing is not necessary. The Mucalo s92 response will also be progressed separately from the WWTP consents.
11) A search of our records indicates that there is no resource consent to discharge stormwater from the municipal system in to the Wairoa River. There is confirmation in the application that very little is known about the status of the current stormwater system (LEI2015A1I1 – section 7 Stormwater Management Issues), however it is clear that wastewater is getting into the stormwater	Wastewater is not entering stormwater; stormwater is entering the wastewater system. The only known exception is where the treated wastewater outfall pipe is surcharging and then overflowing via the emergency pressure relief weir into the last few metres of stormwater drain between Kopu Road and the coastline. Once the main discharge structure is modified and I & I issues are reduced this will become a much less common event.	**This answer satisfies HBRC's information requirement – HBRC staff have been advised of the application that is in the process of being prepared, in conjunction with the investigation work being undertaken by WDC which is identifying and remediating illegal stormwater connections into the sewer network**	

system and possibly contaminants from other land uses within the catchments. Therefore, resource consent would be required for those stormwater discharges that do not meet Rule 163 as per the Regional Coastal Environmental Plan (RCEP) and Rule 42 of the Regional Resource Management Plan (RRMP), the relevant rule is dependent on the location of the discharge pipe into the Wairoa River. If resource consent approval is needed then the current investigations that WDC are currently undertaken will be integral to that application. The HBRC Consents section suggests that WDC meets with HBRC staff for a pre-application meeting to discuss the appropriate steps in ensuring that, if an application is needed that it is applied for in due course. This matter will be passed onto the Incidents and Enforcement section if necessary.	WDC and HBRC's consent compliance staff have discussed consenting needs for Wairoa's stormwater for several years now and WDC have been gathering information to support a future consent application. Grey Wilson of Good Earth Matters has had preliminary discussions with HBRC regarding preparation of a WDC global stormwater consent application. In any case, we do not believe that the treated wastewater consent application should be delayed or related to the stormwater consents because the reticulation and discharges are not directly linked.		
12) Please confirm the likelihood Rule 26.5.6 for the Operative Wairoa District Plan would trigger the need for public notification given it is a Discretionary Activity? Can you please provide clarification regarding this matter from WDC Planning staff? It may be in the best interests for WDC to have a joint hearing (if needed) to avoid incurring additional costs associated with having two separate hearings.	We would not expect public notification from a land use perspective, particularly given effects on the receiving water body would have been addressed under this process. We are in the process of discussing this with WDC planning staff.	**This answer satisfies HBRC's information requirement – this question was more of a "heads up" to WDC to make provision for perhaps a joint hearing if needed.**	



AEE Figure 5.1: Main WWWTP Outfall Relocation Area with Proposed Outfall (June 2019) Overlaid

Annex F – 1st s92 HBRC Feedback

MOTT MACDONALD

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Attention: Tania Diack

Your Reference
Wairoa WWTP Consent

Our Reference
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WAIROA WWTP DISCHARGE CONSENT - REVIEW OF CONSENT APPLICATION AND SECTION 92 RESPONSES (Rev B)

11 July 2019

Dear Tania,

1 EXECUTIVE SUMMARY

Mott MacDonald were commissioned to review the resource consent renewal application and supporting documents for Wairoa District Council's Wairoa wastewater treatment plant (WWTP) discharge. The specific objectives of our review were to focus on the existing wastewater treatment system, and comment on the proposed staging of the works, management regimes, and monitoring conditions.

Our overall findings relating to the treatment plant and associated trated effluent discharge are summarised as follows:

- Detailed assessment of treatment plant performance and expected performance after network and treatment plant upgrade has not been provided, and forms a crucial part of setting conditions for continued performance and improvement in some parameters as identified by the BPO.
- Treatment plant performance as summarised in the reports indicates regular, but not consistent compliance with existing consent conditions, but would appear to be benefiting from significant dilution from the network. Reducing the I&I is an important step for bringing the treatment system into compliance consistently, and should be considered in the assessment of performance.
- The proposed draft consent conditions represent in the most part a significant relaxation of effluent discharge parameters when compared to the previous consent. Significant revision of these is required, including a sound basis for proposed measurement parameters and ranges.
- There is not a strong link between the BPO established in the reports through numerous workshops with key stakeholders, and the proposed draft consent conditions.

Our further recommendations to HBRC relating to the broader application are:

- Consider revision of the consent conditions to measure load equivalent to the existing discharge, so that continued effects can be assured.
- Inclusion of an issues list or similar, or reflection of the key outcomes identified in the BPO within the consent conditions, including some form of review against these. Specific clauses in the draft consent conditions that this relates to have been identified as 16, 17, 18, 21, 22, and 23.

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- Assess whether the land discharge applications should be combined with this consent application, given that they represent the same WWTP discharge and are part of the same identified BPO.
- Consider suitability of a 35-year consent term, given that the adaptive approach prescribed in the draft conditions, and the staged BPO strategy only provide a degree of certainty around the improvements that will be made for the first 10 years (the remaining stages are described as "aspirational").
- Ensure that the loosening of discharge flow effects as described in the draft conditions (1/2 median, median, 3x median etc. in Condition 2 and 3) is adequately assessed for effects based on review by other technical expert reviewers.
- Consider additional suitable conditions covering UV transmissivity, minimum flows to UV treatment before bypassing, and sludge measurement and reporting.

2 INTRODUCTION

Mott MacDonald (MM) were commissioned by Hawkes Bay Regional Council (HBRC) to review the consent application and associated technical reports by Lowe Environmental Impact Ltd (LEI) on behalf of Wairoa District Council (WDC), relating to wastewater discharges from the Wairoa wastewater treatment plant (WWTP) to the mouth of the Wairoa River.

A site visit was undertaken on 08 February 2019 and the following documents were reviewed in cursory detail at this stage:

- AEE: *Application-C0-WDC2018C0-Wairoa_WWTP_Discharge_Consent_AEE-Final.pdf*
- Draft Conditions: *Application-AEE-AppD-Draft_conditions-181129_AEE.pdf;*
- Discharge BPO: *B4-Application-LEI2018B4-Discharge_BPO-181029-AEE.pdf*
- Discharge Concept Design: *C1.0-Application-LEI2018C1.0-Discharge_conceptual_design-181109-AEE.pdf*
- System Data and Compliance Summary: *A2I1-Treatment-LEI2017A2I1-System_Data_Compliance-171020-AEE.pdf*

Specifically, the scope of the review covered:

- Review the application and in particular the above reports and comment on whether the existing wastewater treatment system and proposed staged changes are fit for purpose and are robust enough for the proposed duration of the consent.
- Comment on whether the proposed staged works are reasonable in regards to timing.
- Your view on whether other/further management regimes should be required to manage the existing infrastructure and proposed upgrades.
- Any recommended monitoring conditions and/or any changes to those proposed.
- Any other comments on the proposal.
- Review comments addressing the above to be provided as written memo/letter.

Given the number of documents in the application, a number of initial queries were raised with the applicant informally in February 2019, to clear up areas of uncertainty for the reviewers. Where these could not be resolved quickly, formal Section 92 questions were lodged on 26 March 2019, and responded to on 19 May 2019.

This review document has been revised based on the responses from the applicant in February and May 2019.

3 PRELIMINARY FINDINGS

Our preliminary findings are documented under each report as follows:

3.1 Wairoa Wastewater Treatment Plant Discharge Resource Consent Application and AEE (LEI, 2018:C0)

Table 1.1, in Section 1.4, outlines a summary of the proposed future treated wastewater discharge system for Wairoa. However, the text in this section notes that Stages 3 and 4 of the programme (11-20 years and 21-30 years respectively) are aspirational only, despite taking place within the consenting term (35 years) being sought. The text also notes that only the river discharge parameters in this table are covered in this consent application. We also note that the proposed strategy is not directly reflected in the proposed consent conditions (see below).

Section 1.5 notes that consents are sought for a 35-year term for:

- Pump station overflows to the Wairoa River;
- Treated wastewater discharge to the Wairoa River;
- Discharges to air from the WWTP;
- Riverbed occupation and disturbance in the Wairoa River bed.

We note that irrigation to forestry and farms, storage facilities, and catchment improvements are not included within this consent application (Section 1.6), despite being part of the overall package defined by the best practicable option (BPO).

The separation of the surface water discharge and land irrigation consents is problematic in my view. Gradual transfer of discharge flows is identified as part of the BPO (see further comment on this below), and the change in flow regime identified will require greater storage and/or irrigation.

Section 2.1 notes that a treated discharge pipeline overflow into an adjacent stormwater channel exists, but this volume and frequency of this discharge is not known. This is one of the drivers for an upgrade to the outfall pipeline; to remove capacity limitations.

The three pump stations are noted to overflow during wet weather events. The frequency and dilution of these overflows is not stated. This is one of the divers for network improvements to reduce inflow and infiltration, increase pumping capacity and reliability, and therefore pump station inundation.

The existing consent conditions related to the discharge are noted in the AEE, and copied below.

2. The total discharge of sewage effluent as authorised by this Resource Consent shall not exceed 5400 cubic metres per day.

3. The discharge of sewage effluent as authorised by this Resource Consent shall;

(i) Only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide;

(ii) Only occur after 6:00 pm; and

(iii) Shall cease by 6:00 am at all times.

4. During times of river mouth closure, the Consent Holder shall cease the discharge of sewage effluent into the Wairoa River, unless:

(i) The ability to store excess effluent has been exceeded; or

(ii) Prior to full capacity, it is recognised that the maximum storage capacity is likely to be exceeded during a time when no discharge is allowed.

Where discharge is required for reasons 4(i) and 4(ii) above, the discharge shall only be in accordance with condition 3. The Consent Holder shall give notice to the Environmental Regulation Section of the Hawke's Bay Regional Council of the date discharge was stopped due to river mouth closure, and the date discharge re-commenced.

11. Sewage effluent discharged from the treatment plant shall meet the following standards:

COD not greater than 220 mg/l

Total Ammonia not greater than 36 mg/l

Suspended Solids not greater than 87 mg/l

It is noted in the report "WWTP System Data and Compliance Summary" (LEI, 2017:A2I1) that despite low Hydraulic Retention Times (HRTs), high Inflow and Infiltration (I&I), high BOD load, and high sludge volumes, the plant still performs as per typical maturation pond guidelines.

However, the data presented in Table 1.2 of LEI, 2017:A2I1 indicates that average influent TP is 3.3mg/L, and average influent ammonia is approximately 17mg/L (derived from the effluent and % reduction). Typically, these values would be expected to be two to three times higher, indicating that the effluent discharge is likely benefiting from significant dilution from infiltration in the network.

Given the known issues around high I&I flows in the network, and the likely resultant of contaminants in the treatment plant discharge, we would recommend considering a load-based discharge consent to ensure that consent conditions are met through treatment rather than dilution.

Section 2.3 notes that a comprehensive community consultation process was carried out, involving expert and community reviews of a variety of options for the treatment and discharge of Wairoa's wastewater. From this, the following key features were agreed:

- Additional treatment was required for pathogen control prior to discharge;
- Ideally 100% land discharges should replace the 100% river discharge regime;
- Significant volumes of storage will be necessary for discharge management; and
- Development of future storage and irrigation needed to occur gradually so that it would remain affordable for the community.

These goals should be represented in some form in the draft consent conditions.

Section 3.1 of the AEE outlines high level information on the treatment plant system, i.e. an aerated pond (4,750m^3) followed by a maturation pond (18,250m^3), two aerators in the aerated pond (noted to be diffused air Aquarator units at the site visit), and 500mm storage depth in the maturation pond.

Greater detail of these pond parameters is reference in the report WWTP System Data and Compliance Summary (LEI, 2017:A2I1).

In A2I1, Table 3.2 indicates WWTP performance data, and suggests a number of parameters (such as TP and TN), which have been "corrected". Whilst many of these do appear erroneous, the values used to replace erroneous data are significantly lower, and we would recommend that these are deleted from the set rather than revised to some arbitrary value which could skew statistical analysis.

Section 4.3 of A2I1 sets out the pond design parameters. However, it does not correlate the BOD surface loading rate of the pond – a common design parameter for pond capacity assessment. So, it is not possible to determine whether the pond system is actually performing as would be expected (rather than relying on dilution). We recommend that these loading rates are provided to assess this.

From A2I1 Section 7.3 Dot point 4 after Table 7.1, notes the following:

"Discharge quality limits for COD and/or SS have been exceeded on 1-4 occasions out of 12 in every compliance report, and either the effluent quality limits are too tight and should be increased upon renewal of the discharge consent or treatment is occasionally poorer than expected. It has been noted by HBRC that sludge accumulations have reduced the WWTP's performance, but high I & I may also contribute. The effluent quality has a wide range despite its median values being well below the consented limits. More recent resource consent conditions for other WWTP discharges, in recognition of the inherently variable effluent quality, often allow the rolling 12-month median to exceed any of the effluent quality limits on 2 out of 12 monthly sampling occasions before they are deemed to be a breach of the effluent quality limit condition. Adopting this approach might have resulted in Wairoa WWTP achieving full compliance most, if not all, of the time."

The findings of only four compliance reports were presented (2009, 2011, 2013, and 2014). If other compliance reports are available, these should also be included in the assessment, especially given comments regarding worsening performance in recent years.

Exceedances are noted on numerous occasions for flow, and on few occasions for some pollutant parameters.

Table 1: Summary of key compliance report exceedances related to treatment

Year	Oct 2009	Feb 2011	Jun 2013	Apr 2014
Flow - <5,400m³/d	Exceeded for storm flows	Exceeded for storm flows	Exceeded for storm flows	Exceeded for storm flows
Flow – falling tide at night	Exceeded for storm flows	Exceeded for storm flows	Exceeded for storm flows	Exceeded for storm flows
COD <220mg/L	1 of 12	3 of 12	3 of 12	2 of 12
Suspended Solids <87mg/L	None	1 of 12	4 of 12	2 of 12

The above indicates that managing I&I would assist with compliance with similar conditions in a future consent, and that percentile concentration targets (rather than maximum values) would also be more achievable, as is more common for wastewater discharge consents.

Rather than a rolling monthly median than can be exceeded, modern wastewater discharge consents typically include a median target over a rolling 12-month (monthly samples) average. Further exceedances of this value are not necessarily due to the way a median is calculated. Additionally, many consents include a higher percentile target calculated in a similar way in lieu of a maximum value. We would expect to see a similar approach taken for this consent, with values set by the effects in the environment.

If it is the case that the existing discharge can be shown to have little or no effect on the receiving environment, then we would expect to see a detailed analysis of treatment performance over recent years to demonstrate appropriate median and percentile targets. Graphical and statistical data over the recent years of performance should be provided.

Section 5.7 of the AEE indicates that the only upgrades to the treatment plant will include filters and UV treatment (and possibly a grit trap, which is noted only in the consent conditions). No other upgrades are planned for the treatment plant, as "its treatment performance is currently adequate" and the installation of filtration and UV lamps will improve the treated wastewater quality so that it is more acceptable to discharge.

If the application demonstrates that no effects are noted in the environment, then the above described upgrades may be warranted for the other reasons outlined in the BPO. However, continued performance of the treatment plant ponds requires ongoing upkeep, in terms of sludge management, and aeration. If these aspects are not maintained, then performance will deteriorate.

We also note that the goal of the proposed UV and filtration system is to remove pathogens. Given this aim, membrane filtration may be a better option, especially if the network I&I can be better managed. This option does not seem to have been considered in the BPO or application, and would have similar if not better results.

Current treatment performance is summarised in Table 5.3, Section 5.9 of the AEE. This in turn is extracted from Tables 4.3 and 4.4 of the Conceptual Design Report (LEI, 2018:C1.0).

Table 5.3: Treated Wastewater Quality During 2008-16

Parameter	Current Quality (2008-16)			Potential Quality		
	Range	Mean	Median	Range	Mean	Median
COD (g/m^3)	34 – 620	158	126	20 – 60	40	35
CBOD (g/m^3)	6 – 190	31	23	3 – 30	20	17
NH_3-N (g/m^3)	4.0 – 36	16.1	15.6	2.5 – 25	12	10
TSS (g/m^3)	7 – 290	64	52	2 – 50	15	10
E. coli (cfu/100 ml)	8 – 470,000	5,250	5,200	0 – 5,000	60	50

No basis is provided for the "Potential Quality", and given the inclusion of only filtration and UV in the treatment plant upgrade, and flow reductions removing the dilutionary effects, these values seem very unlikely.

3.2 Wairoa Wastewater Treatment and Discharge Best Practicable Option (LEI, 2018:B4)

As noted in Section 3.1 of the BPO Report, the RMA defines the best practicable option (BPO) as:

> *"the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to—*
>
> *a) the nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects; and*
> *b) the financial implications, and the effects on the environment, of that option when compared with other options; and*
> *c) the current state of technical knowledge and the likelihood that the option can be successfully applied."*

It is also worth noting that the requirements of the NZ Coastal Policy Statement (discussed in the BPO Report Section 3.2), describe the requirements for managing the discharge of human sewerage. This is particularly important when related to the pump station and treatment plant overflows of untreated wastewater.

> *"In managing discharge of human sewage, do not allow:*
> *(a) discharge of human sewage directly to water in the coastal environment without treatment; and*
> *(b) the discharge of treated human sewage to water in the coastal environment, unless:*
> *(i) there has been adequate consideration of alternative methods, sites and routes for undertaking the discharge; and*
> *(ii) informed by an understanding of tangata whenua values and the effects on them."*

The BPO Report generally describes the process undertaken to establish the BPO. The applicant describes in this document (and some supporting documents), how stakeholder groups used workshops to establish the guiding values that options should be assessed against, and then development of options and scoring to obtain the BPO.

We have viewed the memo which summarises the outcome of the Values Workshop (LEI,2017 A6I1) and sets out the agreed scoring and ranking system. However there doesn't appear to be a summary or minutes of the option development and scoring with the Stakeholder group. Providing these minutes will assist with confirmation of the appropriateness of the BPO process, i.e. that the BPO is actually the BPO.

The selected BPO is described in the BPO report (Section 10) as:

> *"continued discharge to Wairoa River while implementing a package of wastewater irrigation to a series of farms, reductions of reticulation leakage and pump station overflows, installation of filtration and UV treatment at the WWTP outlet, installation of treated wastewater storage, and support for wider Wairoa River catchment improvement projects."*

It is important that these aspects of the BPO are reflected in the consent conditions. It is worth noting that the BPO has identified increased storage and irrigation over time (i.e. shifting the discharge receiving environment), but this intent is not a clear requirement of the draft consent conditions (further comment below).

3.3 Conceptual Design for Wairoa Wastewater Treatment and Discharge (LEI, 2018 C1.0)

This document builds upon the findings of the BPO report, to further develop the preferred solution. In particular, it discusses broad concepts for:

- Filtration and UV treatment;
- Storage systems;
- Discharge system; and
- Discharge regimes.

We note that the in developing the discharge regime, future potential treated wastewater quality values are noted as Table 5.1, (transposed from tables 4.3 and 4.4 in the same report). As noted earlier in our assessment, the likelihood of achieving improved ammonia removal through introduction of filtration, UV treatment, and reduced network dilution is very low. Some improvement in TSS and *E.coli* are likely as noted, but the improvement presented is significant, and doesn't take into account the reduction of the dilutionary effects of the I&I reduction campaign. A more detailed assessment of expected treatment plant performance from the proposed network and treatment changes is recommended, to provide greater confidence that the discharge regime being proposed will behave as expected.

Section 6 of the Conceptual Design report outlines the proposed phasing over four stages, spanning 5 or 10 years each. The report notes that Stages 3 and 4 (11 to 20 years, and 21 to 30 years respectively) are aspirational only. Given that a 35-year consent is being sought, and proposed changes to address the BPO are only outlined for the first 10 years, we would question whether a 35-year term is appropriate. If an adaptive management approach is progressed in the consent conditions, then greater certainty should be provided that the issues identified in the application, and in particular BPO, will be addressed over the full term of the consent.

We note from this report that the ponds are not known to be lined, and so may lose some liquid volume to groundwater.

3.4 WDC's Draft Consent Conditions (AEE-AppD, v14, 29 Nov 2018)

This document sets out WDC's proposed draft conditions for consideration.

We note that the Definitions section at the start, defines the median Wairoa River flow as 60 m^3/s. This value will be critical in determining the discharge regime as outlined in the following conditions. If the Wairoa River's median river flow changes over time, will this trigger value be modified, and if not, what effect will it have on the achievability of meeting discharge regime requirements. Sensitivity testing of these changes may assist with demonstrating this.

Proposed Condition 2 continues the currently consented discharge conditions up to median river flows only (previously applicable at all river flows), allows discharge on any tide from median to 3x median river flows, and discharge at any time and volume above 3x median river flow. In effect this is a loosening of the current consent condition. Confirmation is recommended by other technical experts that this the required dilution will be achieved under these conditions – assuming the current WWTP effluent performance.

Proposed Condition 3 expands on Condition 2, and is applicable once filtration, UV disinfection, and storage are in place at the WWTP. It further reduces the river flow regime triggers under which treated wastewater can be discharged to the Wairoa River. Given earlier comments in this review about the low likelihood of achieving the "Potential Quality" outlined in the Conceptual Design Report, we recommend that the applicant demonstrate the dilution and effects of the discharge assuming a more realistic assessment of the treatment plant performance after upgrade with filtration, UV and storage.

Condition 8 outlines discharge quality conditions for the treated wastewater. Parts (a) through (d) set out limits for soluble carbonaceous BOD_5, TSS, *E.coli*, and ammonia-N. All of these limits have two target parameters worded as follows:

1. … must not exceed XX g/m^3 in more than 8 out of 12 consecutive monthly samples, or
2. XX g/m^3 in more than 2 out of 12 consecutive monthly samples.

In our view, these conditions are worded incorrectly. Point 1 only requires that 4 of 12 (33%) samples are below the limit specified, and Point 2 requires that 10 of 12 samples are below the limit specified (83%).

It is normal practice that a median target is specified, or alternatively 6 of 12 consecutive monthly samples. The upper limit (83% requirement) is a common approach taken in consents, rather than applying a maximum, which is not usually workable with biological wastewater treatment systems. We recommend that Point 1 (above) is modified in each case as noted above.

Condition 8(a) sets a soluble carbonaceous five-day biochemical oxygen demand ($scBOD_5$) of 220g/m^3 (to be achieved only 4 out of 12 samples). The previous condition was for COD as a maximum at the same value – 220g/m^3. $ScBOD_5$ is filtered to remove particulate matter, and modified to remove the effects of nitrification in the test seed. $cBOD_5$ is a common parameter for pond discharges as they do not typically nitrify. This parameter change from the previous consent condition introduces a significant loosening of oxygen demand condition for the following reasons:

- BOD always measures at a lower value than COD in any sample, as it only measures the biological oxygen demand, whereas COD measures all oxygen demand (i.e. including chemically available). Typically BOD is approximately half of COD measurements in raw wastewater, and can vary in treated

wastewater depending on the treatment process. Lower target values are required to maintain a similar environmental discharge if changing from COD to BOD.

- Filtering the sample will reduce the measure COD or BOD in the sample. This change also requires that lower target values be set if changing from unfiltered to filtered. In fact, we would expect that even the influent $scBOD_5$ at a municipal WWTP would be less than the proposed effluent condition.
- Conditions in the previous consent were maximum values, and the monitoring reports indicated that BOD and TSS were exceeded in most years 1 to 4 times out of 12 samples. Changing this to 8 out of 12 samples provides the ability to discharge much higher concentrations on a regular basis.
- The two conditions indicated 220mg/L and 224mg/L are so close together, and with vastly different requirements for frequency of exceedance, that the need for two conditions is meaningless.

For the above reasons, these conditions require revision, and need to align with a more detailed assessment of the expected treatment plant performance after I&I reductions, and the addition of filtration, UV, and storage.

Similarly, Condition 8(b) for TSS, the proposed conditions are 87g/m³ and 98g/m³ for the two exceedance frequency parameters respectively. Again, these parameters are very close together, and the difference is likely to be meaningless. As noted above, the existing consent imposes a maximum limit of 36g/m³, whereas this proposed condition reduces this to a limit that only needs to be achieved ~33% of the time. This condition allows a significant relaxation in treatment performance, and cannot stand up to a claim that a similar level of treatment will be maintained to maintain the same level of effects in the receiving environment.

No parameters have yet been proposed Condition 8(c) for *E.coli*. Given that these are not being driven by receiving environment requirements, but rather cultural and recreational drivers as set out in the BPO, target values should be aligned with a realistic assessment of the treatment plant performance before and after upgrade.

Condition 8(d) for ammoniacal nitrogen, proposes conditions of 36g/m³ and 40g/m³ for the two exceedance frequency parameters respectively. Again, these parameters are very close together, and the difference is likely to be meaningless. As noted above, the existing consent imposes a maximum limit of 36g/m³, whereas this proposed condition reduces this to a limit that only needs to be achieved ~33% of the time. This condition allows a significant relaxation in treatment performance, and cannot stand up to a claim that a similar level of treatment will be maintained to maintain the same level of effects in the receiving environment.

For plants with UV disinfection, we would typically expect to see a condition around achieving UV transmissivity of a suitable percentage. This ensures that UV disinfection actually takes place, and is managed in reality by maintaining effective treatment and filtration upstream. We recommend that a transmissivity condition is included.

We would also recommend setting a minimum flow to be filtered and UV treated before bypass of these systems is initiated. There is generally an expectation that these systems cannot be sized to treat all wet weather flows, and this agrees with the Conceptual Design report. But a level of treatment should be outlined that will address the solution requirements set out in the BPO.

We note that there is only one set of effluent discharge parameters proposed, despite an upgrade to the treatment plant taking place within the term of the consent. We would expect that two sets of parameters be provided, the first maintaining an equivalent treatment performance to the existing consent, and the second demonstrating the improved treatment performance provided by the

upgrade. In this case, discharge TSS and *E.coli* parameters will improve in line with the BPO requirements.

We recommend that a condition be added (or this added to an existing reporting condition) to measure sludge levels in the two ponds approximately every 5 years, and desludge when levels exceed the design requirements for the ponds.

Conditions 25 & 26. We recommend that measurement of influent wastewater to the treatment plant is also measured, as this will be the key gauge of success of the I&I programmes (Condition 15, Network Management Plan).

There are a number of reporting requirements set out in the proposed consent conditions as summarised below.

Table 2: Draft Consent Condition report and comments

Cond.	Proposed condition	Comment
10 to 12	Structural Design Report (in the event of a change to the discharge structure).	
14	UV and filtration system detailed design report (within 2 years of consent).	
15	Network Management Plan (within 12 months of consent).	
16	Annual updates in first 5 years on achieving 50ha of irrigation.	Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE.
17	Wastewater Education Plan (WEP) (within 12 months of consent). Consent holder must undertake these.	Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE.
18	Catchment Enhancement Plan (within 12 months).	Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE.
19	Facilitate a Wastewater Stakeholder Group (>6months prior to System Review Data Reports submission).	
21 & 22	System Review Data Report (SRDR) (within 5 years, and at 10, 20, 30 years).	Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE. Also consider including assessment of performance against the last SRDR. This condition does not appear to specify who these are issued to. Stakeholder Group? Council?
23	System Improvement Plans (within 6 months of SRDRs).	Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE.
24	Wastewater Monitoring Strategy (WMS) or amendments to the existing WMS. (within 12 months of submitting System Improvement Plans).	
34	In River Monitoring Plan (within 3 months).	

35	Invite panel for Cultural Health Index Monitoring (within 2 years).	
36	Cultural Health Index Monitoring Protocol (no timeframe).	
41	Asset Management Plan provision every 5 years. Available to Council on request.	
42	Annual report. 2020 and every 2 years thereafter.	Should be every year or renamed a Biennial Report. Suggest date is linked to 1 year after start of consent.

In general, we recommend that the required reporting is reviewed against the stated issues that are being addressed in the BPO report. These could be set out in a separate issues list generated with the application, or set out individually in the conditions.

For example, Condition 16 – Land treatment. This requirement is outlined in the BPO and AEE as an integral component in the first 5 years. If this is a part of the BPO, then the issues that it is intended to address should be outlined, and the reporting on this be reviewed by Council or the Stakeholder Group against these issues. At present, the proposed condition requires reporting, but not commitment to work towards the proposed staged upgrades and BPO.

4 SUMMARY OF S92 REQUESTS

Specific questions to be raised initially informally and then through s92 requests to the applicant are as follows. Responses provided by the applicant through informal discussions and s92 responses are added with bullet pointed below the questions. Question numbers refer to the HBRC s92 question numbering.

AEE, BPO, Conceptual Design and Data Summary Reports

1. Please provide evidence that the data set modifications prescribed in Report A2I1 do not significantly modify the resultant summary data.
   - s92 Q 4a) Details of the data modifications were provided.
2. Provide full data sets and summary calculations, including graphical and statistical representations of performance, that form the basis of AEE table 5.3:
   a. Historical performance flow and load/concentration data for the WWTP;
   b. Historical influent parameter records (flows and loads).
   c. Confirm whether there is any treatment plant influent and effluent performance data for 2017 and 2018.
   - s92 Q 4b) Some additional data provided, but complete data sets not provided.
3. Provide technical assessment of the pond treatment capacity against established pond design parameters. This should cover at least historical kgBOD/ha.day, and assessment of changes to performance due to reduced I&I in the network, and changes to the treatment process.
   - s92 Q 4c) The response to this question has been unsatisfactory. Greater detail is required to assess the effects of changing network I&I conditions, and the resultant WWTP treatment effectiveness, given the inconsistent compliance with existing consent conditions.
4. Confirm when the two ponds were last desludged, and what are the measured sludge levels at present.
   - s92 Q 4d) Confirmed that the aerated lagoon was desludged in April 2017, with about 517m³ (dry basis) removed. The maturation pond was de-sludged

in May to September 2010. The latter date indicates that de-sludging may be required again soon (depending on measured sludge levels).

5. Only four compliance reports are included in the assessment in A2I1, up to the year 2014. Were additional compliance reports available for inclusion in the assessment and if so, what is their impact on A2I1 Table 7.1.
   - s92 Q 4e) Satisfactory response provided.
6. Provide median and other percentile performance data for the existing pond such that ongoing median values can be considered for consent conditions.
   - s92 Q 4f) Satisfactory response provided.
7. Confirm whether membrane filtration was considered in the BPO long list of options in lieu of filtration and UV.
   - s92 Q 4g) Satisfactory response provided.
8. Does the proposed programme to improve network conditions quantify the expected improvements in influent wastewater?
   - s92 Q 4h) Satisfactory response provided.

Draft Consent Conditions

9. Confirm whether there has been any sensitivity testing of the proposed 60m³/s median flow in the Wairoa River. If the actual median flows of the river change over time, what will impact will this have on either effects, or ability to achieve conditions.
   - s92 Q 9e) Agree that this can be addressed with conditions that address any future changes in median river flow through reviews of river flow rates and the associated regime of treated wastewater discharge rates.
10. Consider rewording of Condition 8 to reflect a median (i.e. 6 of 12 samples) and higher percentile parameter that are aligned with the current treatment plant performance data and realistic performance of the upgraded plant (and network).
    - s92 Q 9f) Agree to resolve this when consent conditions are settled.
11. Confirm why soluble carbonaceous five-day Biochemical Oxygen Demand ($scBOD_5$) is proposed for the consent measurement? Has there been any performance data for the existing plant been collected to date for this parameter?
    - s92 Q 9g) Agree that there is no evidence to support the use of scBOD5 for discharge conditions, and that another parameter will need to be agreed to (either cBOD or COD) when consent conditions are settled.
12. Confirm why BOD is being proposed as the oxygen demand parameter, as opposed to COD in the previous consent?
    - s92 Q 9h) Satisfactory response provided.
13. Confirm why such lenient percentiles (e.g. for $scBOD_5$, 4/12 = 220mg/L 33% of the time, and 10/12 = 224mg/L 83% of the time) are being proposed. However, "current" treated wastewater median is ~23mg/L for cBOD. Current consent is for COD <220mg/L. Note COD will always be significantly higher than $scBOD_5$.
    - s92 Q 9i) Agree to resolve this when consent conditions are settled.
14. Explain why such narrow bands are to be met between the 33% and 83% trigger values.
    - s92 Q 9j) Agree to resolve this when consent conditions are settled.
15. Provide treated wastewater consent parameters for pre and post upgrade to the network and treatment plant.
    - s92 Q 9k) Satisfactory for now, but will need to be resolved when consent conditions are settled.
16. Provide proposed consent conditions for *E Coli*.
    - s92 Q 9l) Agree to resolve this when consent conditions are settled.

17. Conditions 25 & 26. Confirm whether measurement of influent wastewater to the treatment plant is possible, as this will be the key gauge of success of the I&I programmes (Condition 15, Network Management Plan).
    - s92 Q 9n) Satisfactory response provided.
18. Conditions 21 and 22. Confirm who the System Review Data Reports are intended to be issued to at 5, 10, 20, and 30 years.
    - s92 Q 9m) Satisfactory response provided.
19. Condition 42. Is the intention that these reports be issued annually or biennially?
    - s92 Q 9o) Satisfactory response provided.

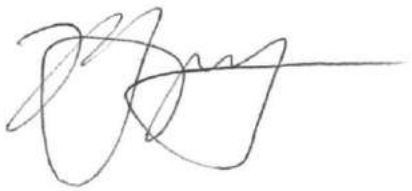
5 SUMMARY OF OTHER RECOMMENDATIONS

Specific recommendations for HBRC to consider that are not directly related to the provision of information from the applicant, are as follows:

1. Revision of the consent conditions to measure load equivalent to the existing discharge, so that continued effects can be assured.
2. Inclusion of an issues list or similar, or reflection of the key outcomes identified in the BPO within the consent conditions, including some form of review against these. Specific clauses in the draft consent conditions that this relates to have been identified as 16, 17, 18, 21, 22, and 23.
3. Assess whether the land discharge applications should be combined with this consent application, given that they represent the same WWTP discharge and are part of the same identified BPO.
4. Suitability of a 35-year consent term, given that the adaptive approach prescribed in the draft conditions, and the staged BPO strategy only provide a degree of certainty around the improvements that will be made for the first 10 years (the remaining stages are described as “aspirational”).
5. Ensure that the loosening of discharge flow effects as described in the draft conditions (1/2 median, median, 3x median etc. in Condition 2 and 3) is adequately assessed for effects based on review by other technical experts in the team.
6. Consider addition of conditions for UV transmissivity to ensure effective disinfection, and minimum flows to UV treatment before bypassing.
7. Consider the addition of a sludge measurement and reporting condition for the treatment plant.

Yours sincerely,

For and on behalf of
Mott MacDonald New Zealand Limited.



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Attention	Tania Diack, Hawkes Bay Regional Council
From:	Dr. Shane Kelly
CC	Reece O'Leary, Hawkes Bay Regional Council
Date:	July 4, 2019
Regarding	Review of Wairoa WWTP Ecological Assessments

1 Scope of this Review

Hawkes Bay Regional Council have previously commissioned me to review information provided in support of a resource consent application by Wairoa District Council to:

- discharge treated wastewater from the Wairoa Wastewater Treatment Plant (WWTP);
- discharge untreated wastewater from engineered overflows in the wastewater network; and,
- to reposition of the current WWTP outfall.

Conclusions and recommendations from my initial reviews are provided in two previous memos. Those reviews highlighted several matters, and further information was sought (and provided) to obtain a better understanding the potential impacts of the proposed activities. The purpose of this memo is to review that information in relation to effects on Wairoa Estuary.

2 Hydrodynamics

Hydrodynamic modelling was used to explore the dilution and dispersal of the discharges to the estuary. The assessment described model inputs and development, but questions remained about the potential for rapid geomorphological changes and/or proposed changes to the position of the wastewater outfall to invalidate predictions. Further information was therefore sought on these matters. The additional information provided[1] indicated that the eastern opening of the river mouth modelled can be considered as a worst-case scenario for those periods when the mouth is open. A visual assessment of the model predictions suggests that under those conditions, and for various scenarios of river flow and discharge volume, discharges will be diluted by about 200 times within around 100-200 m of the outfall.

[1] Wairoa wastewater treatment plant and reticulation network discharge resource consent applications. Applicant's responses to HBRC's requests for further information dated 26 March 2019.

The key contaminant of concern for toxicity effects is likely to be ammonia-N (the effects of oxygen demanding substances is a secondary concern). Final treatment quality data indicated ammonia-N concentrations ranged from 4.0 to 36 mg/l between 2008 and 2016 (Table 5.2 in Hill et al. (2017)). Dilutions of 4.4 to 39.6 times would therefore be required to reduce concentrations to levels below the ANZECC (2000) marine toxicity trigger value for the protection of 95% of species (0.91 mg/l). Model plots suggest that when the river mouth is open, ammonia-N concentrations are likely to fall below the trigger value within 100 m of the outfall.

Figures provided for ammonia-N concentrations in raw influent (Table 5.2 in Hill et al. (2017), coupled with model plots from network overflows (Greer & Mead 2018), and taking into account the dilution of wastewater prior to discharge during storm events (which Greer and Mead (2018) suggest could be up to 98%) indicate that dilution to levels below the toxicity trigger value is likely to occur within a smaller radius around network overflow points.

Periods when the river mouth is closed were not modelled, but the responses to requests for further information acknowledge the potential for adverse effects when this occurs. Few details are provided on the nature of those effects, but it would be reasonable to expect both health and ecological risks to be elevated. Those risks are currently managed through wastewater storage, river mouth clearance, and by issuing public health warnings. In the future, WDC also expect those risks to also be reduced through the application of filtration and UV treatment.

3 Benthic habitats and ecology

An ecological assessment was carried out to evaluate the effects of the wastewater discharge on sediment quality and benthic communities Haggitt et al. 2018). The assessment built upon the work of earlier monitoring and assessments, which surveyed three sites around the outfall. Seven additional sites were sampled by Haggitt et al. (2018), with appropriate sampling design and methods being used.

In summary, the sampling results showed:

- Total sediment metal concentrations were relatively low, with the exception of elevated lead concentrations near an overflow inshore from the WWTP outfall. The cause of elevated lead concentrations was not determined, but the potential for it to have originated from dumped material was highlighted in the response to a request for further information. This seemed reasonable, as lead is not a typical wastewater contaminant.
- There were no clear spatial trends in the percentages of silt or organic matter in seabed sediments around the outfall in 2018. This, together with the low metal concentrations, suggests that the discharge was not having a marked effect on sediment quality.
- Infaunal macroinvertebrate diversity was relatively low at the 10 sites sampled in 2018 (17 taxa in total), with the dominant taxa described as being *synonymous with degraded/impacted environments*. Sites closest to the outfall tended to have higher diversity and abundance, but fewer pipi than the more remote sites. This could be due to the discharge or it could reflect natural variation, as differences in community composition were also apparent among groups of remote sites (see Figures 9-11 in Haggitt et al. 2018).

Overall, there is evidence that benthic ecology and habitat quality in the estuary are impacted by catchment activities, but the existing discharge does not appear to be compounding those effects to any substantial degree.

Further information was also sought on whether nuisance macroalgae blooms were present in the lower Wairoa River. Blooms of marine macroalgae such as *Gracilaria* and *Ulva* (sea lettuce) are a key indicator of nutrient effects and commonly occur in nutrient enriched estuaries, where dense beds can cover intertidal sand and mud flats.

The Applicant's response indicated that no periphyton growth was observed during field data collection and noted that *periphyton growth is unlikely to develop in soft-bottomed rivers such as the lower Wairoa River, regardless of dissolved nutrient concentrations*.

And,

This in combination with the occasionally high water flow rates and poor water quality in terms of light penetration (very turbid), indicate that periphyton blooms are unlikely to occur in the Wairoa estuary.

I note that the growth of periphyton, which typically occurs in freshwater systems, differs from the nuisance macroalgae blooms that occur in harbours and estuaries (see example in Figure 3-1 below). Nuisance macroalgae blooms tend to grow in intertidal areas and be visually obvious (they can also cause offensive odours). Consequently, they are likely to be noticed by members of the public. Further information on this matter may therefore be provided by submitters.

Figure 3-1: *Gracilaria* growing on mudflats in Manukau Harbour.

4 Effects of repositioning the outfall

Additional information was sought on the potential effects of repositioning the outfall. The response provided by the Applicant indicated that it would result in the broader distribution of suspended materials in the discharge, but sedimentation patterns will largely be determined by river migration, the position of the entrance, and sand bars in the lower estuary. Based on the modelling information provided, those conclusions seem reasonable.

In relation to benthic ecological effects, the Applicant indicated that effects on pipi are expected to be localized and temporary. The raw pipi data in Appendix B of Haggitt et al. (2018) indicates that relatively dense populations of juvenile pipi are spread throughout intertidal areas in the lower estuary. However, the subtidal area proposed for the new outfall has not been surveyed.

I note that, adult and juvenile pipi can live in separate areas (pipi move by secreting mucus threads that allow them to drift). In Whangateau Harbour, northeastern New Zealand, Hooker (1995) found that:

- pipi recruits occurred in a small mid-intertidal band;
- juveniles occurred below the recruits in the lower intertidal to subtidal zone;
- adults mainly occurred sub-tidally, forming very dense, discrete beds with juveniles missing in central parts of the beds.

It is therefore possible that moving the outfall into the channel will disturb adult pipi beds. In the absence of site-specific information, I therefore recommend that, if consent is granted, the area of disturbance be minimized during construction.

5 Kai moana

In response to a request for further information on what and where edible species of kaimoana can be gathered around the river mouth, the Applicant states in 6a of their response:

In terms of gathering kaimoana around the river mouth, such as shellfish in the sediment and/or on hard substrate, none are gathered due to river water quality being too poor (in terms of high levels of E. coli that would make them inedible). More importantly, it is because there are few there, and they don't grow to maturity……..

……This trend appears unrelated to silt content, however it must be stressed that all pipi enumerated were <30 mm in size, therefore are likely to be stressed at all sites where they are encountered….

……Local residents and their families who recreationally fish and represent several decades' experience have confirmed that shellfish are not collected anywhere in the estuary because of public health warnings, shellfish population declines, and the small sizes of pipi and mussel spat….

…..It should also be noted that all MACA claimants were sent a summary of the proposed package of changes for future consenting and were subsequently sent a copy of the AEE. Their complete absence of feedback suggests that kaimoana and mahinga kai are not valued and perhaps do not exist in the vicinity of the WWTP discharge pipeline or its plume….

As noted above:

- the ecological assessment indicated that juvenile pipi are relatively abundant and widespread in the estuary;
- the lack of adult pipi at the intertidal sites sampled does not mean adult beds are not present sub-tidally;
- neither does it mean that pipi at those sites are stressed (as the Applicant infers in their response to HBRC's request for further information).

The Applicant did not provide details on which local residents gave details on shellfish harvesting, so I am unsure about the reliability of that information. I also note that there could be many reasons why MACA claimants did not provide feedback on the application. I consider it unwise to assume that the lack of feedback means *kaimoana and mahinga kai are not valued and perhaps do not exist in the vicinity of the WWTP discharge pipeline or its plume*.

In my opinion, effects on kai moana have not been adequately addressed. Further details on shellfish occurrence and harvesting in the estuary may be provided by submitters.

6 Proposed discharge monitoring parameters

In my previous memo I provided a number of observations and recommendations on monitoring requirements. Further information was sought from the Applicant on those matters. The Applicant indicated in their response that WDC and HBRC technical experts would collaborate on drafting a benthic monitoring plan during the public notification period. If that process was unsuccessful, they further indicated a revised set of draft conditions would be provided. Consequently, this matter is yet to be resolved.

7 Staging

The addition of filtration and UV treatment at the outlet of the facultative pond within 2 years of consent being granted is a positive step that should reduce health risks associated with discharges from the WWTP. Risks from bypass events and other sources of microbial contamination will remain.

In principle, the staging of other WWTP initiatives also appear reasonable. However, the application highlights that key targets in Stages 1 and 2 depend on commitments outside resource consent processes and that Stages 3 and 4 are aspirational. Consequently, there is little certainty that the proposed staging will be implemented.

I also note that the proposed staging relaxes the current requirement of only discharging at night. This is unlikely to have a tangible effect on benthic macrofauna or sediment quality but could have other environmental implications (e.g. increasing health risks).

8 Conclusions

The information provided in support of this applications suggests that:

- The key contaminant of concern for toxicity effects is likely to be ammonia-N. Concentrations in the discharge will be rapidly diluted to levels below the ANZECC (2000) trigger value for slightly to moderately disturbed systems when the mouth of the estuary is open.
- Blooms of nuisance marine macroalgae are a key indicator of nutrient effects, but no information was provided on their presence or absence in the estuary. The observations and local knowledge of submitters may provide insights into whether or not they occur.
- The potential for adverse human health and ecological effects is greater when the mouth is closed. Few details have been provided on the likelihood and nature of those effects, but measures including storage, mouth clearance, and public notification are used to reduce their impacts.
- Wairoa Estuary has been degraded by the cumulative effects of multiple catchment activities. The existing discharge from the WWTP does not appear to be compounding those effects on benthic communities or habitats to any substantial degree.
- Moving the outfall into the channel has the potential to physically disturb pipi beds (or other subtidal species), but subtidal habitats and communities in the proposed area have not been surveyed. If consent is granted, I recommend conditions be included that require the disturbance area to be minimized.
- In my opinion, potential impacts on kaimoana have not been adequately addressed. Further context may be provided by submitters.
- An appropriate monitoring plan is still to be developed.

9 References

ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Environment & Conservation Council, and Agriculture and Resource Management Councils of Australia & New Zealand. Canberra, Australia., 316 pgs.

Greer, D., Mead, S. (2018) Wairoa WWTP outfall: 3D hydrodynamic numerical modelling. Client report for Wairoa District Council eCoast Raglan, 50 pgs.

Haggitt, T., Mead, S., Mead, W., O'Neill, S. (2018) Assessment of effects of Wairoa District Council's existing intertidal sewage discharge on benthic sediment characteristics and ecology – Wairoa Estuary. Client report for Wairoa District Council eCoast Raglan, 41 pgs.

Hill, P., Cornelson, J., Lane, A., Tumbure, A., Lake, P. (2017) WWTP system data and compliance summary. Client report prepared for Wairoa District Council Lowe Environmental Impact 36 pgs.

Hooker, S.H. (1995) Life history and demography of the pipi, Paphies australis (Bivalvia: Mesodesmatidae) in northeastern New Zealand. PhD Thesis, University of Auckland, Auckland.

Memo

To:	Tania Diack	From:	Peter Harte
Cc:	Laddie Kuta	Date:	4 July 2019

Subject: Wairoa Wastewater Treatment Plant – Outfall Structure Consent Review

I have completed a review of the proposed consent application by Wairoa District Council (WDC) and the proposed consent conditions #9-#13 by HBRC in regards to the WDC Wastewater Treatment Plant (WWTP) outfall structure (discharge pipeline). Overall the application and consent conditions limits environmental impacts on the Wairoa River as best possible.

The following changes to the consent conditions are suggested:

Expand condition 10, *"In the event of any modification, extension or relocation of the discharge structure, the consent holder shall provide a Structure Design Report to the Council for certification. The design report shall (but is not limited to):"*, to include the following:

g) **Specification of appropriate marine grade construction materials, design standards met and expected service life of materials.**
h) **Include operation and maintenance considerations, including operation during both open and closed river mouth conditions.**
i) **Include risk register for design, construction, operation and maintenance.**

Condition 13bi

*"Any surplus soil, cleared vegetation, **excavated trench material** or debris, shall be deposited at least 20 m from any waterbody or deposited or contained in a manner to reasonably prevent the transportation or deposition of disturbed matter into any waterbody".*

Condition 13h

*"No concrete **or excess construction materials** shall be dumped into bed of any waterbody".*

The wording and proposed inclusion of condition 9a is acceptable with the noted modifications to condition 10 and 13.

It is assumed condition 12 only references condition 13.

The following queries either need to be addressed in the structural design report (yet to be submitted) or as part of this consent application process. *(i.e. Request: Can you please provide comment on the following related to the Wairoa Treatment Plant consent application:).*

- Section 1.8 notes the existing discharge to the river has not been shown to have caused detectable effects on the river's water quality or sediment characteristics. The drawing provided DR-190504-001[1] details a duckbill diffuser located close to the riverbed. How will the riverbed be protected against scour from the jet flume and will any potential scour become an issue during periods of high flood flow?
- Will a reduction in cover due to riverbed migration cause buoyancy/stability issues for the pipeline? What is the anchor spacing? Testing methodology to ensure vacuum seal?

- The report states that the main outfall pipe is proposed to be relocated within the Outfall Relocation Area as indicated in Figure 5.1 of the consent application. Drawing DR-190504-001[1] details the outfall pipe being buried, anchored by concrete and looks rigid. If a location change is required, will the existing pipeline be abandoned or will all infrastructure be excavated and relocated?
- Please provide a trenching detail for the pipeline.
- When the outfall pipeline is operating at maximum pressure does the outfall bend structure require a thrust block or similar reinforcing to stabilise? or is the diffuser armour the thrust stabiliser if so, how are they connected?
- What is the maximum flowrate capacity of the two-duckbill discharge system in L/sec?
- More design details required for 90 degree turn at outfall, missing flange details etc.
- Will the steel piles attached to the diffuser armour be driven 6m into the ground as per the pipe anchors?

Annex G – 2nd s92 Request

Our Ref: APP-123774 *(quote this number when discussing application with HBRC staff)*

12 July 2019

Wairoa District Council
C/- Lowe Environmental Impact
P O Box 4667
Palmerston North 4442

For the attention of: Hamish Lowe

Dear Sir

REQUEST FOR FURTHER INFORMATION

This request for further information relates to application number APP-123774 and the activities and discharges associated with the receipt, treatment, storage and general management of wastewater received at the Wairoa Wastewater Treatment Plant.

In accordance with Section 92 of the Resource Management Act (1991) (RMA) I request the following information regarding the management of stormwater at the site of the Wairoa Wastewater Treatment Plant and the proposed replacement outfall pipe:

Stormwater Management:

- We have been advised from Grey Wilson (Grey Matters Consultants) that the stormwater for the Wastewater Treatment Plant discharges into wastewater system and does not discharge into the municipal stormwater network. Can you please provide some commentary on this and whether or not this discharge will be separated similar to the I&I work that you are currently undertaking on private properties?
- Can you please confirm the catchment size, the volume and rate of stormwater for this site?
- Without knowing the exact details it is likely that this activity will also need to be included in this application either as per rule 43 or rule 52, please confirm which rule would apply.

Replacement of Outfall Structure:

- The design of the proposed replacement main outfall structure has also been reviewed by e2environmental in conjunction with relevant application documents, the overview of the application (intent of consent application dated 25 June 2019) and proposed consent conditions. Their comments on the proposed consent conditions and request for outstanding information is attached. The information sought by e2environmental is required to inform Council's recommendation and the decision maker.

Council understands that Wairoa District Council would prefer to only provide further details if necessary/possible with proposed consent conditions offered in the absence of complete plans and engineering detail. The approach of providing for this using the condition framework proposed **may** be appropriate to manage future alterations to the outfall structure. However, given the need for a replacement structure is already confirmed to remedy non-compliance, the relevant information

relating to the replacement structure should be available given the urgency WDC have expressed in relation to the installation of the replacement structure.

Perhaps the approach to providing the above and the information required by e2environmental is that this information is made available prior to a hearing taking place (if applicable). Ideally, the information would be available for Council to include in the section 42A report, alternatively it will need to be provided as part of the applicant's evidence (if applicable) or, prior to any decision being made on the applications.

Council do not believe a decision can be made on the proposal without this information. Council notes that the original application did not indicate that the existing out fall pipe was in such disrepair, and that an extension to the existing pipe was all that was proposed.

Please use the attached form to respond to this information request. If you prefer you can email your response to tania.diack@hbrc.govt.nz .

As indicated earlier in this letter, the application is not being placed on hold and notification will not be delayed because of this request for further information. However, the information should be provided as soon as practicable so it can be addressed appropriately in Council's section 42A report.

Please contact me on (06) 833 8091 if you have any questions.

Yours faithfully

TANIA DIACK – SENIOR CONSENTS PLANNER
REGULATION GROUP
PH (06) 833- 8091
tania.diack@hbrc.govt.nz

To: Tania Diack

Hawke's Bay Regional Council
Private Bag 6006
Napier

In response to the Council's request for further information dated 12 July 2019 relating to the activities and discharges associated with the receipt, treatment, storage and general management of wastewater received at the Wairoa Wastewater Treatment Plant.

Please tick your response.

☐ the information requested is attached

☐ I'm unable to provide the information by date 15 working days from today, but could send it to you by _____

☐ I refuse to provide the information.

Signature of applicant or authorised agent: _____

Name: _____ Date: _____
Please print full name of person who signed above.

Memo

To:	Tania Diack	From:	Peter Harte
Cc:	Laddie Kuta	Date:	4 July 2019

Subject: Wairoa Wastewater Treatment Plant – Outfall Structure Consent Review

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h) **Include operation and maintenance considerations, including operation during both open and closed river mouth conditions.**
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*"No concrete **or excess construction materials** shall be dumped into bed of any waterbody".*

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It is assumed condition 12 only references condition 13.

The following queries either need to be addressed in the structural design report (yet to be submitted) or as part of this consent application process. *(i.e. Request: Can you please provide comment on the following related to the Wairoa Treatment Plant consent application:).*

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- What is the maximum flowrate capacity of the two-duckbill discharge system in L/sec?
- More design details required for 90 degree turn at outfall, missing flange details etc.
- Will the steel piles attached to the diffuser armour be driven 6m into the ground as per the pipe anchors?

Robyn Chapple

From: Tania Diack <tania.diack@hbrc.govt.nz>
Sent: Tuesday, 5 November 2019 4:47 PM
To: Hamish Lowe
Cc: Phil Lake; Stephen Heath
Subject: FW: Additional questions around the Wairoa Outfall

Hi Hamish,

Please see below query from Laddie Kuta regarding your response to our 2nd section 92 letter.

I was hoping to discuss this at the pre hearing however it was overlooked due to the issues that were raised by the submitters and the time restriction.

I'm not sure if this will be answered prior to the 2nd pre hearing however if you could provide some clarification on this as soon as possible would be appreciated.

Thanks
Tania

From: Laddie Kuta <laddie.kuta@e2environmental.com>
Sent: Wednesday, 16 October 2019 5:03 PM
To: Tania Diack <tania.diack@hbrc.govt.nz>
Cc: David Carruth <david.carruth@hbrc.govt.nz>
Subject: Additional questions around the Wairoa Outfall

Hi Tania,

I believe the main issue to address is risk of pier scour that may occur if the river opening was inline with the new outfall structure and a flood flow was to occur at this time. The structure is buried into the riverbed approximately 2m. Scour around abutments/piers can surpass this depth when hydraulic conditions are great enough. The risk of scour and how it is mitigated for this aforementioned situation should be addressed.

Following on from the above comment, if pier scour were to occur then there would be no material to act as a thrust block. Since high discharge occur at the same time as high river flows and therefore greatest thrust at the upward bend, has this thrust been considered if no supporting material is buried around the outfall structure?

If you have any questions regarding the above, please feel free to give me a call.

Go well,
LK

Laddie Kuta Partner | Associate Engineer

e2environmental CONSULTING ENGINEERS

ph 021 247 4256
e2Environmental Ltd
46 Acheron Drive, Riccarton, Christchurch

PO Box 31159, Ilam, Christchurch 8444
www.e2Environmental.com

e2 is proud to be part of the award winning NCTIR rebuild effort

Annex H – 2nd s92 Response

WAIROA DISTRICT COUNCIL

P +64 6 838 7309
F +64 6 838 8874
E administrator@wairoadc.govt.nz
W www.wairoadc.govt.nz
p PO Box 54, Wairoa 4160, Hawke's Bay
A Coronation Square, Queen Street, Wairoa

[Sent by Email : ~~Post~~]

11 October 2019

Hawke's Bay Regional Council
Private Bag 6006
NAPIER 4142

Attention: Tania Diack

Dear Tania

RESPONSES TO SECOND FURTHER INFORMATION REQUEST FOR CONSENT APPLICATION APP-123774

Thank you for your letter dated 12 July 2019 requesting further information relating to stormwater management at the Wairoa wastewater treatment plant (WWTP) and design details of the proposed replacement outfall structure in the Wairoa River for discharging treated wastewater from the WWTP. This letter provides WDC's responses to the further information sought and includes a copy of the outfall design drawings that were provided to you by email last Thursday.

STORMWATER MANAGEMENT

Stormwater System Catchments
There appears to have been some misunderstanding of the WWTP's stormwater management system design between yourself and Grey Wilson of Good Earth Matters Consultants.

It is correct to note that the WWTP site's stormwater does not discharge into Wairoa's municipal stormwater network. This is because the municipal stormwater network does not extend south of Grant Street except for a few culvert crossings beneath Kopu Road and drains along Williams and Fitzroy Streets. Each of these stormwater drains discharges directly into the Wairoa River or its riverbank reserve. None of them collect or convey stormwater from the WWTP site.

Stormwater from the WWTP site discharges down the natural gullies that are located to the north and south of Rangihoua (Pilot Hill) upon which the WWTP is located, and then flows into rural drains that cross the low-lying flats to the Wairoa River. Nigel How noted that the rural drain on the northern side of the WWTP is the modified channel of the original (pre-European) Tawhara Stream which has its headwaters on the western side of the ridge above the WWTP. It now only drains some southern parts of Wairoa and the eastern flanks of the hills between the WWTP and Wairoa.

WWTP Stormwater System Description
The WWTP site has dedicated stormwater drainage ditches around the outside edges of the WWTP pond bunds. These ditches are grassed and mown to keep the grass short and tidy. By virtue of the raised WWTP pond bunds, the WWTP's stormwater ditches are in fact incapable of overflowing <u>into</u> the WWTP ponds or the WWTP's treated wastewater outlet pipeline. Consequently, there is no need to design any changes to the WWTP's stormwater system to reduce its contribution to I&I inflows into the WWTP ponds, nor is there any need to separate it from the wastewater reticulation in a similar manner to the programme that has been implemented for the urban reticulation.

However, in very large storm events there have been rare occasions when the WWTP ponds have overflowed their bunds and/or the underground wastewater bypass pipes around the WWTP ponds have overflowed via their manhole covers into these stormwater ditches. WDC's current and future I&I reduction programme within Wairoa is addressing this risk by removing all residential stormwater connections into the wastewater reticulation, thus ensuring that the storm flows of wastewater to the WWTP are significantly reduced from historic volumes, which is consequently ensuring that all storm events (even extreme events) are unlikely to generate enough wastewater inflows to overtop the WWTP pond bunds. The proposed wastewater discharge regime of continuous, unlimited discharges when the river is in flood conditions (above 3 x median flow) will enable the discharge rate of treated wastewater to more likely keep pace with storm inflows, thus further ensuring that the wastewater in the WWTP ponds will never overflow into the WWTP's stormwater drains.

It could be argued that there is some risk of wastewater and a variety of other contaminants (such as cleaning products and grease) becoming entrained from the WWTP's facilities such as the inlet screen area, control building area, and vehicle access routes around the treatment ponds. WDC's good site management practices ensure that contaminants do not accumulate or remain on the ground long enough to present opportunities for contamination of stormwater. Any microbial or chemical residues that are entrained by stormwater flows across the WWTP site will either be retained by the grassy swales of the WWTP's stormwater drains or will be rapidly diluted as these drains continuously collect more stormwater along their lengths.

WWTP Stormwater Catchment Size and Discharge Parameters

The area of the WWTP's land parcel is 5.48 hectares, but this includes about 1 hectare of land south and east of Pilot Hill that does not slope past the WWTP facilities and therefore has no risk of being contaminated by wastewater or other contaminants from the WWTP site.

The WWTP ponds occupy about 1.5 ha, and any rainfall that directly falls into these ponds or their bund slopes will simply dilute the wastewater already residing in the ponds that ultimately discharges to the Wairoa River via the main outfall structure. These rainfall volumes are already included in the WWTP's discharge volumes that are reported in WDC's compliance records and were summarised in the wastewater discharge consent application AEE and supporting documents.

The majority of the WWTP site that generates stormwater runoff is grassed and regularly mown. The grassed areas have some capacity to absorb rainfall into the soils, at least during summer months. A fairly small portion of the WWTP site has impervious surfaces that are comprised of the access road, control building, carpark area, and inlet screen accessway. However, these divert their run-off into the grassed stormwater drains around the WWTP ponds.

The stormwater volume and rate for the WWTP site has not yet been assessed because this requires the land areas and run-off coefficients to first be determined for each sub-catchment of the WWTP site. This information is also a fundamental part of the stormwater consent application. The volume and rate of stormwater are not relevant to the wastewater discharge consent applications because the WWTP site's stormwater does not enter the WWTP ponds and nor does it ultimately discharge via the outlet pipeline to the Wairoa River.

Relevant Regional Plan Rule and Proposed Consenting Approach

In WDC's view, RRMP Rule 43 classifying the WWTP's stormwater discharges as a Controlled activity would apply because:

- The WWTP's discharges of stormwater enter neighbouring properties that are inland of the Coastal Environment mapped by the Regional Coastal Environment Plan (RCEP); and
- The WWTP falls within the RMA definition of industrial and trade premises, so cannot be a Permitted activity under Rule 42; and
- The WWTP's stormwater discharges are unlikely to give rise to the RMA s107 adverse effects on the receiving environment after reasonable mixing; and
- The WWTP's stormwater management system includes, in WDC's opinion, all reasonable measures to ensure that the discharge is unlikely to cause the RMA s107 effects noted above.

WDC intend to seek a stormwater discharge consent for the WWTP site that is separate from the APP-123774 suite of wastewater discharge consents. This is primarily because of the full separation of the two discharge systems at the WWTP site. The completely different water quality and flow characteristics of the WWTP's treated wastewater and stormwater discharges is also a strong reason for separating the discharge consents.

As you are aware, WDC and Good Earth Matters are preparing a global discharge consent application for Wairoa's entire municipal stormwater system. This global consent application will not include any stormwater discharges from the WWTP because the WWTP falls outside the geographical coverage of Wairoa's municipal stormwater system. In addition, WDC believe the stormwater consents should be separated because the WWTP site poses different contamination risks from those of the urban Wairoa catchment.

A considerable amount of work is required to produce appropriate levels of documentation for seeking a WWTP stormwater discharge consent, so WDC are unable to lodge an application in the next month or two and have it incorporated into the processing of the wastewater discharge consent applications. WDC will endeavour to progress the investigations and documentation for this stormwater consent application in a timely fashion.

It is important to note that the WWTP's stormwater system was an integral feature of the original WWTP when it was constructed in 1980-81 and, despite being lawfully established, it does not appear to have ever had a stormwater discharge consent to authorise its discharges since the RRMP rules regulating stormwater discharges became operative. The same situation applies to Wairoa's urban stormwater system which is much older (presumably up to 180 years old). The consenting status of Wairoa's stormwater discharges is also not unusual for the Hawkes Bay region or indeed the rest of New Zealand.

REPLACEMENT OF OUTFALL STRUCTURE

A series of questions relating to the proposed new outfall structure was presented in a memo dated 4 July 2019 from E2 Environmental consulting engineers to HBRC which was attached to and directly referred to in your s92 letter dated 12 July 2019. Each of the issues raised by E2 Environmental are addressed below in the order they were raised.

Scouring of Riverbed

The proposed design by Offshore and Coastal Engineering Ltd (OCEL) locates the centreline of the duckbill diffusers 1.0 m above the riverbed. The diffusers are also angled to point towards the river mouth instead of at right angles to the river flow. Both of these design features will ensure that any scour of the riverbed from the jet flow of wastewater is avoided. OCEL do not expect any significant riverbed scour effect apart from perhaps a localised depression, so the riverbed will not be protected against potential scour from the wastewater jet flow.

In addition, the proposed discharge regime will use slower flow rates during low river flows (less than median river flows) and discharge flow rates will increase as river flows increase. These discharge flow controls will ensure that the riverbed is protected from scouring because the river flow will not be unduly disrupted by the wastewater discharge.

OCEL acknowledge that there will be significant scour from river flows during flood events, but the new outfall structure has been designed specifically to be streamlined so as to minimise scouring around its sides, and the piles are designed to take the full flow force plus debris. The diffuser's outer structure is also buried at least 2.4 m into the riverbed, which is expected to be well below any potential scouring zone, so it is very unlikely to ever be undermined It is important to note that the treated wastewater discharge flow rate will be so insignificant compared with the flood flows that the discharge itself will not generate any scour risks for the riverbed during flood events.

Pipeline Buoyancy and Stability
A reduction in riverbed cover of the pipeline due to riverbed migration will not cause any buoyancy or stability issues for the pipeline because the pipe filled with wastewater combined with ballast weights and piles located at 5m centres will prevent movement and floatation. Even if the pipe is fully exposed by scouring of the top cover it will be held against hydrodynamic drag forces by the pin piles installed through the pile guide incorporated into each concrete ballast weight.

Vacuum Seal Testing
OCEL do not understand why there should be any need for a vacuum seal. The duckbills can only be opened by a pressurised flow of water exiting the pipeline, not from external pressures resulting from river flows, and each of the flange connections will seal against internal and external pressures.

Pipeline Abandonment vs Relocation
Figure 5.1 of the AEE provided a broad area (yellow outline) within which the outfall pipeline could be relocated; this area was deliberately made large enough to cover all possible river channel migrations and to provide freedom for designing the pipeline configurations. In the event that the new outfall requires relocation in future, there are various options available for achieving this. The pipeline could be shortened or extended without changing its alignment, a bend could be inserted at an appropriate point to create a dog-leg for the final section (similar to that of the current outfall pipeline), or the full length of straight pipeline could be rotated to a different angle from its currently proposed alignment.

WDC anticipate that any changes that make pipeline sections redundant will include the dismantling and removal of the redundant pipe and piles from the riverbed **unless** the removal is impracticable and/or too hazardous for safety of construction personnel and equipment. As far as practicable all future pipeline modifications will re-use materials from the new pipeline unless the materials are no longer fit for this purpose. In the event that infrastructure is abandoned in situ, WDC are of the view that there would be no adverse effects on the river environment because the materials are suitably benign in nature and would be buried well below the riverbed's natural silt accumulations.

Trenching Details
The enclosed design drawings provide the requested trenching details.

Thrust Stabilisation
The bend below the diffuser outlet will be buried at least 2 m below the riverbed and the diffuser end structure will be filled up to 2.4 m deep with local sediment. That sediment can be contained in geotextile bags locking the pipe into the structure. The thrust load will be taken by the side of the diffuser structure and transferred to the lateral piles.

Maximum Flow Rate Capacity
The maximum flow rate capacity of the two-duckbill discharge system is 273 L/s which matches the existing consented limit of 5,400 m^3/d over a 5.5-hour period for the treated wastewater discharge. The actual discharge rate is expected to generally be well below this due to the proposed restrictions on flows and timing that are given in the AEE.

Design Details
The enclosed design drawings provide the requested details for the entire pipeline. The steel piles for the diffuser armour will be 10 m long and will be driven about 8.25 m into the riverbed.

I trust that the attached drawings and the above responses provide the clarification that you sought on 12 July 2019. Please contact Hamish Lowe at Lowe Environmental Impact (phone 06 359 3099 or email hamish@lei.co.nz) if you require any further information.

Yours sincerely

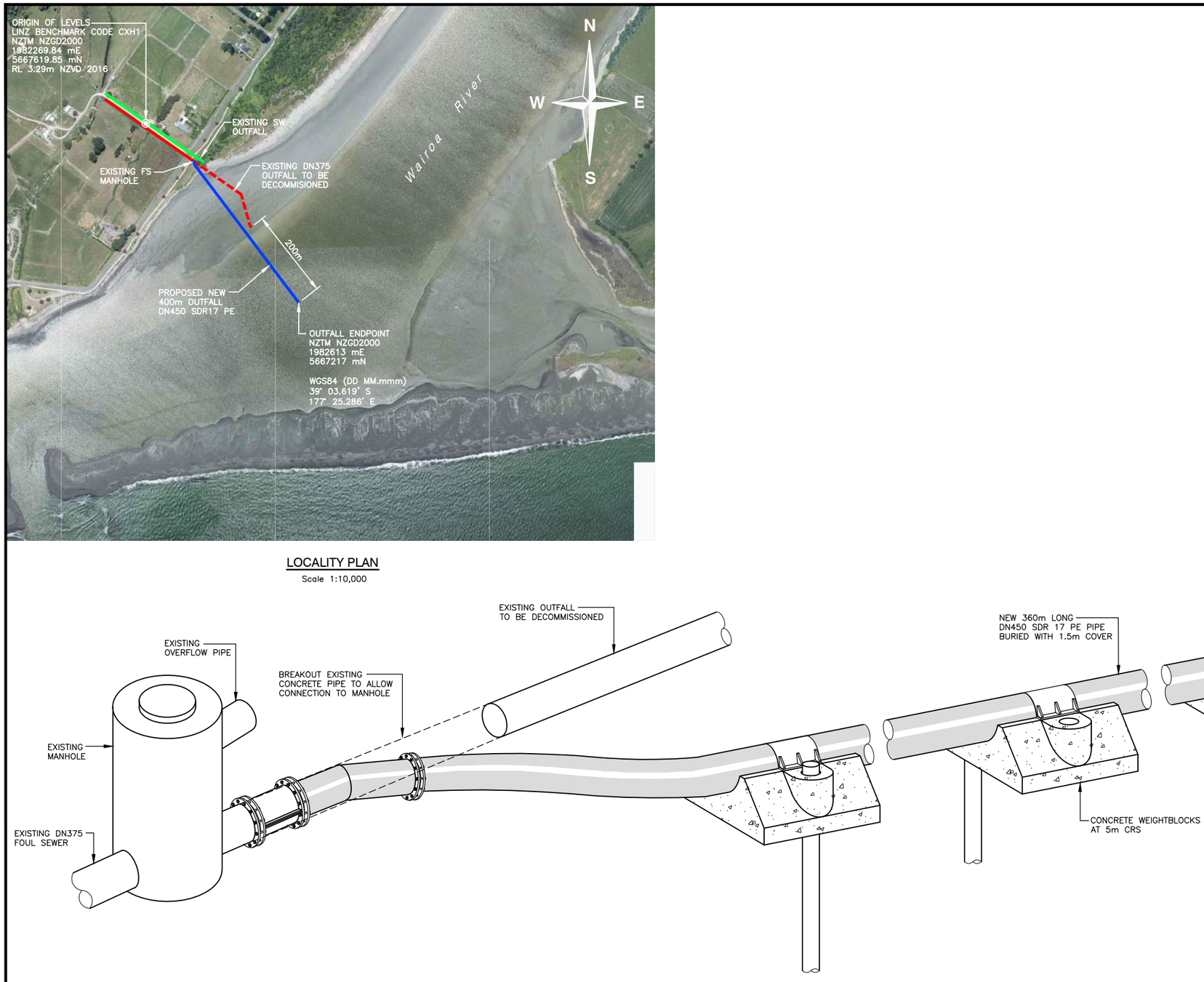
Stephen Heath
Group Manager Community Assets and Services
Wairoa District Council

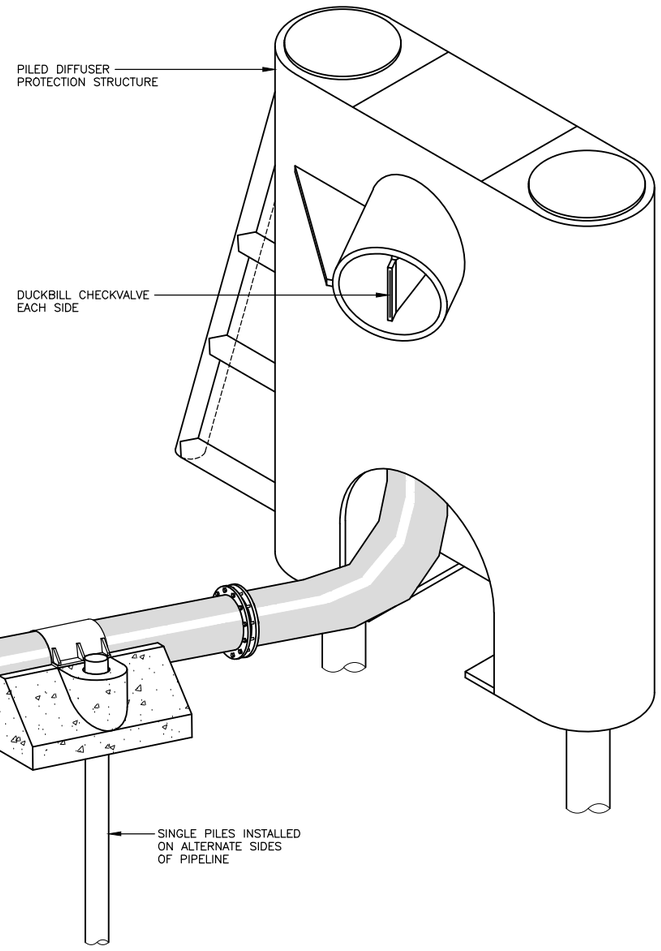
Stephen@wairoadc.govt.nz

Encl

Design drawings for proposed outfall replacement (Offshore and Coastal Engineering Ltd, 12-30 September 2019)

LOCALITY PLAN
Scale 1:10,000





0 100 200 300 400 500 600 700 800 900 1000m

DO NOT SCALE FROM DRAWING

Scale 1:10,0000

NOTE:

1. ALL STEELWORK TO BE COATED TO AS/NZS 2312 TSA225S UNLESS NOTED OTHERWISE
2. ALL STEEL EDGES TO BE ROUNDED
3. ALL STEELWORK MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH NZS3404
4. ALL WELDS TO BE MIN CATEGORY SP E41XX/W40X
5. ALL WELDS ARE TO BE FULL PENETRATION BUTT WELDS UNO.
6. FILLET WELD SIZES SHOWN ARE LEG WIDTHS
7. ALL WELDS TO BE 100% VISUALLY INSPECTED
8. ALL PLATE TO BE GRADE 300
9. ALL BOLTS TO BE GR316 SS WITH TEF-GEL OR SIMILAR APPROVED COATING TO THREADS. NYLON OR SIMILAR APPROVED ISOLATION WASHERS TO BE USED TO PREVENT CONTACT BETWEEN SS AND COATED STEEL.
10. FABRICATION TOLERANCES: LINEAR ± 1.0mm UNO
11. ALL DIMENSIONS ARE IN MILLIMETRES UNO
12. AERIAL PHOTOGRAPHY SOURCED FROM LINZ DATA SERVICE AND LICENSED FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENCE

PRELIMINARY

Amendments	Rev'n	Date	Drawn	Issued for	Checked	Approved
PIPE SIZE INCREASED TO DN450, PIPE LENGTH INCREASED TO 400m	3	12/09/19	RVE	PRELIMINARY		
PRELIMINARY ISSUE	1	11/06/19	RVE	PRELIMINARY		

Drawn	RVE
Checked	
Traced	
Approved	
Date	06/19

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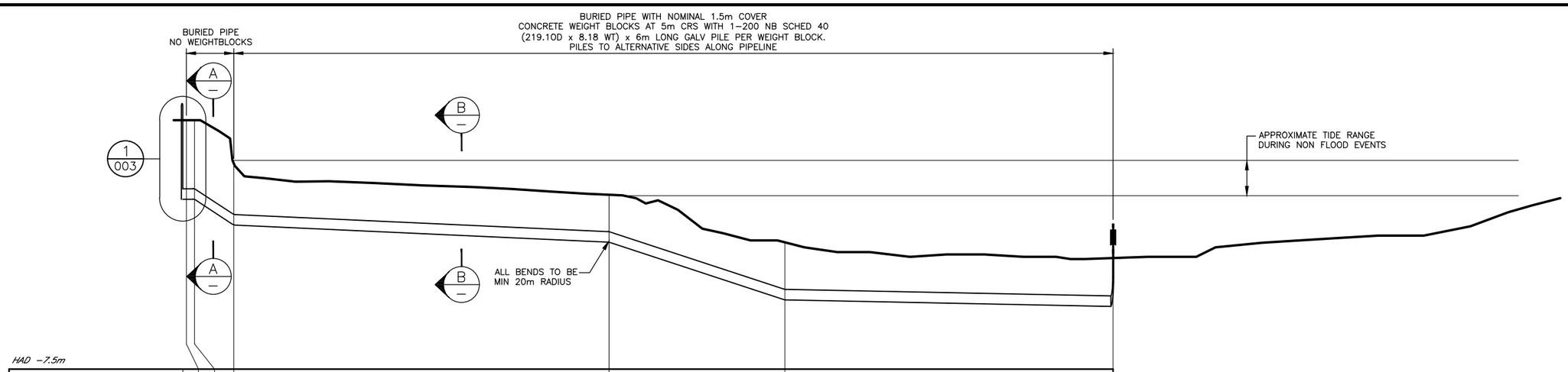
WAIROA DISTRICT COUNCIL
WAIROA RIVER OUTFALL REPLACEMENT
GENERAL DETAILS

Scale (A3)	ACAD Filename
AS SHOWN	190504/DR-190504-001R3
Drawing No.	Rev.
DR-190504-001	3



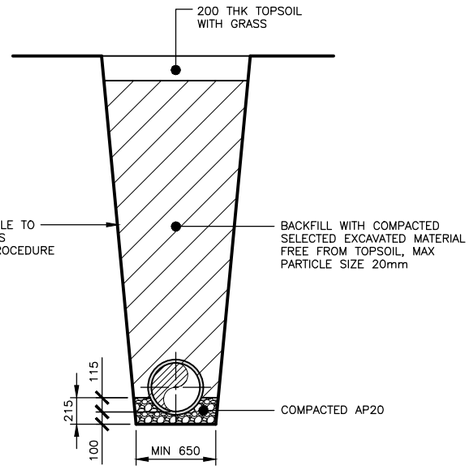
INVERT LEVEL	−0.207	–	–	−1.352	−2.086	−4.550	−4.830
TRENCH LEVEL	−0.577	–	–	−1.624	−2.408	−4.870	−5.152
GROUND LEVEL	3.127	3.135	3.124	1.287	−0.061	−2.091	−2.770
CUT DEPTH	3.704	–	–	2.989	2.347	2.779	2.382
CHAINAGE	0.0	1.5	5.0	25.0	185.0	260.0	400.0
PIPE DESCRIPTION	EXISTING DN375 CONCRETE PIPE			DN450 SDR17 PE100 PN8			
GRADE				1 IN 218		1 IN 30	1 IN 500

EXISTING GRADE UNKNOWN

APPROX 1 IN 20

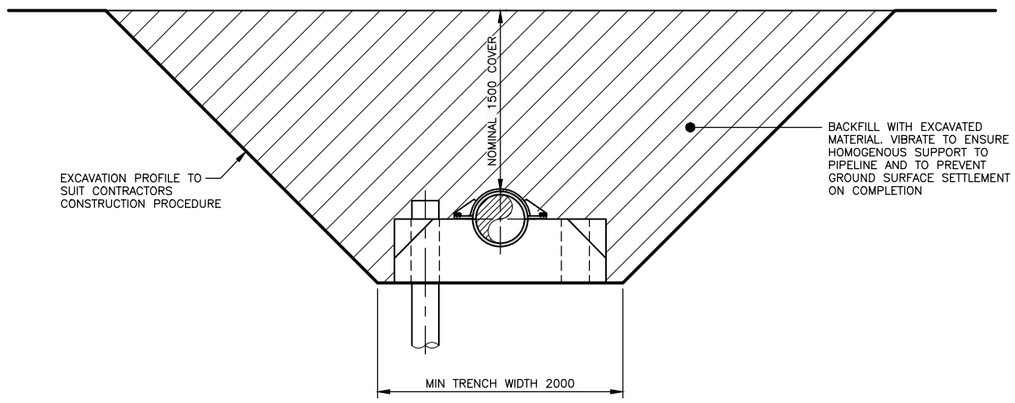
LONG SECTION

Scale 1:2000 H
1:200 V



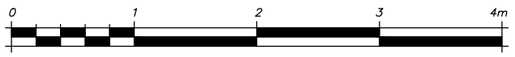
SECTION A
Scale 1:50

TRENCH BEYOND RIVERBED

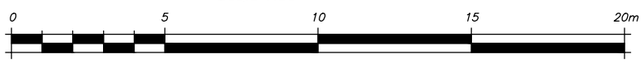


SECTION B
Scale 1:50

TRENCH WITHIN RIVERBED



Scale 1:50



Scale 1:200

DO NOT SCALE FROM DRAWING

PRELIMINARY

Amendments	Rev'n	Date	Drawn	Issued for	Checked	Approved
PIPE SIZE INCREASED TO DN450, PIPE LENGTH INCREASED TO 400m	2	12/09/19	RVE	PRELIMINARY		
PRELIMINARY ISSUE	1	11/07/19	RVE	PRELIMINARY		

Drawn: RVE
Checked:
Traced:
Approved:
Date: 06/19

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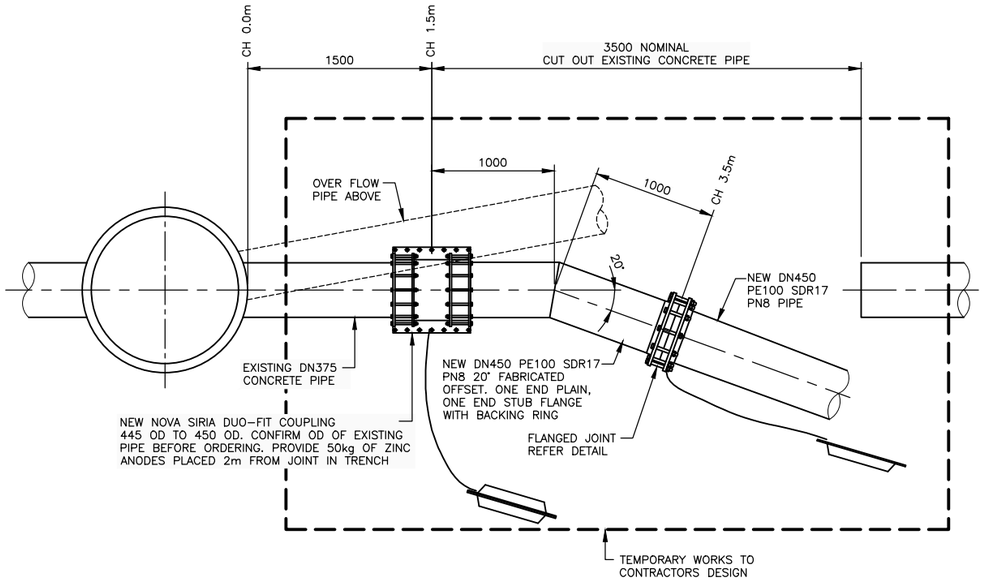
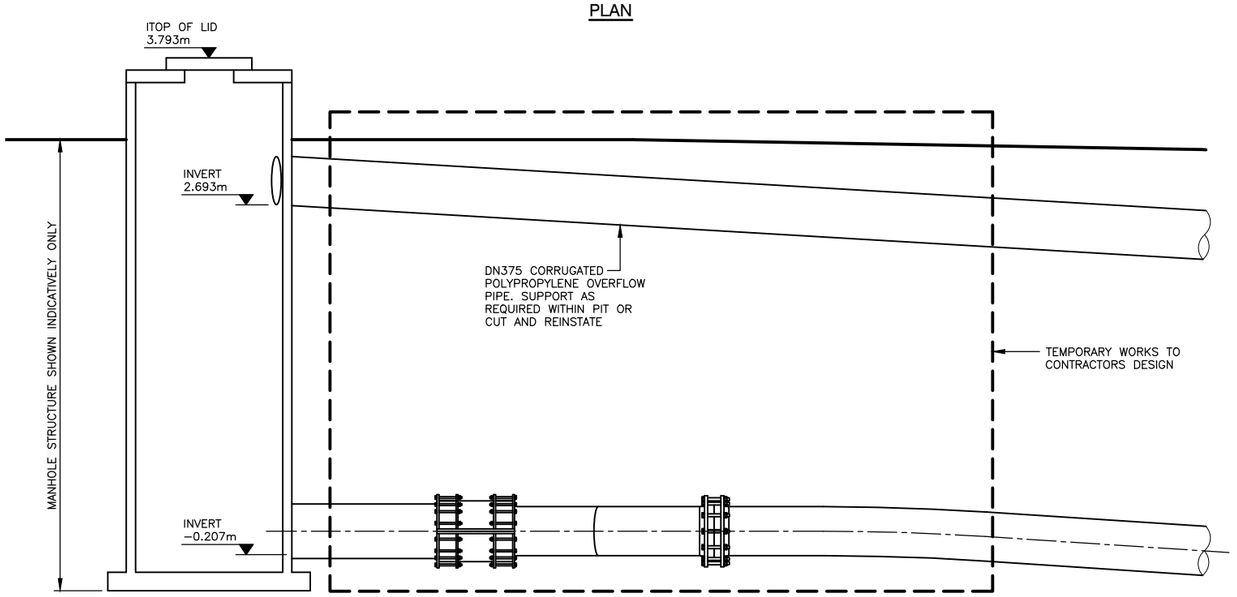
WAIROA RIVER OUTFALL REPLACEMENT

LONG SECTION

Scale (A3)	ACAD Filename
AS SHOWN	190504/DR-190504-002R2
Drawing No.	Rev.
DR–190504–002	2

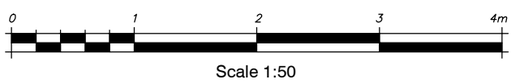


PLAN

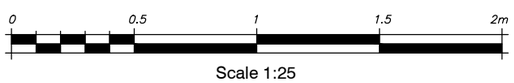


ELEVATION

DETAIL 1/002
Scale 1:50

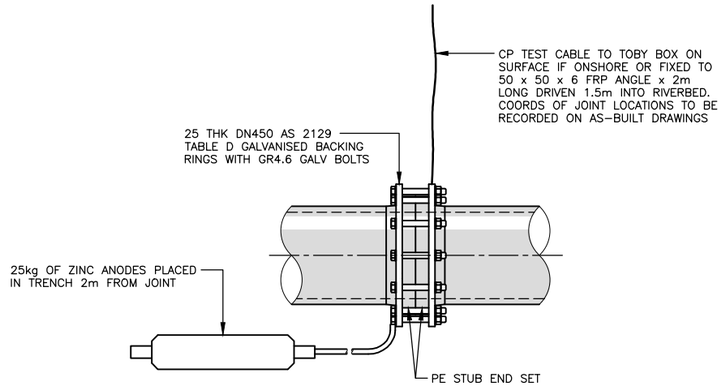


Scale 1:50

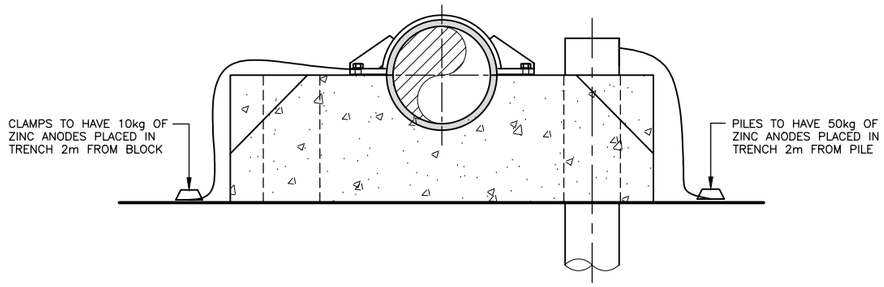


Scale 1:25

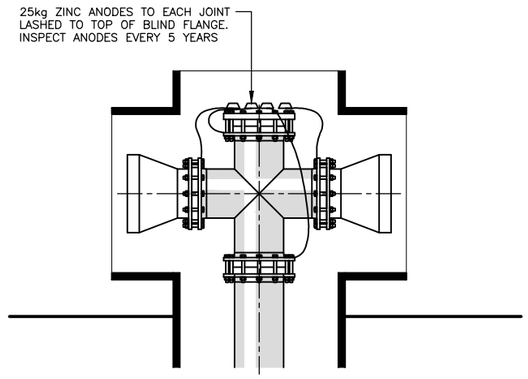
DO NOT SCALE FROM DRAWING



TYPICAL DETAIL OF BURIED BOLTED FLANGED JOINT
Scale 1:25



ANODE REQUIREMENTS TO WEIGHT BLOCKS
Scale 1:25



ANODE REQUIREMENTS TO DIFFUSER
Scale 1:50

NOTE:

1. ANODE WEIGHTS ARE BASED ON A 50 YEAR DESIGN LIFE FOR BURIED COMPONENTS, 10 YEAR DESIGN LIFE FOR SUBMERGED COMPONENTS ABOVE RIVERBED

PRELIMINARY

							Drawn	RVE
							Checked	
PIPE SIZE INCREASED TO DN450	2	12/09/19	RVE	PRELIMINARY			Traced	
PRELIMINARY ISSUE	1	11/07/19	RVE	PRELIMINARY			Approved	
Amendments	**Rev'n**	**Date**	**Drawn**	**Issued for**	**Checked**	**Approved**	Date	06/19

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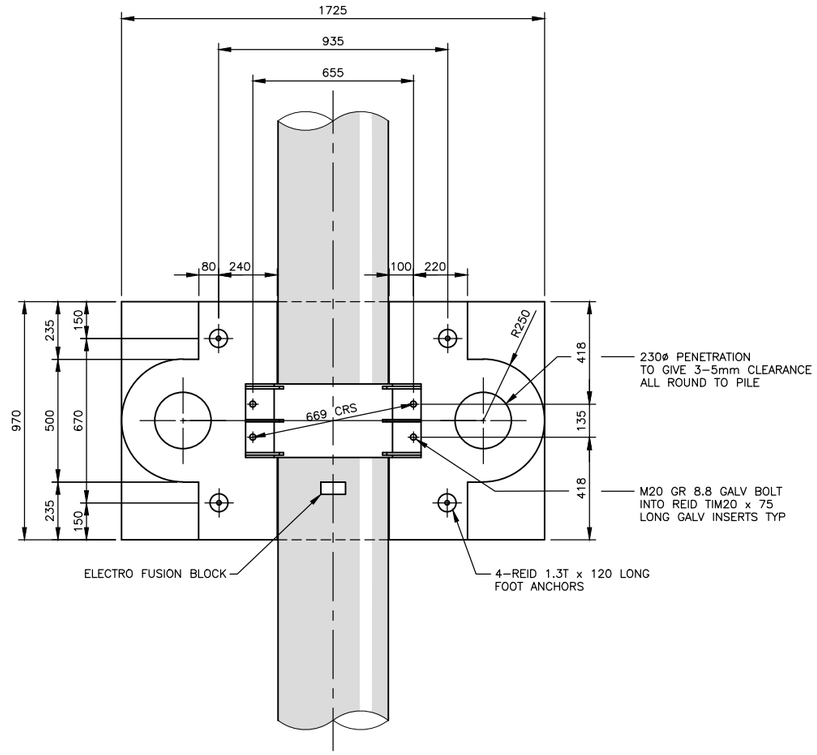
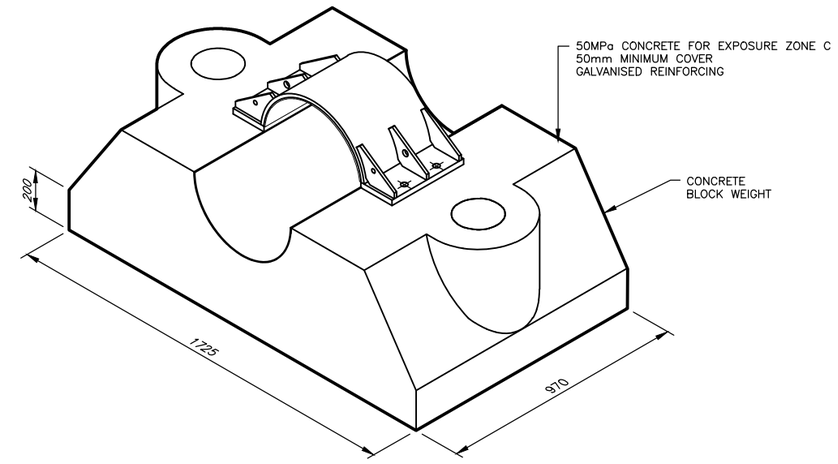
WAIROA DISTRICT COUNCIL
WAIROA RIVER OUTFALL REPLACEMENT
SECTIONS AND DETAILS

Scale (A3)	ACAD Filename
AS SHOWN	190504/DR-190504-003R2
Drawing No.	Rev.
DR-190504-003	2



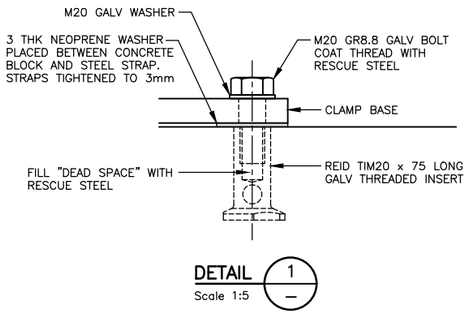
PLAN OF WEIGHT BLOCK

Scale 1:25



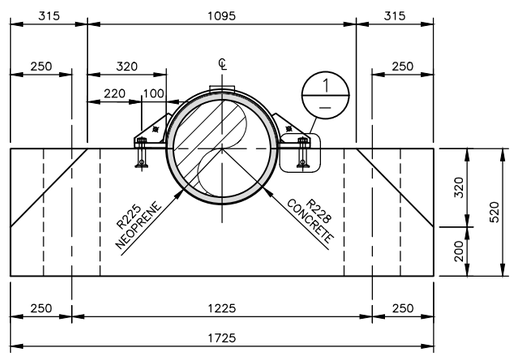
ISOMETRIC VIEW OF WEIGHT BLOCK

Scale 1:25



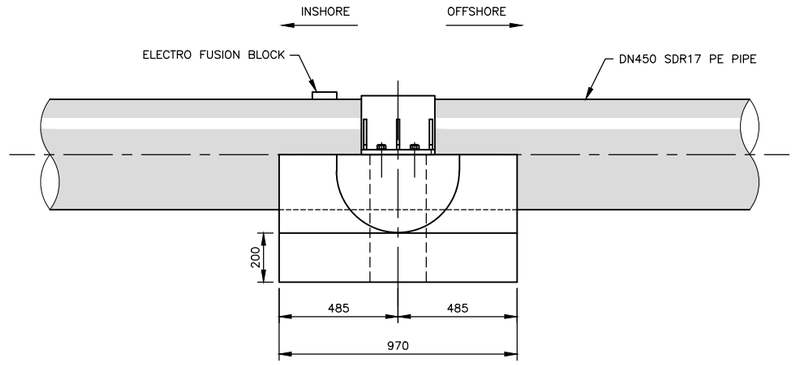
DETAIL 1 —

Scale 1:5



FRONT ELEVATION OF WEIGHT BLOCK

Scale 1:25



SIDE ELEVATION OF WEIGHT BLOCK

Scale 1:25

DO NOT SCALE FROM DRAWING

							Drawn	RE
							Checked	
PIPE SIZE INCREASED TO DN450	2	12/09/19	RVE	PRELIMINARY			Traced	
PRELIMINARY ISSUE	1	11/06/19	RVE	PRELIMINARY			Approved	
Amendments	**Rev'n**	**Date**	**Drawn**	**Issued for**	**Checked**	**Approved**	Date	08/19

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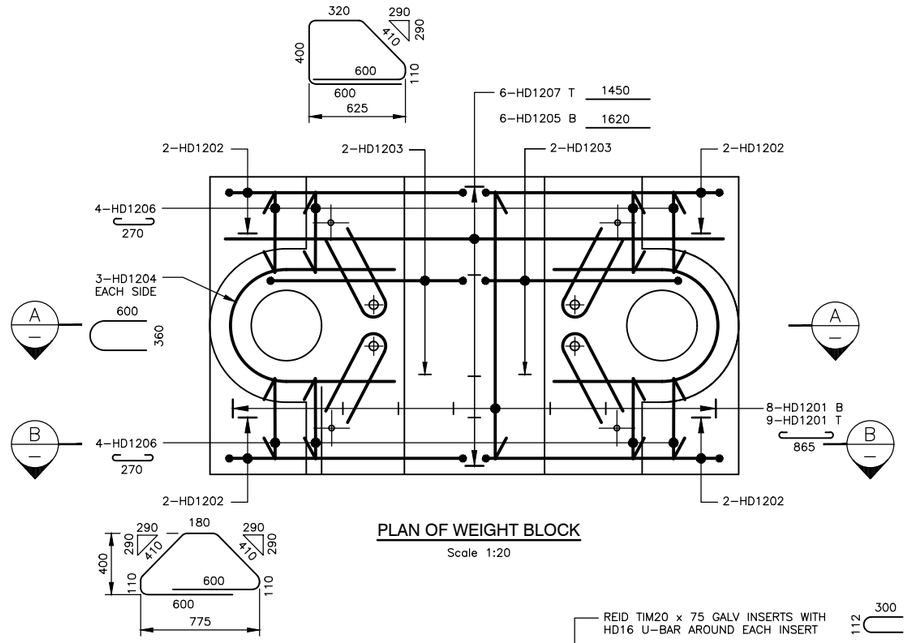
WAIROA RIVER OUTFALL REPLACEMENT

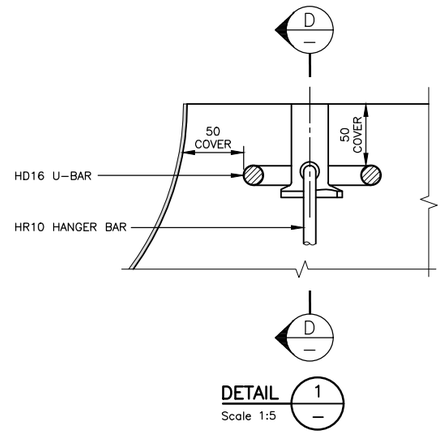
CONCRETE WEIGHT BLOCK – GENERAL DETAILS

Scale (A3)	ACAD Filename
AS SHOWN	190504/DR-190504-004R2
Drawing No.	**Rev.**
DR-190504-004	2



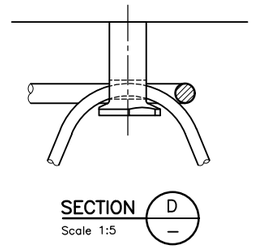
PLAN OF WEIGHT BLOCK

Scale 1:20



DETAIL 1

Scale 1:5



SECTION D

Scale 1:5

CONCRETE STRENGTH = 50 MPa

WEIGHTBLOCK VOLUME = 0.68 m^3

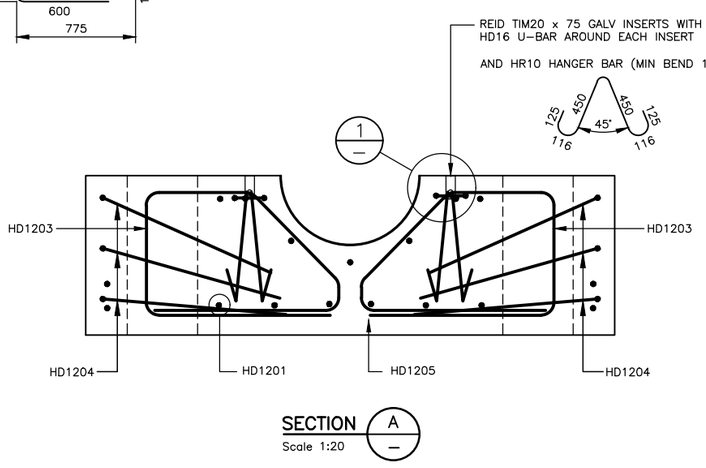
WEIGHTBLOCK WEIGHT = 1640 kg

50mm COVER

FINISHES: F3, U3

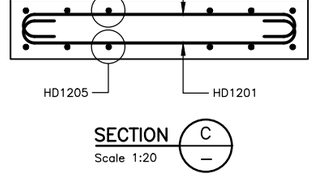
NOTE:

1. ALL REINFORCING DENOTED HD TO BE GRADE 500E DEFORMED
   ALL REINFORCING DENOTED HR TO BE GRADE 500E PLAIN
2. ALL REINFORCING CAGES TO BE ELECTRICALLY CONTINUOUS BY WELDING
3. ALL HOOKS, BENDS, STIRRUPS AND CRANKS TO BE IN ACCORDANCE WITH NZS 3101
4. CONCRETE IS TO BE 50 MPa FOR ZONE C WITH A MINIMUM CEMENT CONTENT OF 375 kg/m3 INCLUDING AT LEAST 8% AMORPHOUS SILICA AND A MAXIMUM WATER/CEMENT RATIO OF 0.4 CONCRETE CONSTRUCTION IN ACCORDANCE WITH NZS 3109. SURFACE FINISHES IN ACCORDANCE WITH NZS 3114.
5. EF DENOTES EACH FACE — NF DENOTES NEAR FACE
   EW DENOTES EACH WAY — FF DENOTES FAR FACE
   T TOP — B BOTTOM
6. ALL REINFORCING TO BE HOT DIP GALVANISED TO HDG900 AS/NZS 2312
7. CONTRACTOR TO MONITOR TARGET FABRICATED WEIGHTS



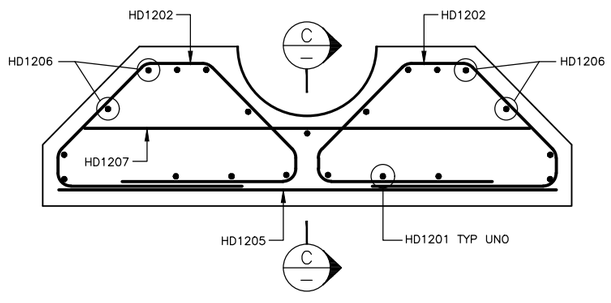
SECTION A

Scale 1:20



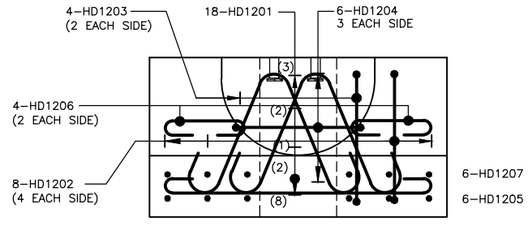
SECTION C

Scale 1:20



SECTION B

Scale 1:20



SIDE ELEVATION OF WEIGHT BLOCK

Scale 1:20

DO NOT SCALE FROM DRAWING

PRELIMINARY

Amendments	Rev'n	Date	Drawn	Issued for	Checked	Approved
PIPE SIZE INCREASED TO DN450	2	12/09/19	RVE	PRELIMINARY		
PRELIMINARY ISSUE	1	11/06/19	RVE	PRELIMINARY		

Drawn	RVE
Checked	
Traced	
Approved	
Date	06/19

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WAIROA RIVER OUTFALL REPLACEMENT

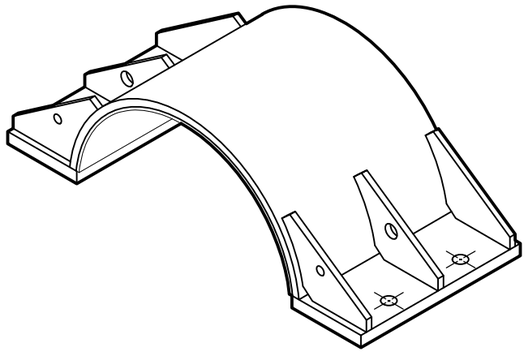
CONCRETE WEIGHT BLOCK – REINFORCING DETAILS

Scale (A3)	ACAD Filename
1:20	190504/DR-190504-005R2
Drawing No.	Rev.
DR–190504–005	2

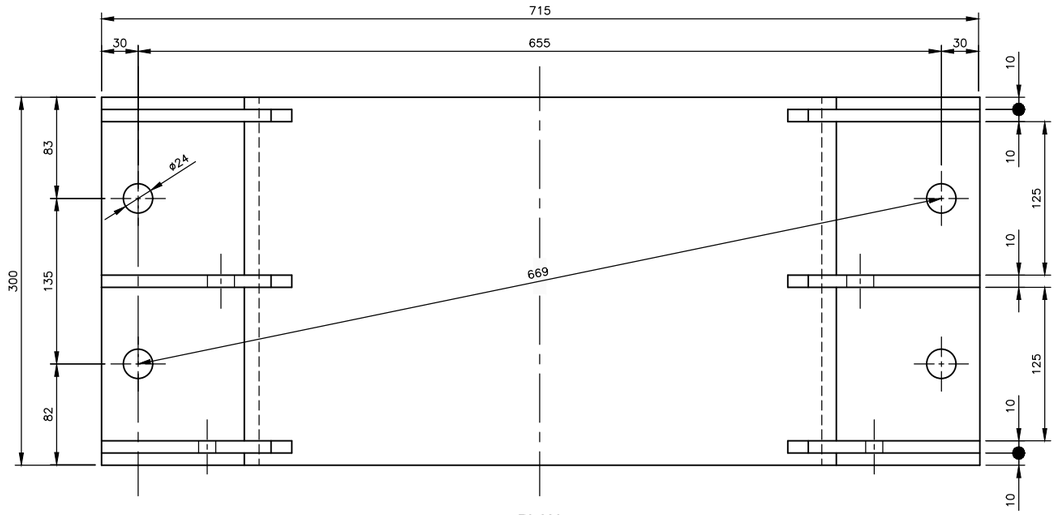
CLAMP WEIGHT = 36 kg DRY AIR WEIGHT
= 31.3 kg SUBMERGED WEIGHT

NOTE:

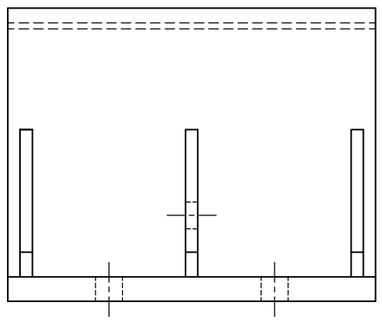
1. ALL STEELWORK TO BE HOT DIP GALVANISED TO HDG900 AS/NZS 2312
2. ALL STEELWORK MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH NZS3404
3. ALL WELDS ARE TO BE FULL PENETRATION BUTT WELDS UNO
4. FILLET WELD SIZES SHOWN ARE LEG WIDTHS
5. ALL WELDS ARE TO BE 100% VISUALLY INSPECTED
6. ALL PLATE TO BE MIN GRADE 300
7. FULL SEAL WELD GUSSET PLATES



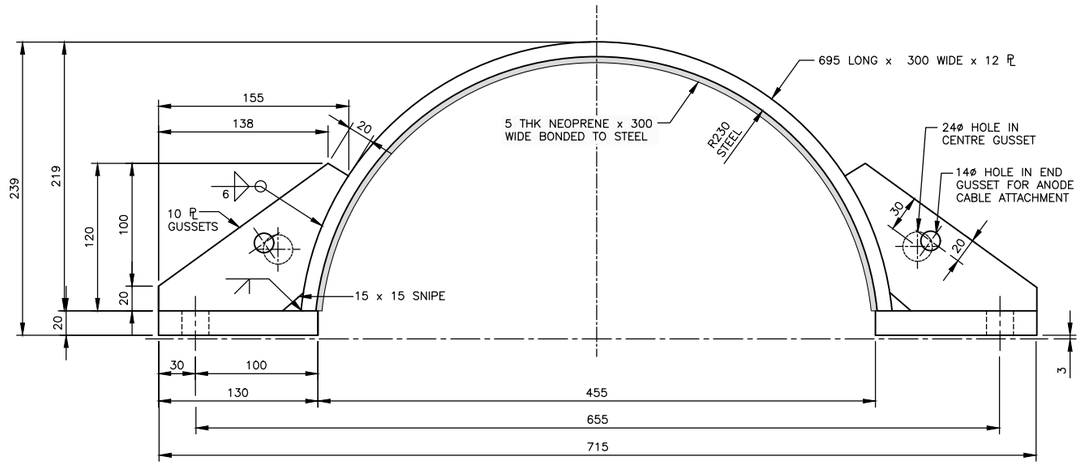
ISOMETRIC VIEW OF WEIGHTBLOCK CLAMP
Scale 1:10



PLAN
Scale 1:5



SIDE ELEVATION
Scale 1:5



FRONT ELEVATION
Scale 1:5

DO NOT SCALE FROM DRAWING

PRELIMINARY

							Drawn	RVE
							Checked	
PIPE SIZE INCREASED TO DN450	2	12/09/19	RVE	PRELIMINARY			Traced	
PRELIMINARY ISSUE	1	11/06/19	RVE	PRELIMINARY			Approved	
Amendments	**Rev'n**	**Date**	**Drawn**	**Issued for**	**Checked**	**Approved**	**Date**	06/19

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WAIROA RIVER OUTFALL REPLACEMENT

WEIGHT BLOCK CLAMP

Scale (A3)	ACAD Filename
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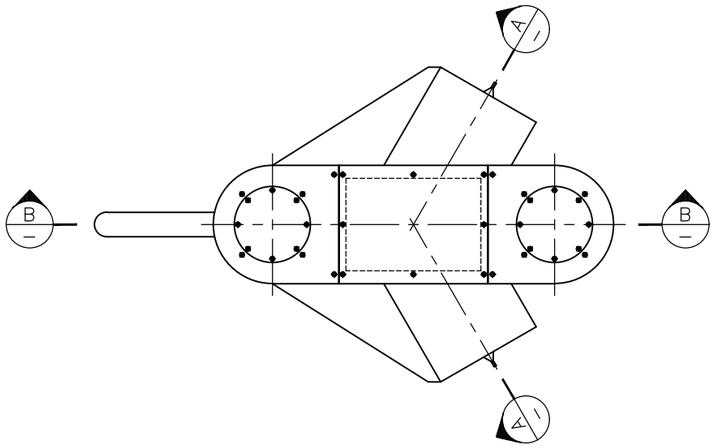

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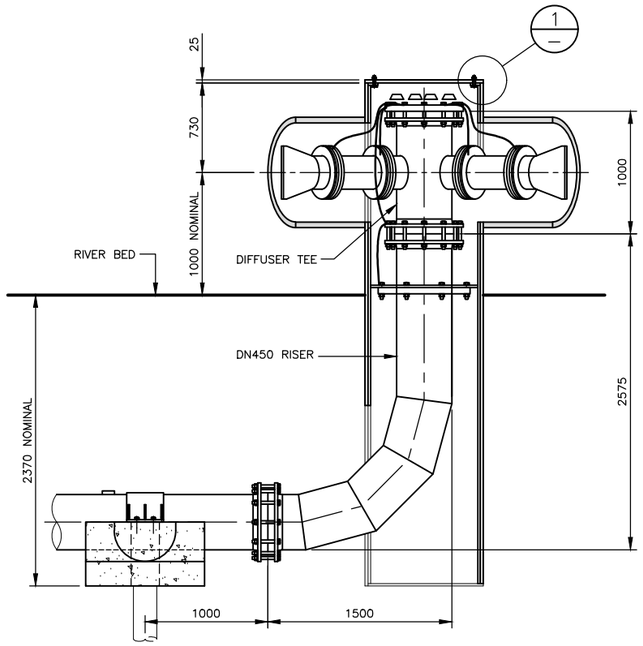

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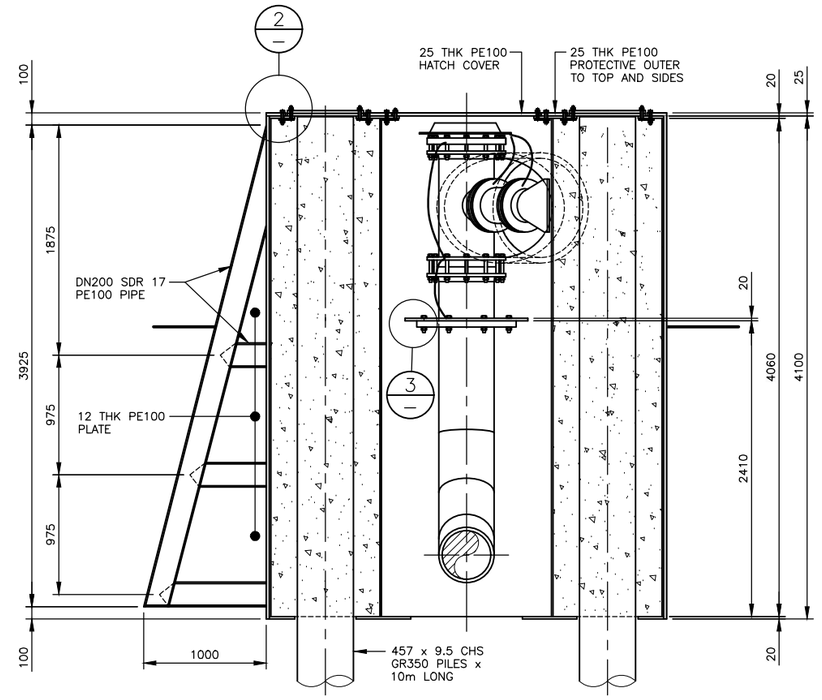

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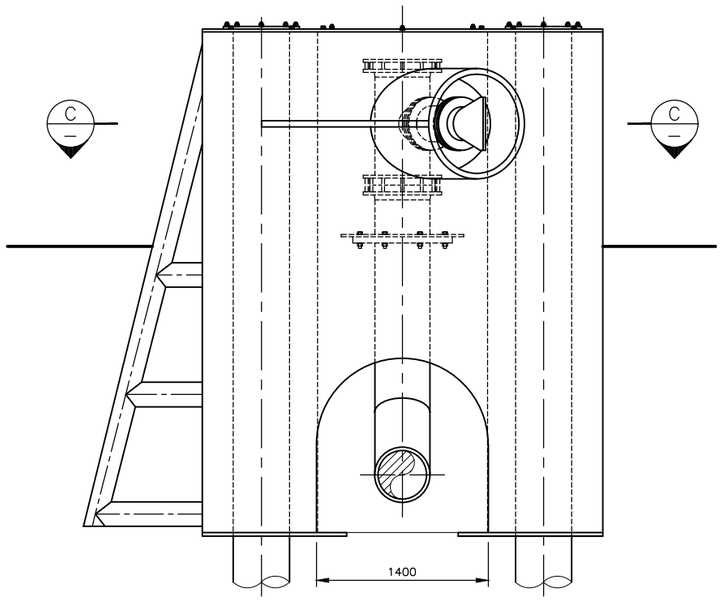

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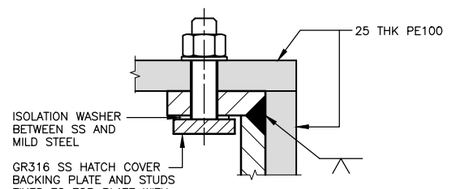

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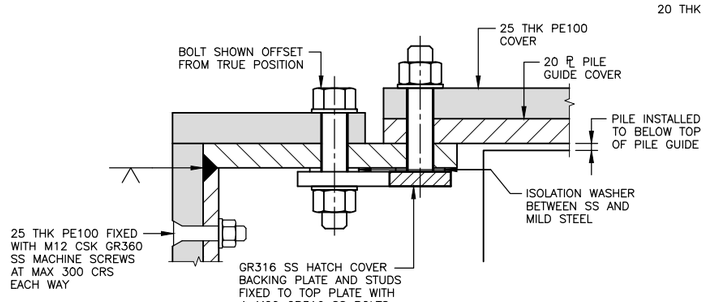

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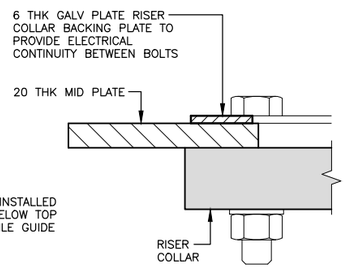

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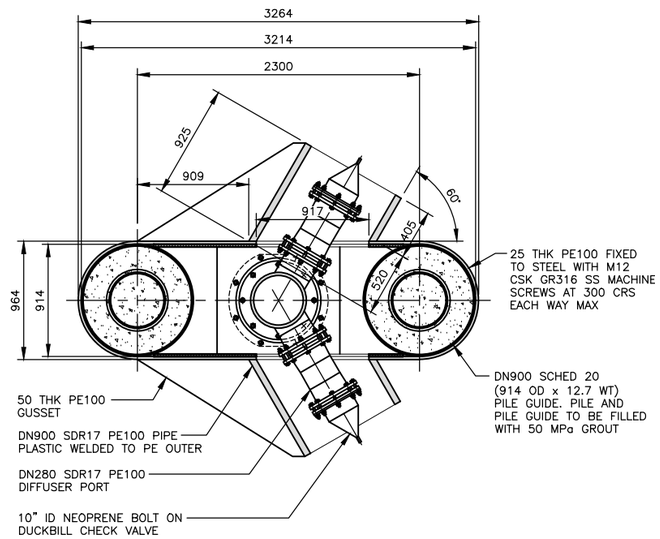

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PRELIMINARY

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PRELIMINARY ISSUE	1	20/09/19	RVE	PRELIMINARY		

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Date	09/19

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WAIROA RIVER OUTFALL REPLACEMENT

DIFFUSER DETAILS – SHEET 1

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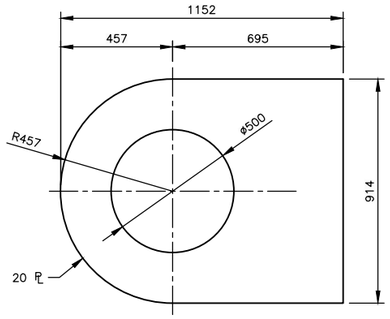

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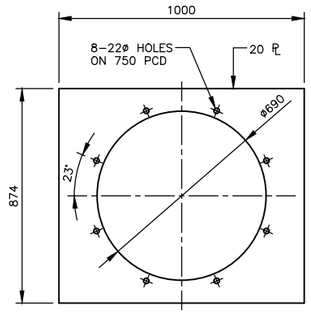

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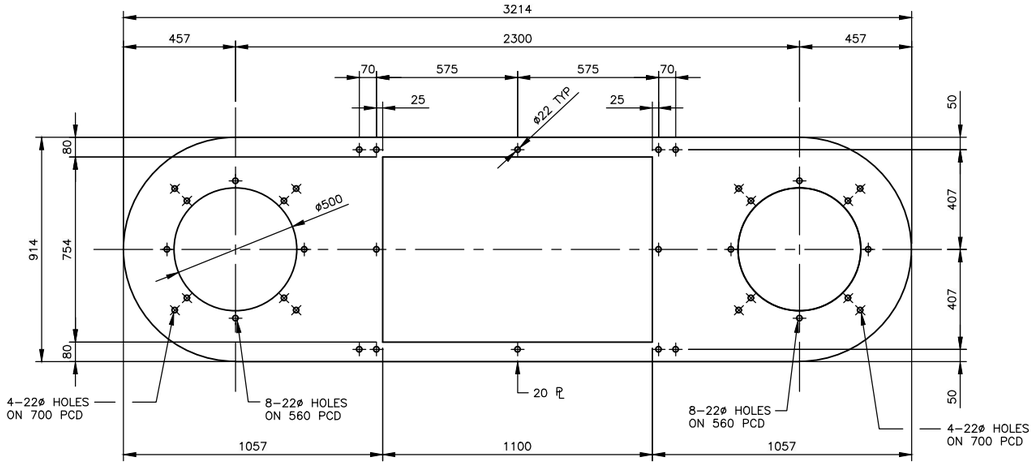

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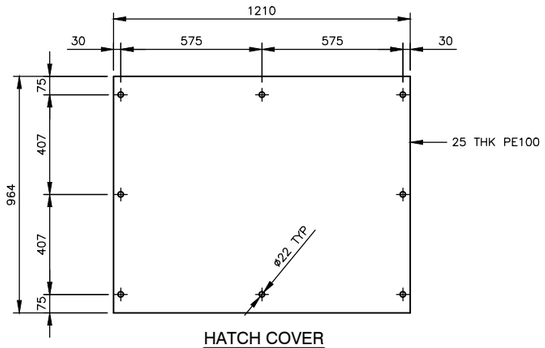

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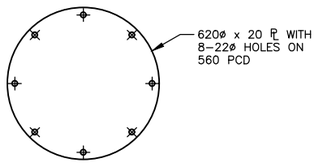

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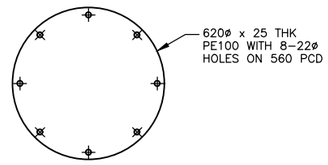

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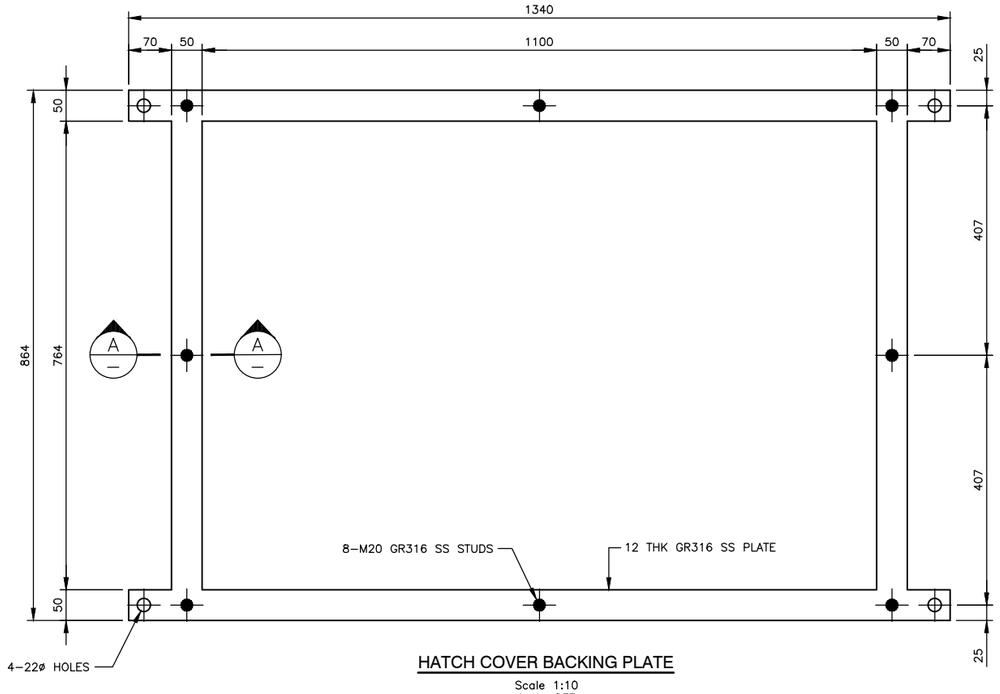

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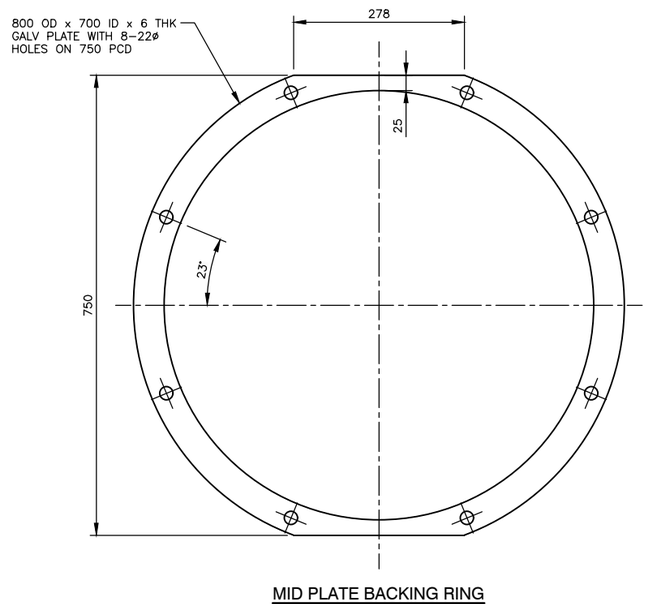

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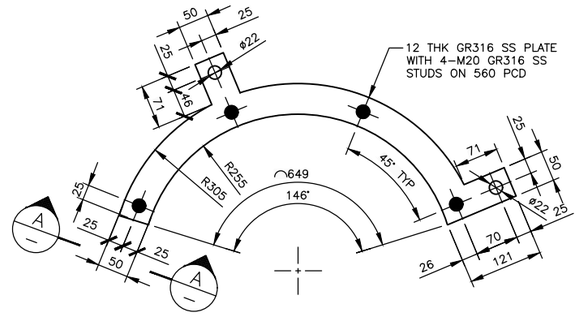

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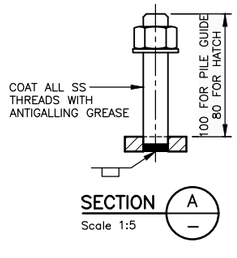

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WAIROA RIVER OUTFALL REPLACEMENT

DIFFUSER DETAILS – SHEET 2

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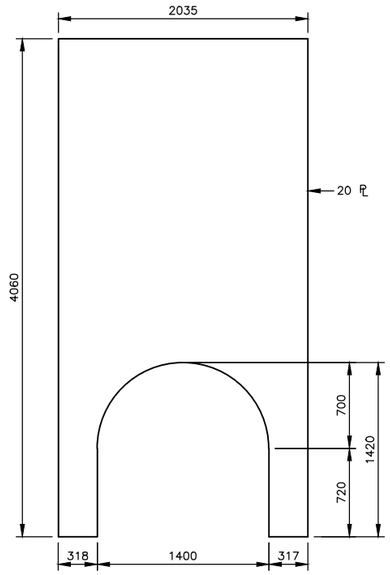
Drawing No.	Rev.
DR–190504–008	2



FRONT SIDE PLATE

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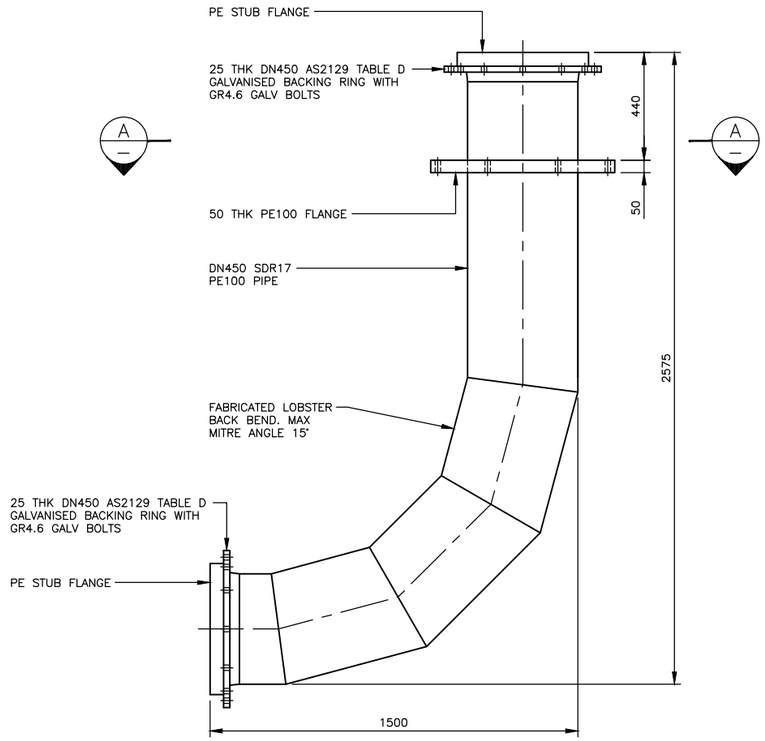

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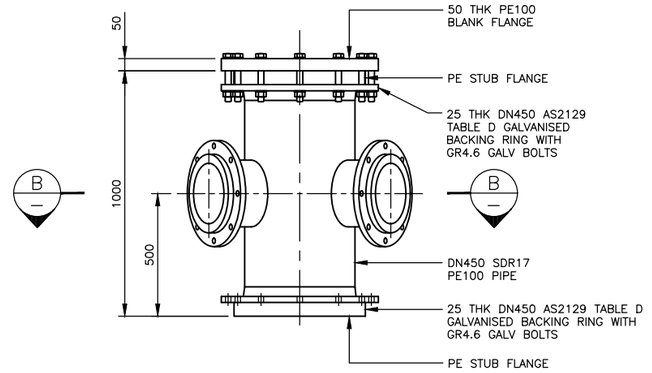

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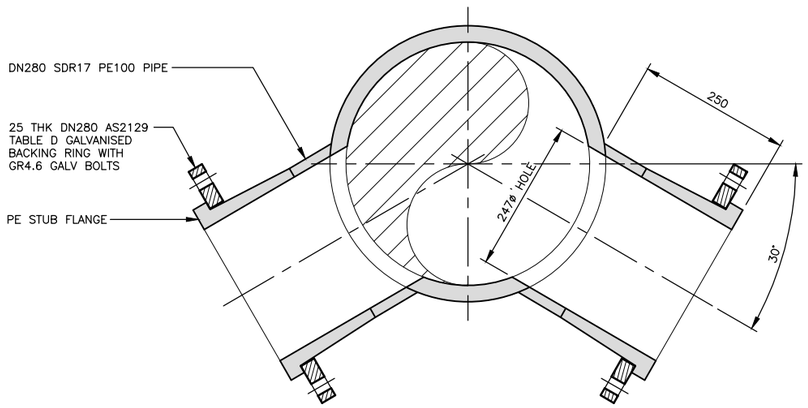

SECTION B

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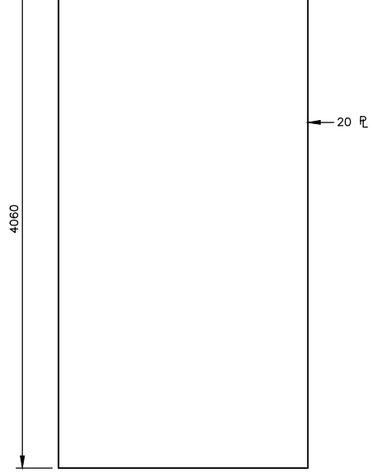

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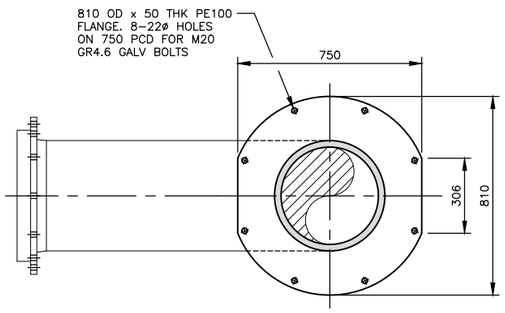

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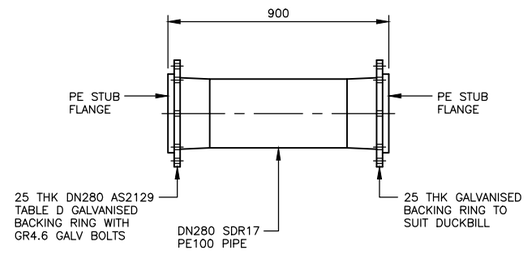

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PRELIMINARY ISSUE	1	20/09/19	RVE	PRELIMINARY			Approved	
Amendments	**Rev'n**	**Date**	**Drawn**	**Issued for**	**Checked**	**Approved**	Date	09/19

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WAIROA RIVER OUTFALL REPLACEMENT

DIFFUSER DETAILS – SHEET 3

Scale (A3)	ACAD Filename
AS SHOWN	190504/DR-190504-009R2
Drawing No.	**Rev.**
DR-190504-009	2

SITE INVESTIGATION RESULTS

LOCATION	NZTM NZGD2000 COORDS		REMARKS
	mE	mN	
1	1982507.9	5667458.2	WATER JET PROBE: SOFT SILTY SANDS TO 5m GRAVELS 5m – 6m, PUNCHED THROUGH GRAVELS AT 6m
2	1982549.2	5667435.2	WATER JET PROBE: SOFT SILTY SANDS TO 2.8m GRAVELS 2.8 – 4m, REFUSAL IN GRAVELS
3	1982570.1	5667418.1	WATER JET PROBE: SOFT SILTY SANDS TO 2.0m REFUSAL IN GRAVELS AT 2.0m
4	1982572.6	5667324.5	SHEAR VANE: 0.5m DEPTH 1 kPa 0 kPa REMOULDED 0.9m DEPTH 5 kPa 3 kPa REMOULDED GUM SPEAR (HAND PROBE): 0.95m PENETRATION THROUGH SOFT, REFUSAL AT GRAVELS AT 0.95m
5	1982578.0	5667312.5	WATER JET PROBE: SOFT SILTY SANDS TO 1.0m SANDY GRAVEL 1.0 – 1.4m REFUSAL IN CLAY (SOFT PUGGY) AT 1.5m

NOTE:

1. AERIAL PHOTOGRAPHY SOURCED FROM LINZ DATA SERVICE AND LICENSED FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENCE

PRELIMINARY

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PRELIMINARY ISSUE	1	30/09/19	RVE	PRELIMINARY			Approved	
Amendments	Rev'n	Date	Drawn	Issued for	Checked	Approved	Date	06/19

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SITE INVESTIGATION DETAILS

Scale (A3)	ACAD Filename
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Drawing No.	Rev.
DR-190504-020	1

Annex I – WDC Information for s42A report

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[Sent by Email : ~~Post~~]

7 September 2020

Hawke's Bay Regional Council
Private Bag 6006
NAPIER 4142

Attention: Tania Diack

Dear Tania

RESPONSES TO FURTHER INFORMATION REQUESTS FOR CONSENT APPLICATION APP-123774 AND REVISED CONDITIONS

This letter provides answers to outstanding information sought by the HBRC from WDC for the processing of the Wairoa wastewater discharge consent. Also attached are revised conditions.

BACKGROUND

On 19 May 2019 WDC provided a response to HBRC's s92 request dated 26 March 2019. HBRC sent a second s92 request on 12 July 2019, which WDC replied to on 11 October 2019. In both responses WDC proposed that some of the requests be addressed separately before the Hearing. While HBRC seemed to agree to this they subsequently provided further feedback and commentary regarding matters that, in their view, were 1) resulting from the earlier responses, 2) were previously incomplete, or 3) remained unresolved. HBRC has provided this feedback at various times over the last 10 months, including during the pre-hearing and submitter consultation period. Further, on 5 November 2019 HBRC raised concerns about flood scouring of the riverbed around the piers of the proposed new outfall structure.

During the pre-hearings and subsequent submitter consultation processes the draft proposed consent conditions have been reviewed and discussed by all parties. A range of feedback including queries, concerns, and potential amendments has been provided to WDC throughout this time. WDC have considered all feedback and have amended the draft conditions with commentary in response to the feedback and proposed amendments.

This letter provides the current version of proposed consent conditions, WDC's responses to the further information sought by HBRC, and relevant supporting information.

DRAFT CONSENT CONDITIONS

<u>Consultation and Structure of Tabulated Conditions</u>
The draft consent conditions have received separate feedback from HBRC and a group of submitters affiliated to Ngati Kahungungu. All submitters were provided an opportunity to respond to a revised set of conditions following the second pre-hearing meeting. The attached table of draft conditions provides the specific amendments and comments from each of these parties in the two left-hand columns. The middle column of this table provides WDC's responses to the feedback and justifications for changing or retaining each of the conditions. The right-hand columns provide

updated condition numbers and WDC's proposed amendments to each condition (strikethrough for proposed deletions and underline for proposed additions).

Structure
In order to simplify the consent conditions and provide clarity, some common terms have been moved to the definitions table above the conditions. Some of these were proposed by the other parties, while others are now proposed by WDC for consistency and simplicity. As part of rationalising the conditions, renumbering has been necessary. For clarity, a new column beside the new condition provides the current number for each condition.

Engagement with Maori
Conditions 2 and 3 have been combined with Conditions 37 and 38 to improve clarity of WDC's overarching goals to help address cultural values and achieve on-going engagement with Maori. Specifically, the wording has been rearranged so that the matters for compliance are within the conditions, while advice notes provide details of the purpose and intended practicalities. In order to show WDC's prioritisation of these matters, these reconfigured conditions are now placed among the first conditions instead of split with some located towards the end (which was disjointed and perhaps suggested that this was a low priority for WDC). WDC believe that this helps to set the scene for the consent conditions and future community engagement.

Discharge Volume Limits
During proofing of these conditions WDC identified that the draft conditions describing the discharge volume and timing limits did not reflect what was sought in the application. The result is a reduction in the volumes that can be discharged when the river is flowing at or below median and 3 x median river flows. This is a change 'down' (more restrictive) from the 5,400 m^3/d limit that was originally shown in the earlier drafts of these consent conditions for all river flows and timing of discharges. WDC apologises for this error.

Certification of Plans
As requested by HBRC, WDC have developed a catch-all condition to describe the generic certification process that would be followed by WDC and HBRC for the various Plans such as the Monitoring Plan.

Outfall Certainty
Now that the design and location of the new outfall have been detailed, WDC have developed two groups of conditions. One group describes the construction management requirements for installing the new outfall at a specific and nominated location, while the other group sets out protocols and minimum construction requirements when undertaking any future modifications, relocations, repairs, or maintenance of the new outfall and existing pump station overflow outfalls. This confirms and provides for a design of the outfall structure to be located at a specific location.

This dual grouping and wording avoids a duplication of the first group of conditions, but clearly separates their applicability to the new versus existing and future outfall structures. The second set is necessary to enable WDC to respond in a timely fashion to operational and functional problems as they arise for any of the outfall structures without having to seek specific additional resource consents first; an issue currently limiting modifications to the existing structure.

RESPONSES TO REQUESTS FOR FURTHER INFORMATION

Treated Wastewater Quality Data and Proposed Discharge Quality Limits
There has been some criticism of WDC failing to provide raw monitoring data and statistical analysis of that data. When preparing the previous s92 responses, WDC understood that the key requests were concerned with the statistics of historic results, predictions of future discharge quality, and the setting of realistic future discharge limits. Providing the full dataset seemed to be of little benefit in addition to these statistics.

WDC notes that HBRC already have a full dataset from the monthly compliance records that WDC have always provided to HBRC and HBRC's compliance team could have provided this data to Nick Dempsey for his own review. HBRC and Nick could readily generate statistics and consider potential compliance limits for future discharge quality based on HBRC's dataset. Nick also seemed to accept WDC's proposal to determine discharge quality limits for these consents in consultation with him prior to the Hearing.

Regardless of this, I have enclosed WDC's full dataset of historic discharge quality with graphs, statistics, and compliance rates with proposed limits. The attached spreadsheet provides all of the available monthly treated wastewater quality data for relevant parameters since November 1999 along with an assessment of the compliance rates that would have been achieved with the proposed limits (on a rolling 12-month basis for simplicity of calculations). Based on this data analysis, WDC has proposed limits that are considered to be an appropriate balance between the risk of consent breaches, similarity to existing consent limits, and typical performance of Wairoa's WWTP. WDC have taken some care to retain limits as close as possible to the existing limits while also providing some incentives to manage the WWTP's performance.

As has been noted in the attached conditions, WDC does not agree to quantify and impose discharge quality limits that will apply once filtration and UV treatment have been added to the WWTP's outlet. This is primarily because there are no environmental reasons for imposing stricter limits but also because it is difficult to quantify the likely improvements in quality. The reduction in I & I is a related factor that is also difficult to quantify in terms of its scale and its effects on treatment performance. A third factor is the management and removal of sludge from the WWTP ponds. In order to assist with defining design parameters and likely discharge quality of the filtration and UV treatment, WDC will perform pilot-scale trials of filtration and UV treatment during the next few months. WDC hope that this will provide more confidence to HBRC and submitters regarding the likely scale of benefits from installing filtration and UV treatment.

River Monitoring Plan

In the previous s92 responses WDC proposed that this Plan be addressed separately before the Hearing, and HBRC seemed to agree. The in-river monitoring plan has recently been discussed between Shane Kelly for HBRC and Shaw Mead for WDC. Good progress towards developing this Plan and agreeing key details appears to have been made, but the Plan is still some way off being finalised. WDC proposes that these experts continue to collaboratively develop the Plan, and confer with Shade Smith who represents a group of submitters affiliated to Ngati Kahungungu, and present the draft Plan with commentary to the Hearing as an integral part of their evidence. Shane agrees with this approach.

In response to concerns raised by Shane regarding the unknown quality of the benthic community along the new outfall's route, WDC has engaged eCoast to sample the riverbed in this area and report on the outcomes. This is expected to assist with assessing the effects of constructing the new outfall on the riverbed's benthic communities. WDC will send copies of eCoast's report to HBRC and the submitters once it is available.

Flood Scouring Around New Outfall Piers

HBRC's expert, Laddie Kuta of E2 Environmental, noted that flood scour around the new outfall structure's anchor piles could exceed the 2 m burial depth of the armoured part of the new structure. He wanted to understand how the risk of flood scour would be mitigated and addressed. He was also concerned that this scouring would remove support and thrust block capacity/resilience from the base of the outfall structure, which is a crucial consideration given that flood flows coincide with maximum discharge velocities and durations from the WWTP.

Gary Teear of OCEL responded directly to Laddie on 8 November 2019. Gary's response noted that, based on other similar-sized New Zealand rivers, the maximum likely flow rate under flood conditions was 12 knots. At this velocity it is likely that the bed is live, sediment upstream is being transported in a bed layer down to the diffuser structure, material is being eroded, and material is simultaneously

being brought in to fill the scour hole. For clear water scour the sediment is eroded/scoured around the structure because the flow locally speeds up.

OCEL calculated that the upper limit of scour depth is likely to be around 2 m. The diffuser's outer structure is buried at least 2.4 m into the riverbed, so this is expected to be well below any potential scouring zone, and therefore it is very unlikely to ever be undermined by flood scouring.

The OCEL survey also picked up a harder cobble layer within this 2 m scour depth, so the geotextile bags inside and around the diffuser's armour are likely to sink down until they rest on this layer, thus limiting the scour depth. The design showed 457 mm diameter piles incorporated into the diffuser structure which are 10 m long. Their standard size is 12 m long, so using 12 m piles would give them 8 m of penetration into the riverbed even after an allowance for 2 m of scouring.

The worst case scenario is for the piles to be taking both the hydrodynamic drag load on the diffuser structure plus the pipe thrust at the upward bend into the diffuser structure, in the absence of seabed support with the diffuser structure in a scour hole, with no soil support within the scour hole. The outfall design drawings previously provided to HBRC illustrate the design dimensions and features that are anticipated to be capable of reducing scour, withstanding any scour and coping with thrust and flood loads combined.

This appeared to allay Laddie's concerns, as there has been no further communication. However, if any concerns do remain, please advise me of the relevant details.

Subsequent to these communications, WDC engaged eCoast to use their hydrodynamic model of the Wairoa River to estimate the likely velocities of flood flows in the vicinity of the new outfall. Based on the largest recorded flood event for the Wairoa River (Cyclone Bola, 1988), eCoast's model predicted that the river velocity at the new outfall's location was likely to be up to 4.0 m/s or 8 knots. This confirmed that OCEL's scouring estimation was based on conservative estimates of river velocities during flood events at Wairoa. OCEL's conclusions are therefore considered to be an appropriate risk assessment of the proposed new outfall's scouring risks under flood conditions.

CLOSING REMARKS

I trust that the attached draft consent conditions, supporting information, and the above responses provide the clarification that you have sought. Please contact Hamish Lowe at Lowe Environmental Impact (phone 06 359 3099 or email hamish@lei.co.nz) if you require any further information.

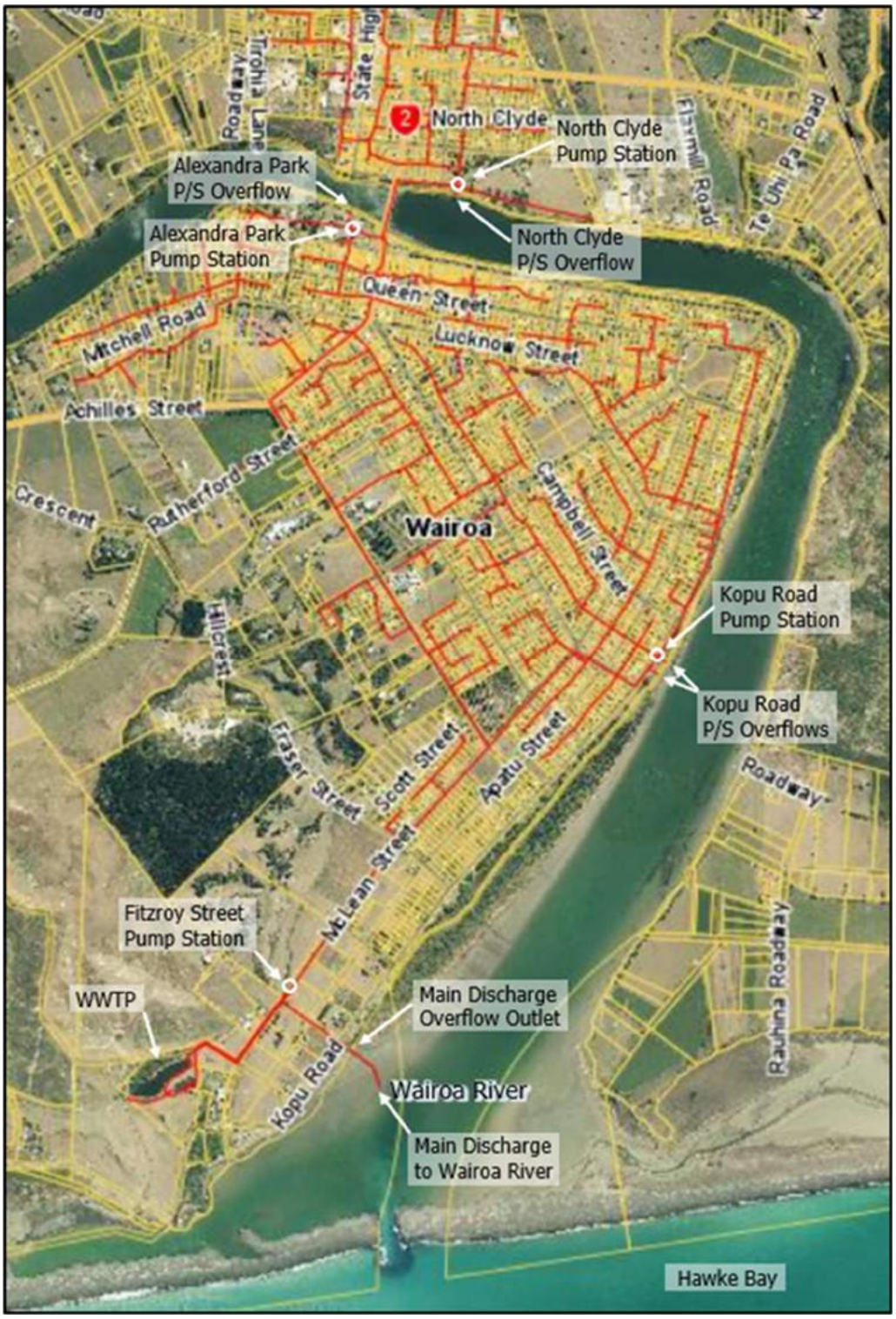
Yours sincerely

Stephen Heath
Group Manager Community Assets and Services
Wairoa District Council

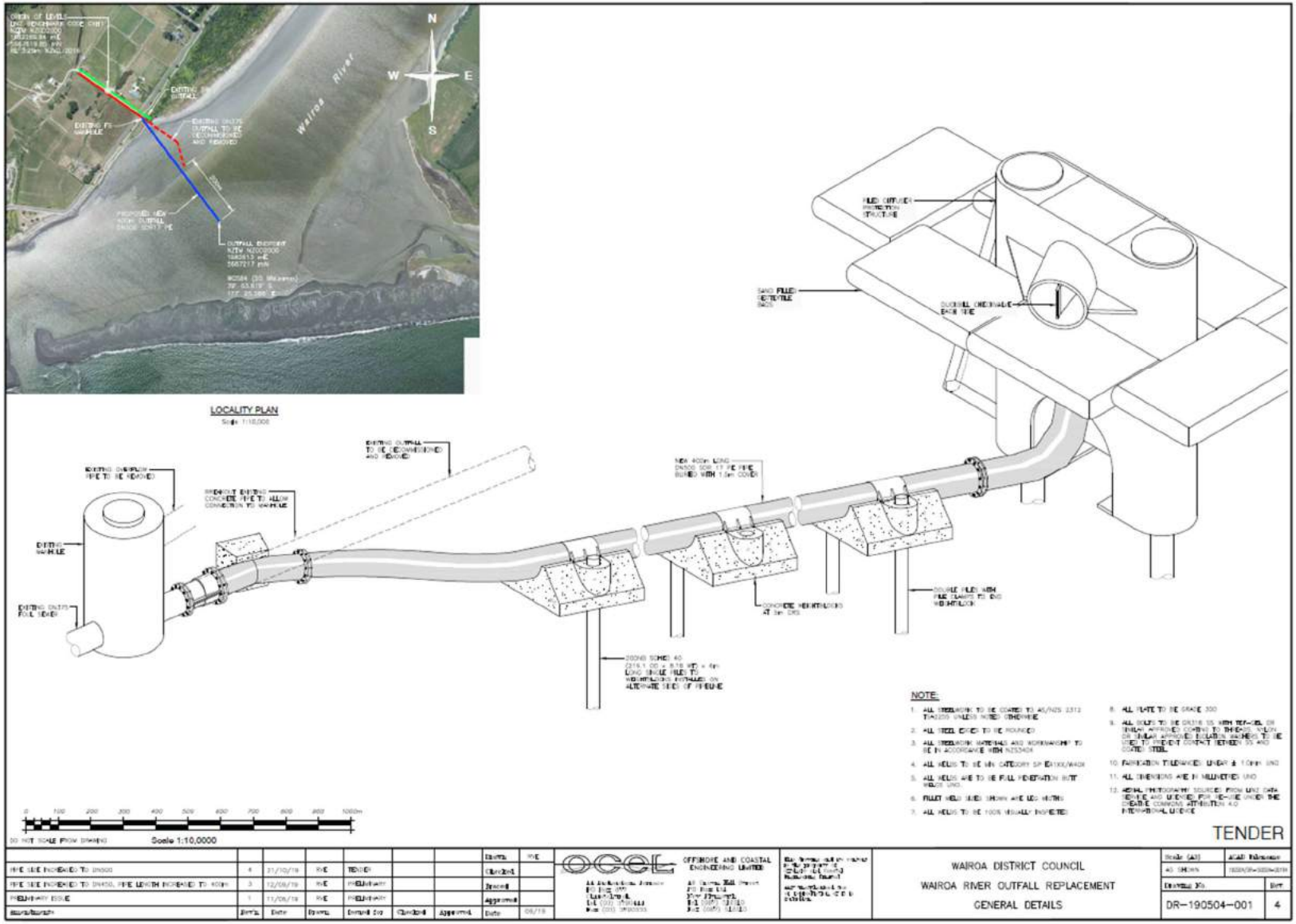
Stephen@wairoadc.govt.nz

Encl

Updated draft consent conditions (Version 20 – 4 September 2020)
Spreadsheet of historic treated wastewater quality and proposed limits



Plan of Existing Wairoa Pump Station and WWTP Discharge Outfalls



Plan of New Outfall Structure for Wairoa WWTP Discharges

Plan of Wairoa WWTP Outfall Relocation Area for Future Modifications

Wairoa WWTP Conditions – 4 September 2020– Version 20

CONDITIONS RELATING TO WAIROA DISTRICT COUNCIL WASTEWATER DISCHARGE CONSENTS

CONSENT HOLDER: WAIROA DISTRICT COUNCIL

WAIROA WASTEWATER TREATMENT PLANT AND PUMP STATION OVERFLOW DISCHARGES AND DISCHARGE STRUCTURES

Version Control

Version	Who	Date	Reason
14	LEI	29/11/18	With application
15	HL	27/2/20	Updated before prehearing – additions to application version in tracked changes
16	CD/HL	13/3/20	Updated after prehearing – additions to application version in tracked changes
17	CD/HL	26/4/20	Incorporated changes suggested by submitters and HBRC. Comments included for further discussion. SS – Shade Smith
19	HL/CD	5/5/20	Incorporated comments from HBRC reviewers
20	LEI/WDC/CD	4/09/20	WDC team review to address feedback from HBRC and submitters, and to rationalise conditions.

Definitions:

The following definitions apply across all resource consents:

Terminology Used	Definition	Reviewer Feedback	WDC Comment	Revised Terminology	Revised Definition
		HBRC May be useful to include Māori words/definitions	WDC agree, but need to be selective.	See Wairoa River addition below.	
Consent holder	Means Wairoa District Council		No feedback received. No change proposed.	Consent ~~h~~Holder	Means Wairoa District Council
Activities	Means the Activities authorised by the Resource Consents		No feedback received. No change proposed.	Activities	Means the Activities authorised by the Resource Consents
WWTP	Means the Wairoa wastewater treatment plant including all current and future treatment processes and storage facilities within the WDC land parcel located at Whakamahi Road legally described as Part Lot 1 DP 3350 SO 7253, Wairoa District, C/T HBJ2/800.		No feedback received. No change proposed.	WWTP	Means the Wairoa wastewater treatment plant including all current and future treatment processes and storage facilities within the WDC land parcel located at Whakamahi Road legally described as Part Lot 1 DP 3350 SO 7253, Wairoa District, C/T HBJ2/800.
Resource Consents	Consents means [list consents….]	HBRC These will need to reflect those activities referenced in the notification document, refer to draft activities table which will need to be finalised to reflect changes made from original application (particularly AUTHs AUTH-123624-01 &	WDC agree and have inserted the wording used in the public notification of the consent applications.	Resource Consents	Means resource consents granted by Hawke's Bay Regional Council to the Consent Holder for the following Activities: • To discharge treated wastewater from the Wairoa WWTP to the Wairoa River within the coastal marine area via an outfall structure (pipeline) and its associated overflow outlet pipe (Rule 160 – Regional Coastal Environmental Plan (RCEP)); • To discharge untreated wastewater from the Alexandra Park and North Clyde pump stations via overflow outlet pipes into the Wairoa River (Rule 52 – RRMP);

		AUTH-124094-01 refer to email)			• To discharge untreated wastewater from the Kopu Road pump station via overflow outlet pipe into the Wairoa River (Rule 9 – RCEP); • To allow for the relocation, maintenance and operation of the overflow outlets from the North Clyde, Alexandra Park, Kopu Road and Fitzroy Street pump stations (Rule 69 – RRMP); • To discharge aerosols and odour to air associated with the receipt, treatment and storage of wastewater from the Wairoa WWTP (Rule 28 – Regional Resource Management Plan (RRMP)); • The occupation of riverbed for the Wairoa WWTP's outfall structure within the Coastal Marine Area (Rule 178 – RCEP); • To replace the Wairoa WWTP's outfall structure (pipeline) and any associated earthworks (Rule 97 – RCEP); • The maintenance and potential re-establishment of the Wairoa WWTP's outfall structure within the coastal marine area (relocation of main outfall structure) (Rule 117 – RCEP); • To carry out earthworks, construction and rehabilitation activities related to the relocation and maintenance of the Wairoa WWTP's main outfall structure (Rule 130 – RCEP); • To carry out vegetation clearance and soil disturbance within the coastal marine area associated with the replacement (and future modification, relocation, and maintenance) of the Wairoa WWTP's outfall structure (Rule 8 – RCEP).
				body representing Maori interests	Body or bodies representing the views of Maori with respect to wastewater management.
Treated Wastewater	Means secondary treated wastewater derived from the Consent Holder's Wairoa WWTP.		No feedback received. No change proposed.	Treated Wastewater	Means secondary treated wastewater derived from the Consent Holder's Wairoa WWTP.
			Inserted by WDC to acknowledge cultural values and clarify which reaches of the river are affected.	Wairoa River	Te Wairoa Hōpūpū Hōnengenenge Matangirau which starts at Te Kapu (Frasertown) and ends at the sea. Te Wairoa Hōnengenenge from Turiroa to Kaimango (Spooner's Point) and Te Wairoa Matangirau from Kaimango to the sea are the reaches of the Wairoa River that receive Wairoa's wastewater discharges.
River Flows ½ Median Median 3 x median	Are calculated based on the median flow for the Lower Wairoa River being 60 m^3/s as determined by Hawke's Bay Regional Council's hydrologists based on daily flow data for 1985-2014. The Lower Wairoa River flow is calculated as follows: (Wairoa at Marumaru x 1.14639) + Waiau at Ardkeen		No feedback received. No change proposed.	River Flows ½ Median Median 3 x median	Are calculated based on the median flow for the Lower Wairoa River being 60 m^3/s as determined by Hawke's Bay Regional Council's hydrologists based on daily flow data for 1985-2014. The Lower Wairoa River flow is calculated as follows: (Wairoa at Marumaru x 1.14639) + Waiau at Ardkeen Advice Note: HBRC's hydrologists may adjust the value of the median from time to time to reflect changes indicated by more recent river flow data.
Outlet structure	Means the pipeline used for discharging treated wastewater into the Wairoa River from the WWTP. The pipe enters the riverbed opposite the intersection of Kopu Road and Fitzroy Street.		No feedback received. Minor change proposed.	Outlet structure	Means the pipeline and its diffuser structure that are used for discharging treated wastewater into the Wairoa River from the WWTP. The pipe enters the riverbed opposite the intersection of Kopu Road and Fitzroy Street.
		HBRC Added Structure design plan:	Need to insert 'Outlet' to clarify what this refers to. This is	Outlet structure design plan	Means the detailed design plan of the outlet structure.

		Is the detailed plan of the outlet structure.	additional to Plan 1 showing the envelope for the location of the outfall's future modifications. [PL: Not sure whether to agree; maybe use some selected plans? Need to ensure that this does not trip up using the existing outfall prior to installing the new pipe and does not trip up any future outfall modifications – related conditions need to be clear on this.]		
		HBRC Added Overall system plan: Plan showing the entire integrated operation. Including reticulation network, pond, storage and treatment systems, outfall structure and diffuser, and land discharge and other discharge provisions (including of mortuary waste) Malcolm: I am thinking they should provide us an up to date plan of the overall system. I don't know if there is a condition asking for that yet. Not unlike having an as built plan updated as more is added. There is a structure plan and a UV addition to be certified and storage pond and irrigation	WDC reject. This is not possible, as the locations of storage and irrigation have not been determined. The suite of resource consents only relates to the river discharges and therefore it is not relevant nor appropriate to include plans for activities that are not within the scope of the river discharge consents.		
Council	Means the Regulatory Compliance Manager of the Hawke's Bay Regional Council.	HBRC Tania: Rather than Regulation Manager our standard wording is for the Compliance Manager to review and to approve documents on behalf of Council	Agree – need to refer to relevant person.	Council Manager	Means the ~~Regulatory~~ Compliance Manager of the Hawke's Bay Regional Council.
			Inserted by WDC for clarity.	Council	Means the Hawke's Bay Regional Council
MWWP	Maori Wastewater Working Party	HBRC Added	Agree	MWWP	Means the Maori Wastewater Working Party

			Inserted by WDC for clarity and simplicity.	River mouth ~~closure~~ restriction	Means when the channel at the river mouth is less than 2 m in width.

Colour code key
No changes requested
HBRC
SS
Underline and ~~strikethrough~~ are changes to conditions

NUMBER	DRAFT CONDITION AS AT 13 MARCH 2020 – VERSION 16 – WITH SUBMITTER FEEDBACK	SUBMITTER COMMENTARY	WDC DISCUSSION	NEW NUMBER	WDC's PROPOSED REVISED WORDING OF DRAFT CONDITIONS INCLUDING SOME SUBMITTER FEEDBACK
	OVERARCHING PRINCIPLES				**OVERARCHING PRINCIPLES**
	General				
1	Except as otherwise required by any other condition of the Resource Consents, the Activities must be carried out in general accordance with the following information provided by the applicant (collectively referred to as 'the Application') in order of precedence: (a) Agreed outcomes from stakeholder engagement held post-application with local Maori and community groups. ~~(b) Wairoa Wastewater Discharge – Resource Consent Application and AEE, dated November 2018, including Appendices A- F; and~~ ~~(c) Section 92 further information responses dated 19 May, 24 June, and 11 October 2019; and~~ ~~(d)~~(b) Additional information provided post-application from the applicant in a letter dated X and Y. ~~(e)~~(c) Section 92 further information responses dated 19 May, 24 June, and 11 October 2019; and ~~(f)~~(d) Wairoa Wastewater Discharge – Resource Consent Application and AEE, dated November 2018, including Appendices A- F; and	HBRC I think this should include an order of precedence, with this consent being first, and the AEE/application last. There will have been many modifications to the proposed solution since application/AEE.	Agree, but it's easier to add to the end of the list instead of inserting at the start. When requiring agreement with stakeholders to be reflected there needs to be a 'document' that can be linked to. Agree outcomes should be captured, but the document stating these outcomes must be listed.	1	Except as otherwise required by any other condition of the Resource Consents, the Activities must be carried out in general accordance with the following information provided by the applicant (collectively referred to as 'the Application') where the most recent information takes priority over older information in the event of any conflicts: (a) Wairoa Wastewater Discharge – Resource Consent Application and AEE, dated November 2018, including Appendices A- F; and (b) Section 92 further information responses dated 19 May, 24 June, and 11 October 2019; and (c) Additional information provided from the applicant in a letter dated ~~X and Y~~ 4 September 2020; and (d) Agreed outcomes from engagement with submitters as detailed in a. ? b. ? c. ?
	Maori Engagement				**Maori Engagement**
~~1a~~ 2	The purpose of the condition structure is to ensure the following outcomes are and remain core goals and principles that guide future changes to the consented activities: (a) the mauri of the Wairoa River is enhanced, (b) the role of [body representing Maori interests] as kaitiaki is enhanced, and the concept of whanaungatanga is implemented; (c) mahinga kai is not compromised; (d) waste from mortuaries and funerary activities are separated from municipal wastewater and does not form part of the discharge to the Wairoa River Estuary. ~~(d)~~(e) [list others];	SS Does condition 23/24 (CHI monitoring) determine if mauri has been enhanced? How will iwi interests be enhanced?	WDC have included some clauses and more importantly changed from a condition to an Advice Note to assist with informing the discussion on the conditions. Ultimately this may be dropped out of the conditions. WDC agree with submitter's proposed (d). However, need to realise delivery on this addition		Advice Note: the following summary provides an overview of condition structure to assist with demonstrating how Maori views and values have been taken into account. The purpose of the condition structure is to ensure the following outcomes are and remain core goals and principles that guide future changes to the consented activities: (a) the mauri of the Wairoa River is enhanced, (b) the role of [body representing Maori interests] as kaitiaki is enhanced, and the concept of whanaungatanga is implemented;

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NUMBER	DRAFT CONDITION AS AT 13 MARCH 2020 – VERSION 16 – WITH SUBMITTER FEEDBACK	SUBMITTER COMMENTARY	WDC DISCUSSION	NEW NUMBER	WDC's PROPOSED REVISED WORDING OF DRAFT CONDITIONS INCLUDING SOME SUBMITTER FEEDBACK
	~~(e)~~(f) treated wastewater discharges from the WWTP do not result in detectable adverse effects on the Wairoa River estuary and coastal water quality after reasonable mixing; and (g) options and funding sources to reduce the discharge of treated wastewater into the river and its effects on the river are continuously investigated and implemented to the greatest practicable extent. ~~(f)~~(h) Staged removal of untreated wastewater associated with network overflows. ***Advice Note:*** *Compliance with all conditions of the resource consents shall be the means by which compliance with this condition is demonstrated. In all cases, the Consent Holder shall use reasonable endeavours to implement these principles.*	Parameterise what the staging entails	may jeopardise funeral services in Wairoa. (h) Untreated overflows are rare occurrence now. Hard to stage as simply direct action/mitigation needs to be taken. Modified wording. (i) added clause that relates to public's actions		(c) mahinga kai is not compromised; (d) wastes from mortuaries and funerary activities are separated from municipal wastewater and do not form part of the discharge to the Wairoa River Estuary. ~~(e) [list others]~~ (e) treated wastewater discharges from the WWTP do not result in detectable adverse effects on the Wairoa River estuary and coastal water quality after reasonable mixing; ~~and~~ (f) options and funding sources to reduce the discharge of treated wastewater into the river and its effects on the river are ~~continuously~~ investigated and implemented to the greatest practicable extent, including but not limited to inflow and infiltration reduction, storage and land discharge schemes. (g) Removal of untreated wastewater associated with network overflows. the public understanding and awareness are increased regarding how the public's actions can reduce water use and wastewater volumes. (h) catchment enhancement opportunities that improve the quality of freshwater within the wider Wairoa River Catchment are consistently identified, coordinated with Iwi other stakeholders, funded, and actioned within an identified reasonable timeframe; and (i) reporting on system performance is focussed on water quality improvements, and opportunities to reduce the volume of wastewater that needs to be discharged to the Wairoa River
~~1a~~ 2	The purpose of the condition structure is to ensure the following issues and outcomes identified through the consenting processes are and remain core goals and principles that guide future changes to the consented activities: (a) the mauri of the Wairoa River is enhanced, (b) the role of [body representing Maori interests] as kaitiaki is enhanced, and the concept of whanaungatanga is implemented; (c) mahinga kai is not compromised; (d) treated wastewater discharges from the WWTP do not result in detectable adverse effects on the Wairoa River estuary and coastal water quality after reasonable mixing; and (e) options and funding sources to reduce the discharge of treated wastewater into the river and its effects on the river are continuously investigated and implemented to the greatest practicable extent, including but not limited to inflow and infiltration reduction, storage and land irrigation schemes (f) increasing levels of public understanding and awareness of how their (the public's) actions/activities can influence wastewater volumes, and the ways in which the public can reduce water use; (g) catchment enhancement opportunities that improve the quality of freshwater within the wider Wairoa River Catchment are consistently identified, coordinated with Iwi other stakeholders, funded, and actioned within an identified reasonable timeframe; (h) reporting on system performance is focussed on water quality improvements, and opportunities to reduce the volume of wastewater that needs to be discharged to the Wairoa River ~~(e)~~(i) ~~(f)~~(j) [list others]; ***Advice Note:*** *Compliance with all conditions of the resource consents shall be the means by which compliance with this condition is demonstrated. In all cases, the Consent Holder shall use all reasonable endeavours to implement these principles.*	HBRC Jack Blunden - This is informative. A-d are not enforceable. F would be considered unreasonable as to continuously investigate is very onerous. I would think that an annual review is suitable. We would have to specify how the concept of whanaunatanga is implemented. Tania – Interested in Matt Lawson's take on this also given the concerns of our Compliance Team as above Nick – e ref conditions 46,47,57,58 Nick – f ref condition 48 Nick – g ref condition 49 Nick – h ref condition 56 Jack Blunden - If compliance with the conditions demonstrates compliance then this condition is really not necessary.	This condition was only intended to describe the goals and principles of these conditions in response to submitters' concerns. Was initially intended as an Augier condition which is not related to environmental or consenting scope issues, this is not meant to be enforceable by HBRC. WDC have included some clauses and more importantly changed from a condition to an Advice Note to assist with informing the discussion on the conditions. Ultimately this may be dropped out of the conditions.		
~~1c~~ 3	To achieve Condition 2 above the consent holder must: (a) ensure human E. Coli associated with wastewater treatment plant is not detected in the Wairoa River by undertaking faecal source tracking once every two years at Site X and Y (Condition 22);	SS	WDC comments on submitters' comments: (b) this provides for two separate things. The general intent of no adverse effect is supported but covered elsewhere. Benthic monitoring is also discussed	2	To ~~achieve Condition 2 above~~ demonstrate its commitment to Maori engagement the Cconsent H~~h~~older must: (a) ensure human E. Coli associated with the wastewater treatment plant is not detected in the Wairoa River by undertaking faecal source tracking once every two years at Site X and Y (Condition ~~22~~ 24); (b) contribute to Wairoa River catchment enhancement (Condition ~~49~~ 47);

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	~~(a)~~(b) ensure detectable adverse effects on water quality and benthic ecology associated with wastewater discharge do not cause undue adverse effects by undertaking enterococci testing 6 monthly for water at sites X, Y and Z. ~~(b)~~(c) contribute to Wairoa River catchment enhancement (Condition 49); ~~(c) have considered and if practically possible ceased the discharge of mortuary waste to the sewer system (Condition 45):~~ (d) ~~invite~~ resource [body representing Maori interests] to: i. prepare cultural health protocol and monitoring in accordance with Condition 23; ~~i.~~ii. make an assessment of at the minimum the level to which mauri has been enhanced, mahinga kai has not been compromised (text needs refining) ~~ii.~~iii. nominate ~~three~~ five representatives to sit on the MWWG in accordance with Condition 38; ~~iii.~~iv. involve the MWWG in reviews and system optimisation (Condition 58); ~~iv.~~v. ~~invite~~ resource [body representing Maori interests]to develop wānanga and karakia options to restore the mauri of the Wairoa River from the effects of wastewater treatment plant discharges and to restore cultural connections. **Advice Note:** The purpose of the MWWP (Condition 37) is for ongoing direct engagement between Maori and the Consent Holder in relation to activities at and discharges from wastewater treatment plant. The body representing Maori interests shall include at a minimum Wairoa Taiwhenua and Tātau tātau o Te Wairoa		elsewhere. The inclusion of Enterococci is supported and this has been added to Condition 23. (c) [old] WDC consider appropriate to retain as this was clear objective of submitters. This is further reflected in Conditions 41-43. (d) agreed with submitters that if invited there will be resourcing, as provided for in Condition 6. (d)(ii) surely mauri enhancement etc will come from cultural monitoring. This is provided for elsewhere. (d)(v) initial wording clumsy as (d) provides for inviting/resourcing. WDC made modification.		(c) ~~have~~ considered and, if practical~~ly possi~~ble, ceased the discharge of mortuary waste to the sewer system (Conditions 41-43 ~~45~~): (d) Make best endeavours to transition to land-based discharge (Conditions 53-55); and (e) invite [body representing Maori interests] to: i. prepare cultural health protocol and monitoring in accordance with Condition ~~23~~ 27; ii. nominate three representatives to sit on the MWW~~G~~P in accordance with Condition ~~38~~ 3; iii. involve the MWW~~G~~P in reviews and system optimisation (Condition ~~58~~ 55); iv. ~~invite [body representing Maori interests] to~~ develop wānanga and karakia options to restore the mauri of the Wairoa River from the effects of wastewater treatment plant discharges and to restore cultural connections. ***Advice Note**: The purpose of the MWWP (Condition ~~37~~ 3) is for ongoing direct engagement between Maori and the Consent Holder in relation to activities at and discharges from the wastewater treatment plant.*
~~1c~~ 3	To achieve Condition 2 above the consent holder must: a) ensure human E. Coli associated with the wastewater treatment plant is not detected in the Wairoa River by undertaking faecal source tracking once every two years at Site X and Y (Condition 22); b) contribute to Wairoa River catchment enhancement (Condition 49); c) have considered and if practically possible ceased the discharge of mortuary waste to the sewer system (Condition 45): d) invite [body representing Maori interests] to: i. prepare cultural health protocol and monitoring in accordance with Condition 23; ii. nominate three representatives to sit on the MWW~~G~~P in accordance with Condition 38; iii. involve the MWW~~G~~P in reviews and system optimisation (Condition 58); iv. invite [body representing Maori interests]to develop wānanga and karakia options to restore the mauri of the Wairoa River from the	HBRC Malcolm: Are X and Y to be located in the river or in the treated waste stream before discharge? If in the river what will prove that the source is from the waste water? Will there be any human source above the wastewater? When will it be sampled? Tide and time of day? Is 1 x in 2 years appropriate. Shane: I see the intent [of (a)], but I'm not sure about how compliance with this condition will be achieved or enforced, given a standard for E. coli concentrations is provided for under Condition 11. I'm also not sure if source tracking would be capable of separating E. coli from the WWTP from other human sources	X and Y are meant to be in the river to show if there is any detectable pathogen load from the WWTP's discharge, with one being upstream. HBRC need to provide firm guidance on the pathogen analyses that could achieve the intent of this condition. It seems that this might not be realistic anyway and should be deleted? Agree to change MWWG to MWWP to match the definitions. WDC can only invite a third party to do cultural health protocols		

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	effects of wastewater treatment plant discharges and to restore cultural connections. **Advice Note:** The purpose of the MWWP (Condition 37) is for ongoing direct engagement between Maori and the Consent Holder in relation to activities at and discharges from the wastewater treatment plant.	I also note that E. Coli are generally used as an indicator for health risks associated with freshwater sites. It is not used as an indicator for health risks associated with shellfish gathering (which use faecal coliforms) or swimming and other recreational activities (which use Enterococci) at marine sites. Enterococci and faecal coliforms are probably more appropriate for the river estuary. E. coli may be appropriate for upstream freshwater sites. Jack: (d) Not enforceable as it doesn't require any further action. Nick: Should this be MWWP as in conditions 37 – 39? Should also be included in Definitions.	and monitoring; an invitation is enforceable. Whether and when that third party follows through on the invitation is outside of WDC's control and should not be a compliance or enforcement issue. It is important for iwi to be given this opportunity.		
	~~**Maori Wastewater Working Party**~~		WDC believe this heading is no longer needed		~~**Maori Wastewater Working Party**~~
~~18b~~ 37	Within 6 months after the commencement of this Consent the Consent Holder must establish a Maori Wastewater Working Party (MWWP). The purpose of the MWWP is to review the operation and management of the Wairoa wastewater discharges, to evaluate information produced from these conditions, to understand limitations (including funding and certainty of outcome) and to inform decision making. Specifically, the MWWP shall: (a) Identify and discuss opportunities to integrate tikanga Maori and to implement changes where those changes would reduce cultural effects; (b) Consider expert assessment from independent expert technical advisors; (c) Review, comment and make recommendations, including possible changes to design, methodology, management, operation of the network and treatment and discharge system or any monitoring or mitigation; (d) Identify and discuss external influences that may influence the impact of wastewater management, such as National and Regional policy changes, population growth and changes within the catchment; (e) Address implications for costs and affordability to the wider community; and (f) Be consulted on by the Consent Holder, and involved in the development of, the System Improvement Plan (Condition 58) and make comment and recommendations in relation to its final content.	SS Potentially rename (MWWP)	WDC have streamlined what were conditions 37 to 39 and created a new condition (see below).		

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~~18c~~ 38	The MWWP must be invited to meet a minimum of annually with notice provided by the Consent Holder 4 weeks before the meeting and an agenda with relevant documents circulated 2 weeks before the meeting. The MWWP should consist of the following members: (a) Two district councillors; (b) ~~Three~~ Five Maori representatives to be selected by [body representing Maori interests]; (c) The infrastructure services manager (or nominee) representing the Consent Holder; (d) Independent expert technical advisors in the areas of community wastewater treatment, discharges and Matauranga Maori; and (e) An independent facilitator appointed by the representatives of the MWWP at their first meeting. In respect of (b) above, [body representing Maori interests] must inform the Consent Holder of their selected representatives within 3 months of the commencement of consent if they want to be involved. All reasonable endeavours will be taken to ensure representatives are consistent and attend meetings and other such requirements. Any unanimous recommendations of the MWWP representatives in (a) to (c) above shall be implemented by the Consent Holder unless other statutory approvals or processes are also required. If such statutory approvals or processes are required, the Consent Holder shall use reasonable endeavours to obtain them. Any recommendations of the MWWP that are not unanimous must be considered by the Consent Holder and if not implemented reasons must be provided to the MWWP and recorded in the Annual Report (Condition 51).	SS			
			This condition is new and incorporates two previous conditions (37 and 38). WDC consider three Maori representatives is appropriate to ensure the group is small and there is a balanced membership.	3	Within 6 months after the commencement of this Consent the Consent Holder shall invite the following parties to establish a Maori Wastewater Working Party (MWWP) to assist its decision making around the review, operation and management of the Wairoa wastewater discharges, including preparation of the System Improvement Plans: (a) Three Maori representatives to be selected by [body representing Maori interests]; (b) two District Council Councillors; and (c) the Infrastructure Services Manager (or nominee) In respect of (a) above, [body representing Maori interests] must inform the Consent Holder of their selected representatives within 3 months of the commencement of consent if they want to be involved. All reasonable endeavours will be taken to ensure representatives are consistent and attend meetings and other such requirements.

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					In addition to the parties in a – b, independent expert technical advisors in the areas of community wastewater treatment, discharges and Matauranga Maori can attend. An independent facilitator appointed by the representatives of the MWWP at their first meeting (and replaced as necessary by appointment of the MWWP during the term of the consents) shall run the meetings, producing an agenda and minutes. *Advice Note: Further to the above, the purpose of the MWWP is to:* (a) *evaluate information produced from the conditions of consent,* (b) *help consider limitations (including funding and certainty of outcome) and opportunities* (c) *Identify and discuss opportunities to integrate tikanga Maori and to implement changes where those changes would reduce cultural effects;* (d) *Consider expert assessment from independent expert technical advisors;* (e) *Review, comment and make recommendations, including possible changes to design, methodology, management, operation of the network and treatment and discharge system or any monitoring or mitigation;* (f) *Identify and discuss external influences that may influence the impact of wastewater management, such as National and Regional policy changes, population growth and changes within the catchment;* (g) *Address implications for costs and affordability to the wider community; and* (h) *Assist the Consent holder to achieve its goals, these being:* *i. the mauri of the Wairoa River is enhanced,* *ii. the role of [body representing Maori interests] as kaitiaki is enhanced, and the concept of whanaungatanga is implemented;* *iii. mahinga kai is not compromised;* *iv. wastes from mortuaries and funerary activities are separated from municipal wastewater and do not form part of the discharge to the Wairoa River Estuary;* *v. treated wastewater discharges from the WWTP do not result in detectable adverse effects on the Wairoa River estuary and coastal water quality after reasonable mixing;* *vi. options and funding sources to reduce the discharge of treated wastewater into the river and its effects on the river are investigated and implemented to the greatest practicable extent, including but not limited to inflow and infiltration reduction, storage and land discharge scheme;* *vii. removal of untreated wastewater associated with network overflows; and*

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					viii. *the public understanding and awareness are increased regarding how the public's actions can reduce water use and wastewater volumes.*
			WDC extracted this from previous Condition 38 which sets out meeting requirements.	4	The MWWP must be invited to meet a minimum of annually with notice provided by the Consent Holder 4 weeks before the meeting and an agenda with relevant documents circulated 2 weeks before the meeting.
			WDC extracted this from previous Condition 38 which provides greater certainty that discussions and actions recommended by the MWWP will be actioned. It should be noted that the MWWP also contains Councillors who should be able to express views on behalf of the Consent Holder.	5	Any: (a) unanimous recommendations of the MWWP representatives shall be implemented by the Consent Holder unless other statutory approvals or processes are also required. If such statutory approvals or processes are required, the Consent Holder shall use reasonable endeavours to obtain them. (b) recommendations of the MWWP that are not unanimous must be considered by the Consent Holder and if not implemented reasons must be provided to the MWWP and recorded in the ~~Annual~~ Report (Condition 51?).
~~18d~~ 39	On receipt of an itemised invoice, reasonable costs of preparing for and attending MWWP meetings by Maori representatives shall be paid by the Consent Holder.		WDC have inserted clarification that WDC's employees and Councillors will not be included in reimbursements because their costs are already a WDC function.	6	On receipt of an itemised invoice, reasonable costs of members of the MWWP not otherwise employed by a Territorial Authority preparing for and attending MWWP meetings ~~by Maori representatives~~ shall be paid by the Consent Holder.
	OPERATIONAL MATTERS				**OPERATIONAL MATTERS**
	Discharge Volumes and Timing				**Discharge Volumes and Timing**
~~2~~ 4	Subject to Condition 6 [river mouth ~~closure~~restriction], and until filtration and UV treatment is commissioned under Condition 41 and storage of an additional 10,000 m^3 has been commissioned, during Wairoa River flows: (a) Less than ~~the median~~3x median the discharge of treated effluent ~~wastewater~~ from the outlet structure shall: i. be limited to 5,400m^3 during any 24 hour period; ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; iii. only occur after 6 pm; and iv. shall cease by 6 am at all times (NZST??). ~~iv.~~v. Shall be responsive to, i.e. recognise and provide for, the results from cultural monitoring at Kihitu, Te Manga, Whakamahia and Ngamotu and other sites e.g. if monitoring shows the tuna heke has begun, and the maramataka suggests it's the time for customary fishing to occur (often this is in the pre-dawn and early evening) then the discharge regime should be responsive to that,	SS Insert conditions proposed in submission	Submitters have indicated the status of the river mouth should refer to restriction and not closure. WDC agrees with this. Also the submitters suggested using treated effluent. For consistency WDC is proposing the use of Treated Wastewater. During proofing of these conditions WDC identified the draft conditions did not reflect what was in the application. The result is a reduction in the volume that can be discharged below median flow (a). Also, the discharge volume above median and below 3 x median has been reduced (b). The commissioning of 50 ha of irrigation is also crucial	7	Subject to Condition ~~6~~ 10 [river mouth ~~closure~~restriction], and until filtration and UV treatment is commissioned under Condition ~~41~~ 39 and storage of an additional 10,000 m^3 and 50 ha of irrigation ha~~ve~~s been commissioned, when ~~during~~ Wairoa River flows are: (a) less than the median the discharge of Treated ~~w~~Wastewater from the outlet structure shall: i. be limited to 3,000 ~~5,400~~m^3 during any 24 hour period; ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; iii. only occur after 6 pm; and iv. shall cease by 6 am at all times. (b) between the median and 3 x median the discharge of Treated ~~w~~Wastewater from the outlet structure shall: i. be limited to 5,000 ~~5,400~~m^3 during any 24 hour period;

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	i.e. store wastewater till fishing ceased/liaise with kaitiaki to decide best time to discharge. ~~(b) between the median and 3 x median the discharge of wastewater from the outlet structure shall:~~ ~~i. be limited to 5,400m³ during any 24 hour period;~~ ~~ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; and~~ ~~iii.~~i. ~~can occur at any time of the day providing (i) and (ii) are met.~~ ~~(c)~~(b) ~~above 3 x median the discharge of wastewater from the outlet structure can occur at any time and volume is not limited.~~		for the successful reduction of discharges to the river. Regarding submitter comment: (a)(iv) WDC does not think reference to daylight saving is needed. (a)(v) the suggestion to provide for cultural monitoring while relevant is not appropriate for this condition. Such monitoring requirement is actually provided for in Conditions 27-28 and a review of the discharge regime is also provided for in Conditions 53-55. (b) and (c) are needed to allow for river flows above those in (a).		ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; and iii. can occur at any time of the day providing (i) and (ii) are met. (c) above 3 x median the discharge of Treated ~~w~~Wastewater from the outlet structure can occur at any time and volume is not limited.
~~2~~ 4	Subject to Condition 6 [river mouth closure], and until filtration and UV treatment is commissioned under Condition 41 and storage of an additional 10,000 m^3 has been commissioned, when ~~during~~ Wairoa River flows are: (a) less than the median the discharge of wastewater from the outlet structure shall: i. be limited to 5,400m^3 during any 24 hour period; ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; iii. only occur after 6 pm; and iv. shall cease by 6 am at all times. (c) between the median and 3 x median the discharge of wastewater from the outlet structure shall: i. be limited to 5,400m^3 during any 24 hour period; ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; and iii. can occur at any time of the day providing (i) and (ii) are met. (d) above 3 x median the discharge of wastewater from the outlet structure can occur at any time and volume is not limited.	HBRC Nick: This condition continues the currently consented discharge conditions up to median river flows only (previously applicable at all river flows), allows discharge on any tide from median to 3x median river flows, and discharge at any time and volume above 3x median river flow. In effect this is a loosening of the current consent condition. Have this and the next condition been confirmed by other technical experts that this the required dilution will be achieved under these conditions – assuming the current WWTP effluent performance. Shane: I understand this condition is designed to reduce the potential/incidence for/of blockages of the outfall and associated surcharging. However, it has the potential to exacerbate microbial effects on an already compromised system. It would be good to get feedback from Nick on whether the proposed limits are technically justified.	As noted above, WDC identified that the draft conditions did not reflect what was sought in the application and have rectified this. WDC acknowledge that this is a loosening of the existing controls when the river is flowing at or above median, but WDC believe that this is justifiable because (b) reflects increased dilution by the river and reduced community contact with the river and allows for discharges to occur more slowly over two out-going tides; and (c) reflects very large dilution by flood flows (>3x median) which can readily accommodate a continuous discharge of WDC's largest likely flow, the public will not be swimming, boating or fishing in the river, and wastewater flows tend to be higher during storm events so WDC need to ensure that their storage capacity at the WWTP is not overwhelmed.		
~~3~~ 5	Subject to Condition 6[river mouth closure], and once filtration and UV treatment is commissioned under Condition 41 and storage of an additional 10,000 m^3 has been commissioned, during Wairoa River flows:		During proofing of these conditions WDC identified the draft conditions did not reflect	8	Subject to Condition ~~6~~ 10 [river mouth ~~closure~~ restriction], and once filtration and UV treatment is commissioned under Condition ~~41~~ 39 and storage of an

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	(a) less than ½ median the discharge of wastewater from the outlet structure shall: i. be limited to 5,400m^3 during any 24 hour period; ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; iii. only occur after 6 pm; and iv. shall cease by 6 am at all times. (b) between ½ median and 3 x median the discharge of wastewater from the outlet structure shall: i. be limited to 5,400m^3 during any 24 hour period ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; and iii. can occur at any time of the day providing (i) and (ii) are met. (c) above 3 x median the discharge of wastewater from the outlet structure can occur at any time and volume is not limited.		what was in the application. The result is, for: (a) the volume discharge below ½ median is reduced and there is a daily limit on discharge days between December and March; (b) inclusion of a new (b) being a regime between ½ median and median; (c) (old (b)) being a reduction in the discharge volume above median and below 3 x median. The commissioning of 50 ha of irrigation is also crucial for the successful reduction of discharges to the river. WDC have changed 'closure' to 'restriction' for consistency with other conditions below.		additional 10,000 m^3 and 50 ha of irrigation haves ~~s~~ been commissioned, ~~during~~ when Wairoa River flows are: (a) less than ½ median the discharge of Treated ~~w~~Wastewater from the outlet structure shall: i. be limited to 1,600 ~~5,400~~ m^3 during any 24 hour period; ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; iii. only occur after 6 pm; ~~and~~ iv. shall cease by 6 am at all times; and v. no more than 30 days discharge in December to March. (b) more than ½ median and less than the median the discharge of Treated Wastewater from the outlet structure shall: i. be limited to 3,000 m^3 during any 24 hour period; ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; and iii. can occur at any time of the day providing (i) and (ii) are met. (c) between ~~½~~ median and 3 x median the discharge of T~~t~~reated ~~w~~Wastewater from the outlet structure shall: i. be limited to ~~5,400~~ 5,000 m^3 during any 24 hour period ii. only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; and iii. can occur at any time of the day providing (i) and (ii) are met. (c) above 3 x median the discharge of ~~t~~Treated W~~w~~astewater from the outlet structure can occur at any time and volume is not limited.
	River mouth closure		For consistency should refer to 'restriction' and not 'closure'.		**River mouth ~~closure~~ restriction**
4 6	The consent holder shall assess the extent to which the river mouth is restricted by the taking of images of the river mouth at midday from an elevated position on Rangihoua (Pilot Hill) to ensure mouth is a minimum 2m in width, additionally ~~O~~on Monday of each week the Consent Holder must ~~view~~ assess the depth of the ~~the~~ river mouth and assess the extent of flow passing from the river to the sea. If the channel is less than 2 m in width and 2m depth at the midpoint of the river mouth is deemed to be ~~closed~~ restricted and discharge flow restrictions as detailed in Condition 7 shall apply. [note this is suggested wording and needs refinement]	SS	Subject to WDC being able to confirm a suitable (secure) camera location, taking an elevated image is acceptable. WDC is of the opinion that there are practicality limitations with measuring depth and the assessment should be based on width only.	9	Within 6 months of the commencement of this consent, the Consent Holder shall install and maintain in working order a camera to continuously record a view of the Wairoa River mouth. A single daily image for 9 am shall be archived. Advice note: if the location of the river mouth changes then the camera direction will need to change. Or if a camera location cannot be found: On ~~Monday of~~ each weekday the Consent Holder must view the river mouth from an elevated position on Rangihoua (Pilot Hill) and visually assess the extent of river flow passing from the river to the sea. If the channel is ~~less~~
	On Monday of each week the Consent Holder must view the river mouth and assess the extent of flow passing from the river to the sea. If the channel is less than 2 m in	HBRC	Providing a remote camera can be used, daily assessments are acceptable to WDC. To be		

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	width the river mouth is deemed to be closed and discharge flow restrictions as detailed in Condition 7 shall apply. [note this is suggested wording and needs refinement]	Jack Blunden – A daily inspection would be warranted as the river mouth could be closed for up to 6 days before the consent holder restricts discharge. This is something that can be checked on the way to the treatment plant.	confirmed but unfortunately there is no suitable place on council property and due to the nature of the river mouth moving up to 500m would require multiple cameras on public areas. This is too costly for WDC to consider and open to vandalism. Please note that river mouth monitoring is a HBRC responsibility.		~~than 2 m in width the river mouth is deemed to be~~ restricted, the ~~and~~ discharge flow restrictions as detailed in Condition ~~7~~ 10 shall apply.
~~5~~ 7	During times of river mouth closure, as defined in Condition 6, the Consent Holder shall cease the discharge of wastewater to the Wairoa River unless: (a) The ability to store excess wastewater has been exceeded; and/or (b) Prior to storage capacity at the wastewater treatment plant being exceeded, it is recognised that the maximum storage capacity is likely to be exceeded during a time when no discharge is allowed.		WDC have changed 'closure' to 'restriction' for consistency with other conditions. Note restrictions are defined in the Definitions. WDC also added an allowance for resuming discharges when storage has or will be exceeded, as is currently allowed. This avoids any discharge breaching the consents.	10	During times of river mouth ~~closure~~ restriction, ~~as defined in Condition 6,~~ the Consent Holder shall cease the discharge of Treated ~~w~~Wastewater to the Wairoa River unless: (a) The ability to store excess wastewater has been exceeded; and/or (b) Prior to storage capacity at the wastewater treatment plant being exceeded, it is recognised that the maximum storage capacity is likely to be exceeded during a time when no discharge is allowed. In the event that (a) or (b) apply, the Consent Holder may resume the discharge of Treated Wastewater to the Wairoa River in accordance with Conditions 7 or 8.
~~6~~ 8	If river mouth closure is imminent, or has occurred, the Consent Holder must immediately contact the Council and enter into discussions to determine the options for mechanical opening of the river mouth. If deemed appropriate and the Council chooses to take action, the Consent Holder shall provide all assistance as deemed necessary.		WDC have changed 'closure' to 'restriction' for consistency with other conditions.	11	If river mouth ~~closure~~ restriction is imminent, or has occurred, the Consent Holder must immediately contact the Council and enter into discussions to determine the options for mechanical opening of the river mouth. If deemed appropriate and the Council chooses to take action, the Consent Holder shall provide all assistance as deemed necessary.
~~44~~ 9	If the river mouth is closed and wastewater is discharged in accordance with Condition 7, prior to that discharge occurring, and as soon as reasonably practicable after becoming aware that a discharge will be necessary, the Consent Holder must holder shall notify the MWWP, Hawke's Bay District Health Board's Public Health Unit, and the Hawke's Bay Regional Council. Within 10 working days of a discharge undertaken in accordance with this consent condition ceasing, the consent holder shall provide the Council with written confirmation of the dates and times when a discharge in accordance with this condition commenced and ceased. This reporting shall also detail: (a) time of notation of Council, MWWP, and the DHB; (b) actions taken by the Consent Holder to limit and restrict discharges occurring; and (c) results of discussions with Council, including options, for mechanical opening of the river mouth.	SS Copy and paste condition 5? From old consent in terms of signage and how quickly that needs to occur , and who gets comms. Also specify new media, socials etc.	This is covered in condition 52 below. WDC have made some other minor changes.	12	If the river mouth is ~~closed~~ restricted and wastewater is likely to be discharged in accordance with Condition ~~7~~ 10, prior to that discharge occurring, and as soon as reasonably practicable after becoming aware that a discharge will be necessary, the Consent Holder must ~~holder shall~~ notify the MWWP, Hawke's Bay District Health Board's Public Health Unit (DHB), Wairoa District Council's Environmental Health Officer (EHO), and the ~~Hawke's Bay Regional~~ Council. Within 10 working days of a discharge undertaken in accordance with this consent condition ceasing, the consent holder shall provide the Council with written confirmation of the dates and times when a discharge ~~in accordance with this condition~~ commenced and ceased. This reporting shall also detail: (a) time of notification of Council, EHO, MWWP, and the DHB;

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~~44~~ 9	If the river mouth is closed and wastewater is likely to be discharged in accordance with Condition 7, prior to that discharge occurring, and as soon as reasonably practicable after becoming aware that a discharge will be necessary, the Consent Holder must holder shall notify the MWWP, Hawke's Bay District Health Board's Public Health Unit, and the Hawke's Bay Regional Council. Within 10 working days of a discharge undertaken in accordance with this consent condition ceasing, the consent holder shall provide the Council with written confirmation of the dates and times when a discharge ~~in accordance with this condition~~ commenced and ceased. This reporting shall also detail: (a) time of notification of Council, MWWP, and the DHB; (b) actions taken by the Consent Holder to limit and restrict discharges occurring; and (c) results of discussions with Council, including options, for mechanical opening of the river mouth. ~~(c)~~(d) Volumes discharged to land during this period	HBRC Malcolm: (d) Just a thought but needs a consent to allow discharge	WDC happy to adopt amended wording of Condition; good clarifications. WDC have added EHO as they also need to be notified. Not sure about validity or need for reporting any volumes discharged to land. In future this will be possible depending on soil moisture and other limitations. Regardless this will be separate consents.		(b) actions taken by the Consent Holder to limit and restrict river discharges occurring including, where appropriate, discharges to land as an alternative to the river; and (c) results of discussions with Council, including options, for mechanical opening of the river mouth.
	Discharge Quality Parameters				**Discharge Quality Parameters**
~~7~~ 10	The discharge shall not give rise to any of the following effects in the Wairoa River after reasonable mixing: (a) The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or (b) Any conspicuous change in the colour or visual clarity; or (c) Any emission or objectionable odour; or (d) The rendering of fresh water unsuitable for consumption by farm animals; or (e) Any significant adverse effects on aquatic life. ~~(e)~~(f) No more than 3°C change in temperature compared to upstream mixing	SS	This condition was a s107 cut and paste. S107 does not include temperature change limitations, but HBRC's RRMP does. WDC is ok with change providing compliance measurement is not needed due to practicality of measuring.	13	The discharge shall not give rise to any of the following effects in the Wairoa River after reasonable mixing: (a) The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or (b) Any conspicuous change in the colour or visual clarity; or (c) Any emission or objectionable odour; or (d) The rendering of fresh water unsuitable for consumption by farm animals; or (e) Any significant adverse effects on aquatic life; or (f) No more than 3°C change in temperature compared to upstream.

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11	The Consent Holder must ensure that the Treated Wastewater meets the following standards prior to discharge to the Wairoa River: (a) The concentration of Soluble Carbonaceous five-day Biochemical Oxygen Demand ($ScBOD_5$) must not exceed 220 g/m^3 in more than 8 out of 12 consecutive monthly samples, or 224 g/m^3 in more than 2 out of 12 consecutive monthly samples; (b) The concentration of Total Suspended Solids (TSS) must not exceed 87 g/m^3 for more than 8 out of 12 consecutive monthly samples, or 98 g/m^3 in more than 2 out of 12 consecutive monthly samples; (c) The concentration of Escherichia coli (E. coli) must not exceed X cfu/100 mL for more than 8 out of 12 consecutive monthly samples, or X cfu/100 mL in more than 2 out of 12 consecutive monthly samples; (d) The concentration of Ammoniacal Nitrogen (NH4-N) must not exceed 36 g/m^3 for more than 8 out of 12 consecutive monthly samples, or 40 g/m^3 in more than 2 out of 12 consecutive monthly samples; and ~~(d)~~(e) Require more stringency than previous consent provides incentive to move more quickly to land based discharge. ***Advice Note**: Compliance will be demonstrated based on the samples required by Condition 12 [monitoring section]. The exceedance frequency allowed for the Treated Wastewater quality values identified above are based on monthly sampling over an annual 12-month monitoring period of 1 July to 30 June each year in accordance with the New Zealand Municipal Wastewater Monitoring Guidelines (NZWERF, Sept 2002) Table 13.2. If the frequency of sampling is more than monthly, the allowed numbers of annual exceedances will need to be amended to remain in line with the New Zealand Municipal Wastewater Monitoring Guidelines (NZWERF, Sept 2002) Table 13.2.* [Note: discharge standards need to be discussed and refined]	SS	Submitter insertion of (e) seems to be in the wrong place. This requirement is covered in Conditions 53 and 54.	14	The Consent Holder must ensure that the Treated Wastewater meets the following standards prior to discharge to the Wairoa River: (a) The concentration of ~~Soluble~~ Carbonaceous five-day Biochemical Oxygen Demand (~~Sc~~BOD_5) must not exceed ~~220~~ 25 g/m^3 in more than 8 out of 12 consecutive monthly samples, or ~~224~~ 75 g/m^3 in more than 2 out of 12 consecutive monthly samples; (b) The concentration of Total Suspended Solids (TSS) must not exceed ~~87~~ 70 g/m^3 for more than 8 out of 12 consecutive monthly samples, or ~~98~~ 150 g/m^3 in more than 2 out of 12 consecutive monthly samples; (c) The concentration of Escherichia coli (*E. coli*) must not exceed ~~X~~ 20,000 cfu/100 mL for more than 8 out of 12 consecutive monthly samples, or ~~X~~ 200,000 cfu/100 mL in more than 2 out of 12 consecutive monthly samples; (d) The concentration of Enterococci must not exceed ~~X~~ 10,000 cfu/100 mL for more than 8 out of 12 consecutive monthly samples, or ~~X~~ 100,000 cfu/100 mL in more than 2 out of 12 consecutive monthly samples; and (e) The concentration of Ammoniacal Nitrogen (NH_4-N) must not exceed ~~36~~ 25 g/m^3 for more than 8 out of 12 consecutive monthly samples, or 40 g/m^3 in more than 2 out of 12 consecutive monthly samples. ***Advice Note**: Compliance will be demonstrated based on the samples required by Condition ~~12~~ 23 [monitoring section]. The exceedance frequency allowed for the Treated Wastewater quality values identified above are based on monthly sampling over an annual 12-month monitoring period of 1 July to 30 June each year in accordance with the New Zealand Municipal Wastewater Monitoring Guidelines (NZWERF, Sept 2002) Table 13.2. If the frequency of sampling is*

~~8~~ 11	Prior to the commissioning of the new filtration and UV disinfection system (Conditions 40-41). ~~T~~the Consent Holder must ensure that the Treated Wastewater meets the following standards prior to discharge to the Wairoa River: (a) [The] concentration of ~~Soluble~~ Carbonaceous five-day Biochemical Oxygen Demand (~~S~~cBOD$_5$) must not exceed ~~220~~23 g/m^3 in more than ~~8~~ 6 out of 12 consecutive monthly samples, or ~~224~~ xx g/m^3 in more than 2 out of 12 consecutive monthly samples; (b) The concentration of Total Suspended Solids (TSS) must not exceed ~~87~~ 52 g/m^3 for more than ~~8~~ 6 out of 12 consecutive monthly samples, or ~~98~~ xx g/m^3 in more than 2 out of 12 consecutive monthly samples; (c) The concentration of Enterococci~~Escherichia coli (E. coli)~~ must not exceed ~~X~~ 1,100 cfu/100 mL for more than 6~~8~~ out of 12 consecutive monthly samples, or X cfu/100 mL in more than 2 out of 12 consecutive monthly samples; (d) The concentration of Faecal coliforms (FC) must not exceed XX cfu/100 mL for more than 6 out of 12 consecutive monthly samples, or XX cfu/100 mL in more than 2 out of 12 consecutive monthly samples; and ~~(d)~~(e) The concentration of Ammoniacal Nitrogen (NH4-N) must not exceed ~~36~~ 15.6 g/m^3 for more than ~~8~~6 out of 12 consecutive monthly samples, or ~~40~~ xx g/m^3 in more than 2 out of 12 consecutive monthly samples; and ***Advice Note**: Compliance will be demonstrated based on the samples required by Condition 12 [monitoring section]. The exceedance frequency allowed for the Treated Wastewater quality values identified above are based on monthly sampling over an annual rolling 12-month monitoring period. ~~of 1 July to 30 June each year in accordance with the New Zealand Municipal Wastewater Monitoring Guidelines (NZWERF, Sept 2002) Table 13.2. If the frequency of sampling is more than monthly, the allowed numbers of annual exceedances will need to be amended to remain in line with the New Zealand Municipal Wastewater Monitoring Guidelines (NZWERF, Sept 2002) Table 13.2.~~* [Note: discharge standards need to be discussed and refined]	HBRC The approach taken for setting exceedance parameters is taken directly Table 13.2 of the referenced monitoring guidelines. This example table demonstrates a 10% discharger's risk, which is very lenient. For example, only 4 of 12 annual samples need to achieve the target median value. This strongly favours the applicant over the environment. Preference is to stick with median and 90th%ile, i.e. 6 of 12 and 10 of 12 samples respectively (90th actually equates to 83rd%ile with rounding. When the target values are based on historical data for This condition is unaltered from the S92 discussions. Soluble carbonaceous (sc)BOD is unacceptable, as this has not been measured at the WWTP and is a significantly lower number than cBOD. S92 questions agreed that cBOD would be acceptable to the applicant. Comment at Numbers proposed by HBRC state "based on Based on limited median data provided by applicant to date". These two values are copied from a COD values in the previous consent. COD and cBOD measurements are vastly different. These values need to be adjusted to reflect historical recorded cBOD values. The applicant has yet to demonstrate what these are when responding to S92 questions, and has not provided the historical data sets when requested. Comment at numbers changed to xx "Applicant to propose, and provide historical performance dataset to discuss." There is no good reason to fix this to a defined annual period. In my opinion, it would make more sense to using a rolling 12-month period. That way, non-compliance would be detected in (close to) real time and timely actions could be taken to remedy the situation rather than potentially waiting for months before a breach is detected, reported and actioned.	There is no environmental reason for only applying these limits for discharges before filtration and UV has been installed. The number of samples that must meet the limits and the limits themselves need to be refined with HBRC and other experts. The change from *E. coli* to Enterococci and faecal coliforms limits is partly rejected by WDC. There is a long history of *E. coli* and Enterococci data, but no recent data for faecal coliforms. Consequently, there is no recent faecal coliform data upon which to base any limits. HBRC are correct that *E. coli* is not as relevant in this estuarine receiving environment but *E. coli* is appropriate for the future irrigation consents. For consistency of monitoring and in recognition of the reduction of discharges to the river over future years WDC would prefer to retain *E. coli*. Rolling 12-month periods is **not** acceptable because a cluster or two of high results can repeatedly trigger limit breaches over a series of 12-month rolling periods despite being caused by the same high results. It may be important to retain the note about compliance in the event that samples are collected more often than monthly. Nominated concentrations for discharge limits have been inserted by WDC.		*more than monthly, the allowed numbers of annual exceedances will need to be amended to remain in line with the New Zealand Municipal Wastewater Monitoring Guidelines (NZWERF, Sept 2002) Table 13.2.* ~~[Note: discharge standards need to be discussed and refined]~~

NUMBER	DRAFT CONDITION AS AT 13 MARCH 2020 – VERSION 16 – WITH SUBMITTER FEEDBACK	SUBMITTER COMMENTARY	WDC DISCUSSION	NEW NUMBER	WDC's PROPOSED REVISED WORDING OF DRAFT CONDITIONS INCLUDING SOME SUBMITTER FEEDBACK
##	After the commissioning of the new filtration and UV disinfection system (Conditions 40 and 41), the Consent Holder must ensure that the Treated Wastewater meets the following standards prior to discharge to the Wairoa River: (a) The concentration of Carbonaceous five-day Biochemical Oxygen Demand ($cBOD_5$) must not exceed 23 g/m^3 in more than 6 out of 12 consecutive monthly samples, or XX g/m^3 in more than 2 out of 12 consecutive monthly samples; (b) The concentration of Total Suspended Solids (TSS) must not exceed XX g/m^3 for more than 6 out of 12 consecutive monthly samples, or XX g/m^3 in more than 2 out of 12 consecutive monthly samples; (c) The concentration of Enterococci must not exceed XX cfu/100 mL for more than 6 out of 12 consecutive monthly samples, or XX cfu/100 mL in more than 2 out of 12 consecutive monthly samples; and (d) The concentration of Faecal coliforms (FC) must not exceed XX cfu/100 mL for more than 6 out of 12 consecutive monthly samples, or XX cfu/100 mL in more than 2 out of 12 consecutive monthly samples; and (e) The concentration of Ammoniacal Nitrogen (NH4-N) must not exceed 15.3 g/m^3 for more than 6 out of 12 consecutive monthly samples, or XX g/m^3 in more than 2 out of 12 consecutive monthly samples. ***Advice Note**: Compliance will be demonstrated based on the samples required by Condition 12 [monitoring section]. The exceedance frequency allowed for the Treated Wastewater quality values identified above are based on monthly sampling over an annual rolling 12-month monitoring period.*	HBRC Applicant to propose values for all values marked with XX, and provide historical performance dataset to discuss.	WDC rejects the need for this insertion. There is no environmental reason for separate limits for discharges after UV has been installed. If it was previously causing less than minor adverse effects in the river, then there is no need to further restrict the discharge quality just because the treatment has improved its quality. It is also difficult to nominate new limits for each of the contaminants when the design, maximum flow rates, and performance capabilities of the future treatment systems are unknown. Any limits need to be based on expert advice from UV disinfection system suppliers and historic flow and effluent quality data. A trial will be conducted to scope out sizing of UV system and results of wastewater discharge standards to be confirmed. This will be completed by late November 2020.		
	MONITORING				**MONITORING**
	General and Standards				**General and Standards**
~~25~~ 12	The Consent Holder must measure and record the daily Treated Wastewater volume discharged to the Wairoa River. The flow meter used to measure and record the Treated Wastewater volume must be calibrated to an accuracy of plus or minus 5%. The Treated Wastewater volume records must be transferred daily to the Council via telemetry in a format compatible with the Regional Council's telemetry system.	HBRC After talking with Jack the current practice to estimate volumes is based on storage. When will this meter be installed and has a brand/model been considered? If so pleas provide that information.	A meter will be installed. As part of reconfiguration of the treatment plant outlet (top of falling main) a new meter will be installed. There are some changes to be made at the ponds to accommodate the new UV system and a meter will be installed at this time. This work is separate to the river outfall works. The meter will be set up and allow for all discharges, including a potential discharge to land. The brand/model is not relevant for consenting purposes. It just needs to be installed and accurate.	15	The Consent Holder must measure and record the daily Treated Wastewater volume discharged to the Wairoa River as follows: (a) Prior to the installation of the new outlet structure - the Consent Holder must calculate the daily discharge volume based on raw wastewater inflows pumped through the Fitzroy Street pump station, changes in storage levels in the WWTP's ponds, percentage of discharge valve opening, and duration of discharge. (b) Following the commissioning of the new UV system a flow meter shall be installed in the discharge pipe after the outlet of the WWTP. The flow meter used to measure and record the Treated Wastewater volume must be calibrated to an accuracy of plus or minus 5%. The Treated Wastewater volume records must be transferred daily to the Council via telemetry in a format compatible with the Regional Council's telemetry system.

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~~26~~ 13	The Consent Holder must have the Treated Wastewater flow meter calibrated annually by an authorised and certified contractor which confirms that the flow meter is accurate to within +/- 5% or better. This calibration must be completed with the meter in-situ to ensure that the calibration takes into account any variability due to its location and installation. The calibration certificate must be provided to the Council by X Y each year commencing in X Y 20ZZ.		No feedback received. No change proposed.	16	The Consent Holder must have the Treated Wastewater flow meter calibrated annually by an authorised and certified contractor which confirms that the flow meter is accurate to within +/- 5% or better. This calibration must be completed with the meter in-situ to ensure that the calibration takes into account any variability due to its location and installation. The calibration certificate must be provided to the Council by X Y each year commencing in X Y 20ZZ.
~~##~~	After the installation of the UV disinfection system (Conditions 40 and 41), the Consent Holder must measure and record the UV transmissivity of the wastewater after the filtration unit, and before the UV disinfection system measured hourly. The transmissivity meter used to measure and record the Treated Wastewater transmissivity must be calibrated to an accuracy of plus or minus 5%. The Treated Wastewater transmissivity records must be transferred monthly to the Council via telemetry in a format compatible with the Regional Council's telemetry system.	HBRC Check need for telemetry for monthly Data?	Continuous records will be kept and provided to Council monthly with other monitoring data.	17	After the installation of the UV disinfection system (Condition39), the Consent Holder must measure and record the UV transmissivity of the wastewater after the filtration unit, and before the UV disinfection system measured hourly. The transmissivity meter used to measure and record the Treated Wastewater transmissivity must be calibrated to an accuracy of plus or minus 5%. The Treated Wastewater transmissivity records must be transferred monthly to the Council Manager.
~~27~~ 14	The Consent Holder must establish and maintain an electronic system that allows tidal conditions to be assessed and recorded.	HBRC Is this necessary given MET service can provide this information?	This is necessary to enable programming of discharges and checks of compliance with tides each day. It also makes retrospective compliance reporting very rapid and simple. WDC already do this.	18	The Consent Holder must ~~establish and~~ maintain an electronic system that allows daily tidal ~~conditions~~ cycles to be assessed and recorded.
~~28~~ 15	To assist with making decision in accordance with Conditions? and ?, the Consent Holder must develop a telemetry system to receive river flow data from the Wairoa at Marumaru and Waiau at Ardkeen flow gauging sites operated by the Council. If such data exchange cannot be established with the Council, then manual retrieval of the appropriate electronic data through alternative means may be necessary. Should this not be possible then flows measured at 9 am shall apply for the following 24 hour period.	HBRC River flows could change significantly over 24 hours so I don't think this is suitable. Flows should be measured at the Wairoa bridge?	HBRC's hydrologists have advised that river flows can't be measured below Marumaru and Ardkeen due to tidal influences. The time delay for water to travel from there to the coast should allow reasonable estimation of flows for the next period of discharges. River flows tend to rapidly increase and then slowly subside. Falcon Electrical and WDC staff will validate with HBRC whether WDC can utilise HBRC's river flow data via telemetry.	19	To assist with making decisions in accordance with Conditions~~?~~ 7 and ~~?~~ 8, the Consent Holder must develop a telemetry system to receive river flow data from the Wairoa at Marumaru and Waiau at Ardkeen flow gauging sites operated by the Council. If such data exchange cannot be established with the Council, then manual retrieval of the appropriate electronic data through alternative means may be necessary. Should this not be possible then river flows measured ~~at~~ no earlier than 3 pm shall apply for the following overnight discharge period and, where relevant, river flows measured within 1 hour of 9 am shall apply for the following ~~24 hour~~ daytime discharge period.
~~29~~ 16	The Consent Holder must ensure that all sampling equipment, including meters and field measurement devices, are maintained in good working order by suitably qualified persons in accordance with the manufacturer's instructions and industry best practice guidelines. Records of calibration shall be kept and made available to the Council upon request.		No feedback received. No change proposed.	20	The Consent Holder must ensure that all sampling equipment, including meters and field measurement devices, are maintained in good working order by suitably qualified persons in accordance with the manufacturer's instructions and industry best practice guidelines. Records of calibration shall be kept and made available to the Council upon request.
~~30~~ 17	In respect of monitoring required by the Consents, the following apply:		No feedback received. No change proposed except to match definition changes.	21	In respect of monitoring required by the Consents, the following apply:

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	(a) All monitoring and sampling techniques employed in respect of the conditions of the Resource Consents must be carried out by suitably experienced and qualified persons; (b) All analytical testing other than on-site measurements, undertaken in connection with these Resource Consents must be performed by a laboratory that is IANZ accredited for the analytical tests or any other method approved in advance in writing by the Council; (c) All water sample analyses must be undertaken in accordance with the methods detailed in the "Standard Methods For The Examination Of Water And Waste Water, 2017" 23rd edition by A.W.W.A., A.P.H.A. and W.E.F., or any other method approved in advance in writing by the Regulatory Manager; and (d) If any monitoring sites are identified as unsuitable, alternative monitoring sites must be identified and developed within a reasonable time after consultation with the Regulatory Manager and Planning Manager.				(a) All monitoring and sampling techniques employed in respect of the conditions of the Resource Consents must be carried out by suitably experienced and qualified persons; (b) All analytical testing other than on-site measurements, undertaken in connection with these Resource Consents must be performed by a laboratory that is IANZ accredited for the analytical tests or any other method approved in advance in writing by the Council Manager; (c) All water sample analyses must be undertaken in accordance with the methods detailed in the "Standard Methods For The Examination Of Water And Waste Water, 2017" 23rd edition by A.W.W.A., A.P.H.A. and W.E.F., or any other method approved in advance in writing by the ~~Regulatory~~ Council Manager; and (d) If any monitoring sites are identified as unsuitable, alternative monitoring sites must be identified and developed within a reasonable time after consultation with the ~~Regulatory~~ Council Manager ~~and Planning Manager~~.
~~31~~ 18	The results of the monitoring undertaken in accordance with the conditions of this consent must be provided to the Council upon request. Copies of original laboratory analytical reports for all analyses shall also be made available upon request.	HBRC Quarterly or monthly in any month where non-compliance with the condition occurs or may occur.	Condition 48 requires WDC to notify HBRC of any breaches. WDC usually include the data with the notice but HBRC could ask for it anyway. These consents require a wide range of monitoring and some results have long analytical timeframes.	22	The results of the monitoring undertaken in accordance with the conditions of this consent must be provided to the Council upon request. Copies of original laboratory analytical reports for all analyses shall also be made available upon request.
	Chemistry				**Discharge Chemistry and Pathogens**
~~32~~ 19	From the commencement of this Consent, the Consent Holder must take samples of Treated Wastewater at the locations as shown on Plan 1 attached to and forming part of this Consent. Treated Wastewater is to be sampled once per month. The samples must be analysed for: (a) ~~Soluble~~ Carbonaceous five-day Biochemical Oxygen Demand (~~S~~cBOD$_5$) mg/L; (b) Chemical Oxygen Demand (COD) , mg/L; (c) Total Suspended Solids (TSS) , mg/L; (d) Total Nitrogen (TN) , mgN/L; (e) Ammoniacal-Nitrogen (NH_4-N), mgN/L;~~;~~ (f) Nitrate Nitrogen (NO_3-N), mgN/L;~~;~~ (g) Nitrite Nitrogen (NO_2-N), mgN/L; (h) Total Phosphorus (TP), mgP/L; (i) Dissolved Reactive Phosphorus (DRP), mgP/L; (j) *Escherichia coli (E. coli)* , cfu/100mL;~~;~~	HBRC Applicant to provide plan Jack: If samples exceed the specified limits then resampling must be undertaken. Why no metals? If they are proposing to monitor the river for metals to measure impact of the discharge then metals (zinc/copper/arsenic/lead/chromium) should be included in the sampling. Nick: Nice to have [COD], but not necessary given the cBOD condition.	Metals are not included because they are present in low concentrations in the wastewater but can slowly accumulate in the receiving environment's sediments over long periods of repetitive discharges. There are no natural sources of metals so the discharges can be identified as the likely source of any variations in sediment metals beyond the local background concentrations of metals. Faecal coliforms and COD are not needed.	23	From the commencement of this Consent, the Consent Holder must take samples of Treated Wastewater ~~at the locations as shown on Plan 1 attached to and forming part of this Consent. Treated Wastewater is to be sampled~~ once per month from the WWTP's main oxidation pond outlet until the UV treatment system is installed, and then from a dedicated sampling port between the UV treatment system and the outlet thereafter. The samples must be analysed for: (a) ~~Soluble~~ Carbonaceous five-day Biochemical Oxygen Demand (~~Sc~~CBOD$_5$) mg/L; ~~Chemical Oxygen Demand (COD), mg/L;~~ (b) Total Suspended Solids (TSS), mg/L; (c) Total Nitrogen (TN), mgN/L; (d) Ammoniacal-Nitrogen (NH_4-N), mgN/L; (e) Nitrate Nitrogen (NO_3-N), mgN/L;~~;~~ (f) Nitrite Nitrogen (NO_2-N), mgN/L;

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	(k) *Enterococci,* cfu/100mL ~~(j)~~(l) Faecal coliforms (FC), cfu/100mL; ~~(k)~~(m) Dissolved oxygen (DO) (field measurement), mgO/L; ~~(l)~~(n) pH (field measurement).				(g) Total Phosphorus (TP), mgP/L; (h) Dissolved Reactive Phosphorus (DRP), mgP/L; (i) *Escherichia coli (E. coli)*, cfu/100mL; (j) *Enterococci,* cfu/100mL (k) Dissolved oxygen (DO) (field measurement), mgO/L; (l) pH (field measurement).
~~33~~ 20	Prior to the discharge of Treated Wastewater, the Consent Holder must install and maintain a sampling port in the pipeline between the WWTP outlet (after proposed location of UV treatment) and the Wairoa River discharge.	HBRC Malcolm: Does this exist now? Discharge is already occurring. Is this required once UV treatment is in place? Where are condition 11 parameters to be measured?	Sampling is currently a grab sample from the WWTP outlet well. A port will be needed after the UV system has been installed. This requirement has been combined with the condition above.	~~24~~	~~Prior to the discharge of Treated Wastewater, the Consent Holder must install and maintain a sampling port in the pipeline between the WWTP outlet (after UV treatment) and the Wairoa River discharge.~~
	In-River Monitoring				**In-River Monitoring**
~~34~~ 21	Within three months of the commencement date of this consent, the Consent Holder must submit to the Council an In-river Monitoring Plan. The In-river Monitoring Plan shall include benthic surveys and water quality monitoring at a minimum of five monitoring sites, sampling for but not limited to: (a) Sediment particle grain size analysis; (b) ~~H~~eavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn); (c) Organic content/matter (TVS), organic carbon; (d) Nutrients (Total Recoverable P, DRP, Total N, SIN, NH_4-N); (e) Pathogens (E.coli, enteroccoci); (f) Faecal source tracking; and (g) Infauna. ~~(g)~~(h) Broadscale habitat map The plan must also detail how sampling corresponds to river and tidal conditions and cultural monitoring sites the reasons for the proposed monitoring regime. Work with with a tangata kaitiaki from the tangata whenua group will be required to develop monitoring plan, and will also be included in the monitoring work. ~~-~~The frequency of sampling (benthic and water quality) shall be stipulated. The plan shall also detail the multivariate analyses to be used in assessing differences in infaunal communities, and also compare all relevant background levels from Hawke's Bay to results gathered. ***Advice Note:*** *The In-river Monitoring Plan may want to consider plans being prepared by others, including the Council and Iwi, so as to provide joint opportunities to share information and provide for consistent collection, analysis and interpretation methodologies.*	SS	WDC notes that: (b) metals are only relevant to sediment. (c) ok with addition of organic carbon (e) ok with addition of enterococci. (h) The use of broad scale habitat mapping is suggested elsewhere as it relates to more than just the discharge. The addition of the cultural element is best placed in the Cultural Monitoring conditions (conditions 27 to 28). What is done and how it is done can be set out in the monitoring protocols that are to be developed, and can cover all the aspects covered here. This includes other activities/work, such as the multi-variant analysis referred to. As a general comment, there may be limited benefit sampling in the water column as there will be no	24	The In-river Monitoring Plan shall include benthic surveys and water quality monitoring at a minimum of five monitoring sites, sampling for but not limited to: (a) Sediment particle grain size analysis (by weight); (b) Sediment ~~H~~heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn); (c) Sediment ~~O~~organic content/matter (TVS) and organic carbon; (d) Sediment n~~N~~utrients (Total Recoverable P, DRP, Total N) (e) River water nutrients (DRP, SIN, NH_4-N); (f) Sediment ~~P~~pathogens (*E. coli, Enterococci*); (g) Faecal source tracking; and (h) Infauna The plan must also detail how sampling corresponds to river and tidal conditions and the reasons for the proposed monitoring regime. The frequency of sampling (benthic and water quality) shall be stipulated. ***Advice Note:*** *The In-river Monitoring Plan may want to consider plans being prepared by others, including the Council and Iwi, so as to provide joint opportunities to share information and provide for consistent collection, analysis and interpretation methodologies.*

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			discharge occurring at the time of sampling.		
~~34~~ 21	Within three months of the commencement date of this consent, the Consent Holder must submit to the Council an In-river Monitoring Plan. The In-river Monitoring Plan shall include benthic surveys and water quality monitoring at a minimum of five monitoring sites, sampling for but not limited to: (a) Sediment particle grain size analysis; (b) Sediment concentrations of heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn); (c) Sediment concentrations of organic ~~Organic~~ content/matter (TVS), (d) River water quality (Total Recoverable P, DRP, Total N, NNN, Ammoniacal-N (NH_3-NH4 -N), temperature, dissolved oxygen, pH, chlorophyll *a*, enterococci and faecal coliforms); ~~(e) Nutrients (Total Recoverable P, DRP, Total N, SIN, NH_4-N);~~ ~~(f)~~(e) Pathogens (E.coli, ~~(g)~~(f) Faecal source tracking; and ~~(h)~~(g) Infauna. ~~(i)~~(h) The presence and extent of nuisance macroalgae. The plan must also detail how sampling corresponds to river and tidal conditions and the reasons for the proposed monitoring regime. The frequency of sampling (benthic and water quality) shall be stipulated. ***Advice Note:*** *The In-river Monitoring Plan may want to consider plans being prepared by others, including the Council and Iwi, so as to provide joint opportunities to share information and provide for consistent collection, analysis and interpretation methodologies.*	HBRC Jack: The monitoring plan should require certification by Council or they can submit whatever they like. The certification system and wording used in the port consents (AUTH-123841-03) works really well in this regard Shane: These parameters [in (d)] cover off key stressors (nutrients and appropriate microbiological indicators for marine waters), plus indicators of environmental responses to stressors (Chl a, pH and DO). Temperature is included because it is a fundamental indicator of water quality and can be collected with a field instrument at little (if any) additional cost. Same goes for pH and DO. See earlier comment on the use of E. coli. Enterococci and faecal coliforms are probably more appropriate for the River estuary. E. coli may be appropriate for upstream freshwater sites.	Agree that this Plan needs to be certified by Council before implementation. There is only value in river water quality sampling if they are collected while the discharge is occurring (which will generally be at night time or at times of high flow and sampling would not be practical or safe). Dilution will be rapid and there are health & safety concerns with this. Sediment samples will be more difficult to collect in the deep channel around the relocated outfall but day-time low tide should be achievable. HBRC's scientists have noted that the Wairoa River estuary is not prone to nuisance macroalgae accumulations due to the low nutrients and high silt concentrations. Therefore, monitoring of a range of nutrient and biological indicators in the water column would be of limited or no value. Also, there will be no discharge at the time of sampling as noted above. However, some parameters could be sampled in the sediment, such as E.coli and Enterococci.		
~~35~~ 22	Within 12 months of the commencement date of this consent, the Consent Holder must have commenced monitoring in accordance with the In-river Monitoring Plan required by Condition 21	What is monitored for the 1st 12 mths?	There will be no in-river monitoring initially until a plan has been approved. WDC have noted that the ability to do monitoring is subject to HBRC approving plan.	25	Within 12 months of the commencement date of this consent, the Consent Holder must have commenced monitoring in accordance with the In-river Monitoring Plan required by Condition ~~21~~ 24.

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			An additional condition has been developed to describe the approval process for plans.		
			WDC have drafted a new condition that sets out a generic process for approving plans. HBRC had suggested a single generic approval condition.	26	Within two months of receiving any Plan requiring certification under the conditions of this consent, the Council must advise, in writing, the Consent Holder whether or not they have certified the Plan. If the Council refuses to certify the Plan it must advise the Consent Holder why this view is held. The Consent Holder shall resubmit a revised Plan to the Council for certification as soon as practicable, and no later than three months after receiving notification from the Council that it refused to certify the Plan. If the Council certifies the Plan the Consent Holder shall commence what is set out in the Plan as required by conditions of consent or as soon as practicable where no timeframe is specified.
	Cultural Monitoring				**Cultural Monitoring**
~~35~~ 23	Within two years of the commencement of this consent, the Consent Holder must invite and resource a ~~panel~~ body representing tangata whenua to undertake ~~Cultural Health Index Monitoring~~Mauri monitoring according to their respective tikanga. If the engagement is accepted, the Consent Holder must commission the body representing tangata whenua ~~at panel~~ or subpanel (as advised) to undertake Mauri~~Cultural Health Index~~ Monitoring in compliance with the Cultural Health Index Monitoring Protocol prepared in accordance with Condition 24. The Consent Holder shall take guidance from the trustees of Tatau Tatau o Te Wairoa and Taiwhenua in inviting the panel members.	SS	Resourcing for engagement is covered elsewhere. The term panel has been replaced with [body representing Maori interests, Mauri monitoring is very specific and could potentially limit the methods used and reported. WDC consider more flexibility is provided to all parties using a generic term of Cultural Health Index Monitoring.	27	Within two years of the commencement of this consent, the Consent Holder must invite a ~~panel~~ [body representing Maori interests] to undertake Cultural Health Index Monitoring according to their respective tikanga. If the engagement is accepted, the Consent Holder must commission that [body representing Maori interests]~~panel~~ or ~~subpanel~~ nominees (as advised) to undertake Cultural Health Index Monitoring in compliance with the Cultural Health Index Monitoring Protocol prepared in accordance with Condition ~~24~~ 28. The Consent Holder shall take guidance from the trustees of Tatau Tatau o Te Wairoa in inviting the [body representing Maori interests]~~panel members~~.
~~36~~ 24	If the engagement is accepted to undertake ~~Cultural Health Index~~Mauri Monitoring as set out in Conditions 23, the Consent Holder must commission the panel members to prepare a ~~Cultural Health Index Monitoring~~Mauri Protocol that as a minimum, must: (a) describe the relationship of tangata whenua to the discharge area and the sites of interest in or near the locations to which these Permits apply; (b) describe the tikanga relevant to the proposed cultural monitoring (including kaitiakitanga, mauri of awa, whenua, tangata, whanaungatanga and te ha tawhirimatia), the activities, and the site(s); (c) identify and map (with map references) the site(s) to be monitored; (d) set out the frequency of monitoring; (e) describe the procedures required to access the application site for the monitoring (in particular health and safety requirements);	SS	As noted above, Mauri monitoring is very specific and could potentially limit the methods used and reported. WDC consider more flexibility is provided to all parties using a generic term of Cultural Health Index Monitoring.	28	If the engagement is accepted to undertake Cultural Health Index Monitoring as set out in Conditions ~~23~~ 27, the Consent Holder must commission the ~~panel members~~ [body representing Maori interests] to prepare a Cultural Health Index Monitoring Protocol that as a minimum, must: (a) describe the relationship of tangata whenua to the discharge area and the sites of interest in or near the locations to which these Permits apply; (b) describe the tikanga relevant to the proposed cultural monitoring (including kaitiakitanga, mauri of awa, whenua, tangata, whanaungatanga and te ha tawhirimatia), the activities, and the site(s); (c) identify and map (with map references) the site(s) to be monitored; (d) set out the frequency of monitoring;

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	(f) identify the parameters and methods used for the monitoring; and (g) set out the matters to be included in the ~~Cultural Health Index~~Mauri Compass Monitoring Report and the frequency of the reporting obligations. (h) Set out the procedures for amendments, (i) set out the procedure for replacing panel members or re-establishing the panel.				(e) describe the procedures required to access the application site for the monitoring (in particular health and safety requirements); (f) identify the parameters and methods used for the monitoring and assessments of effects on cultural health; and (g) set out the matters to be included in the Cultural Health Index Monitoring Report and the frequency of the reporting obligations. (h) Set out the procedures for amendments to the Cultural Health Index Monitoring Protocols, (i) set out the procedure for replacing ~~panel~~ members of the cultural health assessment panel or re-establishing the cultural health assessment panel. Advice Note: there are multiple tools for assessing cultural health, including the Mauri Compass. The selection of the methodology is up to the [body representing Maori interests].
~~36~~ 24	If the engagement is accepted to undertake Cultural Health Index Monitoring as set out in Conditions 23, the Consent Holder must commission the panel members to prepare a Cultural Health Index Monitoring Protocol that as a minimum, must: (j) describe the relationship of tangata whenua to the discharge area and the sites of interest in or near the locations to which these Permits apply; (k) describe the tikanga relevant to the proposed cultural monitoring (including kaitiakitanga, mauri of awa, whenua, tangata, whanaungatanga and te ha tawhirimatia), the activities, and the site(s); (l) identify and map (with map references) the site(s) to be monitored; (m) set out the frequency of monitoring; (n) describe the procedures required to access the application site for the monitoring (in particular health and safety requirements); (o) identify the parameters and methods used for the monitoring; and (p) set out the matters to be included in the Cultural Health Index Monitoring Report and the frequency of the reporting obligations. (q) Set out the procedures for amendments, set out the procedure for replacing panel members or re-establishing the panel.	HBRC Malcolm: What if it [the engagement offer] is not accepted? We need to work to make sure it will be but what if …? Jack Blunden's comment - I would think that HBRC would want to see and certify this plan as well. As you said not sure who we could get to review it. Especially as it is very locally driven. Malcolm: Amendments of what? The monitoring protocol or to the conditions of consent or the way the activity is operated and where waste is discharged?	If the engagement is not accepted by tangata whenua then they have lost an opportunity to assist WDC with understanding changes in cultural effects of the WWTP's discharges. There is no time limit for tangata whenua to take up this opportunity so they could become active some years after these consents commence. It is not appropriate for another party to review and certify this Protocol, as this would offend the mana of the Protocol's authors.		
~~37~~ 25	The Consent Holder must provide a copy of the ~~Cultural Health Index~~Mauri Compass Monitoring Protocol, or any amended version to the Council within 1 month of receiving it.	SS Please specify who Council will use to review mauri monitoring report	Reference to Mauri Compass. Should avoid as is specific tool. WDC want to keep it more generic as there could be replacements. Why is a review needed? Council will not be doing this work. If Panel is commissioned then surely that manages bias.	29	The Consent Holder must provide a copy of the Cultural Health Index Monitoring Protocol, or any amended version, and any subsequent Cultural Health Monitoring Reports to the Council Manager within 1 month of receiving it. ***Advice Note:*** *These documents are the intellectual property of the Maori cultural health experts and are not subject to certification or review by the Consent Holder or Council.*
~~37~~ 25	The Consent Holder must provide a copy of the Cultural Health Index Monitoring Protocol, or any amended version to the Council within 1 month of receiving it.	HBRC Check that the CHI Monitoring report is to be provided. Could say here that it is to be provided within 1 month of receiving it. Followed by a document providing a response to	WDC can't force iwi to prepare a Protocol or reports. WDC can't be in breach of any consent conditions due to lack of action by a third party. It is reasonable to require the Protocols and reports to be provided to HBRC within 1		

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		any recommendations or observations.	month of receipt if and when that occurs.		
	DISCHARGE STRUCTURE				**DISCHARGE STRUCTURES**
					Pump Station Overflows
			WDC have added a condition because pump station overflows weren't specifically mentioned in earlier versions of conditions, yet the consents seek to authorise them including future maintenance and modifications.	30	The existing pump station discharge structures shown on Plan ? shall be maintained or replaced in substantially the same locations and dimensions as the existing structures.
	Location				**Location and Timing of Construction**
~~9~~ 26	The discharge structure shall be retained within the area shown in –Plan ?.		WDC is now offering certainty of installing a new outfall in accordance with a specific design. The timing of installation will be dependent on not only the approval of this consent, but also approval of any necessary concessions. In the meantime the existing structure will have to be used.	31	~~The discharge structure shall be retained within the area shown in –Plan ?.~~The existing discharge structure, including piping, shall be replaced with a new outfall structure constructed in accordance with Condition ~~?~~ 32 and Plan ?, within 18 months of obtaining any necessary concessions. After construction all wastewater discharged to the Wairoa River from the WWTP shall be conveyed to the new outfall. The existing discharge structure shall be used for this purpose in the interim.
			This new condition offered by WDC sets out the requirements to be met during installation of the new outfall structure.	32	Installation of the new outfall structure shall comply with the following: (a) The Consent Holder shall give the Council Manager at least two working days' notice of the intention to commence works and shall advise the Council Manager of having finished the works immediately following their completion. (b) The Consent Holder shall take all practical measures to limit the amount of sediment and prevent contaminants from entering the waterbody during the works. Such measures include, but are not limited to: i Any surplus soil, cleared vegetation, excavated trench material or debris shall be deposited at least 20 m from any waterbody or deposited or contained in a manner to reasonably prevent the transportation or deposition of disturbed matter into any waterbody. ii The wash water from containers and tools shall not be discharged into any waterbody and the washing of equipment shall not occur in any waterbody.

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					iii As far as practicable, all machinery work in the riverbed shall be undertaken during low river flow conditions and from the banks of the river or a craft rather than in the river. iv Refuelling and carrying out machinery maintenance at least 10 m inland from MHWS (Mean High Water Springs). v The use of silt fences and other erosion control methods shall be in accordance with the Council 2009: *Guidelines for Waterways: Erosion and Sediment Control Guidelines*. (c) The Consent Holder shall ensure that at the completion of the works, any newly established surfaces and any grassed slopes or vegetated areas that were cleared or damaged as a result of the activity, are revegetated in order to prevent sediment from entering the waterbody. (d) The design and installation of the structure shall be such that it does not cause any long-term erosion of the bed or banks of the waterbody. (e) To ensure worksite spills are managed appropriately, the consent holder shall produce a Spill Management Plan (SMP) appropriate for the activities being undertaken on site. The SMP must; i include procedures for preventing contaminants such as hydrocarbons or chemicals entering any waterbody in the event of a spill; ii be prepared by a suitably qualified person; iii be provided to the Council prior to commencement of the works. The consent holder and any contractors engaged to undertake work on their behalf shall abide by the SMP and a copy of this SMP must be present on site at all times while the work is being undertaken. (f) The Consent Holder shall check, clean and dry machinery used in the bed of the waterbody to limit the spread of aquatic pests. (g) Any wet concrete cast on site shall be fully contained during casting and, where possible, cast in a dry work area. (h) No concrete or excess construction materials shall be dumped into the bed of any waterbody. (i) The Consent Holder shall use methods and materials non-toxic to aquatic life, except where it is necessary and appropriate to use marine grade construction materials, and limit disturbance of the seabed to the ~~greatest extent~~ smallest practicable area. (j) In the event of any archaeological site or waahi tapu being uncovered during the exercise of this consent, activities in the vicinity of the discovery shall cease. The Consent Holder shall contact the Council Manager and the [body representing Maori]. The Consent Holder shall then consult with the relevant local hapu or marae and Heritage New Zealand Pouhere Taonga, and shall not recommence works in the area

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					of the discovery until the relevant Heritage New Zealand Pouhere Taonga and tangata whenua approvals to damage, destroy or modify such sites have been obtained. (k) The Consent Holder shall ensure that any contractors engaged to undertake work authorised by this consent abide by the conditions of this consent. The person responsible for the work on site shall be familiar with the consent conditions and a copy of this consent shall be present on site at all times while the work is being undertaken.
	Modification	HBRC Given the structure now proposed is new wording through conditions 27 to 32 will need to be included to reflect this	WDC agrees and wording has been proposed. However, there still needs to be provision for future modifications and relocations of the new pipe (if needed) to avoid the inability that exists to modify the current outfall structure without having to embark on another separate consenting process.		**Modification**
~~10~~ 27	In the event of any modification, extension or relocation of the discharge structure, the Consent Holder must provide a Structure Design Report to the Council for certification. The design report shall (but is not limited to): (a) Be prepared by suitably qualified and experienced, independent expert/s, (b) Detail why changes are required~~,~~ ~~(b)~~(c) Detail cost benefit analysis of not doing works and instead fast tracking a discharge to land system this report should be done by an independent expert not involved with construction of the proposed modifications. ~~(c)~~(d) Include plans and supporting explanation for the proposed works, ~~(d)~~(e) Outline solutions regarding navigational hazards, ~~(e)~~(f) Include a Construction Management Plan, ~~(f)~~(g) Include details of the construction timetable.	SS	Submitters identified the need for a cost benefit analysis before committing to the construction of a new outfall, with an evaluation of the appropriateness and need when compared to land application alternatives. WDC has adopted this request and included in the proposed modifications (b). WDC requests the ability, should it be needed, to make modifications at some stage in the future. As has happened with the existing outfall, the riverbed has shifted and the current consent conditions do not allow modifications. This condition for the new outfall provides an opportunity to make modifications at some stage in the future, subject to the necessary approvals of plans and methodology, should the conditions in the river change or the outfall is not functioning as initially designed.	33	In the event of any proposed modification, extension or relocation of the discharge structure, the Consent Holder must provide a Structure Design Report to the Council Manager for certification prior to any works being undertaken. The design report shall (but is not limited to): (a) Be prepared by suitably qualified and experienced, independent expert/s, (b) Detail why changes are required, including details and a cost-benefit analysis of the alternatives considered, with particular regard to whether more rapid implementation of land discharge and storage systems may be a better environmental and economical solution, (c) Ensure that the discharge structure, or any portion thereof, is retained within the area shown in Plan ?, (d) Include plans and supporting explanation for the proposed works, including details on the extent and nature of seabed disturbance, and how any adverse environmental effects are to be minimised, (e) Outline solutions regarding navigational hazards, (f) Include a Construction Management Plan, (g) Include details of the construction timetable (h) Include specification of appropriate marine grade construction materials, design standards to be met and expected service life of materials.

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			To assist with any possible requests for modifications, changes should they be needed should only be undertaken within the area identified in the application. This is reflected in (c).		
~~10~~ 27	In the event of any modification, extension or relocation of the discharge structure, the Consent Holder must provide an updated Structure Design Report to the Council for certification. The design report shall (but is not limited to): (a) Be prepared by suitably qualified and experienced, independent expert/s, (b) Detail why changes are required, including details of the alternatives considered, (c) Include plans and supporting explanation for the proposed works, including details on the extent and nature of seabed disturbance, and how any adverse environmental effects are to be minimised, (d) Outline solutions regarding navigational hazards, (e) Include a Construction Management Plan, (f) Include details of the construction timetable (g) Specification of appropriate marine grade construction materials, design standards met and expected service life of materials. (h) Include operation and maintenance considerations, including operation during both open and closed river mouth conditions. ~~(f)~~(i) Include risk register for design, construction, operation and maintenance.	HBRC Jack: [certification] prior to any works being undertaken Tania: Addition of g - Peter Harte's recommendation refer to e2 environmental memo	WDC notes that the comments by HBRC may relate to the proposed strategy that has change, with a definite structure and location now being defined, with flexibility to monitor at a later stage if needed. It is hoped that HBRC will now consider the appropriateness of this two stage process, particularly the ability to maintain future flexibility. Reject "updated" as this will need to apply to all future modifications, not just the initial new outfall. While there may be some clarity with the proposed changes, HBRC may have more comments. However, WDC are happy to incorporate some of the suggested changes (at this stage) except (h) and (i) – not sure of the relevance of these for this stage in the process of approving future changes.		
~~11~~ 28	Within two months of receiving the Structure Design Report, the Council must advise the consent holder in writing whether or not they have certified the Structure Design Report. If the Council refuses to certify the Structure Design Report it must advise the consent holder why this view is held. The consent holder shall resubmit a revised detailed design to the Council for certification as soon as practicable, and no later than three months after receiving notification from the Council that it refused to certify the initial detailed design.	HBRC Shane: This must be getting close to/going beyond the bounds of matters suitable for Managers approval. I am particularly concerned about the lack of information provided on seabed values and disturbance. Malcolm: Then they need to satisfy us now that the modification can	The Structure Design Report scope now includes seabed matters. This Condition and 29 have been combined into a new generic certification Condition as requested by HBRC. See new Condition 26.		~~Within two months of receiving the Structure Design Report, the Council must advise the consent holder in writing whether or not they have certified the Structure Design Report. If the Council refuses to certify the Structure Design Report it must advise the consent holder why this view is held. The consent holder shall resubmit a revised detailed design to the Council for certification as soon as practicable, and no later than three months after receiving notification from the Council that it refused to certify the initial detailed design.~~

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		occur within the area designated in condition 26 Plan (which we could modify now if too large or extending into something sensitive) without adverse effects on seabed values and disturbance			
~~12~~ 29	Following certification of the Structure Design Report, the consent holder can commence modifications in accordance with consent Condition 30 [condition below].	HBRC Jack: For any certification required can one consent condition capture this to avoid repetition.	WDC agree. See new Condition 26.		~~Following certification of the Structure Design Report, the consent holder can commence modifications in accordance with consent Condition 30 [condition below].~~
					Maintenance of Discharge Structures
~~13~~ 30	Any modifications to the outlet structure as detailed in the Council certified Structure Design Report, must comply with the following: (a) The Consent Holder shall give the Council (Manager Compliance) at least two working days' notice of the intention to commence the works, and shall advise the Council of having finished the works immediately following their completion. (b) The Consent Holder shall take all practical measures to limit the amount of sediment and prevent contaminants from entering the waterbody during the construction works. Such measures include, but are not limited to: i Any surplus soil, cleared vegetation or debris, shall be deposited at least 20 m from any waterbody or deposited or contained in a manner to reasonably prevent the transportation or deposition of disturbed matter into any waterbody. ii The wash water from containers and tools shall not be discharged into any waterbody and the washing of equipment shall not occur in any waterbody. iii As far as practicable, all machinery work shall be undertaken from the banks of the waterbody rather than in the waterbody. iv Refuelling and carrying out machinery maintenance away from waterbody. v The use of silt fences and other erosion control methods shall be in accordance with the Council 2009: *Guidelines for Waterways: Erosion and Sediment Control Guidelines*. (c) The Consent Holder shall ensure that at the completion of the works, any newly established surfaces and any grassed slopes or vegetated areas that were cleared or damaged as a result of the activity, are revegetated in order to prevent sediment from entering the waterbody. (d) The design and installation of the works shall be such that it does not cause any long-term erosion of the bed or banks of the waterbody.	SS	WDC suggest that any maintenance should be undertaken using practices consistent with that adopted during installation of the new outfall. A number of the HBRC comments have been incorporated into the condition for installing the new outfall.	34	Any maintenance and associated disturbance of the riverbed or seabed undertaken to ensure the stability and proper functioning of the outlet structure or pump station discharge structures shall ~~modifications to the outlet structure as detailed in the Council certified Structure Design Report, must~~ comply with the requirements set out in Condition 32 (new outfall).~~following:~~ ~~(c) The Consent Holder shall give the Council (Manager Compliance) at least two working days' notice of the intention to commence the works, and shall advise the Council of having finished the works immediately following their completion.~~ ~~(d) The Consent Holder shall take all practical measures to limit the amount of sediment and prevent contaminants from entering the waterbody during the construction works. Such measures include, but are not limited to:~~ ~~vi Any surplus soil, cleared vegetation or debris, shall be deposited at least 20 m from any waterbody or deposited or contained in a manner to reasonably prevent the transportation or deposition of disturbed matter into any waterbody.~~ ~~vii The wash water from containers and tools shall not be discharged into any waterbody and the washing of equipment shall not occur in any waterbody.~~ ~~viii As far as practicable, all machinery work shall be undertaken from the banks of the waterbody rather than in the waterbody.~~ ~~ix Refuelling and carrying out machinery maintenance away from waterbody.~~

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	(e) To ensure worksite spills are managed appropriately, the consent holder shall produce a Spill Management Plan (SMP) appropriate for the activities being undertaken on site. The SMP must; i include procedures for preventing contaminants such as hydrocarbons or chemicals entering any waterbody in the event of a spill; ii be prepared by a suitably qualified person; iii be provided to the Council prior to commencement of the works. The consent holder and any contractors engaged to undertake work on their behalf shall abide by the SMP and a copy of this SMP must be present on site at all times while the work is being undertaken. (f) The Consent Holder shall check, clean and dry machinery used in the bed of the waterbody to limit the spread of aquatic pests. (g) Any wet concrete cast on site shall be fully contained during casting and cast in a dry work area. (h) No concrete shall be dumped into bed of any waterbody. (i) The consent holder shall construct the structures using methods and materials non-toxic to aquatic life. (j) In the event of any archaeological site or waahi tapu being uncovered during the exercise of this consent, activities in the vicinity of the discovery shall cease. The consent holder shall contact ~~the Council (Manager Compliance) to obtain contact details of the relevant tangata whenua~~the body representing tangata whenua. The Consent Holder shall then consult with the relevant local hapu or marae and the Heritage New Zealand Pouhere Taonga, and shall not recommence works in the area of the discovery until the relevant Heritage New Zealand Pouhere Taonga and tangata whenua approvals to damage, destroy or modify such sites have been obtained. (k) The Consent Holder shall ensure that any contractors engaged to undertake work authorised by this consent abide by the conditions of this consent. The person responsible for the work on site shall be familiar with the consent conditions and a copy of this consent shall be present on site at all times while the work is being undertaken.				~~x The use of silt fences and other erosion control methods shall be in accordance with the Council 2009: *Guidelines for Waterways: Erosion and Sediment Control Guidelines*.~~ ~~(f) The Consent Holder shall ensure that at the completion of the works, any newly established surfaces and any grassed slopes or vegetated areas that were cleared or damaged as a result of the activity, are revegetated in order to prevent sediment from entering the waterbody.~~ ~~(g) The design and installation of the works shall be such that it does not cause any long-term erosion of the bed or banks of the waterbody.~~ ~~(h) To ensure worksite spills are managed appropriately, the consent holder shall produce a Spill Management Plan (SMP) appropriate for the activities being undertaken on site. The SMP must;~~ ~~iv include procedures for preventing contaminants such as hydrocarbons or chemicals entering any waterbody in the event of a spill;~~ ~~v be prepared by a suitably qualified person;~~ ~~vi be provided to the Council prior to commencement of the works.~~ ~~The consent holder and any contractors engaged to undertake work on their behalf shall abide by the SMP and a copy of this SMP must be present on site at all times while the work is being undertaken.~~ ~~(l) The Consent Holder shall check, clean and dry machinery used in the bed of the waterbody to limit the spread of aquatic pests.~~ ~~(m) Any wet concrete cast on site shall be fully contained during casting and cast in a dry work area.~~ ~~(n) No concrete shall be dumped into bed of any waterbody.~~ ~~(o) The consent holder shall construct the structures using methods and materials non-toxic to aquatic life.~~ ~~(p) In the event of any archaeological site or waahi tapu being uncovered during the exercise of this consent, activities in the vicinity of the discovery shall cease. The consent holder shall contact the body representing tangata whenua. The Consent Holder shall then consult with the relevant local hapu or marae and the Heritage New Zealand Pouhere Taonga, and shall not recommence works in the area of the discovery until the relevant Heritage New Zealand Pouhere Taonga and tangata whenua approvals to damage, destroy or modify such sites have been obtained.~~ ~~(g) The Consent Holder shall ensure that any contractors engaged to undertake work authorised by this consent abide by the conditions of this consent. The person responsible for the work on site shall be~~
	Any modifications to the outlet structure as detailed in the Council certified Structure Design Report, must comply with the following: (a) The Consent Holder shall give the Council (Manager Compliance) at least two working days' notice of the intention to commence the works, and shall advise the Council of having finished the works immediately following their completion. (b) The Consent Holder shall take all practical measures to limit the amount of sediment and prevent contaminants from entering the waterbody during the construction works. Such measures include, but are not limited to: i. Any surplus soil, cleared vegetation, excavated trench material or debris, shall be deposited at least 20 m from any waterbody or	HBRC			

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	deposited or contained in a manner to reasonably prevent the transportation or deposition of disturbed matter into any waterbody. ii. The wash water from containers and tools shall not be discharged into any waterbody and the washing of equipment shall not occur in any waterbody. iii. As far as practicable, all machinery work shall be undertaken from the banks of the waterbody rather than in the waterbody. iv. Refuelling and carrying out machinery maintenance at least 10 m inland from MHWS (Mean high water springs~~away from waterbody~~ v. The use of silt fences and other erosion control methods shall be in accordance with the Council 2009: *Guidelines for Waterways: Erosion and Sediment Control Guidelines*. (c) The Consent Holder shall ensure that at the completion of the works, any newly established surfaces and any grassed slopes or vegetated areas that were cleared or damaged as a result of the activity, are revegetated in order to prevent sediment from entering the waterbody. (d) The design and installation of the works shall be such that it does not cause any long-term erosion of the bed or banks of the waterbody. (e) To ensure worksite spills are managed appropriately, the consent holder shall produce a Spill Management Plan (SMP) appropriate for the activities being undertaken on site. The SMP must; i. include procedures for preventing contaminants such as hydrocarbons or chemicals entering any waterbody in the event of a spill; ii. be prepared by a suitably qualified person; iii. be provided to the Council prior to commencement of the works. The consent holder and any contractors engaged to undertake work on their behalf shall abide by the SMP and a copy of this SMP must be present on site at all times while the work is being undertaken. (f) The Consent Holder shall check, clean and dry machinery used in the bed of the waterbody to limit the spread of aquatic pests. (g) Any wet concrete cast on site shall be fully contained during casting and cast in a dry work area. (h) No concrete or excess construction materials shall be dumped into bed of any waterbody. ~~(h)~~(i) The consent holder shall construct the structures using methods and materials non-toxic to aquatic life, and limit disturbance of the seabed to the greatest extent practicable. ~~(i)~~(j) In the event of any archaeological site or waahi tapu being uncovered during the exercise of this consent, activities in the vicinity of the discovery shall cease. The consent holder shall contact the Council (Manager Compliance) to obtain contact details of the relevant tangata whenua. The Consent Holder shall then consult	Peter Harte's recommendation refer to e2 environmental memo Jack Blunden – Distance used in other consents for coastal construction works Peter Harte's recommendation refer to e2 environmental memo			~~familiar with the consent conditions and a copy of this consent shall be present on site at all times while the work is being undertaken.~~

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	with the relevant local hapu or marae and the Heritage New Zealand Pouhere Taonga, and shall not recommence works in the area of the discovery until the relevant Heritage New Zealand Pouhere Taonga and tangata whenua approvals to damage, destroy or modify such sites have been obtained. ~~(j)~~(k) The Consent Holder shall ensure that any contractors engaged to undertake work authorised by this consent abide by the conditions of this consent. The person responsible for the work on site shall be familiar with the consent conditions and a copy of this consent shall be present on site at all times while the work is being undertaken.				
~~13a~~ 31	~~Notwithstanding conditions 27 to 30 above, within 6 months of commencement of this consent the Consent Holder must have nominated a contractor and be prepared to install and make modifications to the current discharge structure so that there is only a discharge at the in-river diffuser.~~	SS	WDC suggests deletion of this condition as it is now included in Condition 26. Dealing specifically with the HBRC issue raised, because of the direct link with the Fitzroy Street pump station overflow it is not possible for WDC to guarantee this pipe will only discharge treated wastewater.		~~Notwithstanding conditions 27 to 30 above, within 6 months of commencement of this consent the Consent Holder must have nominated a contractor and be prepared to install and make modifications to the current discharge structure so that there is only a discharge at the in-river diffuser.~~
~~13a~~ 31	Notwithstanding conditions 27 to 30 above, within 6 months of commencement of this consent the Consent Holder must have nominated a contractor and be prepared to install and make modifications to the current discharge structure so that there is only a discharge at the in river diffuser.	HBRC Jack: That only treated wastewater is discharged through the in river diffuser			
~~13b~~ 32	~~Within 18 months of commencement of this consent, discharge structure modifications must have occurred so that discharge occurs solely through the structure installed in accordance with Condition 31.~~	SS	WDC suggests deletion of this condition as it is now included in Condition 26.		~~Within 18 months of commencement of this consent, discharge structure modifications must have occurred so that discharge occurs solely through the structure installed in accordance with Condition 31.~~
~~13b~~ 32	Within 18 months of commencement of this consent, discharge structure modifications must have occurred so that discharge occurs solely through the structure installed in accordance with Condition 31.				
	MAINTENANCE AND ASSET MANAGEMENT				**MAINTENANCE AND ASSET MANAGEMENT**
~~38~~ 33	The Consent Holder must: (a) ensure that the above ground physical infrastructure of the treatment system is inspected weekly, and that relevant parts of the systems are also inspected whenever any alarms associated with the systems are activated; and (b) visually inspect the land surface of all discharge piping routes every 2 weeks, and that relevant parts of the systems are also inspected whenever any alarms associated with the systems are activated; and (c) ~~visually inspect the piping and discharge location at pumps stations following any discharge.~~	HBRC Tania: Council do not see why there would be the need to discharge any raw sewage from the pump stations with the proposed modifications, upgrades an I&I work proposed.	WDC cannot guarantee that large storm flows and/or pump station failures and blockages of reticulation will never overflow the pump wet wells. In fact these overflow structures are a vital protection for the reticulation system.	35	The Consent Holder must: (a) ensure that the above ground physical infrastructure of the treatment system is inspected weekly, and that relevant parts of the systems are also inspected whenever any alarms associated with the systems are activated; and (b) visually inspect the land surface of all discharge piping routes every 2 weeks, and that relevant parts of the systems are also inspected whenever any alarms associated with the systems are activated; and (c) visually inspect the piping and discharge location at pumps stations following any <u>high level alarms that indicate potential overflow</u> discharge.
~~39~~ 34	The Consent Holder must ensure that all components of the wastewater treatment plan and outfall structure are maintained in good working order, and in accordance with industry best practice guidelines.		No feedback received. No change proposed.	36	The Consent Holder must ensure that all components of the wastewater treatment plan and outfall structure are maintained in good working order, and in accordance with industry best practice guidelines.

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~~40~~ 35	The Consent Holder must record the details of all inspections and works undertaken in accordance with Condition 30. Those records shall be made available to the Council upon request.		No feedback received. No change proposed.	37	The Consent Holder must record the details of all inspections and works undertaken in accordance with Condition ~~30~~ 35. Those records shall be made available to the Council upon request.
~~41~~ 36	The Consent Holder must include in an asset management plan provision for condition assessments to be undertaken no less frequently than every five years. The relevant provisions and results of any assessment shall be made available to Council upon request.	HBRC Tania: Is this [5 year] frequency appropriate should it no align with manufacturers warranty requirements?	This is an asset owner's management decision and function. LGA also requires WDC to do asset management planning.	38	The Consent Holder must include in an asset management plan provision for condition assessments to be undertaken no less frequently than every five years. The relevant provisions and results of any assessment shall be made available to Council upon request.
	INITIAL IMPROVEMENTS AND ACTIONS				**INITIAL IMPROVEMENTS AND ACTIONS**
	Filtration and UV Treatment	**HBRC** This requires two sets of parameters for monitoring.			**Filtration and UV Treatment**
~~14~~ 40	Within two~~one~~ years of the commencement date of this consent, the Consent Holder must have in operation ~~submit to the Council for certification a report outlining the detailed design of the~~a filtration and ultra violet (UV) disinfection treatment system ~~to be installed~~that is endorsed by the DHB. The detailed design ~~report~~ shall (but is not limited to): (a) Be prepared by suitably qualified and experienced, independent expert/s; and (b) Clearly outline the: i. The location of the disinfection system within the treatment process with supporting explanation, ii. discharge parameters for which the disinfection system has been designed; iii. The flow rate and daily total volume able to be accommodated by the disinfection system, (c) Contain details of key operational matters including daily, weekly and monthly maintenance checks; and (d) Include details of the construction timetable. Within two months of receiving the detailed design report, the Council must advise, in writing, the consent holder whether or not they have certified the detailed design. (a) If the Council refuses to certify the detailed design it must advise the consent holder why this view is held. The consent holder shall resubmit a revised detailed design to the Council for certification as soon as practicable, and no later than three months after receiving notification from the Council that it refused to certify the initial detailed design. (b) If the Council certifies the detailed design, the consent holder shall commence construction of the grit trap and filtration and UV disinfection treatment system in accordance with the timetable set out in the report.	SS	WDC are committing to have installed the UV system within two years as requested by the submitter. This system does not need to be certified by HBRC as it will be required to meet performance specifications i.e. consent limits. DHB won't be able to endorse the proposed system design. A requirement sought by HBRC for a minimum UVT has been included, and WDC believe this should apply to discharge below the 3 x median river when the maximum wastewater flow is less than 5,000 m^3/d.	39	Within ~~one~~ two years of the commencement date of this consent, the Consent Holder must have installed and be operating ~~submit to the Council for certification a report outlining the detailed design of the~~ a filtration and ultraviolet (UV) disinfection treatment system~~ to be installed~~. The detailed design ~~report~~ for the system installed shall (but is not limited to): (a) Be prepared by suitably qualified and experienced, independent expert/s; (b) Clearly ~~outline~~ detail the: i. ~~The~~ location of the disinfection system within the treatment process with supporting explanation, ii. inflow and discharge quality parameters ~~for which the disinfection system has been designed,~~ including UV transmissivity (UVT) that achieves or exceeds a minimum UVT of 60% when discharge flows of Treated Wastewater are 5,000 m^3/d or less; iii. ~~The~~ flow rate and daily total volume able to be accommodated by the disinfection system, and (c) Take into consideration ~~Contain details of~~ key operational matters including daily, weekly and monthly maintenance checks~~; and~~ ~~(d) Include details of the construction timetable.~~ ~~Within two months of receiving the detailed design report, the Council must advise, in writing, the consent holder whether or not they have certified the detailed design.~~ ~~(a) If the Council refuses to certify the detailed design it must advise the consent holder why this view is held. The consent holder shall resubmit a revised detailed design to the Council for certification as soon as~~

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~~14~~ 40	Within one year of the commencement date of this consent, the Consent Holder must submit to the Council for certification a report outlining the detailed design of the filtration and ultra violet (UV) disinfection treatment system to be installed. The detailed design report shall (but is not limited to): (e) Be prepared by suitably qualified and experienced, independent expert/s; (f) Clearly outline the: i. ~~The~~ location of the disinfection system within the treatment process with supporting explanation, ii. discharge parameters for which the disinfection system has been designed~~.~~, including UV transmissivity (UVT); iii. ~~The~~ flow rate and daily total volume able to be accommodated by the disinfection system, (g) Contain details of key operational matters including daily, weekly and monthly maintenance checks; and (h) Include details of the construction timetable. Within two months of receiving the detailed design report, the Council must advise, in writing, the consent holder whether or not they have certified the detailed design. (a) If the Council refuses to certify the detailed design it must advise the consent holder why this view is held. The consent holder shall resubmit a revised detailed design to the Council for certification as soon as practicable, and no later than three months after receiving notification from the Council that it refused to certify the initial detailed design. (b) If the Council certifies the detailed design, the consent holder shall commence construction of the grit trap and filtration and UV disinfection treatment system in accordance with the timetable set out in the report	HBRC Malcolm: This [flow capacity] makes me wonder what the treatment will be when discharging in the high flow situation? Will it still go through this phase of treatment. Is the storage pond before or after this phase? Answered by Condition 41 Jack: As per comment against condition 29, this could be captured into one catch all for conditions requiring certification. Malcolm: The detailed design should be incorporated into the structure design plan Nick re grit trap – "What is this?"	WDC agree to specify UVT as a design parameter. The certification process has been deleted from here and instead covered in a generic condition describing the certification process.		~~practicable, and no later than three months after receiving notification from the Council that it refused to certify the initial detailed design.~~ (b) ~~If the Council certifies the detailed design, the consent holder shall commence construction of the grit trap and filtration and UV disinfection treatment system in accordance with the timetable set out in the report.~~
~~14a~~ 41	Within ~~three~~ two years of the commencement date of this consent, the Consent Holder must have installed a UV system that treats all of the wastewater discharged, and have been endorsed by the DHB~~.~~	SS	Condition no longer needed as WDC has committed to install the UV system.		~~Within three years of the commencement date of this consent, the Consent Holder must have installed a UV system that treats all of the wastewater discharged.~~
~~14a~~ 41	Within three years of the commencement date of this consent, the Consent Holder must have installed and commissioned a filtration and UV disinfection system that treats all of the wastewater discharged. The system shall be operated in a manner than achieves or exceeds the certified design performance, with a minimum UVT of 60%.	HBRC Is this realistic? Applicant to consider whether the cost of a system sized for peak wet weather flows is appropriate.	WDC acknowledge that the performance will be lower for high flows. The design performance will be limited to below a nominated upper flow (5,000 m^3/d). This is described in Condition 39 (b) (ii).		
	Network Management Plan				**Network Management Plan**

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~~15~~ 42	Within 12 months of the commencement date of this consent, the Consent Holder must submit to the Council a Network Management Plan. The Plan shall include, but is not limited to: (a) Details of work undertaken since 2015 to reduce the volume of infiltration into the reticulated wastewater network. (b) Details of further work planned to be done over the next 5 years to reduce infiltration into the reticulated wastewater network, including (but not limited to): i. Installation of a dedicated main pipeline from Kopu Road pump station to Fitzroy Street pump station, ii. Installation of new chopper pumps at every pump station, iii. Installation of emergency power generators at every pump station, iv. Installation of a duplicate rising main from the Fitzroy Street pump station to the Treatment Plant. (c) Timeframes for completion of future works. (d) Calculations of predicted reductions in wastewater flows received at the wastewater treatment plant as a result of the planned works. The consent holder shall undertake the planned works as set out in the Wastewater Network Infiltration Management Plan, within the timeframes specified. The Plan shall be reviewed and incorporated as part of preparing each Wastewater System Review Report as required by Condition 58.		WDC have updated the list of planned works to reflect actual programmed works.	40	Within 12 months of the commencement date of this consent, the Consent Holder must submit to the Council Manager a Network Management Plan. The Plan shall include, but is not limited to: (a) Details of work undertaken since 2015 to reduce the volume of infiltration into the reticulated wastewater network. (b) Details of further work planned to be done over the next 5 years to reduce infiltration into the reticulated wastewater network, including (but not limited to): i. ~~Installation of a dedicated main pipeline from Kopu Road pump station to Fitzroy Street pump station,~~ On-going private property inspections for compliance. Ie no illegal storm water connections to the sewer network. ii. Installation of new chopper pumps at every pump station, iii. Installation of emergency power generators at every pump station, iv. ~~Installation of a duplicate rising main from the Fitzroy Street pump station to the Treatment Plant~~WWTP inlet~~.~~ (c) Timeframes for completion of future works. ~~(d) Calculations of predicted reductions in wastewater flows received at the wastewater treatment plant~~WWTP ~~as a result of the planned works.~~ The C~~c~~onsent ~~h~~Holder shall undertake the planned works as set out in the ~~Wastewater~~ Network ~~Infiltration~~ Management Plan, within the timeframes specified. The Plan shall be reviewed by the Consent Holder and incorporated as part of preparing each Wastewater System Review Report as required by Condition ~~58~~ 55.
	Mortuary Waste				**Mortuary Waste**
~~15a~~ 43	Within 12 months of the commencement date of this consent, the consent holder shall have prepared a summary document to be presented to the second MWWP meeting. The summary document shall address: (a) The volume and characteristics of mortuary wastes currently discharged; (b) Expected changes in management of mortuary wastes entering the wastewater sewer; (c) Cultural and social implications for the current discharge; (d) Current regulatory rules and limitations with mortuary waste discharge into the wastewater sewer; (e) Cost implications to ratepayers for possible changes in management of mortuary wastes; (f) The requirements and limitations for management of wastes from multiple fatalities; (g) Potential alternatives to the current management practices, including cultural, social and financial implications.		No feedback received. No change proposed except for minor definition terminology.	41	Within ~~12~~ 24 months of the commencement date of this consent, the ~~c~~Consent ~~h~~Holder shall have prepared a Mortuary Waste S~~s~~ummary D~~d~~ocument to be presented to the second MWWP meeting. The summary document shall address: (a) The volume and characteristics of mortuary wastes currently discharged; (b) Expected changes in management of mortuary wastes entering the wastewater sewer; (c) Cultural and social implications for the current discharge; (d) Current regulatory rules and limitations with mortuary waste discharge into the wastewater sewer; (e) Cost implications to ratepayers for possible changes in management of mortuary wastes; (f) The requirements and limitations for management of wastes from multiple fatalities;

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	Advice Note: *MWWP and its operation is defined in Condition 37*				(g) Potential alternatives to the current management practices, including cultural, social and financial implications. ***Advice Note:*** *MWWP and its operation is defined in Condition ~~37~~ 3.*
~~15b~~ 44	Based on guidance given by the MWWP from the presentation of the summary document in condition 15b, the consent holder shall prepare a Mortuary Waste Management Plan. This plan shall have received input from any operators currently discharging mortuary waste to the wastewater sewer. This plan shall be presented to the third meeting of the WRP, and subject to revisions, within 6 months of the third meeting recommendations shall be made to the Wairoa District Council Infrastructure Committee to modify, if appropriate, the management of mortuary waste entering the wastewater sewer. ***Advice Note:*** *such recommendations could be modification of the Trade Waste Bylaws that govern acceptance of mortuary waste.*	SS: What is WRP?	No feedback received. No change proposed except for minor definition and typo corrections.	42	Based on guidance given by the MWWP from the presentation of the summary document in Condition ~~15b~~ 41, the ~~c~~Consent ~~h~~Holder shall prepare a Mortuary Waste ~~Management~~ Action Plan. This plan shall have received input from any operators currently discharging mortuary waste to the wastewater sewer. This plan shall be presented to the third meeting of the MW~~R~~WP, and subject to revisions, within 6 months of ~~the third~~that meeting, recommendations shall be made to the Wairoa District Council Infrastructure Committee to modify, if appropriate, the management of mortuary waste entering the wastewater sewer. ***Advice Note:*** *such recommendations could be modification of the Trade Waste Bylaws that govern acceptance of mortuary waste.*
~~15b~~ 44	Based on guidance given by the MWWP from the presentation of the summary document in condition 15b, the consent holder shall prepare a Mortuary Waste Management Plan. This plan shall have received input from any operators currently discharging mortuary waste to the wastewater sewer. This plan shall be presented to the third meeting of the WRP, and subject to revisions, within 6 months of the third meeting recommendations shall be made to the Wairoa District Council Infrastructure Committee to modify, if appropriate, the management of mortuary waste entering the wastewater sewer. ***Advice Note:*** *such recommendations could be modification of the Trade Waste Bylaws that govern acceptance of mortuary waste.*	HBRC Malcolm: Is this approach of "if appropriate consistent with the Trade Waste Bylaw prohibition in next condition?			
~~15c~~ 45	Within 18 months of the commencement date of this consent, the Consent Holder must have initiated a Trade Waste Bylaw review consultation process that proposes mortuary waste being prohibited from entering the sewer and treatment system.		WDC have clarified the trigger and timing for implementation of this condition. The Bylaw review can't commence if it has not been recommended to WDC through its internal management and reporting processes.	43	If recommended to the Wairoa District Council Infrastructure Committee as an outcome of Condition 42, w~~W~~ithin ~~18~~ 36 months of the commencement date of this consent, the Consent Holder must have initiated a Trade Waste Bylaw review consultation process that proposes mortuary waste being prohibited from entering the sewer and treatment system.
	Initial Land Treatment Area				**Initial Land Treatment Area**
~~16~~ 46	The Consent Holder must have acquired 50ha of land and have implemented an irrigation system for discharge to land within 5 years. ~~provide a~~Annual updates to the Council during the month of June of each year ~~for the first five years~~ until system is operational will detail ~~of the commencement date of this consent as to~~ progress towards establishing the system. ~~ability to discharge treated effluent to up to 50 ha of land.~~ The updates may cease once 50 ha of land application area is commissioned.	SS	WDC notes that they may struggle to buy land. It may be more effective to simply lease.	44	The Consent Holder must provide annual updates to the Council Manager during the month of June of each year ~~for the first five years of~~ from the commencement date of this consent as to progress towards establishing the ability to discharge treated effluent to up to 50 ha of land. The updates may cease once 50 ha of land application area is commissioned.
46	The Consent Holder must provide annual updates to the Council during the month of June of each year ~~for the first five years of~~from the commencement date of this consent as to progress towards establishing the ability to discharge treated effluent to up to 50 ha of land. The updates may cease once 50 ha of land application area is commissioned.	HBRC Nick: What happens after 5 years? Suggest the five year requirement is deleted so that reporting is required until irrigation is in place.	The aim is that 50 ha of land will be irrigated within the first 5 years. However, it is fair to require continued reporting if this is not achieved within 5 years.		

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	Initial Storage Facilities				**Initial Storage Facilities**
~~16a~~ 47	The Consent Holder must have constructed an additional 10,000m3 of storage within 5 years of the commencement of this consent. ~~provide annual updates to the Council d~~During the month of June of each year for the first five years of the commencement date of this consent an update as to progress towards establishing the ability to construct and operate up to 10,000 m^3 of additional storage of wastewater. The updates may cease once 10,000 m^3 of additional storage is commissioned.	ss	While the intent would be to provide storage as soon as possible, the ability to secure land and the necessary funding creates limitations as to when it will happen.	45	The Consent Holder must provide annual updates to the Council Manager during the month of June of each year ~~for the first five years of~~ from the commencement date of this consent as to progress towards establishing the ability to construct and operate up to 10,000 m^3 of additional storage of wastewater. The updates may cease once 10,000 m^3 of additional storage is commissioned.
47	The Consent Holder must provide annual updates to the Council during the month of June of each year ~~for the first five years off~~from the commencement date of this consent as to progress towards establishing the ability to construct and operate up to 10,000 m^3 of additional storage of wastewater. The updates may cease once 10,000 m^3 of additional storage is commissioned.	HBRC What happens after 5 years? The reporting goes away?	The aim is that 10,000 m^3 of additional storage will be completed within the first 5 years. However, it is fair to require continued reporting if this is not achieved within 5 years.		
	Wastewater Education Plan				**Wastewater Education Plan**
~~17~~ 48	Within 12 months of the commencement date of this consent, the Consent Holder must submit to the Council a Wastewater Education Plan (WEP) detailing a multi-faceted programme designed to increase the public's understanding and awareness of how their [the public's] actions/activities can influence wastewater volumes, and the ways in which the public can reduce water use. Within six months of submitting the report to Council, the consent holder shall commence delivery of the WUEP, in accordance with the report. The Consent Holder must undertake the planned works as set out in the Wastewater Education Plan, within the timeframes specified. The Plan shall be reviewed and updated as part of preparing each Wastewater System Review Report as required by Condition 58.		No feedback, but WDC have removed the need for HBRC to approve this Plan and clarified the timing of its implementation.	46	Within 12 months of the commencement date of this consent, the Consent Holder must prepare and implement ~~submit to the Council~~ a Wastewater Education Plan (WEP) detailing a multi-faceted programme designed to increase the public's understanding and awareness of how their [the public's] actions/activities can influence wastewater volumes, and the ways in which the public can reduce water use. Within six months ~~of~~ after submitting the ~~report~~ WEP to the Council Manager, the ~~c~~Consent ~~h~~Holder shall commence delivery of the W~~U~~EP~~, in accordance with the report~~. ~~The Consent Holder must undertake the planned works as set out in the Wastewater Education Plan, within the timeframes specified.~~ The Plan shall be reviewed and updated as part of preparing each ~~Wastewater~~ System Review Data Report as required by Condition ~~58~~ 53.
	Catchment Enhancement Plan				**Catchment Enhancement Plan**
~~18~~ 49	Within 12 months of the commencement date of this consent, the Consent Holder must submit to the Council a Catchment Enhancement Plan detailing actions taken in the past 24 months and intended actions over the next 3 years towards facilitating the involvement of the Wairoa District Council in activities that improve the quality of freshwater within the wider Wairoa River Catchment. This shall include (but not be limited to): (a) Progress on and assistance provided to establishing a catchment improvement group; (b) Financial and in-kind contributions to individual and collaborative catchment programmes; (c) The financial commitment given to various programmes, and that planned;		No change was offered, but discussions with submitters identified an opportunity to include broad scale mapping to better understand catchment dynamics.	47	Within 12 months of the commencement date of this consent, the Consent Holder must submit to the Council Manager a Catchment Enhancement Plan detailing actions taken in the past 24 months and intended actions over the next 3 years towards facilitating the involvement of the Wairoa District Council in activities that improve the quality of freshwater within the wider Wairoa River Catchment. This shall include (but not be limited to): (a) Progress on and assistance provided to establishing a catchment improvement group; (b) Financial and in-kind contributions to individual and collaborative catchment programmes;

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	The Catchment Enhancement Programme Plan shall include specific programmes (where known), timing of contributions and involvement and financial commitments. The consent holder shall undertake the planned works as set out in the Catchment Enhancement Plan, within the timeframes specified. The Plan shall be reviewed and updated as part of preparing each System Improvement Plan as required by Condition 58 and shall be submitted to Council. **Advice Note:** The Catchment Enhancement Plan may want to consider plans being prepared by others, including the Council and Iwi, so as to provide joint opportunities to share information and provide for consistent approaches and methodologies.				(c) The financial commitment given to various programmes, and that planned; The Catchment Enhancement ~~Programme~~ Plan shall include specific programmes ~~(where known)~~, timing of contributions and involvement and financial commitments (such as undertaking a broad scale benthic survey once every 3 years within the Whakamahi and Ngamotu Lagoons downstream of the outfall). The ~~c~~Consent ~~h~~Holder shall undertake the planned works as set out in the Catchment Enhancement Plan, within the timeframes specified, subject to obtaining all necessary approvals and funding. The Plan shall be reviewed and updated as part of preparing each System Improvement Plan as required by Condition ~~58~~ 55 and shall be submitted to Council. ***Advice Note:*** *The Catchment Enhancement Plan may want to consider plans being prepared by others, including the Council and Iwi, so as to provide joint opportunities to share information and provide for consistent approaches and methodologies.*
	REPORTING AND NOTIFICATION				**REPORTING AND NOTIFICATION**
~~45~~ 50	The Consent Holder must notify the Council within two working days of the identification of any non-compliance or when it becomes evident that a breach of Consent Conditions is about to occur. For conditions requiring compliance with a particular water quality standard, or mauri monitoring standard notification is required within two working days of receipt of the water quality analysis from the Laboratory.	SS	The addition is not the intent of this condition. There is no standard in the CHIM/mauri monitoring to report non-compliance to the Council.	48	The Consent Holder must notify the Council Manager as soon as possible and no later than within two working days of the identification of any non-compliance or when it becomes evident that a breach of Consent Conditions is about to occur. For conditions requiring compliance with a particular water quality standard, notification of the Council Manager is required within two working days of receipt of the water quality analysis result from the Laboratory.
~~45~~ 50	The Consent Holder must notify the Council as soon as possible and no later than within two working days of the identification of any non-compliance or when it becomes evident that a breach of Consent Conditions is about to occur. For conditions requiring compliance with a particular water quality standard is required within two working days of receipt of the water quality analysis from the Laboratory.	HBRC Annual reporting should be undertaken as per other municipal discharges	Agree.		
	Annual Monitoring Report				~~Annual~~ **Monitoring Report**
~~42~~ 51	By X Y 1 X 2021, ~~and there after every two years~~, the Consent Holder must prepare an Annual Monitoring Report that summarises and assesses all of the monitoring information required under Conditions ?, ? and ? for the preceding 24 months (1 Y to 30 Y) or part thereof for the duration of this Consent. The raw monitoring data from Conditions 19 and 21 should be made available to the Council. The Annual Monitoring Report must assess whether compliance has been achieved with Conditions ?. This report must be submitted to Council in a suitable electronic format. The report shall address and summarise (but not be limited to) the following: (a) daily discharge volumes, and corresponding river flows and tidal sequence; (b) summary of any wastewater quality monitoring information and compliance with water quality standards;	SS	WDC support adding a requirement to report the cultural monitoring, but there are no mauri monitoring standards. It would be unwise for WDC to accept specific requirements without knowing what they are.	49	By ~~X Y 1 X~~31 August 2021, and thereafter every two years~~,~~, the Consent Holder must prepare an ~~Annual~~ Monitoring Report that summarises and assesses all of the monitoring information required under Conditions ~~?, ? and ?~~of the Resource Consents for the preceding 24 months (1 ~~Y~~July to 30 June~~Y~~) or part thereof for the duration of this Consent. The raw monitoring data ~~from Conditions 19 and 21~~ should be made available to the Council Manager. The ~~Annual~~ Monitoring Report must assess whether compliance has been achieved with each of the Resource Consent conditions~~?~~. This report must be prepared by a suitably qualified and experienced person and submitted to the Council Manager in a suitable electronic format. The report shall address and summarise (but not be limited to) the following:

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	(c) the occurrence of any pump station overflow and corresponding river flows and tidal sequence; (d) storage management; and (e) the volume discharged to alternative receiving environments. ~~(e)~~(f) Tangata whenua summary of any mauri monitoring information and compliance with mauri monitoring standards				(a) daily discharge volumes, ~~and~~ corresponding river flows, river mouth conditions, and tidal sequences, and compliance with discharge limits; (b) summary of any wastewater quality monitoring information and compliance with Treated Wastewater quality standards; (c) the occurrence of any pump station overflow and corresponding rainfall, river flows and tidal sequence; (d) storage management; ~~and~~ (e) the volume discharged to alternative receiving environments; (f) identification and comment on any trends in discharge data collected, both within the annual period and compared to previous years, including comment on the potential environmental implications of these trends; (g) any areas of non-compliance and actions taken to rectify them; (h) summary and assessment of receiving environment monitoring data, both within the ~~annual~~ current period and compared to previous years; (i) any cultural health monitoring undertaken; (j) details of any improvements or changes made to the system; and (k) any recommendations for improvement/changes to the monitoring programmes.
~~42~~ 51	By X Y 1 X 2021, and there after every two years, the Consent Holder must prepare an Annual Monitoring Report that summarises and assesses all of the monitoring information required under Conditions ?, ? and ? for the preceding 12~~24~~ months (1 Y to 30 Y) or part thereof for the duration of this Consent. The raw monitoring data from Conditions 19 and 21 should be made available to the Council. The Annual Monitoring Report must assess whether compliance has been achieved with Conditions ?. This report must be submitted to Council in a suitable electronic format. The report shall address and summarise (but not be limited to) the following: (a) daily discharge volumes, and corresponding river flows and tidal sequence; (b) summary of any wastewater quality monitoring information and compliance with water quality standards and any additional monitoring undertaken by the consent holder to better characterise the effects of the discharge on the Wairoa River; (c) the occurrence of any pump station overflow and corresponding river flows and tidal sequence; (d) storage management; ~~and~~ (e) the volume discharged to alternative receiving environments;~~.~~ (f) identification and comment on any trends in data collected, both within the annual period and compared to previous years. This shall include any trends in water quality parameters/wastewater constituents including comment on the potential environmental implications of these trends; (g) any areas of non-compliance and actions taken to rectify; (h) Summary and analysis of receiving environment sampling data; (i) Details of improvement undertaken to the system; (j) Recommendations for improvement/changes to the monitoring programs; and ~~(e)~~(k) Prepared by a suitably qualified and experienced person.	**HBRC** Tania: Annual reporting should be undertaken as per other municipal discharges Tania: Similar requirement for NCC municipal discharge Tania: As per 51 (b) Jack: [additions and] changes to condition	HBRC previously accepted 2-yearly reporting when WDC confirmed this in response to the s92 queries so WDC would prefer to retain this. The additional requirements all appear reasonable for WDC to accept. Some editing is proposed for more clarity of requirements.		
	Pump Station Performance	**HBRC** Tania: These conditions should not be included, it should be dealt with through the Emergency provisions of the RMA, if needed. Given the works outlined in this application will	HBRC's compliance staff and WDC disagree with HBRC's consenting response. It has been accepted for some time now that pump station overflows and their existing structures do require		**Pump Station Performance**

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		negate the need for overflows ever taking place in the course of normal operating conditions with emergency generators and infrastructure improvements ensuring during storm events or when power outages occur wastewater will still be pumped to the WWTP.	consents to meet RMA requirements and comply with Regional Plan rules despite being presumably lawfully constructed prior to the RMA. They cannot be dealt with through the RMA's emergency provisions. This is why consents for these overflow discharges have been specifically sought in this application.		
~~43~~ 52	Should a pump station overflow occur, the Consent Holder must: (a) Advise the following parties within 24 hours of becoming aware of the incident, i The Council; ii MWWP; iii The Hawke's Bay District Health Board's Public Health Unit; and iv Taiwhenua~~Others??~~ ~~iv~~v Public notification via radio/social media/newspaper (b) Erect signage along the river bank and post to social media to advise the community of the incident (c) Provide a summary report to the Council within 48 hours of the discharge ceasing and detail: i the location and timing of the overflow; ii the approximate volume released; iii river and tidal conditions at the time of the discharge; iv any observed effects; v the cause of the discharge; and vi remedial action if known to avoid such discharge occurring again.	SS	WDC has taken into account suggested changes and included further changes from a subsequent condition.	50	Should a pump station overflow occur, the Consent Holder must: (a) Advise the following parties within 24 hours of becoming aware of the incident: i The Council Manager; ii MWWP; ~~iii~~ The EHO and Hawke's Bay District Health Board's Public Health Unit; ~~iv~~iii marae with close proximity to the Wairoa River; and ~~v~~iv ~~Others?~~Taiwhenua. (b) Erect signage along the riverbank and issue public notices via local mass media, social media, and the Consent Holder's website to advise the community of the incident; and (c) Provide a summary report to the Council Manager within 48 hours of the discharge ceasing ~~and~~ which details: i the location and timing of the overflow; ii the approximate volume released (if practicable to quantify); iii river and tidal conditions at the time of the discharge; iv any observed effects; v the cause of the discharge; and vi remedial action if known and practicable to avoid or reduce the likelihood of such discharge occurring again.
~~52~~	Delete whole pump station performance section – 52 & 53	HBRC Jack: If this is going to be an issue then they need to be able to know 100% when an overflow has occurred. Would meters be installed confirming the date/volume of overflow?	It is difficult to visually check overflows when the river is flooding. Meters are very expensive for occasional events and don't measure flow accurately when the pipe is not full. WDC as noted in Condition 50 propose to continue to record when an overflow event occurs.		

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~~44a~~ 53	Should notification occur as required in Condition 52 , members of the MWWP must be given an opportunity to view water levels and discolouration in the estuary and provide guidance on measures taken to respond overflows and high water levels. Such measures may include, but not be limited to: (a) direct the Consent Holder to advise specific marae of the closure of the river mouth and the need to avoid gathering of kaimoana and contact recreation; (b) placement and erection of warning signage; (c) Public notification via radio/social media/newspaper ~~(c)~~(d) ? ~~(d)~~(e) ?.	SS	WDC suggest condition is deleted as it largely repeats the previous condition.		~~Should notification occur as required in Condition 52, members of the MWWP must be given an opportunity to view water levels and discolouration in the estuary and provide guidance on measures taken to respond overflows and high water levels. Such measures may include, but not be limited to:~~ ~~(a) direct the Consent Holder to advise specific marae of the closure of the river mouth and the need to avoid gathering of kaimoana and contact recreation;~~ ~~(b) placement and erection of warning signage; and~~ (c) ~~?~~
	PROGRESSIVE IMPROVEMENT PROGRAMME				**PROGRESSIVE IMPROVEMENT PROGRAMME**
	Wastewater Stakeholder Group				**Wastewater Stakeholder Group**
~~19~~ 54	No less than 6 months prior to the submission date of the 'System Review Data Reports' required by Conditions 56, the Consent Holder must facilitate the establishment and meetings of a Wastewater Stakeholder Group (the Group) for the purposes of providing feedback on the matters of discussion referred to under Condition 58 [system review data reports]. In consultation with the MWWP ~~i~~invitations shall be extended to, but are not limited to, representatives of different sectors of the Wairoa community including: (a) A youth representative; (b) A representative of the older population; (c) Tangata whenua; (d) Local business owners; (e) Local industries; (f) Hawke's Bay Regional Council; (g) The Department of Conservation; (h) Hawke's Bay District Health Board; (i) Wairoa District Council. The Group may be disbanded between each review provided the Group is reformed in accordance with this condition 6 months prior to each Wastewater System Review Report being finalised.	SS	The submitter seeks to have the MWWP involved in deciding the makeup of the Stakeholder group. WDC considered this could work, but acknowledges that final approval of the group is at WDC's discretion.	51	No less than 6 months prior to the submission date of the 'System Review Data Reports' required by Conditions ~~56~~ 53 and 54, the Consent Holder must facilitate the establishment and meetings of a Wastewater Stakeholder Group (the Group) for the purposes of providing feedback on the matters of discussion referred to under Conditions ~~58~~ 53 and 54 [system review data reports]. In consultation with the MWWP, invitations shall be extended to, but are not limited to, representatives of different sectors of the Wairoa community including: (a) A youth representative; (b) A representative of the older population; (c) Tangata whenua; (d) Local business owners; (e) Local industries; (f) Hawke's Bay Regional Council; (g) The Department of Conservation; (h) Hawke's Bay District Health Board; (i) Wairoa District Council. The Group may be disbanded between each review provided the Group is reformed in accordance with this condition 6 months prior to each ~~Wastewater~~ System Review Data Report being finalised.
~~20~~ 55	The first task of the Wastewater Stakeholder Group is to draft 'Terms of Reference' ('Terms') for the group that set out how the group is to operate to meet its purpose, and must include, but are not limited to, details of meeting frequency, resourcing, decision making processes, group membership, expectations of members, and	HBRC Malcolm: How will this be managed. Who is to chair? What if it doesn't function? Is there payment for member ship	These details are up to the group to decide.	52	The first task of the Wastewater Stakeholder Group is to draft 'Terms of Reference' ('Terms') for the group that set out how the group is to operate to meet its purpose, and must include, but are not limited to, details of meeting frequency, resourcing, decision making processes, group membership, expectations of members, and reporting processes. Once

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	reporting processes. Once agreed to by the majority of attendees a copy of the 'Terms' shall be provided to the Council.				agreed to by the majority of attendees a copy of the 'Terms' shall be provided to the Council Manager.
	System Review Exercise and Reports				**System Review Exercise and Reports**
~~21~~ 56	Within five years of the commencement date of this consent, the Consent Holder must prepare a 'System Review Data Report' including but not limited to: (a) works undertaken to reduce inflow and infiltration; (b) A summary of changes that have been made to the wastewater treatment plant and details of changes proposed; (c) An analysis of discharge volume and river flow and tidal conditions, and opportunities to lessen the frequency of any discharges below 3 x median flow; (d) The dates and river flow conditions of when any overflow discharges occurred from the pump stations or outlet overflow, and a commentary around how works undertaken to reduce inflow and infiltration have reduced the frequency of overflow discharges. This should include an analysis of any trends in discharge frequency and action proposed to be taken to further reduce overflows; (e) A summary of progress in implementing land based discharge including irrigation systems that have been considered and plans or opportunities to increase the irrigation areas up to 150 ha in the next 5 years; (f) A summary of storage sizes, locations, and designs that have been considered and plans or opportunities to increase the storage volume up to an additional 10,000 m^3 5 years from commencement date of this consent; and (g) key contributions made to improve the quality of freshwater within the wider Wairoa River Catchment, including summary of discussions with other major point source discharges into the Wairoa River, that must include AFFCO.~~.~~ (h) Funding sources investigated to assist with wastewater system improvements. The data must be provided in a manner to facilitate discussion on the options available at the time to reduce the volume of wastewater that needs to be discharged to the Wairoa River by considering the following: ~~(Aa)~~ The feasibility of and methods to amend the discharge regime to verify the assimilative capacity of the river to receive the discharge. ~~so that:~~ ~~(Ab) During flows less than ½ median:~~ ~~(Ac) Discharge volumes will be limited to 1,600m^3 during any 24 hour period,~~ ~~(Ad) The discharge will:~~ ~~(Ae) only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide;~~ ~~(Af) only occur after 6 pm;~~ ~~(Ag) shall cease by 6 am at all times; and~~	SS	WDC comments: (e) ok with some other wording modifications. (g) AFFCO inclusion seems reasonable (Aa) the work has been undertaken to consider the assimilative capacity. It is noted this is hard to quantify due to the dynamic nature of the discharge location, especially influenced by tidal cycles.	53	Within five years of the commencement date of this consent, the Consent Holder must prepare a 'System Review Data Report' including but not limited to: (a) works undertaken to reduce inflow and infiltration; (b) A summary of changes that have been made to the wastewater treatment plant and details of changes proposed; (c) An analysis of discharge volume and river flow and tidal conditions, and opportunities to lessen the frequency of any discharges below 3 x median flow; (d) The dates and river flow conditions of when any overflow discharges occurred from the pump stations or outlet overflow, and a commentary around how works undertaken to reduce inflow and infiltration have reduced the frequency of overflow discharges. This should include an analysis of any trends in discharge frequency and action proposed to be taken to further reduce overflows; (e) A summary of irrigation and other land-based discharge systems that have been implemented and changes that have been considered and plans or opportunities to increase the irrigation areas up to 150 ha in the next 5 years; (f) A summary of storage expansion that has been implemented and changes to storage sizes, locations, and designs that have been considered and plans or opportunities to increase the storage volume up to an additional 10,000 m^3 in the next 5 years ~~from commencement date of this consent~~; and (g) Whether the discharge quality standards of this consent can be adjusted to improve discharge quality; (h) Key contributions made to improve the quality of freshwater within the wider Wairoa River Catchment, including summary of discussions with AFFCO and other major point source dischargers into the Wairoa River; (i) Funding sources investigated to assist with wastewater system improvements. The data must be provided in a manner to facilitate discussion on the options available at the time to reduce the volume of wastewater that needs to be discharged to the Wairoa River by considering the following: (Aa) The feasibility of and methods to amend the discharge regime so that: i During flows less than ½ median:

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	~~(Ah) be limited to no more than 30 days discharge in the months of December through to March~~ ~~(Ai) During flows between ½ median to median:~~ ~~(Aj) Discharge volumes will be limited to 3,000m³ during any 24 hour period;~~ ~~(Ak) The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide;~~ ~~(Al) During flows between median to 3xmedian:~~ ~~(Am) Discharge volumes will be limited to 5,000m³ during any 24 hour period,~~ ~~(An)~~(Aa) ~~The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide;~~ ~~(Ao)~~(Ab) Any changes to the filtration and UV treatment system; ~~(Ap)~~(Ac) The availability of any other alternative discharge and/or treatment options; ~~(Aq)~~(Ad) Details of the work programme and timeframes for implementation of each discharge and/or treatment option considered; ~~(Ar)~~(Ae) The likely storage requirements for implementation of each discharge option; and ~~(As)~~(Af) Updates to the Catchment Enhancement Programme Plan.				• Discharge volumes will be limited to 1,600m³ during any 24 hour period, • The discharge will: ○ only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; ○ only occur after 6 pm; ○ shall cease by 6 am at all times; and ○ be limited to no more than 30 days discharge in the months of December through to March ii During flows between ½ median to median: • Discharge volumes will be limited to 3,000m³ during any 24 hour period; • The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; iii During flows between median to 3 x median: • Discharge volumes will be limited to 5,000m³ during any 24 hour period, • The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; (Ab) Any changes to the filtration and UV treatment system; (Ac) The availability of any other alternative discharge and/or treatment options; (Ad) Details of the work programme and timeframes for implementation of each discharge and/or treatment option considered; ~~(Ae)~~ The likely storage requirements for implementation of each discharge option; and (Af) Updates to the Catchment Enhancement Programme Plan.
~~21~~ 56	Within five years of the commencement date of this consent, the Consent Holder must prepare a 'System Review Data Report' including but not limited to: (a) works undertaken to reduce inflow and infiltration; (b) A summary of changes that have been made to the wastewater treatment plant and details of changes proposed; (c) An analysis of discharge volume and river flow and tidal conditions, and opportunities to lessen the frequency of any discharges below 3 x median flow; (d) The dates and river flow conditions of when any overflow discharges occurred from the pump stations or outlet overflow, and a commentary around how works undertaken to reduce inflow and infiltration have reduced the frequency of overflow discharges. This should include an analysis of any trends in discharge frequency and action proposed to be taken to further reduce overflows; (e) A summary of irrigation systems that have been considered, installed, operate and plans or opportunities to increase the irrigation areas up to 150 ha in the next 5 years; (f) A summary of storage sizes, locations, and designs that have been considered, installed, operate and plans or opportunities to increase the storage volume up to an additional 10,000 m³ 5 years from commencement date of this consent; and (g) key contributions made to improve the quality of freshwater within the wider Wairoa River Catchment. (h) Funding sources investigated to assist with wastewater system improvements.	HBRC Malcolm: edited € and (f) Shane: [Re clause (Ab)] Can changes be made to the certified design? Is recertification required? Nick: edited (Ab) and inserted new (Ac)	The measurement of sludge solids in the WWTP ponds is an operational matter that is checked every few years. It does not need to be a consent condition.		

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	The data must be provided in a manner to facilitate discussion on the options available at the time to reduce the volume of wastewater that needs to be discharged to the Wairoa River by considering the following: (Aa) The feasibility of and methods to amend the discharge regime so that: iv During flows less than ½ median: • Discharge volumes will be limited to 1,600m^3 during any 24 hour period, • The discharge will: o only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; o only occur after 6 pm; o shall cease by 6 am at all times; and o be limited to no more than 30 days discharge in the months of December through to March v During flows between ½ median to median: • Discharge volumes will be limited to 3,000m^3 during any 24 hour period; • The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; vi During flows between median to 3xmedian: • Discharge volumes will be limited to 5,000m^3 during any 24 hour period, • The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; (Ab) Any improvements to the filtration and UV treatment system, and subsequent re-certification process; (Ac) Measurement of the volume of solids accumulated in the treatment plant ponds, and actions required to reduce this volume so that treatment performance is not impaired; (Ad) The availability of any other alternative discharge and/or treatment options; (Ae) Details of the work programme and timeframes for implementation of each discharge and/or treatment option considered; (Af) The likely storage requirements for implementation of each discharge option; and (Ag) Updates to the Catchment Enhancement Programme Plan.				

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~~22~~ 57	Within ten years of the commencement date of this consent, and on a ten year basis thereafter, the Consent Holder must prepare further 'System Review Data Reports' that provide data in relation to the matters referred to in Condition 56(a)-(g) to facilitate discussion on: (a) Methods to increase storage as follows: i To 50,000-100,000m^3 as part of the first 10 year review ii To 200,000-400,000m^3 as part of the second 10 year review (b) The feasibility of the application of wastewater to land, with the view of this involving: i up to 300ha as part of the first 10 year review ii up to 600ha as part of the first 10 year review (c) The feasibility of and methods to amend the discharge regime: i As part of the first 10 year review so that: • During flows less than ½ median there is no discharge to the river, • During flows between ½ median to median: ○ Discharge volumes will be limited to 3,000m^3 during any 24 hour period, ○ The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; ○ only occur after 6 pm; and ○ shall cease by 6 am at all times • During flows between median to 3 x median: ○ Discharge volumes will be limited to 5,000m^3 during any 24 hour period, ○ The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; ii As part of the second 10 year review so that: • During flows less than the median there is no discharge to the river, • During flows between median to 3 x median: ○ Discharge volumes will be limited to 5,000m^3 during any 24 hour period, ○ The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide;	HBRC Nick: edited (d) and inserted new (e)	Reject suggestions for (d) and (e) for the same reasons as for Condition 56 above.	54	Within ten years of the commencement date of this consent, and on a ten year basis thereafter, the Consent Holder must prepare further 'System Review Data Reports' that provide data in relation to the matters referred to in Condition ~~56~~ 53(a)-(g) to facilitate discussion on: (a) Methods to increase storage as follows: i To 50,000-100,000m^3 as part of the first 10 year review ii To 200,000-400,000m^3 as part of the second 10 year review (b) The feasibility of the application of wastewater to land, with the view of this involving: i up to 300ha as part of the first 10 year review ii up to 600ha as part of the first 10 year review (c) The feasibility of and methods to amend the discharge regime: i As part of the first 10 year review so that: • During flows less than ½ median there is no discharge to the river, • During flows between ½ median to median: ○ Discharge volumes will be limited to 3,000m^3 during any 24 hour period, ○ The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; ○ only occur after 6 pm; and ○ shall cease by 6 am at all times • During flows between median to 3 x median: ○ Discharge volumes will be limited to 5,000m^3 during any 24 hour period, ○ The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide; ii As part of the second 10 year review so that: • During flows less than the median there is no discharge to the river, • During flows between median to 3 x median: ○ Discharge volumes will be limited to 5,000m^3 during any 24 hour period, ○ The discharge will only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide;

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	○ only occur after 6 pm; and ○ shall cease by 6 am at all times (d) Any ~~changes~~ improvements to the filtration and UV treatment system; and subsequent recertification process; (e) Measurement of the volume of solids accumulated in the treatment plant ponds, and actions required to reduce this volume so that treatment performance is not impaired; ~~(d)~~(f) The availability of any other alternative discharge and/or treatment options; ~~(e)~~(g) Details of the work programme and timeframes for implementation of each discharge and/or treatment option considered; ~~(f)~~(h) Updates to the Catchment Enhancement Programme Plan				○ only occur after 6 pm; and ○ shall cease by 6 am at all times (d) Any changes to the filtration and UV treatment system; (e) The availability of any other alternative discharge and/or treatment options; (f) Details of the work programme and timeframes for implementation of each discharge and/or treatment option considered; and (g) Updates to the Catchment Enhancement Programme Plan.
	System Improvement Plans				**System Improvement Plans**
~~23~~ 58	Within 6 months of the System Review Data Reports being provided to the Stakeholder Group, the Consent Holder must prepare, in consultation with the MWWP and Stakeholder Group, and submit to the Council, a 'System Improvement Plan' that sets out: (a) Details improvements and/or changes to be made to the wastewater treatment and discharge system over the period to the next review to implement tikanga Māori and to improve the mauri of the Wairoa River; (b) Inclusion of the Wastewater Network Infiltration Management Plan, including further details on works undertaken to reduce inflow and infiltration; (c) Details of improvements and/or changes to be made to the Wastewater Treatment System over the period to the next review to reduce the volume of wastewater that needs to be discharged to the Wairoa River; (d) Clear reasons why those changes are being made (including views of the Wastewater Stakeholder Group on the changes proposed); Where agreement of the Group is reached on specific matters and actions, this shall be reflected in proposed actions included in the final Systems Improvement Plan. Should consensus and preference not be reached, or the consent holder does not support the Group's preference, this difference shall be documented in the Systems Improvement Plan with an explanation of the outstanding position and/or difference and the Consent Holders alternative proposal where needed. (e) An indicative work programme setting out steps necessary to implement changes proposed; (f) A summary of updates to the Catchment Enhancement Plan		No feedback received. No change proposed except for minor definition amendments. Minor changes to reflect changes made elsewhere - consistency	55	Within 6 months of the System Review Data Reports being provided to the Stakeholder Group, the Consent Holder must prepare, in consultation with the MWWP and Stakeholder Group, and submit to the Council Manager, a 'System Improvement Plan' that sets out: (a) Details of improvements and/or changes to be made to the wastewater treatment and discharge system over the period to the next review to implement tikanga Māori and to improve the mauri of the Wairoa River; (b) Inclusion of the ~~Wastewater~~ Network ~~Infiltration~~ Management Plan, including further details on works undertaken to reduce inflow and infiltration; (c) Details of improvements and/or changes to be made to the Wastewater Treatment System over the period to the next review to reduce the volume of wastewater that needs to be discharged to the Wairoa River; (d) Clear reasons why those changes are being made (including views of the Wastewater Stakeholder Group on the changes proposed); Where agreement of the Wastewater Stakeholder Group is reached on specific matters and actions, this shall be reflected in proposed actions included in the final Systems Improvement Plan. Should consensus and preference not be reached, or the consent holder does not support the Wastewater Stakeholder Group's preference, this difference shall be documented in the Systems Improvement Plan with an explanation of the outstanding position and/or difference and the Consent Holders alternative proposal where needed. (e) An indicative work programme setting out steps necessary to implement changes proposed; (f) A summary of updates to the Catchment Enhancement Plan

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	Wastewater Monitoring Strategy				**Wastewater Monitoring Strategy**
~~24~~ 59	Within 12 months of submitting the 'System Improvement Plans' required by Condition 58 to the Council, the Consent Holder may submit to the Council for certification a Wastewater Monitoring Strategy (WMS) or amendments to an existing WMS. The WMS shall: (a) Be prepared by a suitably qualified and experienced, independent expert/s (cultural experts included)~~,~~ (b) Outline the monitoring that the consent holder will undertake to assess the effects of the discharge. ~~(b)~~(c) If the WMS potentially supercedes conditions above related to mauri monitoring then must engage with the body representing tangata whenua Within two months of receiving the Wastewater Monitoring Strategy the Council must advise, in writing, the consent holder whether or not they have certified the WMS. (a) If the Council refuses to certify the WMS it must advise the consent holder why this view is held. The consent holder shall resubmit a revised WMS to the Council for certification as soon as practicable, and no later than three months after receiving notification from the Council that it refused to certify the WMS. (b) If the Council certifies the WMS the consent holder shall immediately commence the monitoring set out in the WMS (at the frequencies stated in the WMS). ***Advice Note:*** *For clarity, the monitoring set out in the Wastewater Monitoring Strategy may supersede the monitoring required by Conditions 12 to 25.*	SS	WDC comments: (a) Cultural monitoring is separate to the condition requirements here, so reject. Is included elsewhere - Conditions 27-28. (c) is not needed as cultural monitoring protocols and report is standalone (subset) and will not be modified unless the group managing the monitoring changes the protocols.	56	Within 12 months of submitting the 'System Improvement Plans' required by Condition ~~58~~ 55 to the Council, the Consent Holder may submit to the Council Manager for certification a Wastewater Monitoring Strategy (WMS) or amendments to an existing WMS. The WMS shall: (a) Be prepared by a suitably qualified and experienced, independent expert/s, (b) Outline the monitoring that the consent holder will undertake to assess the effects of the discharge. ~~Within two months of receiving the Wastewater Monitoring Strategy the Council must advise, in writing, the consent holder whether or not they have certified the WMS.~~ ~~(a) If the Council refuses to certify the WMS it must advise the consent holder why this view is held. The consent holder shall resubmit a revised WMS to the Council for certification as soon as practicable, and no later than three months after receiving notification from the Council that it refused to certify the WMS.~~ ~~(b) If the Council certifies the WMS the consent holder shall immediately commence the monitoring set out in the WMS (at the frequencies stated in the WMS).~~ ***Advice Note:*** *For clarity, the monitoring set out in the Wastewater Monitoring Strategy may supersede the monitoring required by Conditions ~~12~~ 9 to ~~25~~ 24.*
~~24~~ 59	Within 12 months of submitting the 'System Improvement Plans' required by Condition 58 to the Council, the Consent Holder may submit to the Council for certification a Wastewater Monitoring Strategy (WMS) or amendments to an existing WMS. The WMS shall: (c) Be prepared by a suitably qualified and experienced, independent expert/s, (d) Outline the monitoring that the consent holder will undertake to assess the effects of the discharge. Within two months of receiving the Wastewater Monitoring Strategy the Council must advise, in writing, the consent holder whether or not they have certified the WMS. (c) If the Council refuses to certify the WMS it must advise the consent holder why this view is held. The consent holder shall resubmit a revised WMS to the Council for certification as soon as practicable, and no later than three months after receiving notification from the Council that it refused to certify the WMS. (d) If the Council certifies the WMS the consent holder shall immediately commence the monitoring set out in the WMS (at the frequencies stated in the WMS). ***Advice Note:*** *For clarity, the monitoring set out in the Wastewater Monitoring Strategy may supersede the monitoring required by Conditions 12 to 25.*	HBRC Shane: I'm not sure what the purpose of this is and it doesn't seem to be an actual requirement anyway. Why is it included? Malcolm [re advice note]: Check what this would mean. As with Shane I'm not sure what this condition intends especially if this is a "may" Jack's comment - This would require a change of conditions?	WDC notes that this is to set out and bring together the monitoring to be undertaken and have the methodology and proposed monitoring regime approved by HBRC. The requirement for certification has been removed as it is now covered by a new generic condition 26 as suggested by HBRC.		

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	COMPLAINTS				**COMPLAINTS**
~~46~~ 60	The Consent Holder must maintain and make available to Council on request, a record of complaints which lists all complaints received alleging adverse effects attributable to the Activities. The record must include but not be limited to the following: (a) Name, address and contact details of the complainant (if given); (b) The nature and duration of the alleged effect; (c) The date and time the alleged effect was detected; (d) The location where the alleged effect was detected; (e) The prevailing river and weather conditions e.g. flow rate, river mouth status, wind speed and direction; (f) Description of the Activities occurring at the time of the complaint; (g) Description of investigations carried out to investigate the compliant and their outcomes; (h) The likely cause of the effect (if detected under (f)); (i) Any measures taken to avoid, remedy or mitigate the effect (if detected under (f)) and its reoccurrence; and Details of the follow up undertaken to inform the complainant of the actions taken in response to the complaint and the outcomes of the investigations.		No feedback received. No change proposed.	57	The Consent Holder must maintain and make available to Council on request, a record of complaints which lists all complaints received alleging adverse effects attributable to the Activities. The record must include but not be limited to the following: (a) Name, address and contact details of the complainant (if given); (b) The nature and duration of the alleged effect; (c) The date and time the alleged effect was detected; (d) The location where the alleged effect was detected; (e) The prevailing river and weather conditions e.g. flow rate, river mouth status, wind speed and direction; (f) Description of the Activities occurring at the time of the complaint; (g) Description of investigations carried out to investigate the compliant and their outcomes; (h) The likely cause of the effect (if detected under (f)); (i) Any measures taken to avoid, remedy or mitigate the effect (if detected under (f)) and its recurrence; and (j) Details of the follow up undertaken to inform the complainant of the actions taken in response to the complaint and the outcomes of the investigations.
	REVIEW				**REVIEW**
61	The Regional Council may annually during the month of May review the conditions of the consent in accordance with Sections 128, 129, 130, 131 and 132 of the Resource Management Act 1991 for the following purposes: a) To address any adverse effect on the receiving environment that can be reasonably attributed to the Activities which may arise from the exercise of the resource consent and which is appropriate to deal with at a later stage. b) To modify the monitoring programme required by the resource consent or require additional monitoring if there is evidence that the current monitoring requirements of the resource consent are inappropriate or inadequate. c) To modify the reporting requirements of the resource consent if there is evidence that the current reporting requirements of the resource consent are inappropriate or inadequate. d) To address any new regional or national rules, standards, or regulations relating to freshwater and/or coastal water management.		No feedback received. No change proposed.	58	The Hawke's Bay Regional Council may annually during the month of May review the conditions of the consent in accordance with Sections 128, 129, 130, 131 and 132 of the Resource Management Act 1991 for the following purposes: (a) To address any adverse effect on the receiving environment that can be reasonably attributed to the Activities which may arise from the exercise of the resource consent and which is appropriate to deal with at a later stage. (b) To modify the monitoring programme required by the resource consent or require additional monitoring if there is evidence that the current monitoring requirements of the resource consent are inappropriate or inadequate. (c) To modify the reporting requirements of the resource consent if there is evidence that the current reporting requirements of the resource consent are inappropriate or inadequate. (d) To address any new regional or national rules, standards, or regulations relating to freshwater and/or coastal water management.