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Resource Consents Department
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Attention: Graeme Michie

Dear Graeme

**Central Interceptor Main Project Works
Section 92 RMA Response Report May 2013**

On 8 April 2013, Auckland Council requested further information under Section 92 of the Resource Management Act 1991 (RMA). Watercare's response to that request was provided on 13 May 2013 in the report titled "*Central Interceptor Main Project Works – Section 92 Response Report to Auckland Council*" dated 13 May 2013. As noted in that report, there were some matters still requiring a response. These are addressed in this letter and the attachments.

This letter and the attachments also include further information in response to specific requests from you at recent meetings. In particular, we have attached further information on:

- The proposed access to Roma Road
- Alternative sites considered at Mount Albert War Memorial Reserve (MAWMR), Lyon Avenue, Keith Hay Park and Kiwi Esplanade
- Consultation undertaken since lodgement in mid 2012
- Information on the Mangere Wastewater Treatment Plant (WWTP) and Manukau Harbour.

Our response to the various matters raised by Auckland Council has been prepared with assistance from our technical and environmental consultants at AECOM and Tonkin & Taylor.

1. Earthworks

Attachment 2 to the Auckland Council letter of 8 April 2013 ("the Section 92 Request"), a memo from Campbell Stewart, stated:

Without a draft CMP to assess and comment on we will be left with no choice but to prepare a detailed consent condition outlining the specific details to be provided in the CMP and the specific approval process that will apply so that Auckland Council can have confidence in the

robustness of the management plan approach. This very prescriptive approach will be necessary to support a recommendation that the likely adverse effects will be no more than minor.

So in summary, either the applicant provides a draft CMP or we adopt that very prescriptive approach in the consent recommendation.

Further to our earlier response on this (refer letter dated 13 May 2013), we have discussed this item with Mr Stewart and understand that he is wishing to see some certainty in the standards that will be applied to site discharges. Accordingly, we propose that the following condition be included in the construction discharges consent:

The standards for construction discharges to receiving environments shall be: turbidity of 50NTU and pH of 7.5.

Alternative discharge quality standards for turbidity and pH may be implemented if:

- A receiving environment monitoring programme is submitted to and approved by the Manager;
- The receiving environment monitoring programme is implemented for a sufficient period of time to demonstrate that alternative standards for turbidity and pH are appropriate for the site; and
- Written approval is provided by the Manager.

We have updated our suggested draft consent conditions (as forwarded to you on 9 May) to include this. The updated conditions for the construction discharges consent are included in **Attachment 1**.

We have also discussed with Mr Stewart his comment below:

The CTMP [Chemical Treatment Management Plan] does not meet best practice...In the absence of a satisfactory Draft CTMP consent conditions could be developed detailing the requirements and expectations of the CTMP that would meet Auckland Council's expectations.

As noted in our letter of 13 May 2013, the details of the final treatment methods for tunnel dewatering and site discharges will be developed as part of the Construction Management Plan (CMP) once detailed designs have been developed and construction methods confirmed. Subsequent to our discussion with Mr Stewart, the draft Chemical Treatment Management Plan previously provided to Auckland Council has been updated to revise the section relating to batch dosing following rainfall events. Consequent amendments have also been made to the Construction Discharges Management Plan. The updated draft Chemical Treatment Management Plan and Construction Discharges Management Plan are contained in **Attachment 2** (changes are highlighted).

2. Emergency Pressure Relief (EPR) Discharge

Our responses to Question 7 of the Section 92 Request (8 April 2013) are set out below. Auckland Council's question is quoted in full, followed by the response to each question.

7.1 Combination of Events

Please advise the combination of events that could lead to the discharge for which consent is sought. The AEE includes an estimate of the combined probabilities of events leading to the EPR activating, showing that it is unlikely to activate more than once every 50 years. Please describe the events and combination of events taken into account in estimating the probability of a discharge.

As stated in Section 5.11.5 of Part A of the August 2012 Central Interceptor Main Project Works AEE (the AEE), activation of the proposed EPR at the proposed Mangere Pump Station requires a combination of events to occur. The AEE summarises the key events that, in combination, would lead to a potential activation of the EPR. The conclusion presented in the AEE is that the “EPR is unlikely to activate more than say once in every 50 years”. We expand on that analysis below.

Activation of the EPR will only occur if there is failure of the Mangere Pump Station due to power loss or mechanical failure and it is not possible to bring the pump station back into service before the tunnel is full. A number of elements have been included in the concept design of the Central Interceptor to minimise the likelihood of the EPR activating (e.g. control gates to restrict inflows to the tunnel, pump redundancy in the pump station, tunnel sizing to provide for storage) and Watercare has measures in place to ensure continuity of power supply. These items are discussed below.

- Approximately 70% of the flows into the tunnel can be controlled with inlet flow gates. If a problem occurs at the Mangere Pump Station, Watercare will have the ability to divert all but about 30% of the tributary flows away from the tunnel, either into the existing trunk sewer system or to existing overflow locations. These gates will have fail safe features which means they can be activated without power should the power loss event be wide spread. Diversion of flows from the tunnel by gate closure will reduce the rate of tunnel filling, the likelihood of EPR activation, and the magnitude of any flow at the EPR if it was to activate.
- The concept design for the proposed Mangere Pump Station includes mechanical redundancy such that if one pump fails other pumps are in place and will automatically come on line. The pump station structure will also be designed to prevent flooding of the mechanical and electrical areas. The combination of these elements minimise the likelihood of a total mechanical failure of the pump station.
- If pump station failure occurs during a 10 year storm event it would take approximately 12 hours for the storage in the tunnel to fill. The EPR would only activate once the tunnel is full. In dry weather conditions it would take closer to 48 hours for the tunnel to fill if the pump station is out of service.
- If pump station failure occurs due to power outage, Watercare has backup generator services on standby. Based on current operational performance, the time taken to return power supply to the pump station using backup generators is expected to be within four hours, minimising the likelihood of EPR activation and the magnitude of any flow at the EPR if it was to activate.
- Further, the Mangere WWTP has a dual power supply feed which will be used to provide power to the Mangere Pump Station. This greatly reduces the chance of a power supply failure, and in particular, an extended power supply failure.

Numerous factors require consideration to estimate the probability of the EPR activating. These include an assessment of the combined probability of weather conditions, power loss to the Mangere Pump Station, and the time taken to implement measures that return the pump station to service. Each of these events has an independent likelihood of occurrence, and a combination of all (i.e. large storm event, pump station power loss and delays to mobilise backup power in sufficient time) is required to activate the EPR discharge.

Probability calculations for selected scenarios that would lead to activation of the EPR are set out below. The combined probability has been assessed as being in the order of 1 in 50 years or higher. The estimate of the combined probability is on the basis of multiplying the individual independent probabilities together.

1. Combined probability of power loss to pump station plus 10-year storm event plus delays to mobilise backup power in sufficient time.

- The probability of total power loss at Mangere is estimated at 1 event per 5 years
- The probability of a 10 year storm event is 1 event in 10 years
- The probability of Watercare not being able to mobilise backup power within 12 hours is estimated 1 event per 5 years.

Therefore the combined probability of these events occurring together leading to an activation of the EPR is $1/5 \times 1/10 \times 1/5 = 1/250$ or 1 event every 250 years (> 1 in 50 year probability).

2. Combined probability of power loss to tunnel pump station plus 1 year storm event plus delays to mobilise backup power in sufficient time:
 - The probability of total power loss at Mangere is estimated at 1 event per 5 years
 - The probability of a 1 year storm event 1 event in 1 year
 - The probability of Watercare not being able to mobilise backup power within 24 hours is estimated 1 event per 10 years.

Therefore the combined probability of these events occurring together leading to an activation of the EPR is $1/5 \times 1/1 \times 1/10 = 1/50$ or 1 event every 50 years (=1 in 50 year probability).

7.2 Discharges

- (a) *Please confirm if under any of those events and combined event scenarios, the discharges upstream in the network are different to discharge scenarios modelled for 2027 and 2062 and considered in the assessment of effects.*

Under the events described above the discharges in the upstream network modelled for the 2027 and 2062 conditions are not significantly different than during normal operating conditions in larger wet weather events. The reason for this is that under normal operating conditions the inlet flow control gates to the tunnel are designed to close when the tunnel reaches the full storage capacity. This is estimated to occur approximately 6 to 8 times per average year of rain. As noted above, if activation of the EPR discharge occurs, the inlet flow control gates would also be closed and accordingly, the network discharges would be similar to those modelled under normal operating conditions.

- (b) *Please provide further information in relation to the effects on the environment from the emergency discharge of wastewater to the coastal marine area of the Manukau Harbour in the event the discharge does occur. In particular:*
 - (i) *Please provide a targeted assessment of effects of the potential discharge from the proposed EPR structure with particular regard to with regard to effects on public health, recreational use areas, ecological values and on any areas with identified cultural values. As an example, a risk assessment based on likely consequences of the discharge on the environment and identifying short, medium and any long term risks to any of the identified values can satisfy this requirement.*

Response to this question is set out in two parts:

- The first part addresses the range of factors which determine the extent of any potential environmental effects; and
- The second part sets out a qualitative risk assessment of potential short, medium and long term effects of an EPR discharge on public health / recreational, ecological and cultural values.

Factors to consider in assessment of potential environmental effects

In the unlikely event that a discharge from the EPR structure occurs, the potential extent of any environmental effect will be determined by a range of factors, as summarised below:

- **The quality of the discharge** – discharge at the EPR structure will effectively comprise very dilute wastewater, mixed with a high proportion of stormwater. Organic, nutrient and microbiological pathogen and virus levels would all be similar to levels in the diluted wastewater overflows currently experienced in the urban streams within the Central Interceptor catchment area. It is highly unlikely that the discharge would comprise less dilute or raw wastewater as there are many hours of storage available in the tunnel under dry weather flow conditions. Design of the EPR would likely include some provision for coarse debris screening.
- **The duration of any discharge** – this would be determined by the rate of inflow and the time taken to repair and return the Mangere Pump Station to service. A worst case scenario would be a combination of an extreme storm event (e.g. a 10 year storm) coinciding with the pump station being out of service for the duration of the storm. In this scenario, discharge could occur for several hours after the tunnel has filled. In less intense storm events the duration of discharge would be shorter. Ultimately, the duration of discharge would be determined by the rate of inflow to the tunnel and the time taken to return the pump station to service.
- **The rate of discharge** – the same range of factors affecting the duration of any potential discharge will also determine the rate of discharge. Any discharge occurring following the combination of an extreme storm event and pump station outage would be at a higher rate than discharge in a less extreme storm. Any discharge from the EPR structure would display an initial peak rate of discharge, which would then subside, reflecting the restriction of inflows to the tunnel. In extreme conditions the maximum rate of discharge could occur at a rate of some 10 – 20 m³/s. As previously noted, the likelihood of this occurring is very low.
- **Dilution and dispersion conditions in the receiving environment** – the primary determinant for discharge dilution and dispersion in the harbour will be tidal conditions. The EPR discharge will occur at the coastal margin adjacent to the Mangere Pump Station. As the use of the EPR would only be in an emergency event, there would be very little ability to limit or restrict the timing of any discharge to coincide with any particular tidal conditions (refer later response to Question 7.2 b (iv)). The discharge could occur under any tidal condition.

Watercare has previously completed studies of discharge dispersion in the Manukau Harbour for discharge from the tidal storage basin under a range of tidal conditions. Based on those previous studies, discharge from the EPR occurring during outgoing tidal conditions would see the discharge disperse in a westerly direction past Puketutu Island and into the main Purukau Channel, from where it would be transported towards the south west. Incoming tidal conditions would then disperse the discharge back up the harbour in the Purukau Channel and the Wairopa Channel towards and onto the Hillsborough coast, impinging on the shoreline from about Cape Horn and the series of bays and beaches to the east (Waikowhai, Faulkner Bay, Granny's Bay, and Hillsborough Bay). These locations are shown in Figure 1 below.



Figure 1: Manukau Harbour

Discharge occurring on the incoming tide would see dispersion restricted to the north of Puketutu Island, and the discharge water being dispersed towards the Hillsborough coast and Mangere inlet, and as the tide rises, against the Ambury shoreline also.

At low tide and for a period either side of low tide, discharge would drain across the intertidal flats until it reaches the Purukau Channel, while under high tide conditions, and for a period either side of high tide, discharge would be direct to tidal waters, but with limited additional mixing and dispersion.

Overall, until dispersed into the Purukau Channel and beyond, the discharge will see only limited dilution, but then tidal mixing will provide rapid dilution.

Receiving environment areas that could encounter the dispersing discharge will include the contact recreation and bathing beaches along the Hillsborough coast, and the areas along the shoreline of Puketutu Island and at the Nga Kuia e Toru Reef.

Potential effects

Setting aside the very low likelihood of an EPR discharge occurring (addressed in response to Question 7.1), a qualitative assessment of potential effects of the discharge is summarised in Table 1 below. The assessment takes into account the factors outlined on the previous page and considers the potential short term effects (hours), medium term effects (days) and long term effects (weeks) of an EPR discharge on public health / contact recreation values, ecological values and cultural values. A overall effect assessment has been identified for each environmental value.

Table 1: Qualitative assessment of potential environmental effects of EPR discharge

Value	Potential Discharge Effect		
	Short Term Effects (hours)	Medium Term Effects (days)	Long Term Effects (weeks)
Public health / contact recreation	Public health risk to contact recreational use of waters along shoreline from Waikowhai Bay to Hillsborough Bay. Closure of beaches and deployment of warning signage. Public health risk associated with shellfish gathering from Nga Kuia e Toru Reef. Effect assessment: High	Public health risk to contact recreational use significantly reduced. Monitoring implemented to assess risk and determine need for ongoing beach closures. No shellfish gathering from Nga Kuia e Toru Reef. Effect assessment: High / Medium	Very low residual risk associated with contact recreation. Restrictions on shellfish gathering from Nga Kuia e Toru Reef remain in place until testing confirms safe. Effect assessment: Medium
Ecological value	Potential for formation of scour channel between shoreline discharge point and the point where the discharge mixes with tidal waters. Reduced water quality in zone between discharge location and point of mixing in Purakau Channel. Localised ecological effects in area where dilution is limited. Effect assessment: Medium	Tidal mixing disperses diluted discharge into north eastern part of harbour, but at levels that are unlikely to have adverse ecological effects. Effect assessment: Medium / Low	Tidal mixing dilutes discharge to background water quality levels and any ecological effects less than minor. Scour channel starts to infill through tidal and wave processes Effect assessment: Negligible
Cultural	Discharge impinges along Puketutu shoreline, in area affected by treated wastewater discharge, and on Nga Kuia e Toru Reef. Effect assessment: Medium / High	Shellfish quality at Nga Kuia e Toru Reef remains affected. Effect assessment: Medium / High	Shellfish quality returns to acceptable after a period of weeks. Effect assessment: Medium

Effects assessment: High = widespread effect; **Medium** = effects generally in area where limited mixing occurs; **Low** = very localised effect; **Negligible** = less than minor effect

Overall the assessment presented in Table 1 shows that some level of effect, lasting for a period of hours to days, is likely to result should an EPR discharge occur. This effect would reduce with time, with the main residual longer term issue being risks associated with shellfish gathering from waters affected by the discharge, and in particular from the Nga Kuia e Toru Reef.

As described in the response to Question 7.1, there is a very low likelihood of an EPR discharge occurring, and therefore a low likelihood of the effects summarised above occurring. Watercare's incident response procedures for an EPR discharge are described in the response to Question 7.2 b(iii) below.

In considering the potential effects of an EPR discharge, Watercare's permitted discharge from the Mangere WWTP provides some useful context. The existing permitted discharge includes the normal daily discharge of treated effluent from the tidal storage basin, along with occasional partially treated discharges which occur when high levels of inflow to the plant result in bypassing of the secondary treatment. While bypass discharges receive UV treatment to reduce pathogens and viruses, they are comparable to an EPR discharge in terms of duration and rate. Typically, however, bypass discharges occur several times in any given year associated with storm events and high levels of inflow, which is significantly more frequent than the EPR discharge.

- (ii) *Please clarify whether such effects are unavoidable or whether there are any measures that would need to be implemented to avoid, remedy or mitigate any adverse effects in the coastal environment, particularly with regard to effects on public health, high recreational use areas, high ecological values and any areas with identified cultural values.*

The scenarios which would lead to discharge from the EPR structure are described in the response to Question 7.1. The EPR structure is required in order to provide pressure relief in the event of a failure of the Mangere Pump Station combined with the tunnel being full. It ensures that a safe discharge can occur in a way that minimises risk to people and the environment, and prevent damage to the tunnel and associated structures. This approach represents best practice engineering design. In this regard, while the risk of discharge is very low, should pump station failure occur and it is not possible to return it to service before the tunnel fills, discharge from the EPR structure is unavoidable and the effects described above will result.

Watercare has developed procedures for responding to overflow incidents across the wastewater network. These are set out in the Wastewater Overflows Incident Controllers Manual. The procedures were developed in collaboration with Auckland Council and the Auckland Regional Public Health Service and are documented in the “Wastewater Overflow Regional Response Manual” which was issued earlier in May 2013. The procedures include response to overflow events on both the transmission network and the local network, including pump station overflow events. These procedures, and any future update to them, will form the basis for responses should discharge from the EPR structure occur.

A key element of the Wastewater Overflow Regional Response Manual is to reduce risk to people and the environment. The procedures focus on both repairing the fault as quickly as possible, while at the same time, responding to public health and environmental risk. The procedures include a process for advising Auckland Council and the Auckland Regional Public Health Service of overflows and a process for the deployment of appropriate warning signage by Auckland Council on affected bathing beaches, along with key performance indicators for response and reporting.

Any discharge from the EPR structure would be managed under the procedures as a “Level 4 Incident” (Major Overflow). Incident levels range from Level 1 to Level 5, with Level 1 being for a routine type incident and Level 5 being a civil defence emergency. As an EPR discharge would present a contact recreation risk at beaches along the Hillsborough coast, and to shellfish gathering at Nga Kuia e Toru Reef, deployment of signage at these areas, along with wider public communications, would form part of the early response process.

The response process defined in the Wastewater Overflow Regional Response Manual is set out in **Attachment 3**.

- (iii) *In respect of the above, please identify measures consistent with the level of risk. Are there any measures required in addition to Watercare’s standard overflow response procedures?*

As noted above, the Wastewater Overflow Regional Response Manual involves a process of incident escalation. Discharge from the EPR structure would be considered a Level 4 Incident, and responsibility for incident control and response is escalated to Watercare’s second tier management. In this regard, the standard operating procedures already contain a process for escalation to reflect the significance of an incident. No additional measures would be proposed in addition to those already established in the procedures.

Our suggested consent conditions for the EPR discharge were provided to you on 9 May 2013. These are set out below:

- 9.1 The Consent Holder shall take all reasonable steps to manage the operation of the Central Interceptor tunnel and Mangere Pump Station to minimise the frequency and volume of any discharge from the Emergency Pressure Relief Structure to the CMA.
- 9.2 The Consent Holder shall respond to discharge incidents from the Emergency Pressure Relief Structure in general accordance with the Wastewater Overflow Regional Response Manual (Version 1.0 – May 2013) and any updates to this Manual.
- 9.3 In the event of a discharge occurring from the Emergency Pressure Relief Structure, the Consent Holder shall notify the Auckland Council Pollution Control Hotline and the Auckland Regional Public Health Service within six hours of the discharge, and shall include the following information in the notification:
 - a) The duration (if known);
 - b) An explanation of the cause of the discharge;
 - c) The response time to attend to the discharge; and
 - d) Details of remedial actions undertaken.

We note that reference to the recently released Wastewater Overflow Regional Response Manual has been updated in the proposed condition above.

(iv) Will procedures be in place to ensure (as far as practicable) that any emergency discharge will be limited to an outgoing tide.

As activation of the EPR would only occur in an emergency event, there is little ability to control discharge from the EPR to coincide with an outgoing tide as the factors that would combine to cause a discharge are outside of Watercare's control (i.e. weather and timing of power failures). While Watercare will incorporate measures to reduce the likelihood of EPR activation into the design and operation of the tunnel and Mangere Pump Station (refer response to Question 7.1), it is not possible to completely eliminate the chance that EPR activation may occur. Any discharge from the EPR would encounter the tidal conditions at that time.

(v) Please advise of likely reporting procedures likely to be instigated following an emergency discharge event (i.e. identification of events leading to the emergency discharge, estimated volume and characteristics of the discharge and any remedial measures undertaken, and monitoring of effects).

The Wastewater Overflow Regional Response Manual contains procedures for reporting. This includes formal reporting very early in the incident to advise Auckland Council and the Auckland Regional Public Health Service of the incident, and again at closeout of the incident to confirm the repair is complete, and the results of any monitoring. In addition, as noted above, Watercare has proposed additional reporting requirements in the proposed consent conditions.

(c) Please provide further information with respect to the operational linkages and staging of planned improvements at the Mangere WWTP in respect of the Central Interceptor and other network upgrades referenced in the application. In this regard please provide a description of the linkages between the Disinfection Facility and the Wet Weather Treatment Facility with the Central Interceptor and the Mangere Pump

Station implementation and operation. Please also describe linkages between secondary treatment improvements at the WWTP and other network upgrades referenced in the application documents (Northern Diversion, potential extension of Central Interceptor to the CBD, etc).

The following provides an overview of the planned improvements and associated linkages with the proposed Central Interceptor main project works.

Mangere Pump Station

- The proposed Mangere Pump Station will be constructed as part of the Central Interceptor main project works. The pump station is an essential element of the Central Interceptor and must be completed and operational in order to commission and operate the main tunnel. The intention is that the proposed Mangere Pump Station will be constructed and on line to facilitate commissioning of the Central Interceptor main project works upon completion in 2023. The Central Interceptor and Mangere Pump Station have been designed to operate within the current consent limits of the Mangere WWTP.

Mangere WWTP

- Upgrading of the Mangere WWTP is planned to ensure continued compliance with the conditions of the existing discharge permit, particularly in terms of the protection of public health and the management of nitrogen. Staged upgrading is provided for in the Mangere WWTP designation, with areas designated for future expansion.
- The Mangere WWTP upgrades include construction of a proposed wet weather treatment facility, which is planned to be implemented and fully operational prior to the Central Interceptor coming on line in 2023. The wet weather treatment facility is being implemented to provide enhanced treatment and disinfection of peak wet weather flows which exceed the capacity of the biological treatment system. The facility will be designed to provide wet weather treatment for all peak inflows to the Mangere WWTP, including those from the Central Interceptor. The wet weather facility will be operated within existing discharge permit limits.

Northern Interceptor

- Watercare is planning a new Northern Interceptor, which will be designed to divert flows from West Auckland from the Mangere WWTP to the Rosedale WWTP. Stage 1 of the Northern Interceptor is currently scheduled to be in use by 2022.

Extension to Central Business District (CBD)

- As noted in Part A of the August 2012 AEE, Watercare has designed the Central Interceptor main project works so that the tunnel could be extended upstream into the Auckland CBD at some point in the future. Details of the project and timing have yet to be finalised. Wastewater flows from the affected area are already treated at the Mangere WWTP, and any decisions relating to a CBD extension will have no effect on Watercare's ability to comply with the conditions of the existing Mangere WWTP discharge permit.

7.3 *Determination of Discharge Location*

Please provide further information in relation to the assessment and criteria used in the determination of the location of the point of discharge. In particular:

- (a) *Please provide the rationale behind the alternative selected and the full range of alternatives considered.*

A number of alternative locations for the EPR structure were assessed during development of the Central Interceptor main project works design. As noted earlier, the EPR structure is required to

provide pressure relief in the event of pump station failure combined with the tunnel being full, and to ensure that safe discharge can occur in a way that minimises risk to people and the environment, and that prevents damage to the tunnel and associated structures. The EPR needs to be at a low point in the system to operate simply by gravity and provide a “fail safe” back up that is not reliant on any form of mechanical or electrical equipment. This approach represents best practice engineering design.

The options considered for the location of the EPR included:

- Mangere Pump Station
- Kiwi Esplanade
- Pump Station 23
- Pump Station 25
- Motions Road
- Rawalpindi Reserve

These sites are all connection points to the Central Interceptor main project works and are described in the August 2012 AEE.

The Mangere Pump Station, Kiwi Esplanade and Pump Station 23 locations were the only sites that proved to be hydraulically viable for the EPR and all would discharge into the Manukau Harbour. Of these three sites the Mangere Pump Station location was identified as the preferred site. The site is adjacent the Mangere WWTP, with site staffing offering better support than other locations in the event of activation, along with better access for any maintenance requirements. The site is also remote from the public, reducing safety and public health risks, and any discharge would be to a receiving environment where dilution and dispersion would minimise potential environmental effects.

(b) Clarify whether providing disinfection to the emergency discharge at the treatment plant is feasible, providing the reasons for this alternative having been discounted.

Disinfection of discharge from the EPR structure is not practicable. This is due to hydraulic constraints at the Mangere WWTP site and the fact that the EPR is predicted to activate not more than once every fifty years. Hydraulic constraints mean that pumping would be required to convey flow from the EPR structure to the existing Mangere WWTP UV disinfection facility. This would require another pump station of greater capacity than the proposed Mangere Pump Station, which would essentially sit on standby until required, and as it would be subject to the same power failure risk as the Mangere Pump Station, it would be unable to operate. This scenario would not be practicable.

A new disinfection facility to treat EPR flows (if one was practicable) would likely involve chemical disinfection. This facility would be significant in scale given possible discharge flow rates, and would sit on standby until required. As noted above, this facility would be subject to the same power failure risk as the Mangere Pump Station. Given the low likelihood of operation, it is possible that disinfection equipment would exceed its design life (and require upgrading) before actually being used. For these reasons this scenario is also not practicable. It is noted that chemical disinfection results in residual chemicals and formation of disinfection by-products which can have additional environmental effects in receiving waters.

(c) Clarify whether discharging to the outgoing tide using the existing WWTP discharge channel and outfall structure is feasible, providing the reasons for this alternative having been discounted.

Use of the existing Mangere WWTP discharge channel and tidal storage basin was considered for the EPR discharge. This option is not feasible as the discharge channel does not have the required hydraulic conveyance capacity.

7.4 *Reference to Permit 30083*

Please provide details of any recommendations or feedback made by the various groups (Audit Group, the Microbiological Review Group, and, or the Disinfection Review Group Community Liaison Group) established under permit 30083 (Mangere WWTP discharge consent) regarding the emergency discharge location, the alternatives, effects on the environment and any monitoring or mitigation recommendations.

The Central Interceptor Project has been presented to the Audit Group and the Community Liaison Group. These presentations have been primarily to update the groups on the Project and to present an outline of construction and operational issues. Information on the EPR structure and the frequency of discharge were included in presentations, however there has been no feedback on this issue.

As details of the Central Interceptor main project works develop through the detailed design process, Watercare will consult further with the groups established under Permit 30083, including presenting further detail on the operation of the Central Interceptor.

3. Roma Road Access

Site access to the May Road site is proposed via Roma Road. The access is currently unformed and physical works will be required to form this access so that it is suitable for use by construction traffic. The details of these physical works will be developed during the detailed design phase and will be provided with the Outline Plan of Works for the site.

A preliminary design has been developed to indicate how the access may be formed (refer **Attachment 4**). This indicates a timber retaining wall being constructed along the southern length of the access and a sealed access with suitable sub base and seal being formed. The works will require earthworks to form the required grade. Currently the elevation difference across the width of the access is around 1.5 m and there is a fall from Roma Road along the length of the access of around 4 m. Earthworks will involve removal of top soil and any unsuitable materials and placement of engineered fill.

The retaining wall and roadway would be designed to meet engineering standards and to avoid effects on neighbouring properties, and would be subject to the usual design checks and approval process set out under the Building Act.

4. Alternative Sites Consideration

The August 2012 AEE provides a summary of the alternatives considered for each of the construction sites, and the March 2013 AEE prepared to support the new Notice of Requirement at the Mt Albert War Memorial Reserve car park site summarises alternatives at that site also. At recent meetings Auckland Council has requested additional information on the consideration of alternative sites at Mount Albert War Memorial Reserve, Lyon Avenue, Keith Hay Park and Kiwi Esplanade. A comparative summary assessment table for each of these sites is included in **Attachment 5**.

5. Consultation Update

Consultation undertaken as part of the Central Interceptor main project works to the end of June 2012 is summarised in Section 8 of Part A of the August 2012 AEE. Further consultation that has taken place between 1 July 2012 and 24 May 2013 is summarised in the table in **Attachment 6**, using the same headings and order as set out in the AEE report. The consultation process will continue during the detailed design, pre-construction and construction phases of the project.

6. Amendment to the designation boundary at the Lyon Ave Site.

In response to recent consultation with the directly affected landowner at the Lyon Avenue site, we propose to make a minor amendment to our proposed designation boundary. The proposed designation at Lyon Avenue included a number of privately owned car parks on Morning Star Place. A minor adjustment to the boundary of the proposed designation is now proposed so that it no longer includes these car parks. The proposed designation (as amended) and the works to be undertaken are shown on the following updated drawings included in **Attachment 7**:

- AEE-NOR1-3 Issue B. Amended designation plan showing the revised proposed designation.
- AEE-MAIN-3.1 Issue B. Amended permanent works drawing.
- AEE-MAIN-3.2 Issue B. Amended construction works drawing.

The only parties affected by the amendment to the designation are the car park owners and St Lukes Gardens Apartments. By removing the designation from these car parks the effect on these parties is less than previous, therefore we do not consider that any parties need to be notified. The schedule of land included in the designation at Lyon Avenue remains as identified on Attachment 2 of Notice of Requirement 1 lodged in August 2012.

Accordingly, please amend Plan Modification 332 on Sheet E06 Planning Map No. 2 of the Auckland Council District Plan (Auckland City Isthmus Section) as shown on the attached drawing AEE-NOR1-3 Issue B (Attachment 7).

7. Drawing Updates

7.1 Mount Albert War Memorial Reserve

The original construction layout for the Mount Albert War Memorial Reserve (as set out in Notice of Requirement 1) included noise barriers around the site, but not along the construction access road from Wairere Avenue. We now proposed to include noise barriers along the construction access road. The updated drawing AEE-MAIN-2.2 Issue B is included in **Attachment 8**.

7.2 Haverstock Road

As summarised in Attachment 5, Watercare has been in discussion with Plant and Food Research, the main landowner at the Haverstock Road site. A concept drawing for the reinstatement of the site has been prepared and a copy of this is included in **Attachment 9** for your information. We note that due to hydraulic requirements, the control chamber will need to be located partly above ground. This is noted in the Section 4.4.1 of Part B of the August 2012 AEE, but colour coded blue (flush with ground) on Drawing AEE-MAIN-4.1 instead of green (above ground). Revised drawings (Drawings AEE-MAIN-4.1 Issue C and AEE-MAIN-4.2 Issue C) are included in Attachment 8. This information forms part of the Notice of Requirement and consent application package for the Central Interceptor main project works.

7.3 Updated Drawing Index

As we have amended a number of drawings since lodgement of the three Notices of Requirement, an updated drawing index is included in **Attachment 10** to ensure the most recent drawings are being assessed by Council staff.

8. Mangere WWTP and the Manukau Harbour

As part of the consultation process referred to in Item (5) above, we have provided further written information to the Mangere Bridge Residents and Ratepayers Association (MBRRA) in response to some of their key areas of concern. A copy of each of the following reports is included in **Attachment 11** for your information:

- “Preliminary Response to Mangere Bridge Residents and Ratepayers Association Submissions on Central Interceptor – Existing Resource Consent Conditions” – draft report provided to MBRRA on 12 March 2013
- “The Mangere Wastewater Treatment Plant and the North East Manukau Harbour Status Report – March 2013” – draft report provided to MBRRA on 27 March 2013

These reports are not directly relevant to your statutory consideration of the Notices of Requirement and consent applications (any relevant aspects have been provided to you as part of the original documentation and in response to your Section 92 requests), but they may assist your understanding of the wider context for the proposed Central Interceptor Project.

Yours sincerely



Belinda Petersen
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Watercare Services Limited