REPORT

Tonkin+Taylor

Private Plan Change Request

Compiled Clause 23 responses

Prepared for
Waste Management NZ Ltd
Prepared by
Tonkin & Taylor Ltd
Date
March 2020
Job Number
1005069

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Overview

Waste Management NZ Ltd (WMNZ lodged a request for a Private Plan Change with Auckland Council on 17 July 2019 for the Auckland Regional Landfill precinct. Auckland Council requested further information pursuant to Clause 23 of Schedule 1 of the Resource Management Act 1991 (RMA) on WMNZ's Private Plan Change request. These requests were included in letters sent through on:

- 30 September 2019
- 24 December 2019
- 3 March 2020.

Responses to these questions have been provided to Council as follows:

- 15 November 2019 (Appendix A)
- 3 February 2020 (Appendix B)
- 4 March 2020 (Appendix C)

The Private Plan Change Request has been updated to incorporate changes made in response to matters raised by Council through the Clause 23 process.

Appendix A: Clause 23 response November 2019

Tonkin+Taylor

Job No: 1005069.2000
15 November 2019

Auckland Council
135 Albert Street
Auckland CBD
Auckland 1010

Attention: Peter Vari

Dear Peter

Clause 23 Response: Auckland Regional Landfill - Private Plan Change

Further to your letter dated 30 September 2019 requesting further information pursuant to Clause 23 of Schedule 1 of the Resource Management Act 1991 (RMA), we write to provide a response to the matters outlined therein. The responses to the formal requests for further information are provided in Appendix A. In addition to the formal Clause 23 questions, your letter included some matters for clarification and consideration. Responses to these are provided in Appendix B. Amended precinct provisions are contained in Appendix C.

Application of precinct to future proposals on the site

As an overarching comment on many of the questions in the Clause 23 request, it appears that a number of the technical specialists reviewing the private plan change request have not fully understood the difference between the earlier (and separate) resource consent application and the proposed precinct provisions in this private plan change request. For clarity, the precinct provisions do not authorise the construction of a landfill as a permitted activity, rather they require consent to be obtained as a discretionary activity, with some precinct-specific objectives and policies proposed which future consent applications would be considered against.

Many of the matters raised by specialists in the Clause 23 request, such as those relating to the design of a future landfill, will be dealt with through any resource consent process that might follow the precinct provisions coming into effect As you will understand, it is not appropriate for planning provisions to attempt to pre-empt or prescribe too specifically the nature of any particular activity, especially where, as is proposed here, the substantive activity (i.e. a landfill) is classified as a discretionary activity. Accordingly, nor is it appropriate to provide, as part of a Clause 23 response, that level of detail. The *current* resource consent application will not be assessed under the precinct provisions requested through this private plan change request, and in the context of that application the separate current process for resource consents is the appropriate place to assess more specific matters relating to how the particular proposal will be constructed and operated.

Having emphasised that distinction, and as previously explained, we have cross referenced in our proposed private plan change a number of technical reports prepared for the resource consent application. This was for reasons of efficiency (i.e. avoid duplicating the same reports for both processes), and to demonstrate, in a general sense, that the proposed site is an appropriate location for the proposed precinct.

We would be happy to meet with the Council team to go through how the plan change would work, the differences between the private plan change request and the resource consent application, as well as to discuss our responses, if that would be helpful.

Relationship between the precinct provisions and the wider AUP provisions

A number of questions requested further clarification of the relationship between the precinct provisions and the wider AUP provisions. To address these questions, changes have been made to the proposed precinct provisions (Appendix C). These changes are intended to clarify the activities which are regulated by the precinct, and to clarify that many activities, including stormwater discharges and earthworks, will continue to be regulated by the Auckland wide provisions in the AUP, rather than having precinct-specific controls.

Some of the changes are intended to make it easier for people who may not be familiar with reading and interpreting plan rules, but are not strictly necessarily, such as inclusion of a reference to whether a landfill is located in Sub-precinct A in the activity table. Previously this had been included as a standard which would determine whether a landfill would be a discretionary activity or a non-complying activity, but a number of the specialists did not appear to understand how the rules would apply in practice. We have also included some commentary on the relationship between the precinct provisions and the wider AUP in the Precinct description and in the objectives, policies and rules. We are happy to work with Council to remove some of these clarification additions if they are deemed to be unnecessary.

Conclusion

Our responses refer to information provided in the private plan change request submitted 17/7/19 and address the questions raised in the Clause 23 request. We trust that there is now sufficient information available for you to continue processing the application. As has been previously discussed with Auckland Council, WMNZ's strong preference is for joint public notification of the consent application for the Auckland Regional Landfill and this private plan change request. As such, we respectfully request that this plan change is progressed efficiently to a Clause 25 decision.

Please do not hesitate to contact Rachel Signal-Ross if you require further clarification of any aspects of this letter. We look forward to assisting your team further in the Clause 25 process, and we would greatly appreciate being kept informed of the private plan change request's progress and an expected timeframe for a Clause 25 decision. This will help us ensure that the resource consent application will be ready to be notified jointly with the private plan change request.

Prepared by:

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Planner

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Andrea Brabant
Technical Director - Planning

Authorised for Tonkin & Taylor Ltd by:

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Simonne Eldridge
Project Director

Appendix A: Clause 23 responses

Air Quality

1	*Please clarify what constitutes 'ancillary activities' in the activity table. A number of air discharge activities may constitute ancillary activities to a landfill, such as those associated with pre-treatment of incoming wastes, and post-treatment of discharges from the landfill. Air discharges from many such 'ancillary activities' would be currently classified as Discretionary Activities under Table E14.4.1 of the Auckland Unitary Plan*
The reference to ancillary activities has been removed from the precinct table, and new activities have been added to provide greater clarity on the activities meant to be covered by the precinct specific rules.	
2	*E14.8.2(8)(e): 'Whether air discharges are minimised as far as practicable, where appropriate through: reduction, reuse or recycling of waste materials relating to waste processes.' The reduction of wastes received at the landfill and ancillary activities is an obviously effective method for avoiding air quality effects in accordance with the direction of the Regional Policy Statement (B7.5). Please provide further detail as to how the proposed precinct gives effect to the RPS in light of the absence of this RD Assessment Criterion.*
A Class 1 landfill is a disposal site that accepts residual municipal solid waste which has not been diverted or recycled. Therefore, the opportunities for diversion from landfill have occurred prior to materials arriving at the site. These opportunities are managed and governed by legislation such as the Waste Minimisation Act and through initiatives such as the Auckland Waste Minimisation Plan. As such, landfills provide a final solution for waste disposal. Opportunities to divert specific waste streams, such as organic materials and e-waste should be explored and taken wherever possible, including through the use of received materials used on site for other purposes. The existence of a landfill does not restrict or prevent these measures from being introduced. It is not the role of a landfill to divert waste – their purpose is to provide for appropriate management of residual waste. As such this assessment criteria is not relevant to the precinct, but its absence does not make the precinct inconsistent with the RPS.	

Environmental risk and waste acceptance

3	*Please provide further information on how the proposed landfill precinct would be able to achieve the policies and objectives outlined in E13 and E30 of the Auckland Unitary Plan and the National Policy Statement on freshwater. Also, address why the assessment criteria proposed for the landfill precinct should be more permissive than those for other clean fill, managed fills and landfills within the Auckland Region.*

The provisions in E30 are not replaced by the precinct provisions. As such, future applications would be considered against the objectives, policies and rules in E30 where relevant. In addition, future applications would be considered against the NPSFW, in accordance with the requirements of s104 of the RMA. The precinct provisions are consistent with the NPSFW, as set out in Section 5.2 of the Plan Change application.

Chapter E13 contains assessment criteria for cleanfills, managed fills and closed landfills. There are no assessment criteria for new or existing landfills in Chapter E13, as these are classified as discretionary or non-complying in Table E13.4.1.

Some additional matters of discretion and assessment criteria have been included in the attached redrafted precinct provisions, including site management plans.

4	*Please provide a response as to how the proposed plan change addresses the management of long term (post closure) discharges within the landfill precinct and aftercare activities*

Chapter E13 already contains rules, standards, matters of discretion and assessment criteria for closed landfills during the aftercare period. It was not considered necessary to duplicate these controls within the precinct, consistent with Auckland Council's best practice guide for precincts.

5	*Please provide further information on the identification and management of risks associated around discharges of these contaminants. A quantitative ecological risk assessment, taking into account background and cumulative discharges from within the landfill precinct, should be provided which includes potential risks to aquatic, terrestrial and avian receptors*

The precinct does not authorise establishment of a landfill on the site and does not include design details for the landfill, and therefore it is not appropriate to undertake a risk assessment to the level of detail suggested at this point of the private plan change process. Discharges of contaminants would be considered as part of a resource consent application to establish a landfill under the precinct provisions. This would be a discretionary activity, and as such Council would have full discretion to consider potential effects on aquatic, terrestrial and avian receptors.

6	*Please provide further information on how the scale and magnitude of effects will be assessed and how the appropriateness of proposed monitoring should be assessed within the proposed plan change*

Future applications under the precinct provisions would be subject to the normal assessment process under s104 of the RMA. The proposed plan change does not permit the establishment and operation of a landfill - it requires assessment as a discretionary activity. Therefore, effects are assessed through that avenue, allowing Council to consider the full range of relevant matters including monitoring.

Monitoring has been included as a matter for control and assessment criteria for re-consenting of discharges (renewal of consents), which would allow Council to assess the appropriateness of proposed monitoring for restricted discretionary activities in the precinct as well.

7	*Provide further information to address the minimum requirements of a site management plan and what discretion the council would have to assess the adequacy of the management plan*

Regarding applications to establish a new landfill in Sub-precinct A, this would be a discretionary activity, which would allow Council to have full discretion regarding the requirement for, and the adequacy of, a site management plan.

Regarding re-consenting discharges from a legally established landfill within Sub-precinct A, the redrafted precinct provisions now include site management plans as a matter for discretion and an assessment criterion.

Historic heritage

Archaeological assessment
8 While these represent gaps in relation to the information provided there is no reason to suspect that any places of significant historic heritage value will be present within the area. The overall conclusions of the report in relation to archaeological sites are based on an appropriate level of evidence. Although the title would suggest that this report only addresses matters to do with archaeological sites, it does indirectly address other historic heritage values as noted on page 1. The report provides a sufficient level of detail in relation to archaeological sites. However, the following information is required: - *Explicit confirmation that extant buildings and structures within the plan change area have been assessed in relation to heritage values other than archaeological potential.* - *Addressing places of significance to mana whenua (these being identified through the cultural values assessment process* - *Assessment of trees associated with sites of early settlement* - *Addressing historic heritage generally* - *Addressing notable trees*
An Archaeological assessment has been undertaken as part of the resource consent application. Development of a new landfill still needs consent under the proposed precinct provision, so the opportunity exists to consider archaeology and heritage through this process. In addition, the precinct does not replace any of the relevant provisions in the AUP regarding historic heritage and sites of value to mana whenua, so where relevant, these would apply to future activities on the land.
12 The assessment of effects (Section 10) makes reference to accidental discovery protocols ('ADR') in the Auckland Unitary Plan. These are rules rather than protocols and this should be amended. While the ADR is an appropriate interim process for managing the unanticipated presence of archaeological sites, it would be appropriate to note that pre-1900 archaeological sites are protected under the provisions of Heritage New Zealand Act and that any adverse effects will be managed through the Heritage New Zealand authority process.
The precinct provisions have been redrafted to refer to the Accidental Discovery Rule in the AUP, rather than a protocol. WMNZ acknowledges that the provisions of the Heritage New Zealand Act would apply to any pre-1900 archaeological sites.

Landfill engineering, groundwater and surface water takes

13	*It is noted that the Auckland Unitary Plan classes discharges from new landfills as a Non-Complying Activity (E13 (A9)). Therefore, the proposed change of these activities to Discretionary in the precinct does not allow for the Auckland Unitary Plan provisions for existing landfills to be relied upon for any new landfill proposal in the precinct. In this case, the criteria for a NC activity i.e. S104D of the RMA, may be less stringent than those set out in the Auckland Unitary Plan for RD activities as set out in E13.8.2, especially as aspects such as aftercare may not be a consideration during the term of the consent. Please provide comment as to whether the Assessment Criteria in E13.8.2 should be applied to new landfills in the precinct and whether new criteria be formulated to extend those to apply to Discretionary activities.*
Under the AUP, Council has full discretion to consider relevant issues for discretionary and non-complying activities (there are no specified criteria), so the proposed activity status of discretionary under the precinct for new landfills is more stringent than a restricted discretionary activity which would limit the scope of matters which Council could consider when assessing a consent application. The proposed precinct has intentionally retained a discretionary status for new landfills to allow for a full assessment of any future application, rather than attempting to limit Council's discretion. The Auckland Council best practice guide does not provide for assessment criteria to be imposed on discretionary and non-complying activities.	
14	*Please provide information relating to how the current Auckland Unitary Plan provisions for "Taking, using, damming and diversion of water and drilling" (E7) would be treated within the precinct, and provide an explanation on the suitability of any activities which are presently listed as a Permitted Activity (PA) and Controlled (C) within the underlying Rural Production zoning. As an example – some of the existing Auckland Unitary Plan provisions which permit the drilling and taking of groundwater, surface water as a PA or C, may not be appropriate within the precinct, due to contaminant migration and/or human health risks. The precinct framework needs to address such aspects, particularly given that the precinct could outlast any landfill operational resource consents.*
We do not consider that there is any reason to restrict water takes within the precinct, on the basis that any resource consent for a landfill would require ongoing protection and monitoring of groundwater quality. If there was no precinct proposed for the ARL, the same matter raised would still apply, in that a consent for a landfill could be granted but it wouldn't be able to restrict people within the vicinity under E7 to undertake permitted water takes Ultimately it is up to the design of the landfill to contain its contaminants and this will be assessed as part of a resource consent application, whether that is through the precinct or not (discretionary v non-complying). Conditions could be placed on the consent requiring notification of surrounding water users if contamination was identified, which we consider to be more appropriate than overriding the provisions of E7 for other people's ability to take water.	
15	*Please provide comment as to whether provisions for a water quality protection mandate should be included in the precinct. These provisions should be incorporated into a framework which ensures that any activities occurring within the precinct are not permitted to degrade water quality outside of the precinct. The framework could be established in a manner that is "fluid", enabling the water quality performance standards to evolve/update; in keeping with the relevant water quality standards and contaminants of concern at the time. The water quality protection mandate could also be measured and monitored at (or inside) the precinct boundary. The precinct framework needs to address the aspects of water quality protection, particularly given that the precinct, and risks to water quality, could outlast any landfill operational resource consents.*
The proposed framework being described in the question sounds like a monitoring plan which could be imposed as part of a resource consent process. Establishment of a landfill within the	

precinct will require consent to be obtained as a discretionary activity. Measures to protect and monitor water quality would be considered as part of this process.

16 *The proposed inclusion of landfill liner design specifications "hard codes" design specifications for engineering elements which may not necessarily continue (in the future) to align with Policy 3 of the precinct which refers to "the use of industry best practise lining system". Please provide comment on the option of the precinct providing an engineering elements mandate, that incorporates a framework to ensure changes to best-practice engineering elements/controls are implemented. Ultimately, it is the actual performance of such engineering elements/controls which avoids, mitigates, or manages the potential environmental effects – not the specifications.*

There are industry agreed standards for lining systems for Class 1 landfills, as set out in the Technical Guidelines for Disposal to Land (August 2018), which is why these have been included as a standard for landfill development in the precinct. The reason for referring to "industry best practice" is to allow for changes in systems and technology over time for lining systems. We do not consider that there are other equivalent industry standards which would be relevant or appropriate. Consequently other than a standard for the lining system we haven't proposed specific "hard codes" or standards, as we agree that the standards would then be locked in place within the precinct wording, reducing flexibility for both the applicant and the Council to adapt to improvements in technology or developments in science to ensure effects are appropriately managed. Further, as the precinct will require most activities to be assessed as a discretionary activity, this provides more discretion for Council, rather than prescribing particular standards, which can become out of date rapidly. As such, we consider that it is appropriate to specify a standard for the lining system, whilst other engineering elements can be considered as part of the consent process.

17 *It is requested that the applicant provide further information on the water supply requirements of the landfill, and how this will be serviced with respect to future demands on freshwater allocation. Please also consider incorporating provisions for groundwater and/or surface water take (quantity) in the landfill precinct. There is a potential need to ensure sufficient quantities of freshwater are available to service the needs of the landfill. For example - the landfill precinct is not currently within an Auckland Unitary Plan High-Use Aquifer Management Zone. However, it is possible that groundwater use patterns within the region could change, and consequently groundwater allocation availability may reduce. If groundwater and/or surface water takes are to be relied upon by the landfill, it could be appropriate to earmark the required allocation during the private plan change process.*

As described in the resource consent application, the required water volumes for the landfill's operation would not be considered significant on a regional scale, and the work completed to date on the resource consent application has demonstrated that there is sufficient water availability in the area.

We are not aware of any existing mechanism in the Auckland Unitary Plan for earmarking water allocation within a precinct, any water allocation is 'ear-marked' through the process of applying for and obtaining a resource consent for the water take, which would be assessed under the RMA. Any water take application for the landfill would be considered against the provisions of E7 in the AUP.

18 *While the resource consent application refers to landfill closure and post closure requirements, the precinct is silent on these matters. Please provide comment as to why the precinct does not cover these matters (noting that the resource consent application be declined/withdrawn and the private plan change approved).*

Chapter E13 already contains rules, standards, matters of discretion and assessment criteria for closed landfills during the aftercare period. It was not considered necessary to duplicate these controls within the precinct, consistent with Auckland Council's best practice guide for precincts.

In addition, a site aftercare plan has been included as a matter of discretion for re-consenting of existing landfills if the landfill is likely to close within the term of the consent.
19 *Please confirm the intent of Activity (A7) within Table I617.4.1 of Appendix A. The present wording may allow new landfills/landfilling activities within the precinct (but outside of Sub-Precinct A) to be classified as D. The wording of Activity (A8) implies that new landfills/landfilling activities within the precinct but outside sub-precinct-A are NC.*
The proposed wording does not allow for a landfill outside of sub-precinct A to be discretionary. It could only be a discretionary activity if it met the relevant standards, which includes the requirement that the landfill be located within Sub-precinct A. Landfill proposals not meeting the standards would be classed as non-complying. For clarity, we have redrafted the rules in the precinct to make this distinction more explicit to audiences who may be unfamiliar with reading and interpreting plan rules.

Terrestrial biodiversity and freshwater ecology

20 The proposed precinct standards for restricted discretionary and discretionary activities include: "No works, other than ecological restoration or enhancement works, shall occur within any Wetland Management Area overlay, or within any Significant Ecological Area overlay, or occupy more than 200m2 of the Natural Stream Management Area overlay identified in the Precinct Plan". While the intent seems to be to avoid Wetland Management Areas and Significant Ecological Areas, it is not clear if the intent of the standard is to limit the works within the Natural Stream Management Area overlay to 200m2 at any one time, or as a result of the resource consent, or to limit the cumulative total of works across multiple consents within the precinct? In the interest of understanding the effects of the proposed plan change and the management of these effects, please clarify the above. This may include revising the proposed standards to make the intent clearer.
To simplify implementation of the proposed discretionary activity rule for works within the NSMA, we are now proposing a new Sub-precinct (sub-precinct B). Works within the NSMA in Sub-precinct B would be discretionary, whereas works in an NSMA outside of the sub-precinct would remain non-complying.
21 Table I617.4.1(A6) does not acknowledge wetlands as it requires the assessment only relating to streams (whereas Auckland Unitary Plan E3 relates to wetlands as well). Activity (A7) may also try to capture wetlands as, "any activity classified as a non-complying activity elsewhere in the Unitary Plan associated with any landfilling or any ancillary works or access" is a discretionary activity in the precinct. This provision seems overly broad and open to considerable interpretation; please clarify.
The reference to ancillary activities has been removed from the precinct table, and new activities have been added to provide greater clarity on the activities meant to be covered by the precinct specific rules. In addition, the activity table in the precinct has been updated to apply to freshwater systems, rather than just streams.
22 The additional notification requirement set out in the proposed precinct plan I617.5 requires that any resource consent application for "construction and operation of landfills and ancillary activities" (A1) is notified. The notification requirements do not explicitly require notification of resource consent application for the "reclamation, drainage, diversion or disturbance of any streams for the purposes of any landfilling or any ancillary works or access" (A6). However, it would appear that any reclamation that requires consent under (A6) would also automatically trigger consent requirements under (A1). Please clarify if it was the intent to require notification of any proposed reclamation, drainage, diversion or disturbance of any streams/wetlands for the purposes of any landfilling or any ancillary works or access.
The precinct provisions would only trigger mandatory public notification requirements under I617.5 for a new landfill development, discharges to air from landfills, and landfill proposals which do not comply with the minimum standards set out in the precinct (I617.6) (Rules I617.4.1 (A1), (A2), (A4), (A5) or (A15)). If an application for these activities also sought consent for reclamation of streams/wetlands under the precinct provisions, as a bundled consent application it would also be subject to public notification by default. Other activities in the precinct (if not part of a bundled application with the activities which trigger I617.5(2) would be subject to the normal notification test in the RMA. Edits have been made to the precinct provisions to clarify this.
23 Appendix E of the Planning Report (Assessment of precinct provisions against AUP) notes that policies 5 and 6 are intended to be read together. This could be made more explicit within the precinct wording.
Edits have been made to the precinct provisions to clarify this.

Transport

24 Traditionally, analysing the AM and PM peaks during the week is generally acceptable. However, given the popularity of this road during the weekends, particularly in summer periods, separate modelling for the weekends is needed to assess the situation fully.
This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
25 The operational impact of heavy vehicles travelling though Dome Valley from Warkworth to the proposed roundabout requires further assessment. With the daily addition of 260 heavy vehicles it is assumed there will be an impact on traffic flows, particularly on the up-hill sections. An assessment is to include, but not be limited to, grades of hills to and from the roundabout, passing lanes in each direction, horizontal geometry, existing speed limits and operational speeds. This is particularly important as it has been noted that Dome Valley has a very high number of crashes, with almost 20% being directly related to overtaking.
This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
26 Clarification as to whether the Auckland Unitary Plan E27 (Transport) rules apply within the precinct or whether the precinct intends to over-ride these
The precinct provisions do not replace the provisions in E27 of the AUP, which would continue to apply where relevant to activities within the precinct. As with all precincts in the AUP, the activities, standards and assessment in the underlying zoning (in this case Rural Production) apply in precincts unless otherwise specified. The provisions in the Auckland-wide provisions and any relevant overlays apply in this precinct unless otherwise specified.

Health

Human Health Risk Assessment report
27 There is a lack of sufficient justifications on the reasons not to take into account stormwater runoff from the vicinity of the proposed landfill area as one of the sources of contaminants. Please justify with evidence that stormwater runoff should not be considered as one of the sources of contaminants or include this source of contaminants into the risk assessment. This should include the consideration of additional contaminant loads from stormwater runoff in addition to the potential leachate currently assessed (8.2 L/day as specified in section 7.2 of the report as well as section 7.4) and justification of any additional mitigation measures, future monitoring programme and the criteria for stormwater discharge
This question has already been asked as part of the further information request under s92 for the resource consent application and will be answered as part of the s92 response. Therefore, there is little benefit in repeating the response here. However, for further clarity, it should be noted that the precinct does not authorise the establishment of a landfill as a permitted activity. A new landfill requires discretionary consent under the precinct and will be subject to a full assessment as part of that process. As such, this question is not relevant to the private plan change request. We note that whilst this question is not relevant to the private plan change process, it is being dealt with as part of the parallel resource consent application.
28 Please clearly identify site specific activities relevant to human health effects including identification of the extent and the locations of food harvesting and recreational uses by both Maori and the wider communities in the surrounding environment on a map as well as a description of each of these activities.
This question has already been asked as part of the further information request under s92 for the resource consent application and will be answered as part of the s92 response. Therefore, there is little benefit in repeating the response here. However, for further clarity, it should be noted that the precinct does not authorise the establishment of a landfill as a permitted activity. A new landfill requires discretionary consent under the precinct and will be subject to a full assessment as part of that process. As such, this question is not relevant to the private plan change request. We note that whilst this question is not relevant to the private plan change process, it is being dealt with as part of the parallel resource consent application.
29 Section 4.6 provides a summary of exposure pathway assessment. The pathway for exposure to residents has considered inhalation, as well as deposit onto roof and soil, and stock watering. Irrigation from bore water has also been considered as a pathway. However, it is understood that there are valid consents for steam intake in the surrounding environment. Please provide additional information on these intake consents and justifications on why irrigation using stream water is not considered in the report as an exposure pathway.
This question has already been asked as part of the further information request under s92 for the resource consent application and will be answered as part of the s92 response. Therefore, there is little benefit in repeating the response here. However, for further clarity, it should be noted that the precinct does not authorise the establishment of a landfill as a permitted activity. A new landfill requires discretionary consent under the precinct and will be subject to a full assessment as part of that process. As such, this question is not relevant to the private plan change request. We note that whilst this question is

not relevant to the private plan change process, it is being dealt with as part of the parallel resource consent application.

30 Birds have been seen in large populations in some existing landfill facilities. This is considered as a potential risk to health since the birds can take up pathogens from the landfill to waterways and reservoirs that may transmit diseases. Please confirm whether there are water supply sources or reservoirs within the vicinity of the proposed precinct area. Please justify whether microbiological contamination should be included as the contaminant of concern. Please provide an assessment of the potential health risk of microbiological contamination of streams associated with the proposed landfill operation and any proposed mitigation measures.

This question has already been asked as part of the further information request under s92 for the resource consent application and will be answered as part of the s92 response. Therefore, there is little benefit in repeating the response here.

However, for further clarity, it should be noted that the precinct does not authorise the establishment of a landfill as a permitted activity. A new landfill requires discretionary consent under the precinct and will be subject to a full assessment as part of that process. As such, this question is not relevant to the private plan change request. We note that whilst this question is not relevant to the private plan change process, it is being dealt with as part of the parallel resource consent application.

Landfill precinct

31 Activity Table (A1) proposes construction and operation of landfills and ancillary activities as discretionary activity. Please clarify whether this intends to allow additional landfill activities to be carried out outside the proposed Sub-precinct A in future as a discretionary activity.

The proposed precinct provisions were drafted such that landfills outside of Sub-precinct A would remain a non-complying activity, and only landfills within sub-precinct A would be discretionary. For clarity, the precinct provisions have been redrafted to make this more explicit (Appendix C of this Clause 23 response).

32 The evaluation report and assessment of environmental effects has largely relied on the significant buffer of the proposed landfilling area to the boundaries that the site can offer. Please clarify the reason not to include a specification of the buffer requirement (set back distance) into the standards.

WMNZ secured a large landholding in order to secure a buffer from surrounding land-users, so that they would hold control of a buffer without needing to impact on existing landowners. This is the fundamental reason for the proposed precinct boundaries following the boundaries of WMNZ's landholdings.

It is in WMNZ's interests to protect their buffer into the future. If any land within the precinct was to be sold, WMNZ would require a covenant to be placed upon the title, as well as an easement allowing for the discharge of odour, noise, vibrations and so on over the land from the landfill's operation (subject to complying with the relevant consent conditions). Covenants would require no complaints in relation a wide range of matters, including noise, vibration, and odour, and would apply to owners, occupiers and tenants.

Covenants and easements have successfully been used by WMNZ to protect their buffer from sensitive uses at other landfill sites throughout New Zealand, including at Redvale Landfill. Therefore, we consider that the extent of the precinct is appropriate and the use of covenants in the future will be sufficient to protect the buffer.

33 The proposed standards include the design specification of the lining system of the landfill. Please specify whether other standards relevant to site design, drainage system and waste management should also be included to achieve the policies and objectives of the private plan change.

There are industry agreed standards for lining systems for Class 1 landfills, as set out in the Technical Guidelines for Disposal to Land (August 2018), which is why these have been included as a standard for landfill development in the precinct. There are no other equivalent industry standards which are considered to be relevant or appropriate. Further, as the precinct will require

most activities to be assessed as a discretionary activity, this provides more discretion for Council, rather than prescribing particular standards, which can become out of date rapidly. Site drainage, design and management will all be able to be considered as part of future resource consent processes.

34 *The matters of discretion and assessment criteria have restricted the assessment to discharges to air, land and water. However, vermin and birds are common problems of landfills if they are not properly managed that have the potential risk of creating health nuisance and transmitting diseases. Therefore, the proposed precinct (Standards, Matter of discretion or Assessment criteria) does not cover other exposure routes relevant to human health in addition to discharges to air, land and water. Please provide information on how the wider health impacts can be captured and addressed through the precinct provisions*

The only restricted discretionary activities provided for in the precinct relate to discharges which have already been through a consent process and are seeking to renew, which is why the assessment criteria are limited to effects of discharges. However, site management plans are included in the restricted discretionary assessment criteria, including measures to control vermin and birds.

Potential effects on human health, including consideration of site management measures to minimise numbers of vermin and birds would be assessed as one of the matters considered through the discretionary resource consent process.

35 *The Assessment criteria for discharge to land and water are too broad to allow appropriate assessment of a proposal. More specific assessment criteria are required. Please comment on the following matters:*

o what is considered 'appropriately minimised or mitigated', whether any standards or guidelines are appropriated to be used for compliance to achieve the proposed precinct policies and objectives.

o what information is considered sufficient such as the requirement for a risk assessment report, management plans etc.;

o how the risk of natural hazards can be minimised and the requirement for an emergency management plan

The assessment criteria have been adopted based on existing assessment criteria for similar activities within the Auckland Unitary Plan. As such, we consider that they are appropriate for providing for Council's assessment. Broad assessment criteria allow Council to have greater scope of discretion, rather than highly specific ones which could result in unintended consequences, potentially excluding issues that should have been considered.

Regarding what would be considered 'appropriately minimised or mitigated', this is for Council to exercise its discretion on. Rather than prescribing particular standards, which can become out of date rapidly, we consider it more appropriate to provide Council with less specific matters to consider.

36 *Please provide details of any guideline/standard basis for the methodology adopted for the risk management assessment.*

The Risk Management Assessment (Technical Report S) has been provided to support the design described in the separate resource consent application. It is not relevant to the private plan change request. This question has already been asked in the s92 questions on the resource consent application and will be answered in the s92 response.

Stormwater

37 Further clarification is required as to what constitutes 'ancillary activities.' A number of stormwater and contaminants discharge activities and stormwater damming activity may constitute ancillary activities to a landfill, such as those associated with pre-treatment of incoming wastes, and post-treatment of discharges from the landfill.
The reference to ancillary activities has been removed from the precinct table, and new activities have been added to provide greater clarity on the activities meant to be covered by the precinct specific rules. Stormwater discharges are not covered by the precinct provisions and would continue to be assessed under the existing Auckland wide provisions.
38 Policy 5 refers to "on-line stormwater treatment devices". Can you clarify whether this means on-stream? It is noted that on-line stormwater treatment devices are less efficient for treatment (as off-line treatment) and on-stream treatment is contrary to the Auckland Unitary Plan policies.
The reference to on-line stormwater treatment devices has been removed from the proposed precinct wording.
39 I617.6(1) Restricted Discretionary Standards has no provisions relating to stormwater discharges. Note that E7, E8, E9, E10 and E33 all have standards that relate to different water related requirements. Can you please comment on the environmental effects of not including similar standards?
The precinct provisions are not intended to replace the rules or assessment criteria for stormwater discharges in E7, E8, E9, E10 and E33. These chapters of the AUP would continue to apply to activities within the precinct. Edits have been made to the precinct provisions to make this more explicit.
40 Please address hydrological mitigation with further technical information only how applying the SMAF1 overlay will ensure appropriate mitigation of changes in catchment hydrology as a consequence of the development anticipated in the precinct.
We note that the objective of Chapter E10 is: *High value rivers, streams and aquatic biodiversity in identified <u>urbanised catchments</u> are protected from further adverse effects of stormwater runoff associated with <u>urban development</u> and where possible enhanced.* As such, it appears that this chapter is not intended to apply to this site, which is located outside of the Rural Urban Boundary (RUB). The Auckland Regional Landfill would primarily be considered against the objectives and policies for Industrial and Trade Activities (E33) and the general stormwater discharge and diversion provisions in E8.

Healthy Waters

41	*The site is integrated with surrounding sites of significant ecological value, indicating a higher value here than other rural zoned land. Most site values are identified as a consequence of anticipated development via public consultation and plan preparation processes. The absence of planning barriers may not represent a lack of environmental constraints. Please indicate what assessment was carried out to determine gaps in previous policy analysis given the current anticipated land use, and the proposed land use.*

The precinct provisions require that the establishment of a landfill within the precinct obtain consent as a discretionary activity. As such, potential effects on ecological values would be considered as part of this consenting process.

As set out in Appendix D of the Plan Change application, the proposed site for the Auckland Regional Landfill was identified as the result of an extensive site selection process, undertaken over the course of a number of years. This process took into account a range of considerations, including underlying geology, site access, cultural values and ecological values. Sites with listed ecological values (identified by the AUP) within a potential landfill footprint were avoided, consistent with the criteria listed in the Technical Guidelines for Disposal to Land (August 2018).

The technical guidelines recognise that a balanced approach to site selection is required, as no one site is likely to score highly on all criteria. As described in the Plan Change application, the Wayby Valley site was identified as the preferred site for the landfill development following an extensive site selection process as it scored highly in the assessment due to a number of factors, including the ability to avoid sites of identified cultural significance, SEAs and other identified features in the AUP (or PAUP as it was then).

42	*The section 6e of the s32 report limits the scope of the policy framework set out in the AUP with regard to water quality, protection of hydrological features and integrated land and water management. Please provide the rationale for this.*

The precinct provisions are intended to be read alongside the existing policy framework of the AUP. Refer to Appendix E, which includes an assessment of the AUP policy framework, and conclude that the objectives and policies proposed for the precinct are generally consistent with the RPS and AUP provisions. Clarification of the relationship between the precinct provisions and the provisions of E3, E1, E15 and Appendix 8 of the Auckland Unitary Plan has been added to the introductory section of the precinct.

43	*This AEE should assess the appropriateness of the land use in the context of the cultural fabric, rather than provide a framework for assessment once the land-use is established as acceptable. Please provide clarification.*

Landfills need to be located somewhere, as they provide a solution for residual waste which has not been reused, recycled or diverted, and therefore play an important role as infrastructure for the Auckland Region. Landfill development is never popular, so there is a need to find somewhere that is acceptable and appropriate, rather than necessarily desirable. An overall assessment of the appropriateness of the site is provided in the PPC. This is sufficient to demonstrate that the site is broadly appropriate for landfill development, with the specific assessment of a landfill development, including design, site layout and management to be subject to a full resource consent process.

44	*Please provide an assessment against the AUP policy framework and comment on the status of this document in terms of its scope and status in relation to a plan change application.*
Please refer to Section 5 and Appendix E of the Plan Change application. These provide an assessment of the PPC against the AUP policy framework and conclude that the objectives and policies proposed for the precinct are generally consistent with the RPS and AUP provisions.	
45	*The s32 report states, the site is preferred due to its proximity to central Auckland. No other sites were identified in the reports, and the site is comparatively remote. What other site options were assessed and on what basis were they dismissed?*
Due to the significant amount of development within the Auckland Region, it is very difficult to find sites with sufficient setbacks in close proximity to the city, which also satisfy the other requirements for landfill development, such as appropriate geology and access. The process used for assessing and ranking potential sites is described in Appendix D of the Plan Change application. This application does not identify the other sites considered. This is due to commercial sensitivity and the potential impact on current landowners of the other sites, as the vast majority would be unaware that their land was considered, potentially causing significant uncertainty for them if this information was made public.	
46	*The site selection notes "a limited number of landowners" as a determining factor, however this is not an environmental effect, and is more appropriate in terms of a feasibility and options assessment. Is a full options assessment available for the proposal?*
As described in the Plan Change application, the Wayby Valley site was identified as the preferred site for the landfill development following an extensive site selection process as it scored highly in the assessment due to a number of factors, including the ability to avoid sites of identified cultural significance, SEAs and other identified features in the AUP. Please refer to Appendix D of the Private Plan Change application, which provides a summary of the site selection process. This identifies the range of criteria that were considered as part of the site selection process. Land title complexity and the number of owners was a secondary constraint in the site selection process and was not a determining factor. The limited number of landowners was one of the factors which contributed to the selection of the Wayby Valley site.	
47	*Placement of landfill to be within Sub-precinct A in Valley 1 under Eastern block. The precinct introduces its own new Objectives and Policies which relates to AUP chapters B7, E1, E3, D4, D8 and D9. Some of these new policies undermine/weaken existing policies in the AUP OP and suggest that a lower level of effects management will be used (eg; partially Policy 3). Please provide an explanation and rationale for this.*
An assessment of the objectives and policies of the precinct against the AUP is provided in Appendix E of the Private Plan Change application. This assessment concludes that the objectives and policies proposed for the precinct are generally consistent with the RPS and AUP provisions. In particular, the wider AUP recognises that most if not all significant infrastructure activities will result in adverse effects within the footprint of the infrastructure development and provides for infrastructure development whilst requiring adverse effects to be appropriately managed. Further clarification of the relationship between the precinct objectives and policies and those contained in E3, E1, E15 and Appendix 8 of the Auckland Unitary Plan has been added to the precinct description.	

48 The existing policy framework under Chapter E2 and E3 of the AUP avoids activities in, on under or over the beds of rivers/streams/wetlands where appropriate. The proposal contains a series of on-stream ponds to be constructed on permanent steam. Post developed stage 3, the permanent stream in Valley 1 will be reclaimed. While taking into account outcomes of the proposal (activities that are not envisaged or supported by AUP), the s32 report doesn't adequately assess actual and potential effects on these and how the proposal fits within relevant Objectives and Policies of the plan, in particular, Chapter E2 and E3.3 policies; RPS Policy B7.3.2. Please address.
The precinct does not authorise establishment of a landfill on the site as a permitted activity. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions. In addition, the reference to on-line stormwater treatment devices has been removed from the redrafted precinct provisions.
49 The wording of the proposed precinct's policy framework doesn't provide adequate emphasis on to 'avoidance' of effects first before moving into remedy and or mitigate. Please provide an explanation and rationale for this.
Further clarification of the relationship between the precinct objectives and policies and those contained in E3, E1, E15 and Appendix 8 of the Auckland Unitary Plan has been added to the precinct description.
50 The plan change area discharges into SEA-Terrestrial which represents SEA values of 1, 2,3 4 and 5 under Schedule 3. Protection of this is directed in the AUP but the proposed stormwater discharge from landfill and the precinct plan do not adequately support this. Please provide an explanation and rationale for this.
The precinct does not authorise any discharges into the SEA. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions. In addition, the precinct provisions do not replace the existing stormwater rules in the AUP, so any future consent application for stormwater discharges would be assessed under the existing stormwater provisions of the AUP
51 In the AEE and Stormwater report, there is no adequate assessment is provided explaining actual and potential effects on SEAs in downstream receiving environment from contaminated discharges from the landfill or ancillary activities. Proposed ponds are focused on removal of coarse and fine sediment and to provide stormwater detention. Please provide details on how contaminated discharges will be avoided from stormwater runoff.
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions. In addition, the precinct provisions do not replace the existing stormwater rules in the AUP, so any future consent application for stormwater discharges would be assessed under the existing stormwater provisions of the AUP.

52 Please assess the effects of the proposal in terms of sedimentation, erosion and water quality on the Hoteo River.
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
53 It is mentioned in the stormwater report that stormwater controls are to be implemented across the site which addresses both quality and quantity and is consistent with best-practice methods. Please provide further discussion around how this be achieved
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
54 It is acknowledged that sediments from the wheel wash and any overflows from the wheel wash are to be diverted to an adjacent sediment pond for settling. Then flows will be directed into the landfill stormwater management sediment ponds. However, there are no clear methods shown in the stormwater report demonstrating how the water quality will be achieved. Please address
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
55 There is confusion between engineering drawing sheets 40 and Page 15 of the stormwater report in regard to the series of proposed online sediments ponds. In the Stormwater report, use of five stormwater sediment ponds to direct runoff from upstream to downstream is proposed to be constructed during the first stage of landfill Giving reference to Engineering drawings Sheets 40, only four sediment ponds indicated, namely Pond 1, Pond 2, Pond 3 and Upstream Pond. Please clarify.
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
56 Page 11 of the Stormwater Report states, "Drainage from the first stage of the landfill including during seasonal earthworks will discharge into Pond 4". This pond 4 is not visible in the Drawing sheet 40. Therefore, overall references between the series of ponds proposed in the Stormwater report and engineering drawings are hard to follow. Please provide accurate references between these documents.
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.

57	*Are these capacities of the proposed sediment ponds sufficient enough to serve/contribute to treat surface water drain from each of the pre-development catchment to post-development catchment stages? (Stormwater report, page 27-29)*
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.	
58	*Having 'online' ponds reduces the natural flow of water upstream to downstream. It is proposed to decommission upstream pond No 4 after completion of stage 3. Given that the treatment ponds will be online, how will variation in stream flows resulting from different rainfall events be accommodated in the design, and how will it impact on the performance of the ponds?*
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.	
59	*Will the capacity of this wetland be designed to adapt to all storm events to avoid draining untreated runoff to adjacent streams or receiving environment?*
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.	
60	*Please discuss how potential and actual effects on changes in flowrate from reclaiming streams and wetlands are to be managed from wider catchments?*
The plan change does not include design details regarding potential changes in flowrate, nor does it authorise changes in flowrate. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.	
61	*Sec 7.5 of the stormwater and industrial and trade activity report discusses access road filter strips designs. Is use of filter strip restricted by any Geotech conditions?*
The precinct does not authorise establishment of a landfill on the site, nor does it include design details such as filter strips. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.	

62 The report doesn't address hydrology mitigation and stream erosion effects. Please assess the effect of the development on hydrology and stream bank erosion in the context of the level of impervious surface and earthworks proposed.
The precinct does not authorise establishment of a landfill on the site, nor does it include design details regarding potential hydrology mitigation, nor does it authorise stream erosion effects. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
63 There is no assessment of the potential for infiltration to maintain baseflow, the effect of new impervious surfaces, hydrology, proposed mitigation and stream bank erosion. The proposal is within a catchment with known erosion and sedimentation issues. Please provide an assessment of these effects.
The precinct does not authorise establishment of a landfill on the site, nor does it include design details such as impervious surfaces, nor does it authorise changes in baseflow, hydrology or erosion. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
64 The proposal contains reclamation of a permanent river/stream/wetland and also the construction of a series of online sediment ponds within the stream. The proposal currently undermines the hierarchy of decision making in which should first assess how to 'avoid' effects before moving onto discussing remedies and or mitigation. Please discuss why it is not possible to locate channel of online ponds elsewhere avoiding the stream as well as for reclamation of the stream.
The precinct does not authorise establishment of a landfill on the site, nor does it include design details such as sediment ponds, nor does it authorise online sediment ponds. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions and could consider the hierarchy of avoid, remedy and mitigate as part of that process. Further discussion of the application of the Auckland Unitary Plan hierarchy is provided in response to question 65 below. It is also important to note that stream reclamation is an almost inevitable consequence of developing a landfill in the Auckland Region, as any large valley system which may be suitable for development as a landfill will likely have streams present due to climatic conditions in Auckland (subtropical with high rainfall). The Private Plan Change application recognises this whilst still requiring effects on freshwater systems to be avoided, remedied, mitigated, offset or compensated.

65	*Considering what is proposed in the plan change, the policy framework proposed would compromise the integrity of the AUP policy framework which seeks to avoid stream reclamation, a non-complying activity. This is supported by the latest Ministry for Environment position released 09/09/19 for the NPSFM to achieve no net loss in stream habitat. Chapter E1 and additional policies expect that streams and wetlands be restored and enhanced at the time of development. This proposal doesn't address stream and wetlands retention or restoration. Please provide an explanation and rationale for this.*

We note that we have received legal advice, prepared by Bal Matheson and provided to Auckland Council on 27 August 2019, on the hierarchy in the Unitary Plan. There are only a very limited number of examples within the Unitary Plan where there is a hierarchy to the resource management responses: avoid, remedy, mitigate, and offset/compensate. There is a general expectation that effects will be avoided, remedied or mitigated prior to any consideration of "offsetting" (see Objective E3.2.(1) and Policy D9.3.(1)).

Regarding the hierarchy within the Auckland Unitary Plan, the precinct provisions have been edited to clarify that the hierarchy in the plan does still apply, with effects required to be avoided where possible, whilst acknowledging that, given the nature of a landfill development, strict avoidance of effects on freshwater bodies (in particular streams) will not be possible. This aligns with objectives in the RPS and within the regional plan provisions supporting infrastructure as demonstrated in Appendix E of the Plan Change application. The wider AUP recognises that most if not all significant infrastructure activities will result in adverse effects within the footprint of the infrastructure development. Landfills are included within the definition of infrastructure in the AUP.

The plan change includes provisions to provide a framework for offset and compensation for significant adverse effects associated with activities in the precinct which cannot be avoided, remedied or mitigated. An explanation of this has been provided in the updated precinct description.

In respect of the Ministry for the Environment position referred to in the question above, we have not responded to the draft NPSFM. It does not currently have any statutory weight, and will be subject to change as it goes through the submissions and development process.

66	*The AEE addresses the infrastructure chapter in the AUP. Please assess the other relevant objectives and policies to determine the extent to which the proposal aligns with the AUP policy framework including cumulative effects.*

Please refer to Appendix E of the Plan Change application, which provides an assessment of the proposed objectives and policies against the wider AUP provisions in relation to the use of the site for a landfill development.

67	*Please assess in the AEE the actual and potential short-term and long-term effects on the loss of the 15KM long stream within the landfill footprint and the surrounding environment.*

The precinct does not authorise establishment of a landfill on the site, nor does it authorise stream loss. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.

68 Please assess in the AEE the actual and potential short-term and long-term effects on the loss of wetlands.
The plan change does not authorise any effects on wetlands, a resource consent would be required. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
69 It is acknowledged that offset and compensation package has been prepared and also indicates a 15Km of stream enhancement within the WMNZ landholdings and other commitments are to be undertaken over the lifetime of the landfill. Further enhancement is proposed for wetlands. But a level of detail on these compensation packages must be presented with a plan change request to understand effects associated with stream loss/reclamation and mitigation actions on these matters.
The precinct does not authorise establishment of a landfill on the site. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
70 Water quality is essential for the ecosystem and the suitability of the activity in this area needs to be assessed to avoid the effects on the environment. The private plan change hasn't considered the option to avoid effects on streams or wetlands as expected by the AUP. Please provide an assessment against chapter E1 of the AUP – Integrated Land and Water Management.
Please refer to Appendix E of the Plan Change application, which provides an assessment of the proposed objectives and policies against the wider AUP provisions, including the relevant objectives and policies in E1. Regarding avoidance of effects, refer to the answer provided for question 65.
71 S32 report further states, the precinct provisions include standards which would mean that any application to encroach upon the recognised SEAs, WMAs, ONLs and NSMAs would be a non-complying activity, consistent with the wider provisions in the AUP. This approach doesn't consider effects anticipated by the AUP in areas outside of these areas. Please assess these effects.
The precinct does not authorise any activities. Activities impacting on freshwater systems within the precinct would be classified as a discretionary activity, and as such the effects on these would be assessed as part of the discretionary resource consent process. Effects on other areas would be regulated by the existing provisions in the AUP and would be considered against the relevant provisions in future consent processes.
72 The Hydrological report nor the AEE assesses how effects will be managed should they be detected. Please assess these effects and comment on how they could be avoided, remedied or mitigated.
This question refers to the design/operation of the landfill and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
73 Where/what is final disposal point for leachate?
This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The

issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.

Despite not being relevant to the Private Plan process, for clarity, the parallel resource consent application (which will not be considered under these proposed precinct provisions) proposes for leachate to be taken off-site to an appropriate disposal facility in the early stages of the landfill's operation. Once sufficient LFG is available at the Auckland Regional Landfill, a new evaporator or new technology will be installed on site. Leachate will not be disposed of to watercourses or land within the precinct.

74 Please provide an assessment of the risk compressible soils may present to groundwater contamination.

This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.

75 Filtering may not equate to water quality treatment. Please expand on this topic to understand the suitability of the site for this land use and the potential to achieve compliance with relevant technical guidance

This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.

76 Please provide an assessment of the risk of leachate entering groundwater

The risk of leachate entering groundwater is determined by a number of factors, including design and operation of the landfill, which would need to be considered as part of a future resource consent application under the precinct. At a high level however, the technical assessments to date have shown that the underlying geology is generally suitable for landfill development and the precinct provisions include minimum standards for the landfill lining system, to ensure industry best practice is adopted.

77 Please provide an assessment of the extent to which the effects will be avoided and to what extent they can be remedied and mitigated; acknowledging the surrounding ecological sensitivity.

This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.

78 Ngati Manuhiri
The outcomes of the discussions and the CVA are not discussed. Please explain how the proposal responds or doesn't respond to the outcomes.

No activities are authorised by the PPC. WMNZ is engaging with iwi so that their culture and traditions, and their ancestral land and water are considered and that the principles of the Treaty of Waitangi are taken into account. Consultation will continue throughout the PPC and resource consent process, and beyond.

The objectives and policies within the AUP relating to mana whenua values, and particularly within the RPS would likely be relevant to any future application and would need to be taken into account in the decision making process.

79	*Ngati Whatua* *The primary concern expressed was sedimentation, which has not been addressed in this section. Please see related information requests on this topic.*
	No activities are authorised by the PPC. WMNZ is engaging with iwi so that their culture and traditions, and their ancestral land and water are considered and that the principles of the Treaty of Waitangi are taken into account. Consultation will continue throughout the PPC and resource consent process, and beyond. The objectives and policies within the AUP relating to mana whenua values, and particularly within the RPS would likely be relevant to any future application and would need to be taken into account in the decision making process. In addition, the precinct provisions do not replace the erosion and sediment control rules contained in Chapters E11 and E12 of the AUP, and as such, future applications for earthworks in the precinct would be considered under the existing AUP provisions.
80	*Ngati Rango* *Ngāti Rango remains particularly concerned about the long term legacy that remains when the landfilling is finished. The outcomes of the discussions and the CVA are not discussed. Please explain how the proposal responds or doesn't respond to the outcomes.*
	No activities are authorised by the PPC. WMNZ is engaging with iwi so that their culture and traditions, and their ancestral land and water are considered and that the principles of the Treaty of Waitangi are taken into account. Consultation will continue throughout the PPC and resource consent process, and beyond. The objectives and policies within the AUP relating to mana whenua values, and particularly within the RPS would likely be relevant to any future application and would need to be taken into account in the decision making process.
81	*Other mana whenua* *Their concerns were confirmed as being mainly sediment in the Hōteo River, potential leakage from landfill liners and potential impact on the Kaipara moana. Please see related information requests on this topic as above*
	No activities are authorised by the PPC. WMNZ is engaging with iwi to ensure that their culture and traditions, and their ancestral land and water are considered and that the principles of the Treaty of Waitangi are taken into account. This will continue throughout the PPC and resource consent process. The objectives and policies within the AUP relating to mana whenua values, and particularly within the RPS would likely be relevant to any future application and would need to be taken into account in the decision making process.
82	*This assessment is limiting the ambit of mana whenua interest to historical sites and obligation, and delays assessment of remaining values. Please assess the effects of the proposal on mana whenua values as identified in the AUP.*
	Establishment of a landfill within the precinct will require consent to be obtained as a discretionary activity. The objectives and policies within the AUP relating to mana whenua values, and particularly within the RPS would likely be relevant to any future application and would need to be taken into account in the decision making process.

83 The report should assess the effects of the reclamation. How does the applicant propose to achieve the proposed objective in the context of stream loss and discharges in terms of erosion, water quality (surface and ground) and infiltration to ground for baseflow?
An assessment of the effects of reclamation would form part of a resource consent application under the provisions of the precinct. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.
79 Ngati Whatua *The primary concern expressed was sedimentation, which has not been addressed in this section. Please see related information requests on this topic.*
No activities are authorised by the PPC. WMNZ is engaging with iwi so that their culture and traditions, and their ancestral land and water are considered and that the principles of the Treaty of Waitangi are taken into account. Consultation will continue throughout the PPC and resource consent process, and beyond. The objectives and policies within the AUP relating to mana whenua values, and particularly within the RPS would likely be relevant to any future application and would need to be taken into account in the decision making process. In addition, the precinct provisions do not replace the erosion and sediment control rules contained in Chapters E11 and E12 of the AUP, and as such, future applications for earthworks in the precinct would be considered under the existing AUP provisions.
80 Ngati Rango *Ngāti Rango remains particularly concerned about the long term legacy that remains when the landfilling is finished. The outcomes of the discussions and the CVA are not discussed. Please explain how the proposal responds or doesn't respond to the outcomes.*
No activities are authorised by the PPC. WMNZ is engaging with iwi so that their culture and traditions, and their ancestral land and water are considered and that the principles of the Treaty of Waitangi are taken into account. Consultation will continue throughout the PPC and resource consent process, and beyond. The objectives and policies within the AUP relating to mana whenua values, and particularly within the RPS would likely be relevant to any future application and would need to be taken into account in the decision making process.
81 Other mana whenua *Their concerns were confirmed as being mainly sediment in the Hōteo River, potential leakage from landfill liners and potential impact on the Kaipara moana. Please see related information requests on this topic as above*
No activities are authorised by the PPC. WMNZ is engaging with iwi so that their culture and traditions, and their ancestral land and water are considered and that the principles of the Treaty of Waitangi are taken into account. Consultation will continue throughout the PPC and resource consent process, and beyond. The objectives and policies within the AUP relating to mana whenua values, and particularly within the RPS would likely be relevant to any future application and would need to be taken into account in the decision making process.

82	*This assessment is limiting the ambit of mana whenua interest to historical sites and obligation, and delays assessment of remaining values. Please assess the effects of the proposal on mana whenua values as identified in the AUP.*
Establishment of a landfill within the precinct will require consent to be obtained as a discretionary activity. The objectives and policies within the AUP relating to mana whenua values, and particularly within the RPS would likely be relevant to any future application and would need to be taken into account in the decision making process.	
83	*The report should assess the effects of the reclamation. How does the applicant propose to achieve the proposed objective in the context of stream loss and discharges in terms of erosion, water quality (surface and ground) and infiltration to ground for baseflow?*
An assessment of the effects of reclamation would form part of a resource consent application under the provisions of the precinct. This question refers to the design and associated assessments which have been provided with the resource consent application. As such, it is not relevant to the private plan change request. The issues raised in this question would be considered as part of a consent application under the precinct provisions, as the Council would have full discretion under the proposed provisions.	

Land disturbance

84 The definition for ancillary activities requires further clarity. The current definition is insufficient and it is unclear on what this could encompass and as such, the full extent of implications of the proposed provisions on future resource consent applications.
The reference to ancillary activities has been removed from the precinct table, and new activities have been added to provide greater clarity on the activities meant to be covered by the precinct specific rules.
84 An assessment is required against the objectives and policies of E11 compared to those proposed in the precinct, noting that E26 for infrastructure refers directly back to E11 for objectives and policies. Some objectives and policies of E26 are compared but not those relevant to land disturbance
The precinct is not intended to replace the provisions in E11, and future applications for the activities regulated by E11 would be assessed against the provisions of that chapter. As such the private plan change request is not assessed against the objectives and policies of E11.
85 The objectives and policies contain ambiguous terms and the issue of time lag regarding offsetting and compensation needs to be addressed. Guidance as to how conflicting objectives and policies will be assessed is also recommend to determine which provision has precedence; the proposed precinct or the Auckland-wide provisions of the Unitary Plan.
An allowance for a time lag in offset and compensation has been intentionally included, in recognition of the distinct locational requirements of a landfill as a form of infrastructure, and the likely need to stagger offset and compensation. The precinct provisions have been redrafted based on the Auckland Council best practice guide for precincts, to provide more clarity on the relationship between the precinct provisions and the Auckland-wide provisions in the AUP.
86 The proposed assessment criteria and matters of discretion are general where they could result in difficulty determining the effects to be assessed, the type of information required on future resource consent applications and the ability to impose consent conditions. Some detail from the current provisions in chapter E11 of the Auckland Unitary Plan is absent and could prevent such matters from being assessed in any future resource consent applications. Confirmation is sought as to whether this detail was intentionally left out or not.
As stated above, the precinct provisions do not replace the provisions in E11. As such, future applications involving activities controlled by E11 would continue to be assessed against the relevant provisions in that chapter, rather than the precinct.
87 The applicant has proposed an adaptive management approach for the current resource consent application. Please clarify whether the precinct intentionally omits an adaptive management approach for all earthworks within the precinct (taking into account the sensitivity of the receiving environment and scale of earthworks required for landfill and ancillary activities)
As above, the precinct does not replace the provisions in E11. As such, consideration of an adaptive management approach for earthworks would be considered against the provisions of E11 in future consent applications.

Planning

88 Can you please redraft the precinct in light of the best practice guidance for drafting Auckland Unitary Plan provisions (sent to you on 2 September).
The best practice guidance has been reviewed and the precinct provisions have been redrafted, refer to Appendix C.
Please provide any details of consultation with Auckland Transport on the use of the legal road areas for the landfill activity.
WMNZ has been consulting with Auckland Transport on the process for road stopping, including a series of meetings. An application to stop the roads within the landfill footprint is being prepared and will be submitted shortly. This is a separate process to the private plan change application under the RMA, and will be considered under different legislation.
89 Can you please state how many dwellings or other sensitive activities are currently within the precinct and what is the potential for new dwellings within the precinct (utilising any existing resource consents and the subdivision and development provisions of the underlying Rural Production zone).
There are currently three dwellings within the precinct. There are no other sensitive activities. The previous owner of the land had obtained resource consent for 13 new lots on the farmland which comprises the western part of the precinct. Should WMNZ proceed to construct the landfill, this consent would be surrendered. The future development potential of the land for sensitive activities is determined by the underlying Rural Production Zone, which is reasonably restrictive for sensitive activities, with most being classified as discretionary or non-complying. A proposal to subdivide off parts of the precinct (the WMNZ landholdings) would also be a discretionary or non-complying activity. Consequently, it is likely that Council would have un-restricted discretion when considering future development in the precinct, including the proximity of the new activity or lot to the landfill.
90 Can you comment on why the precinct provisions do not control the development of dwellings and/or other sensitive activities within the precinct area (see Chapter J definitions for a list of activities sensitive to air discharges, hazardous facilities and infrastructure, and noise).
Please refer to the answer provided to Question 32. The regulations controlling sensitive activities is normally in relation to different owners who you have no control over. Because WMNZ owns the whole precinct, this isn't an issue and any development within the precinct in future would need no complaints covenants. The use of covenants and easements has proven successful at other landfills in New Zealand.
91 Can you please provide comment as to whether any potential restrictions on sensitive activities should go further than the current precinct boundary (i.e. extend the precinct)?
The intention is for the precinct to apply only to the land secured by WMNZ. WMNZ has intentionally acquired a large landholding in order to secure a buffer without needing to impinge on surrounding landowners. In addition, one of the purposes of the precinct is to record the presence of the landfill on the Auckland planning maps, so future landowners would be able to make informed decisions about land-use.

92 Can you please provide an assessment in section 5.3 of the AEE of the landfill precinct against:

- *Auckland Council's draft Climate Action Framework (2019).*
- *The New Zealand Waste Strategy (2010) from the Ministry for the Environment and any other relevant national direction on waste management.*
- *Specifically, please comment on what part landfills have in the future of waste management in New Zealand.*

Auckland Council's draft Climate Action Framework (2019)

The draft Climate Action Framework identifies a number of waste-related actions, including diversion of food waste and transitioning towards a circular economy. To achieve waste minimisation or a circular economy, more efficient ways to reduce, reuse and recycle must be adopted. Waste management facilities, and in particular refuse transfer stations and resource recovery facilities, play an important role in achieving a reduction in waste and will affect the nature and amount of residual waste going to landfill. Opportunities to divert specific waste streams, such as organic materials and e-waste should be explored and taken wherever possible. The existence of a landfill does not restrict or prevent these measures from being introduced. However, despite measures to reduce waste generation, for the foreseeable future there will be demand for landfill capacity for the disposal of residual waste which cannot be diverted or recycled.

New Zealand Waste Strategy

The revised New Zealand Waste Strategy, published in 2010, sets out the Government's long term priorities for waste management and minimisation. The Strategy's two goals provide direction to local government, businesses (including the waste industry), and communities on where to focus their efforts in order to deliver environmental, social and economic benefits to all New Zealanders. The goals are:

- Reducing the harmful effects of waste; and
- Improving the efficiency of resource use.

The precinct is intended to provide for a modern class 1 landfill[1] to be developed on the site. The precinct provisions and subsequent resource consent process will require the landfill to be designed and managed using measures such as leachate collection systems, engineered liners, and systems for recovering landfill gas. Combining waste disposal into a well designed regional landfill facility is the best available option for reducing harm to the environment from the disposal of residual waste.

94 Can you clarify whether the landfill will only be used for waste from the Auckland Region as the precinct description seems to state?

The landfill will serve as a significant piece of infrastructure for the Auckland region, and the majority of waste disposed of in the landfill is anticipated to come from within the Auckland region, however, waste from other regions would also be accepted.

[1] Landfill classes are defined in the Technical Guidelines for Disposal to Land, WasteMINZ (August 2018)

95 Understanding what is covered by "ancillary activities" is crucial as the term is used in the precinct activity table. This could either be proposed to be added as a definition to Chapter J (noting the risk that it could have unintended consequences for other parts of the Auckland Unitary Plan) or through a standard in the precinct that sets out what ancillary activities must be limited to.
The reference to ancillary activities has been removed from the precinct table, and new activities have been added to provide greater clarity on the activities meant to be covered by the precinct specific rules.
96 The objectives and policies refer to renewable energy generation from the biomass within the landfill but the precinct activity table is silent on this. Can you clarify whether this an intentional omission?
The precinct provisions have been updated to include a specific rule for discharges from energy generation from the biomass within the landfill.
97 Can you comment as to why the wording in the activity table for (A1) is "Construction and operation of…" as elsewhere in the Auckland Unitary Plan (i.e. the underlying Rural Production zone) the activity is referred to as simply "Landfill"?
The precinct provisions have now been updated to be consistent with the wording in the Rural Production zone.
98 There is a minor drafting error under 1616.6 (1) Restricted Discretionary Standards where the word "restricted" needs to be inserted: "….must comply with the following restricted discretionary activity standards"
This error has been remedied in the updated precinct provisions
99 There is a minor drafting error with the reference 1617.6(1) for Discretionary activities. It should in fact be 1617.6(2).
This error has been remedied in the updated precinct provisions.

Appendix B: Response to clarification points

The Clause 23 request letter included several comments from Auckland Council, which were stated to not form part of the formal Clause 23 request. These have been considered to be points of clarification. A copy of these matters and a response is provided below.

Long term expansion

The current resource consent application refers to Valley 2 as the "northernmost of the two valleys currently in forestry suitable for landfilling, and that might be considered for development after Valley 1 has been filled, but does not form part of this consent application."

The private plan change application refers to the precinct enabling the future re-consenting of the landfill but does not refer to any long-term expansion plans for Valley 2. Sub-precinct A (the area where waste is proposed to be placed) only covers Valley 1 and not Valley 2. One of the reasons for the private plan change is to "provide recognition of the site in the planning framework for the Auckland Region…" so it is queried whether it would be logical to identify in the precinct any long-term expansion areas where waste could be placed in the future?

The basis for the precinct proposed by WMNZ is that this site is unique in an Auckland context, providing a combination of features which resulted in its selection following an extensive site selection process that has taken nearly a decade. Following selection of the broader site, further more detailed assessment was undertaken to confirm that Valley 1 is suitable for a landfill development. The same level of information is not currently available for Valley 2, so at this stage we do not consider it appropriate to include Valley 2. Further work should be undertaken to consider the suitability of Valley 2 before it would be appropriate to include it as Sub-precinct allowing for development of a landfill to proceed as a discretionary activity.

Legal roads within precinct

The proposed Landfill precinct would not apply to the legal roads within the precinct boundaries. The Auckland Unitary Plan does not zone roads (A1.6.4) and the precinct seeks to vary the underlying zone controls. As there is no zoning on the underlying roads, the precinct provisions do not apply to them.

It is also noted that Auckland Transport have a Notice of Requirement lodged with Auckland Council to designate all existing roads. The interim effect of the notice of requirement is that under s178(2) of the RMA "no person may do anything that would prevent or hinder the public work, project, or work to which the designation relates unless the person has the prior written consent of the requiring authority."

It would be advisable for the applicant to investigate the road stopping process with Auckland Transport. A first point of contact at Auckland Transport is Irene Tulloch (Technical Property Services Manager). Some general information on road stopping can be found at the link below.
https://at.govt.nz/about-us/working-on-the-road/road-processes-for-property-owners/changing-the-legal-status-of-a-road/

WMNZ has been consulting with Auckland Transport on the process for road stopping, including meeting with their Technical Property Services Manager. An application to stop the roads within the landfill footprint is being prepared and will be submitted shortly. This is a separate process to the private plan change application under the RMA, and will be considered under different legislation. Following closure of the roads and amalgamation with adjacent titles, the underlying zoning and precinct provisions would apply to the Land. This is WMNZ's preferred approach, rather than

seeking agreement under s178(2) of the RMA to undertake works within the roads. (In any event, the notice of requirement, which was lodged in 2012 and still has not been notified, expressly excludes unformed roads – see 1.C(v) of the notice of requirement – and most of the roads affected by the landfill works are unformed roads.)

Precinct scope

In light of the feedback to date from the council's specialists it is suggested that the applicant consider whether the activity table in the precinct should be focused on district plan land use activities rather the provisions around air, land and water (for which the existing Auckland-wide rules could be relied on).

There is a concern from a number of council specialists that the precinct provisions as written dilute the current Auckland-wide provisions. This could result in a reduced scope of assessment which could translate to the environmental outcomes from the proposal.

It is noted that the existing framework of the Auckland Unitary Plan already provides for consideration of infrastructure within many of the Auckland-wide provisions (i.e. Chapter E3 recognises there is a balance to be struck between providing for infrastructure and the protection of freshwater and terrestrial environments).

It is also noted that Chapter E13 of the Auckland Unitary Plan already seeks to manage new landfills and policy E13.3(4) seeks to "Avoid adverse effects from new landfills". This is a much more directive policy than what is proposed in the precinct which seeks that adverse effects are "avoided, remedied, or mitigated, or, to the extent reasonably practicable, as offered by the applicant, offset, or compensated"

Generally, a precinct focused on district plan land use activities and relying more on the existing Auckland-wide provisions would find more specialist support. Otherwise, further robust evidence is required to vary from the Auckland-wide provisions to the extent proposed in the precinct.

Regarding the above points:

- There is no restriction in the Unitary Plan that restricts Precincts only to district plan or land use matters. Indeed, other existing precincts within the Unitary Plan expressly provide for matters relating to air, land and water, including precincts that confer a very permissive activity status (ie permitted) for reclamation of streams[1]. The proposed precinct would not therefore be unique in providing for a full range of activities.
- A precinct which only addressed district plan matters would not achieve the purpose of the proposed precinct. As set out in Section 3.2 of the Private Plan Change request, the purpose of the precinct is to enable efficient operation of a future landfill at the site throughout its operating life. Changes to the activity status of discharges to air, land and water from landfills within the precinct are sought as part of this private plan change request. If these changes were excluded from the precinct, the overall activity status of establishing a landfill within the precinct would continue to be non-complying. Non-complying activities are generally not envisaged or supported by the AUP. Non-complying activities are usually unlikely to find direct support from any specific provisions of a regional or district plan, whereas a discretionary activity might find support. It seems at odds on the one hand to provide supporting and enabling provisions for the activity of a landfill within the precinct yet at the same time impose a non-complying activity status on discharges from a landfill within the precinct which suggests that it is not supported.

[1] For example Long Bay

- We note that Chapter E13 relates to discharges from cleanfills, managed fills and landfills. Changes have been made to the precinct provisions to clarify the relationship between the precinct and the wider AUP provisions. In general many activities, such as stormwater, industrial and trade activities, discharges from closed landfills, and earthworks, will continue to be regulated by the Auckland-wide provisions in the AUP.
- We consider that the precinct is consistent with the Auckland-wide provisions, whilst providing some additional precinct-specific considerations for future resource consent applications. The objectives and policies in the precinct are generally to be read alongside the Auckland-wide provisions, rather than replacing them.
- We also note that the precinct provisions are not permissive, with landfill activities still required to go through a full resource consent process before they can be established within the precinct. As such the rules within the precinct, and the higher order objectives and policies, do not present a significant departure from the existing level of regulation of these activities under the Auckland Unitary Plan.

Appendix C: Updated precinct provisions

Auckland Regional Landfill Precinct (I617)

I617.1 Precinct Description

The precinct applies to the Auckland Regional Landfill and its surrounds. Its purpose is to recognise the existence of, and enable the efficient construction and operation of the landfill and the associated land and activities in recognition of its role in providing the long term, safe disposal of solid waste from Auckland and surrounding regions, and for enabling renewable energy generation from the biomass within the landfill.

The Auckland Regional Landfill Precinct has two sub-precincts: Sub-precinct A, which identifies the area where waste will be placed; and Sub-precinct B, which identifies an area of the precinct where works within the Natural Stream Management Area are subject to a different activity status than the overlay. The remaining land within the precinct will be used for a range of activities associated with the landfill operations and energy generation. These associated activities include (but are not limited to) bin exchange area, stormwater treatment, access roads, soil stockpiles, gas and leachate collection and treatment, workshops, office facilities, and clay borrow.

The precinct includes objectives and policies which allow for consideration of biodiversity offsets and ecological compensation for unavoidable impacts on natural resources arising from development of a landfill within the precinct. The matters in objective 4 and policies 5 and 6 provide direction on offset and compensation for activities within the precinct which have unavoidable impacts on freshwater systems, providing direction on how the provisions of E3, E1, E15 and Appendix 8 of the Auckland Unitary Plan are to be applied, which address the circumstances in which residual adverse effects on natural resources that cannot be avoided, remedied or mitigated may be offset and compensated.

The land and the surrounding waterways, particularly the Hōteo River, have significant value to mana whenua in terms of historical, spiritual and cultural associations. Areas within and adjacent to the Auckland Regional Landfill Precinct have significant ecological values (e.g. the Sunnybrook Reserve). The objectives and policies of the Precinct requires a full assessment of potential effects and a requirement to avoid, remedy, mitigate, or offset/compensate adverse effects, including on ecological/freshwater and mana whenua values, that may be created by these activities to the extent practicable.

The underlying zoning of land within this precinct is Rural – Rural Production zone.

I617.2 Objectives [rp/dp]

1. The development and continued operation of the Auckland Regional Landfill is enabled, recognising its regional significance as essential infrastructure, and recognising the benefits of biomass being used for renewable energy generation.

2. Human health is protected from adverse effects of operational or closed landfills.

3. The Auckland Regional Landfill is designed and operated so that the adverse effects of discharges to land and water from the landfill are avoided, remedied or mitigated.

4. Adverse effects on rivers, lakes, streams and wetlands arising from the development and continued operation of the Auckland Regional Landfill are avoided, remedied or mitigated, and significant residual adverse effects are, to the extent reasonably practicable, and as

offered by the applicant, offset, or compensated where this will promote the purpose of the Resource Management Act 1991.

5. Effects on the ecological and mana whenua values from works within any Significant Ecological Area overlay or Wetland Management Area overlay areas are avoided, and effects on the ecological and mana whenua values from works within any Natural Stream Management Area overlay are avoided where practicable or are otherwise minimised.

6. The mauri of freshwater and indigenous biodiversity within those areas of the precinct not required for operations associated with the development and continued operation of the Auckland Regional Landfill is maintained and consistent with being enhanced over time.

The overlay, Auckland-wide and zone objectives apply in this precinct in addition to those specified above, except where there is a conflict, in which case these objectives take precedence.

I617.3 Policies [rp/dp]

1. Enable the development and continued operation of the Auckland Regional Landfill, and the associated renewable energy generation.

2. Require that any assessment of environmental effects for an activity that may affect mana whenua values includes an appropriate assessment of adverse effects on those values, and how those effects may be avoided, remedied or mitigated, including through making provision for mana whenua to exercise kaitiakitanga and the adoption of the Auckland Unitary Plan's Accidental Discovery Rule (E11.6.1).

3. Discharges of contaminants into water, land and air from the Auckland Regional Landfill's construction and operations shall avoid where practicable, and otherwise minimise:

    a. adverse effects on the quality of freshwater, including from contamination and sediment;
    b. adverse effects from contaminants, and the potential for these to enter freshwater from both point and non-point sources;
    c. adverse effects on mana whenua values associated with coastal water, freshwater and geothermal water, including wāhi tapu, wāhi taonga and mahinga kai; and
    d. adverse effects on the water quality of catchments and aquifers that provide water for domestic and municipal supply;
    e. adverse effects on the quality of air, including from the discharge of contaminants and odour;

    including through the adoption of the best practicable option for the treatment and discharge of stormwater, the use of industry best practice lining system and the provision of an appropriate buffer within the precinct

4. Subject to policy 5, provide for works within freshwater systems in order to provide for the development and operation of the Auckland Regional Landfill, including the reclamation of streams within Sub-Precinct A, culverts or bridges required to access the landfill.

5. Subject to policy 6, require adverse effects from the Auckland Regional Landfill's construction and operation on freshwater systems to be avoided, remedied or mitigated generally and to the extent practicable, and encourage in particular the use of offsetting or

compensation to manage significant residual adverse effects of unavoidable reclamation of stream beds and associated loss of freshwater systems.

6. Where effects cannot be avoided, remedied or mitigated, provide for offsetting or compensation, thereby enabling the Auckland Regional Landfill as infrastructure, while recognising that:

   a. not all significant residual adverse effects will be able to be fully offset or compensated, however a ratio of at least 1:1 is expected;
   b. any offset or compensation package may be staged over the long term and sites should be identified in the following order of preference – within the precinct, within the Hōteo River catchment, within the Kaipara Harbour catchment, and within the Auckland Region..

The underlying zone, Auckland-wide and overlay policies apply in this precinct in addition to those specified above, except where there is a conflict, in which case these policies take precedence. In particular, policy I617.3(3) is intended to take precedence over E13.3(4).

I617.4 Activity Table

Table I617.4.1 Activity table specifies the activity status of land use and development activities in the Auckland Regional Landfill Precinct pursuant to sections 9 and 11, 13, 14 and 15 of the Resource Management Act 1991. Any reference to an activity includes its construction, operation and maintenance. This Activity Table applies instead of any other rule in the Unitary Plan for the purposes of the activities listed[1].

Table I617.4.1 *Activity Table (rp/dp)*

Activity		Activity status
New landfills		
(A1)	Landfill in Sub-precinct A	D
(A2)	Discharges to air from landfills in Sub-Precinct A	D
(A3)	Discharges to land and water from landfills in Sub-precinct A that are otherwise categorised as non-complying	D
(A4)	Landfill outside of Sub-precinct A	NC
(A5)	Discharges to air, land and water from landfills outside of Sub-Precinct A	NC
Existing landfills		
(A6)	Discharges to air from existing landfills in Sub-Precinct A	RD
(A7)	Discharges to land and water from existing landfills in Sub-precinct A unless a more lenient activity status applies	RD
Activities in lakes, rivers, streams and wetlands		
(A8)	Reclamation, drainage, diversion or disturbance of any lakes, rivers,	D

[1] Specifically, the rules in this table are intended to replace E3.4.1 (A49) E13.4.1 (A9), E14.4.1 (A160), and H19.8.1 (A67), and is intended to apply instead of any plan change to make landfills or associated activities non-complying.

	streams (including intermittent streams) and wetlands outside overlays that are otherwise categorised as non-complying.	
(A9)	Reclamation, drainage, diversion or disturbance of any lakes, rivers, streams (including intermittent streams) and wetlands inside overlays unless a more lenient activity status applies	NC
Renewable energy		
(A10)	Energy generation from waste biomass, that is otherwise categorised as non-complying	D
(A11)	Discharges to air, land or water from energy generation from waste biomass, that are otherwise categorised as non-complying	D
General		
(A12)	Office or workshop associated with landfill	D
(A13)	Bin exchange area	D
(A14)	Except for (A4), (A5) and (A9) above, any activity classified as a non-complying activity elsewhere in the Unitary Plan associated with any landfill activity	D
(A15)	Any landfill activity that does not comply with the restricted discretionary or discretionary activity standards in I617.6	NC

Table I617.4.2 *Activity Table – Sub-precinct B*

Table I617.4.2 specifies the activity status of activities in, on, under, or over the bed of lakes, rivers, streams and wetlands within Sub-precinct B, pursuant to sections 13 and 14 of the Resource Management Act 1991. This Activity Table applies instead of any other rule in the Unitary Plan for the purposes of the activities listed.[2]

Activity		**Activity status**
(A1)	Works within lakes, rivers, streams (including intermittent streams) and wetlands within Sub-precinct B, including reclamation, drainage, diversion or disturbance of any watercourses, or construction of structures unless a more lenient activity status applies.	D

[2] Specifically, the rules in this table are intended to replace E3.4.1 (A33) and E3.4.1 (A49) within the sub-precinct.

I617.5. Notification

1. Any application for resource consent for an activity listed in Table I617.4.1 Activity table above will be subject to the normal tests for notification under the relevant sections of the Resource Management Act 1991, except where I617.5(2) applies.
2. Any application under Rule I617.4.1 (A1), (A2), (A4), (A5) or (A15) will be publicly notified.
3. When deciding who is an affected person in relation to any activity for the purposes of section 95E of the Resource Management Act 1991 the Council will give specific consideration to those persons listed in Rule C1.13(4).

I617.6 Standards

I617.6(1) Restricted Discretionary Standards

Activities listed as restricted discretionary activities in Table I617.4.1 must comply with the following restricted discretionary activity standards.

1. The discharge must be associated with an existing, legally authorised landfill or ancillary activity.
2. Any placement of waste shall only occur within Sub-Precinct A, shown on Precinct Plan 1.
3. A lining system must be installed prior to waste being placed within any area of Sub-Precinct A. The proposed lining system for the landfill must be one of the following types:

    a. Type 1 lining system (Leachate drainage material, with underlying cushion geotextile to protect the geomembrane, 1.5 mm HDPE geomembrane, and 600 mm compacted clay with a coefficient of permeability $k < 1 \times 10^{-9}$ m/s); or
    b. Type 2 lining system (Leachate drainage material, with underlying cushion geotextile to protect the geomembrane, 1.5 mm HDPE geomembrane, Geosynthetic clay liner (GCL), or 600 mm compacted clay with a coefficient of permeability $k < 1 \times 10^{-8}$ m/s); or
    c. Any other lining system that provides equal or better protection than a Type 1 or Type 2 lining system described above.
4. There shall be no offensive or objectionable odour at the Precinct boundary caused by the landfilling operation, in the opinion of a suitably qualified enforcement officer when assessed in accordance with the '*Good Practice Guide for Assessing and Managing Odour', (Ministry for the Environment, 2016).*

5. No works, other than ecological restoration or enhancement works, shall occur within any Wetland Management Area overlay, or within any Significant Ecological Area overlay, or within any Outstanding Natural Landscape overlay, or in any Natural Stream Management Area overlay (except Sub-precinct B).

I617.6(2) Discretionary Standards

Activities listed as discretionary activities in Table I617.4.1 must comply with the following discretionary activity standards.

1. Any placement of waste shall only occur within Sub-Precinct A, shown on Precinct Plan 1.

2. A lining system must be installed prior to waste being placed within any area of Sub-Precinct A. The proposed lining system for the landfill must be one of the following types:

    a. Type 1 lining system (Leachate drainage material, with underlying cushion geotextile to protect the geomembrane, 1.5 mm HDPE geomembrane, and 600 mm compacted clay with a coefficient of permeability $k < 1 \times 10^{-9}$ m/s); or
    b. Type 2 lining system (Leachate drainage material, with underlying cushion geotextile to protect the geomembrane, 1.5 mm HDPE geomembrane, Geosynthetic clay liner (GCL), or 600 mm compacted clay with a coefficient of permeability $k < 1 \times 10^{-8}$ m/s); or
    c. Any other lining system that provides equal or better protection than a Type 1 or Type 2 lining system described above.

3. There shall be no offensive or objectionable odour at the Precinct boundary caused by the landfilling operation, in the opinion of a suitably qualified enforcement officer when assessed in accordance with the '*Good Practice Guide for Assessing and Managing Odour', (Ministry for the Environment, 2016).*

6. No works, other than ecological restoration or enhancement works, shall occur within any Wetland Management Area overlay, or within any Significant Ecological Area overlay, or in any Natural Stream Management Area overlay (except Sub-precinct B).

I617.7. Assessment – controlled activities

There are no controlled activities in this precinct.

I617.8. Assessment – restricted discretionary activities

I617.8.1 Matters of discretion

1. For discharge of contaminants into air from all restricted discretionary activities (A6):

    a. the matters in Policy E14.3(1); and
    b. location of site and activity; and
    c. site and plant layout.
    d. quantity, quality and type of discharge, including biological contaminants, and any effects arising from that discharge;
    e. sensitivity of receiving environment and separation distances between the activity and any sensitive land uses;
    f. protocols for waste acceptance;
    g. odour, dust, visible emissions and hazardous air pollutant mitigation measures;
    h. monitoring requirements and management plans; and
    i. Closure and after-care plans (if the landfill is likely to close within the duration of the consent).

2. For other discharges from all restricted discretionary activities (A7):

a. the quality and quantity of any discharge including methods for the treatment and disposal of contaminants;
b. the method of discharge and adverse effects arising from the method chosen;
c. the best practicable options for reducing adverse effects;
d. the location of any discharge point;
e. the rate and frequency of any discharge;
f. monitoring requirements, management plans and consent duration;
g. the effects on mana whenua values; and
h. closure and after-care plans (if the landfill is likely to close within the duration of the consent).

.

I617.8.2 Assessment criteria

Discharges to air from legally established landfills

The Council will consider the relevant assessment criteria below for restricted discretionary activities:

1. The degree to which Auckland Ambient Air Quality Targets are likely to be met where people are likely to be exposed to the specified contaminants for the relevant averaging period.
2. Whether the amount of separation between the activity discharging contaminants into air and existing or potential activities sensitive to the air discharges is sufficient to mitigate adverse effects on the environment, health and amenity
3. The extent to which adverse effects are avoided, remedied or mitigated including appropriate emissions control technology and use of management practices.
4. Where applicable, the degree to which offsetting can remedy or mitigate adverse effects considering the proximity of the offset to where the effects of the discharge occur and the effective duration of the offset
5. Whether there are practicable location and method options that cause less adverse effects and can still achieve the applicant's objectives
6. The extent to which the odour and dust level meet the expectations for the Medium air quality – dust and odour area (Rural).
7. Whether the assessment methods, including monitoring and modelling are appropriate to the scale of the discharge and any potential adverse effects
8. Whether discharge into air are minimised as far as practicable, where appropriate through
    a. use of best practicable option emissions control and management practices: or
    b. minimisation of fugitive emissions:
9. the adequacy of the site management plan including:
    a. operation of the site
    b. placement and compaction of waste material
    c. daily operating procedures
    d. waste acceptance controls and monitoring;
    e. response to natural hazards and unexpected discharges;
    f. Vermin and bird management;
    g. load inspection records; and
    h. monitoring, testing and sampling documentation
10. the adequacy of the site aftercare plan including:

a. aftercare activities to address the risk posed by the contaminants to the environment: and
b. timing and standard of aftercare activities

Discharges to land and water from legally established landfills

The Council will consider the relevant assessment criteria below for restricted discretionary activities:

1. potential adverse effects (including cumulative effects) are appropriately minimised or mitigated, taking into consideration all of the following:

a. the nature of the contaminants and associated discharge to the receiving environment;
b. the sensitivity of the receiving environment, and its susceptibility to the adverse effects of the contaminants;
c. the extent to which contaminants from the site contribute to incremental and cumulative adverse effects on receiving environments including adverse effects on biodiversity, community and mana whenua uses and values
d. whether it is practicable to reduce existing adverse effects including site and operational constraints;
e. the adequacy of the site management plan including:
    I. operation of the site;
    II. placement and compaction of waste material;
    III. daily operating procedures;
    IV. waste acceptance controls and monitoring;
    V. response to natural hazards and unexpected discharges;
    VI. Vermin and bird management;
    VII. load inspection records; and
    VIII. monitoring, testing and sampling documentation
f. the adequacy of the site aftercare plan including:
    I. aftercare activities to address the risk posed by the contaminants to the environment; and
    II. timing and standard to aftercare activities

I617.9. Special information requirements

There are no special information requirements in this precinct.

I617.10. Precinct plan

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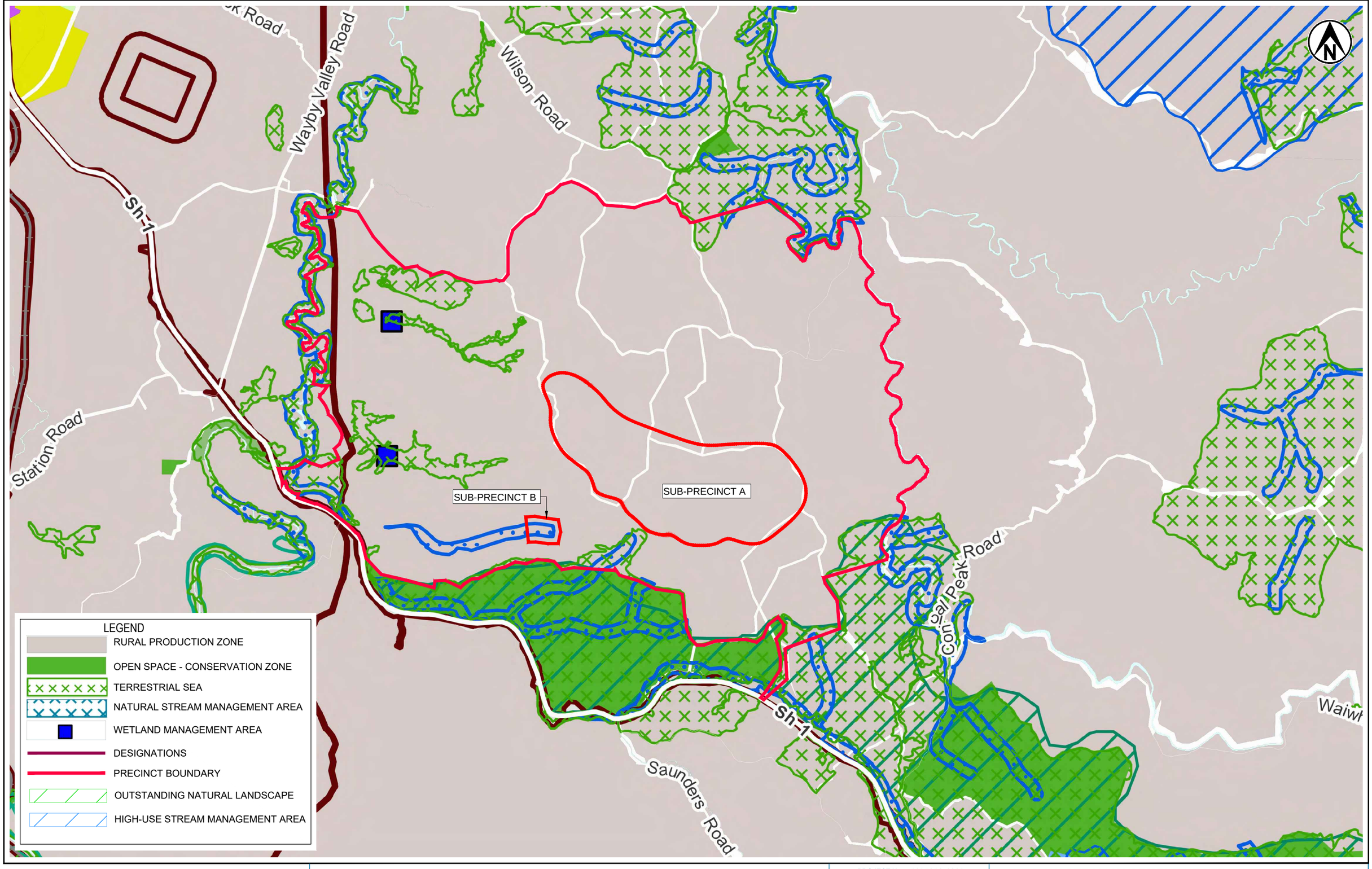

Tonkin+Taylor

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SCALE 1:25,000

0 500 1000 1500 (m)

Unitary Plan sourced from Auckland Council GeoMaps

PROJECT No.	1005069.1200	
DESIGNED	RJB	Jun.19
DRAWN	LIWA	Nov.19
CHECKED	RJB	Nov. 19
APPROVED	DATE	

CLIENT **WASTE MANAGEMENT NZ LTD**

PROJECT **AUCKLAND REGIONAL LANDFILL**

TITLE PRIVATE PLAN CHANGE
PRECINCT PLAN 1

SCALE (A3) 1:25,000 FIG No. FIGURE 1 REV 3

Appendix B: Clause 23 response February 2020

Tonkin+Taylor

Job No: 1005069.2000
3 February 2020

Auckland Council
135 Albert Street
Auckland CBD
Auckland 1010

Attention: Peter Vari

Dear Peter

Clause 23 Response: Auckland Regional Landfill - Private Plan Change

Further to your letter dated 24 December 2019 requesting further information pursuant to Clause 23 of Schedule 1 of the Resource Management Act 1991 (RMA), we write to provide a response to the matters outlined therein. The responses to requests for further information are attached.

Our responses refer to information provided in the private plan change request submitted 17/7/19 and the Clause 23 response provided 15/11/19. We trust that there is now sufficient information available for you to continue processing the application. As has been previously discussed with Auckland Council, WMNZ's strong preference is for joint public notification of the consent application for the Auckland Regional Landfill and this private plan change request. As such, we respectfully request that this plan change is progressed efficiently to a Clause 25 decision.

Please do not hesitate to contact Rachel Signal-Ross (09 352 2995) if you require further clarification of any aspects of this letter. We look forward to assisting your team further in the Clause 25 process, and we would greatly appreciate being kept informed of the private plan change request's progress and an expected timeframe for a Clause 25 decision. This will help us ensure that the resource consent application will be ready to be notified jointly with the private plan change request.

Prepared by:

.....

Rachel Signal-Ross
Planner

.....

Andrea Brabant
Technical Director - Planning

Authorised for Tonkin & Taylor Ltd by:

.....

Simonne Eldridge
Project Director

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Appendix A: Clause 23 responses

Traffic

Refer to attached response provided by Stantec (Appendix B).

Health

3	*It is understood from Waste Management's Clause 23(1) response letter that the below information request will be provided for the s92 request on the resource consent. We request that this information is forwarded through to the private plan change team too.* *The Human Health Risk Assessment report contains several information gaps relating to the potential for the landfill to impact human health. Additional information is requested around:* • *Stormwater runoff from the vicinity of the proposed landfill area as a source of contaminants (and any additional mitigation measures).* • *Site specific activities in the surrounding environment relevant to human health effects (including identification of the locations and extent of food harvesting and recreational uses by both Maori and the wider communities in the surrounding environment on a map and a description of each of these activities).* • *The nature of any stream take consents in the surrounding area and irrigation utilising these consents as a pathway for exposure to residents.* • *Microbiological contamination of streams associated with the proposed landfill operation and any proposed mitigation measures.* *The response to the above matters (27 - 30 in the Waste Management letter of 15 November) states that these matters are not relevant to the private plan change process and they are being dealt with as part of the parallel resource consent application. As stated above, we request that this information is forwarded through to the private plan change team too.*
	Responses to most of the relevant s92 questions have been provided to Auckland Council with Tranche 3 of the s92 responses (20/12/2019). Tranche 4 will be provided to Council shortly. The Tranche 3 responses are attached (Appendix C).

Healthy Waters

4	*The catchment has known erosion and sedimentation issues. What is the stormwater management approach for the precinct given its size – retention and detention (in areas outside of the landfill itself) to mitigate effects on stream erosion? The AEE doesn't assess effects of sedimentation or erosion on streams. The AEE does not provide adequate assessment of the potential impacts of the landfill on the Hōteo River and downstream to the Kaipara Harbour.* *The response to the above matter (50, 51, 52, 53, 62, 63, 75 in the Waste Management letter of 15 November) states that it is not relevant to the private plan change request and could be considered as part of a consent application under the precinct provisions.* *Whilst the precinct does not authorise any discharge, insufficient information is provided to understand the effects on the environment and determine whether additional precinct provisions may be required to adequately manage potential adverse effects of contaminant discharges.*
	We do not consider it appropriate to undertake a specific assessment of sedimentation and erosion effects associated with a plan change which does not authorise any activities. The Auckland Unitary Plan contains a suite of existing provisions which manage the potential effects of stormwater and sediment, in particular the rules in Chapters E8 Stormwater - discharge and diversion, E11 Land disturbance (regional) and E12 Land disturbance (district). The rules which are likely to apply to activities associated with the landfill are generally restricted discretionary or discretionary. The matters of discretion relate to the issues raised by the technical specialist (erosion, sedimentation, contaminants, retention and detention). The precinct provisions do not

supersede the underlying AUP rules for stormwater and earthworks. Consequently, Council would have the opportunity to consider whether any proposed landfill operation within the precinct was appropriate at the time of assessing a consent application.

To give the technical specialist some context, the separate resource consent application, which is currently lodged with Council, to establish a landfill on the site has been developed under the existing AUP framework for managing the effects of stormwater and sediment. The application includes an assessment of potential effects on the downstream receiving environment and concludes that the effects can be appropriately managed (Technical Report R).

Consequently, we consider that the existing AUP framework is appropriate for addressing the issues raised.

We also note that if there is a concern about sediment and stormwater management in the broader Hōteo River and Kaipara catchments, that Sub-precinct A comprises only approximately 0.5% of the Hōteo River catchment, and consequently, is unlikely to justify separate or additional rules for the precinct beyond those already included in the AUP.

5	*Appendix E does not provide an assessment against all the relevant objectives and policies. For example, Objective 3 is only assessed against Objective E3.2(3) and (5) but not the others. In particular Objective E3.2(2) requires that lakes, rivers, streams and wetlands are restored, maintained or enhanced. This is a significant omission when considering the change of activity status and the policy framework proposed to be more permissive for reclamation*.

Section 32(3) of the RMA requires a proposed plan change to consider the appropriateness of the provisions to achieve the objectives of the wider plan, which in this instance includes the RPS and the district and regional provisions of the AUP.

Our analysis has identified a number of themes within the AUP's objectives and policies, which run 'either way' through the higher and lower level provisions. The objectives and policies of the AUP should be read as a whole, rather than individual objectives or policies in isolation.

The AUP objectives and policies are concerned with managing effects, but also with supporting and enabling regionally significant infrastructure to operate efficiently to support the population. A strong theme across many of the objectives and policies, particularly in relation to effects on water and ecological values, is that adverse effects from infrastructure are anticipated and are appropriate when there are no practical alternatives.

Of particular significance to this proposal are the following themes:

- **Enabling infrastructure** (B3.2.1(3), B3.2.2 (1), B3.2.2 (6), B7.4.2(1), B7.5.1(2), E26.2.1(3), E26.2.1(4), E26.2.1(8) - Infrastructure is enabled within the RPS and lower level provisions of the Unitary Plan. This is because it is recognised that infrastructure has an important role to play in a resilient and well-functioning city. A key aspect of the enabling of infrastructure, is that the AUP seeks to *manage* effects of establishing and operating infrastructure rather than seeking to avoid effects. This is important and supports the enabling provisions which recognise the vital role infrastructure has to play. It provides direct recognition of the importance of infrastructure and it recognises that infrastructure can result in unavoidable effects.
- **Managing adverse effects from infrastructure** (B3.2.1(3), B3.2.1(8), B3.2.2(6), B3.2.2(8), E26.2.1(9), E26.2.2(4)) - The directive through the objectives and policies relating to the development and operation of infrastructure, is to avoid, remedy or mitigate adverse effects, rather than solely avoid. This is important and supports the enabling provisions which recognise the vital role infrastructure has to play. It provides direct recognition of the importance of infrastructure and it recognises that infrastructure can result in unavoidable effects.

- **Functional, operational and locational requirements of infrastructure are recognised (**B3.2.1(4), B3.2.2(3), D4.2(5), E14.2(4), E14.3(3), E15.3(7), E26.2.2(2)) - A key aspect of the enabling of infrastructure is that the AUP seeks to *manage* effects of establishing and operating infrastructure rather than seeking to avoid effects. It also recognises that to enable it, often allowance must be given for the functional, operational and locational requirements of infrastructure, which are different to other types of development. In this case, landfills have a number of functional and operational requirements which mean that there are limited locations for a landfill within the Auckland region. These include being located in natural valleys that can be filled. As a result, there is no practicable alternative to reclamation within the landfill footprint. The precinct provisions reflect this reality.
- **Freshwater systems** (B7.3.1 (1), B7.3.1 (2), B7.3.1 (3), B7.3.2 (1), B7.3.2 (4), B7.3.2 (5), B7.3.2 (6), E3.2(1), E3.2(2), E3.2(3), E3.2(4), E3.2(5), E3.2(6), E3.3(1), E3.3(2), E3.3(3), E3.3(4), E3.3(7), E3.3(10), E3.3(11), E3.3(12), E3.3(13), E3.3(15), E3.3(16)) - the AUP has a clear directive to enhance degraded freshwater systems, minimise loss of freshwater systems and avoid, remedy or mitigate adverse effects on freshwater systems. These directives flow from the RPS down through the regional plan provisions. While there is a strong theme on protection of fresh water – the provisions also run in partnership with those relating to infrastructure, which enable the development and operation of infrastructure, despite the sometimes unavoidable adverse effects of it on the environment – including freshwater systems. We recognise that some of the proposed precinct provisions may be seen as inconsistent with some of the more protective provisions of the AUP (eg E3.2(2)). We have assessed the precinct provisions against these AUP provisions, but as set out below, we consider the proposed rule framework is nonetheless appropriate.

The nature of a landfill development within the Auckland Region will inevitably involve a large scale project within a valley system, resulting in considerable changes to the existing conditions. This is similar to any large infrastructure development. The AUP has recognised this across the AUP's provisions. Throughout the AUP, in both higher and lower level provisions, there are objectives and policies which recognise and provide for infrastructure development, including recognition that this may result in unavoidable adverse effects on natural values.

Consequently, whilst individual objectives and policies within the AUP require avoidance and protection of freshwater systems, these need to be read in their context of the wider AUP. The proposed precinct provisions are generally consistent with and supportive of the key relevant objectives and policies for infrastructure and recognise the particular locational requirements of a landfill. The precinct provisions direct that adverse effects should be avoided, remedied and mitigated wherever possible, while recognising that adverse effects on freshwater systems from landfill development in the precinct may be inevitable, due to the nature, scale and locational requirements of landfill development.

In summary, we recognise that whilst the proposed precinct provisions may not be entirely consistent with some individual objectives and policies in the AUP, we consider that the proposed objectives and policies of the precinct are generally consistent with the overall direction of the AUP and are appropriate for achieving the broader objectives of the AUP. We note that establishing a landfill within the precinct remains a fully discretionary activity. As such, the full suite of AUP objectives and policies would need to be considered as part of a consent process to establish a landfill on the site, and appropriate measures could be imposed on any consent that would restore, maintain or enhance those waterways not directly subject to works.

Landfill engineering, groundwater and surface water takes

6	*Please provide further information on how it is proposed to control the size of the landfill envelope and impose a limit on the potential environmental effects of the waste.* *In order to understand the extent and nature of the environmental effects of new or existing landfills within sub-precinct A, it is necessary to understand the total mass of waste and size of the landfill that could be enabled by the private plan change. While the maximum footprint has been defined in the precinct plan, no reference is made to the maximum size of the landfill. The landfill size will obviously affect a range of potential environmental effects on, for example, groundwater and surface water through the rate, quality and duration of leachate generation and the landfill liner design. Other aspects of the environment will also be affected by the enabled maximum landfill envelope.*
Our understanding is that this question seeks assurance that the precinct will not enable the development of a landfill which is substantially larger than anticipated. In a practical sense, the maximum size of landfill which could be established in Sub-Precinct A is largely constrained by the size of the valley which Sub-Precinct A covers. WMNZ's parallel (but separate) resource consent application for a landfill in this valley has been designed to maximise the available airspace in the valley. Consent is being sought for a 25.8 Mm^3 landfill. To provide an upper volume limit on the size of landfill which could be assessed as a restricted discretionary or discretionary activity, new activity standards have been proposed, limiting the landfill size to 28.5 Mm^3, providing for a 10% allowance on top of the design proposed in the resource consent application (See Appendix D[1]). Any landfill exceeding this size constraint or extending beyond Sub-Precinct A would be a non-complying activity.	
7	*Please confirm how the private plan change will constrain any potential water quality effects e.g. the physical extent where this is not degradation of water quality.* *This is a follow-up question relating to item 15 in the Waste Management letter of 15 November). We note that the proposed Restricted Discretionary and Discretionary standards provide a constraint to potential odour effects (e.g. the private plan change framework appears to use the precinct boundary as a 'buffer zone' for odour, whereby potential odour effects are alleviated at the precinct boundary). This provides an envelope with the private plan change framework where all odour related effects are to be constrained with. The provisions of a buffer with the private plan change and standards at the boundary of the buffer acknowledges that odour cannot be practically contained within the landfill mass. Effects of water quality equally apply from the release of leachate (no lining system provides absolute containment) and stormwater that is generated from the landfill activities.*
We consider a buffer to be an appropriate planning mechanism for managing some types of effects, but for others, alternative (existing) planning mechanisms are more appropriate. Odour is not easily measured and demonstrating compliance with a particular standard is not clear-cut. A buffer to provide for dispersion and separation distance is a key effects management approach for addressing odour effects at landfills (complemented by other measures such as waste acceptance controls and working face management). In contrast, from an effects management perspective, these same tools are not the most appropriate measures for controlling effects on water quality. Water quality is measurable, and the Auckland Unitary Plan contains an extensive suite of objectives, policies and rules which control effects on water quality. Any proposed landfill in the precinct would be subject to the water quality controls in the wider AUP, as the precinct does not establish alternative limits for activities within the precinct. The Auckland Council Best Practice Guide for Plan Changes (2018) states that precincts should not duplicate rules which are contained within the AUP. The question is appears to be asking for a potential extent of decreased water quality to be defined and allowed for. We consider it appropriate for potential effects on water quality from activities	

[1] Other minor updates have also been made for clarification purposes – these are shown as underlined for additions, and ~~strike-through~~ for deletions.

within the precinct to be assessed against the wider AUP controls on water quality, rather than introducing new rules to the precinct which might allow for decreased water quality. The applicant is not intending that there be any leaching from the landfill into the underlying groundwater, whereas with odour, some discharges are inevitable. In this way, discharges to ground are entirely different to discharges to air and it is not appropriate to use a "buffer-type" approach.

In summary, we consider that the substance of our response to question 15 in the original Clause 23 request is still relevant – in the absence of a private plan change request, the potential concern about effects on water quality beyond the landfill would need to be considered as part of the resource consent process to establish a landfill on this site. Ultimately it is up to the design and management protocols of the landfill to contain its contaminants. This would be assessed as part of a resource consent application, whether that is through the precinct or not (discretionary v non-complying). Conditions could be placed on the consent requiring notification of surrounding water users if contamination was later identified, which we consider to be more appropriate than allowing for decreased water quality within a buffer zone.

Environmental risk and waste acceptance

8	*Please provide further information on the type of environmental risks associated with various types/size of landfills which could be located in sub-precinct A.*

It is unclear what this question is referring to regarding further information. However, to provide some further context to the technical specialist, the separate resource consent application which is currently lodged with Council to establish a landfill on the site included a risk assessment (refer Technical Report S). This identified the types of potential environmental risks associated with establishing and operating a large landfill on the site. To provide certainty about the potential size of any landfill established within the precinct, a maximum size of landfill which can be considered as a restricted discretionary or discretionary activity has now been included in the proposed precinct provisions. Consequently, the risk assessment prepared for the consent application is reflective of a landfill of a size and scale which corresponds to the discretionary activity proposed for the precinct. Should a landfill of a smaller scale be established under the precinct provisions, there would be a corresponding change in the scale of the potential environmental effects.

Regarding potential 'types' of landfill, the AUP contains an existing definition for the term 'landfill' which applies to the precinct - "*Landfill Facility where household, commercial, municipal, industrial and hazardous, or industrial waste is accepted for disposal*". Cleanfills and managed fills are also separately defined in the AUP and are subject to different rules in the AUP (Rural zone). These rules would continue to apply to any proposal on the site, as the precinct does not contain alternative rules for these activities. The existing plan rules for cleanfills and managed fills require the potential environmental risks of these activities to be considered as part of the resource consent process. In a general sense, the potential environmental risks of cleanfills and managed fills have a reduced risk profile compared to a landfill.

9	*Please clarify whether there are any type of landfills/waste that would not be suitable to be disposed into a landfill located within the precinct and if so what changes to proposed rules for the precinct could be made to ensure that the human health and the environment is protected from the adverse effects of operational or closed landfills.*

We note, as with our previous response, that it is important to recognise that the precinct does not authorise establishment of a landfill, and that establishing any type of landfill within the precinct, including its associated waste acceptance criteria, would be subject to a discretionary resource consent process. As a fully discretionary process, Council would have full remit to consider and control potential effects on human health and the environment. The proposed

precinct has intentionally retained a discretionary status for new landfills to allow for a full assessment of any future application, rather than attempting to limit Council's discretion.

Regarding the 'type' of landfill which could be established, we consider that it would be inappropriate for a landfill without a well-designed lining system to be constructed within the precinct, and consequently a minimum standard for the lining system of the landfill has been proposed in the precinct provisions. The lining system proposed as a minimum standard is appropriate for the type of waste accepted into a Class 1 landfill (WasteMINZ, 2018) and is the industry accepted standard for a lining system.

We have not proposed a precinct-specific definition for 'landfill', as the Auckland Council Good Practice Guide for Plan Changes does not allow for a precinct-specific definition. The Unitary Plan already contains a definition for landfills. This definition would apply to proposals to establish a landfill within the precinct. The existing definition does not include other kinds of waste facilities such as a hazardous waste landfill, liquid waste disposal site, chemical waste dump, or waste burning facility.

We do not consider plan rules to be the appropriate place to list out waste streams and waste acceptance criteria. This has always been done as part of the resource consent process – we are not aware of any examples where plan rules have been set for landfill waste acceptance criteria[2]. Waste acceptance criteria for landfills are usually subject to approval from peer review panels or the Regional Council or both and require regular reviews as a condition of resource consent for landfill operations. The process for updating waste acceptance criteria through a consent condition is a much more streamlined and efficient approach, compared to a plan change process, which typically have very long lead times. There is no single agreed list of waste acceptance criteria which would be appropriate to refer to, such as a legally mandated list. Consequently, we consider that the controls on waste acceptance are best dealt with as part of consenting any future landfill within the precinct, at which time Council would have full discretion to consider appropriate waste acceptance criteria.

[2] The Whitford Landfill Designation in the Auckland Unitary Plan has the following definition for permitted waste, however as this definition is so general it does not provide any real guidance on waste acceptance and is generally consistent with the existing definition for 'landfill' in the Unitary Plan, which refers to the types of waste accepted at a landfill.
Whitford Landfill Permitted Waste — The categories of refuse permitted to be disposed of at the landfill shall be limited to the following: General household, commercial or industrial refuse, but excluding prohibited waste; Clean fill; Offal and animal carcasses

Appendix B: Traffic

30 January 2020

Waste Management New Zealand Ltd
PO Box 228
Silverdale
AUCKLAND 0944

Attention: **Bruce Horide**
Ian Kennedy

Dear Bruce / Ian

Auckland Regional Landfill – Request for Further Information

Stantec is pleased to provide the following response to the traffic comments received from Auckland Council, dated 24 December 2019 with regards to the Private Plan Change application and the additional Section 92 comments dated 30 January 2020 with regards to the Resource Consent application, in respect of the above project.

1. Introduction

Following receipt of the Private Plan Change application for the above development, Auckland Council has issued a request for further information under Clause 23(2) of the Resource Management Act 1991 ("**the request**"), dated 24 December 2019. Auckland Council has also included these traffic comments within an additional request for further information under Section 92 of the Resource Management Act in regard to the Resource Consent application, dated 30 January 2020.

The following response addresses the transport related matters raised within the request for the proposed Auckland Regional Landfill **("ARL")** in Wayby Valley. These queries are cited in italics for ease of reference with the Stantec response following.

This response builds on the Integrated Transport Assessment **("ITA")** prepared by Stantec dated May 2019 in regard to the ARL.

2. Responding to Request for Further Information

Transport Bullet Point 1

> *"Traditionally, analysing the AM and PM peaks during the week is generally acceptable. However, given the popularity of this road during the weekend, particularly in summer periods, separate modelling for the weekends is needed to assess the situation fully".*

The reported traffic generation of 520 trips per day and the subsequent morning and evening peak hour traffic generation (as shown in Table 5-2 of the ITA) has been determined based on the expected peak hour traffic during the year. This has been assessed by considering the characteristics and patterns of current waste volumes, customers and total waste volume acceptance at the Redvale Landfill.

As experienced at the Redvale Landfill, the peak traffic generation associated with a regional landfill is strongly influenced by contaminated soils during the summer construction season, which are typically transported by contractors and hauliers on weekends and outside the weekday peak periods. Therefore, the peak traffic generation of waste truck movements (520 trips per day inclusive of both inbound and outbound movements) used in the modelling assessment is expected to occur on a Saturday.

In regards to holiday and weekend traffic, traffic flows from the New Zealand Transport Agency **("NZTA")** traffic count database on State Highway 1 **("SH1)"** at a count site south of Wellsford across the first week of January 2019 (which can be considered the peak holiday period) have been analysed. Traffic data from NZTA database shows that a the two-way SH1 volume on Saturday 5 January 2019 was approximately 4,100 vehicles and 4,600 vehicles in the morning and evening peak four-hour periods, respectively. Assuming a 3% growth rate per annum (consistent with the growth rates used in the ARL ITA assessment), it is expected that the peak traffic flows on SH1 in 2028 (corresponding with an expecting year of ARL established operation) would be approximately 5,400 vehicles and 6,000 vehicles in the morning and afternoon peak-four hour periods, respectively.

A peak intensity of 72 waste truck movements (inclusive of laden inbound and unladen outbound movements) is expected to occur between 8am to 12am, and 12 and 4pm, which coincides with the identified four-hour peak period of SH1 usage. Across these morning and afternoon peak four-hour periods, the ARL traffic generated represent approximately 1% of the total SH1 Saturday holiday traffic. Such additional flows are considered to be well within the day-to-day and peak period to peak period variation of flows already being carried by the highway.

Heavy vehicle volumes during the peak four-hour period on the same day were recorded at 426 vehicles and 468 vehicles in the morning and evening peak four-hour period respectively. Considering the estimated background traffic growth between the 2019 data and the year of established operation, approximately 560 and 610 heavy vehicles in the morning and afternoon peak four-hour period respectively are expected to travel through this section of SH1 in 2028.The heavy vehicle generation of the landfill represents an increase of approximately 12% to 13% of the predicted heavy vehicle volumes along SH1 in 2028, taking the total proportion of heavy traffic from 10% to 11% of the total traffic within the peak four-hour periods (i.e. a 1% increase).

The proportional increase in traffic associated with the landfill during the summer periods remains modest and would not adversely affect the operation of the highway. It is noted that during the other January 2019 analysed periods SH1 traffic data record showed greater proportion and total number of heavy traffic movements. Analysis of the January 2019 data reveals that the hourly heavy vehicle proportion regularly exceeds 10% of the total traffic, both on a Saturday and weekdays.

In addition, the above assessment has been undertaken on the assumption that the peak waste truck generation would remain consistent during the summer holiday period. Whilst the waste truck generation over the holiday period is influenced by many factors, it is commonly known that residential waste tonnage collected during this period is less than on a regular day. Similarly, contaminated soil tonnages are known to drop during the Christmas and New Year break. In this regard, the above assessment is considered to provide a suitably conservative assessment of the effect of the landfill on weekend and holiday traffic.

Modelling undertaken within the ITA incorporated multiple levels of conservatism such as:

- assuming co-incident waste and non-waste peak periods; and
- upper estimate of waste volume generation.

As the modelling results in the ITA show that the proposed roundabout will operate with minimal delays and additional available capacity, no further modelling of SH1 holiday period is considered necessary.

Overall, it is considered that the modelling undertaken within the ITA is sufficient to understand the overall traffic effects of the proposed plan change and consent application.

Transport Bullet Point 2

> *"The operational impact of heavy vehicles travelling though Dome Valley from Warkworth to the proposed roundabout requires further assessment. With the daily addition of 260 heavy vehicles it*

is assumed there will be an impact on traffic flows, particularly on the up-hill sections. An assessment is to include, but not be limited to, grades of hills to and from the roundabout, passing lanes in each direction, horizontal geometry, existing speed limits and operational speeds. This is particularly important as it has been noted that Dome Valley has a very high number of crashes, with almost 20% being directly related to overtaking".

It is noted that this section of SH1 already carries a high heavy vehicle proportion, both during the weekday and on the weekend, with heavy vehicle proportions varying between 8% to 15% in 2019. As discussed previously, the ARL activity is expected to increase heavy vehicle volumes by 12% to 13% in the ARL 2028 operational year, taking the proportion of heavy traffic within the weekend peak four-hour periods to 11% of the total peak traffic volume (i.e. an increase in total heavy vehicles of approximately 1%). It is acknowledged that the increase in heavy vehicles will have some impact on traffic flows and speeds, however, the provision of various passing and slow lanes as currently exist (in part) and as being upgraded within the current NZTA safety improvements through the Dome Valley, will assist in the mitigation of any negative effects additional vehicles may have compared to the existing environment. It is also noted that the projected volumes and proportions of heavy traffic carried along the highway while giving rise to additional traffic flows along the highway are not greatly inconsistent with other periods of heavy traffic movements at other time of the week.

The NZTA Dome Valley Safety improvements being undertaken within the Safer Networks Programme will enhance the consistency of lower travel speed expectations and enhance the safety of any overtaking manoeuvres being undertaken. Work involves installing flexible median safety barriers and replacing the northbound and southbound passing lanes at the top of the Dome Valley with a wider shoulder, allowing slow vehicles space to pull over. These improvements are expected to be completed well in advance of the construction of the ARL access roundabout and other works for the ARL project, and are expected to positively address the high proportion of overtaking crashes and provide a more consistent speed environment. It is noted that all works on SH1 including grades and geometry will be subject to the express approval of NZTA and accordingly, these design matters will be addressed during the consent application.

We trust that the above response meets your requirements, however, please do not hesitate to contact us if you have any queries on the above.

Yours sincerely

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Stantec New Zealand

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Appendix C: Health Risk s92 responses

Health Risk Assessment s92 questions

92	*The HHRAR provides a systematic approach for identifying and selecting potential contaminants of concern in section 5.0. However, it is considered that the list does not cover enough emerging contaminants of concern, such as pharmaceutical compounds, personal care products, anti-microbial agents and persistent bioaccumulative toxic substances (and candidate compounds) listed in the Stockholm Convention (including short chain chlorinated paraffins and poly chlorinated naphthalene and hexachlorobutadiene). In addition, substances of very high concern have been identified by the European Union (i.e. highly environmental mobile substances such as nonyl phenol, alkylphenols and alkylphenol ethyoxylates (APEOs) and listed PBT/vPvB substances) as well as 1,4-Dioxane. Accordingly, please provide an assessment of likelihood of Persistent Bioaccumulative and Toxic (PBT) EmCoC within the leachate that could have a potential impact on human health receptors. Please also confirm how these compounds will be managed at the landfill in terms of waste acceptance criteria and site management practices.*

Additional contaminants of potential concern

A detailed response to the first part of this question, in relation to screening of additional contaminants of concern, will be provided as soon as it is available. We are reviewing the European ECHA PBT/vPvB substances list and other specific compounds mentioned in this request. Where appropriate leachate concentration data is available, we will undertake an assessment and include these substances in the HHRA where appropriate.

Waste acceptance criteria and management practices

Many of the emerging contaminants identified in this question are present in landfills because they are a very small component of general municipal solid waste. In some cases they would be classified as "household hazardous waste", e.g. residues of cleaning or personal care products in disposed packaging. In other cases, they arise from materials that are typically considered non-hazardous or within manufactured articles e.g. plasticisers contained within plastic packaging or plastic components. As these materials are co-mingled in the general waste stream, there is no practical way to monitor their presence in the waste itself. However, they represent a very small proportion of the overall waste stream and are therefore highly diluted in the case of liquids, or well dispersed through the waste mass in the case of solids. The potential for adverse effects from these materials is managed through the engineering controls at the landfill, such as the lining system and leachate and landfill gas management systems.

All commercial and industrial wastes are subject to waste acceptance controls. This comprises evaluation against a pre-determined set of waste acceptance criteria for materials that are more commonly sought to be disposed at the landfill, or a case-by-case evaluation for less common waste materials (which may include a requirement for pre-treatment). Specific waste acceptance criteria have not been developed for many of the emerging contaminants because the number of emerging contaminants is cumbersomely large and because the emerging contaminants are rarely elevated above common concentrations found typically in general commercial wastes sent to landfill under a contract. The approach to waste acceptance is to set screening and testing criteria that would address virtually all wastes apart from rare contaminants (like emerging contaminants) occurring in smaller waste deliveries that have relatively low impact on the scale of the whole waste mass.

93	*It is unclear from reading the hydrogeological assessment and the HHRA if discharges of leachate / contaminated stormwater from spills / leachate from the bin transfer area are included in the assessment. Please provide clarification of all the sources / pathways into the environment that the HHRA considers.*

The bins stored in the bin exchange area will be kept closed until they are tipped at the working area. In the unlikely event of a spill during storage and transfer, this will be cleaned up in accordance with the spill response procedures to prevent discharge to any stormwater system and subsequent discharge to surface water. The impacts of low probability accidental releases of this nature have not been considered in the HHRA.

We note that in response to other questions, further consideration has been given more generally to stormwater as a potential exposure pathway. It is noted that stormwater from the bin exchange area will be treated via a rain garden to reduce incidental contaminants associated with activities such as operation and parking of trucks.

94	*Based upon the description in the hydrogeological assessment discharge concentrations of PFAS to the environment appear to have been modelled using RBCA. However, the standard RBCA model does not have PFAS compounds in its database and the Koc approach used by RBCA to assess retardation is not appropriate for assessing ionic organic compounds (i.e. the PFAS compounds assessed). As noted in the hydrogeological assessment memorandum from Alan Pattle and Aslan Perwick of Pattle Delamore Partners Limited, dated 28 June 2019, this is not considered an appropriate tool to use to estimate receiving environment concentrations due to discharges from the landfill. Accordingly, please provide clarification on how PFAS discharges were modelled as well as the physiochemical properties (and the source of the information) used to assess the transport of PFAS compounds in environmental media.*

The PFAS discharge concentrations to the environment have been modelled using RBCA. Data for modelling PFAS was retrieved from the Risk Assessment Information System website (RAIS https://rais.ornl.gov/) including KoC values (see below). While KoC partitioning is used to determine retardation in RBCA, the partitioning and associated retardation has no effect on the predicted concentrations at the receptors for the PFAS compounds. This is because the modelling did not account for any degradation of PFAS compounds and assumed an infinite source and steady state conditions. So on this basis, the partitioning option does not have an effect on the outcome of the modelling.

Contaminant	**Perfluorohexanesulfonate (PFHxS)**	**Perfluorooctane sulfonic acid (PFOS)**
RAIS Koc (L/kg)	112.2	371.5
RAIS H	0	0

95	*Please confirm how background concentrations of the various parameters of concern and the effect of cumulative sources (i.e. stormwater, aerial deposition (where appropriate), runoff from the bin transfer area, etc.) have been taken into account when predicting final groundwater and surface water source effects.*

Comment on background concentrations

The purpose of a health risk assessment is to characterise the change in health risk associated with a proposed development. In other words, the HHRA for the ARL estimates the worst case

incremental (additional) health risk associated with exposure to contaminants that may be released from the landfill and assesses them against acceptable risk criteria developed for the same purpose. For this reason, the HHRA does not attempt to quantify individual exposures to contaminants from other sources and via other pathways, such as from consumption of purchased food and drink, smoking or workplace exposure.

Comment on cumulative effects from the landfill sources

The HHRA does however consider the cumulative effects of exposure to contaminants from different sources at the landfill (leachate and landfill gas), transport mechanisms (via groundwater, surface water, aerial transport) and exposure pathways (ingestion of drinking water, home-grown produce, soil, etc). This is described schematically in Figure 4.1 in the HHRA.

96	*Please provide justification as to why a 50% dilution factor has been used for calculating the contributing volume from Valley 2.*

Valley 2 has a similar catchment area to Valley 1. Therefore, during rainfall events when the discharges from the landfill will occur, the runoff at the point of discharge from the site i.e. wetland outlet will be mixed immediately at that point with the flow from Valley 2 at a 50 % dilution rate.

97	*The hydrogeological assessment indicates that because the Watercare intake from the Hōteo River is upstream of the site that potable water risks have not been considered in the HHRA. Accordingly, please undertake a review of consented water takes within 5km downstream of the site and confirm with landowners downstream that there are no potable water takes.*

The consented surface water takes reported in the Hydrogeology Assessment (based on Auckland Council records) appear to be mainly for the purpose of irrigation, other than the Watercare consented take. On this basis, the HHRA exposure scenarios have considered the potential for surface water takes from the Hōteo River to be used for irrigation but not as potable water supply. However, there is sufficient information in the HHRA to understand the effects if water from the Hōteo River was used for drinking water, as discussed below.

Appendix D Table 1 of the HHRA compares predicted concentrations of contaminants in the Hōteo River, as a result of leachate seepage into groundwater and subsequent migration, with drinking water guideline values. The predicted concentrations are all well below drinking water quality guidelines, with the most significant potential exposures being lead (0.80 % of the guideline) and arsenic (0.76 % of the guideline).

It is important to note that the concentrations reported in the HHRA as being in the Hōteo River are actually the concentrations in groundwater at the point of release into the River – i.e. they do not take into account the very significant dilution that would occur in surface water within the River. Taking this dilution into account, the incremental health risk to a receptor drinking water from the Hōteo River will be lower than the worst case representative residential receptor presented in the HHRA and does not warrant more detailed consideration.

For this reason, we do not consider it necessary to undertake the requested review of consented surface water takes.

98	*The HHRA assessment assumes that fluorotelomers will be destroyed within the flare and that there are no TRV (toxicological reference values) for PFAS fluorotelomers. Both of these assertions are not considered to be correct. The C-F bond needs temperatures*

	of greater than 1,200 degrees Centigrade to be destroyed, therefore the flare may transform some PFAS compounds, but not destroy them. Also, there are published TRV for PFAS compounds. Accordingly, please provide comment on the validity of the assumption made about the destruction of fluorotelomers in the flare.
99	*There is a wider variety of PFAS compounds that could potentially be discharged such that only assessing three compounds could underestimate the overall risk. A recent NTP report (https://ntp.niehs.nih.gov/results/areas/pfas/index.html) suggests short chain PFAS may affect some organ systems and therefore their effects could be additive. Some studies suggest that landfill leachate may contain elevated concentrations of short chain PFAS compounds. Accordingly, please provide justification for why only three compounds have been assessed to demonstrate potential risks associated with PFAS compounds and further, whether the presence of shorter chain PFAS compounds would potentially change the human health risks assessment.*

A comprehensive response to these questions will be provided separately as soon as it is available. We are undertaking an analysis of partial decomposition products of FTOHs that may be generated if there is not complete destruction in the flares/generators and the likely fate of these substances once released to the environment (e.g. whether they are precursors to PFOA). In addition, we have reviewed toxicity data for PFAS compounds not covered by the FSANZ criteria. Where there is representative leachate concentration data available for Australasian landfills and it is supported by appropriate toxicity data, additional PFAS compounds will be included in the HHRA.

We not that our preliminary work suggests that additional analysis is very unlikely to alter the conclusions of the HHRA with respect to PFAS compounds due to the significant margin (5 orders of magnitude) between the calculated cumulative exposure and tolerable exposure levels.

100	*The proposed monitoring programme recommends monitoring only pH and elevated conductivity, boron, ammoniacal nitrogen (ammonia) and chlorides as indicators of leachate breakout. These indicators may not be suitable for compounds such as PFAS, phenol ethyoxylates as well as nonionic compounds. From experience in reviewing reports from several different landfills within New Zealand, these parameters are subject to a number of external sources and confounding factors which makes interpreting the results difficult. Also, for compounds that have very low human health guidelines, these indicators may not be sufficiently sensitive enough to detect a potential leachate breakout. Therefore there is a potential for 'false negatives' when interpreting these results. The use of secondary indicators such as PFAS would provide definitive indication of a leachate breakout. Accordingly please provide commentary on why the indicator parameters proposed are enough to detect leachate breakouts and whether additional parameters are warranted.*

Landfill leachate typically has elevated conductivity, boron, ammoniacal nitrogen and chlorides. While each individual parameter may be subject to confounding factors (e.g. they could be affected sources other than leachate), consideration of these different parameters together is a good indicator of the presence of leachate. The purpose of the monitoring is to quickly identify the potential presence of leachate and to avoid release of contaminants to the environment by containing the stormwater.

Leachate is unlikely to come into contact with stormwater as any rainfall runoff that comes into contact with waste is directed into the leachate collection system and treated as leachate. Therefore, cross-contamination could only occur from a scenario such as a leachate breakout through the soil cover or cap away from the working face, or seepage into the underdrain in the

initial stages of the landfill. This would be picked up by the proposed stormwater monitoring and regular visual inspections of the landfill cap. Testing of PFAS in stormwater as an indicator of leachate contamination is not considered practicable or necessary given the high costs and longer laboratory turnaround time, bearing in mind that periodic analysis of trace constituents in the leachate will be specified to correlate leachate indicators identified above to contaminants like PFAS.

We note that the proposed monitoring programme is not intended as a basis for assessing potential effects. The HHRA has considered the very unlikely scenario of a continuous discharge of up to 8.2 L/day of leachate into the stormwater pond (corresponding with the anticipated upper trigger level for release of stormwater from the site). The proposed stormwater monitoring should ensure that any leachate entering the stormwater system would be detected well before this occurred, and the source of leachate would be identified and remedied so there was no ongoing discharge. Nonetheless, the HHRA has shown that even if this discharge did occur, there would not be unacceptable health effects.

101	*No reference or justification has been provided for a number of parameters used in the HHRA e.g. size of the garden area and various transfer factors used in calculations. Please provide references to the source of all parameters used in calculations for the HHRA and justification as to why those parameters where selected.*

The parameters were taken from the NES Soil or the HHRAP where available. Where the parameters are not taken from these sources, an alternative reference is given or they are stated as being assumptions. The media concentration scenarios not covered by the NES Soil or the HHRAP are:

- Accumulation of contaminants in soil in domestic vegetable gardens, as a result of contaminants being present in water used for irrigation. See Section 7.5.2 of the HHRA for justification of the following assumed parameters:
  - Watering rate: 10 L/min
  - Watering duration: 60 minutes/day
  - Watering period: 100 days per year
  - Garden size: 45 m^2
- Entrainment of contaminants in roof collected drinking water. See section 7.6 for justification of the following assumed parameter:
  - Percentage of rainfall collected: entire mass of deposited contaminants collected in 50% of the potential rainwater volume.

We were unable to locate any transfer factors used in the calculations where the source was not identified.

102	*The health risk from organic and element mercury compounds has not been adequately assessed in the HHRA. Please assess the risk of organic and element mercury compounds.*

A response to this question will be provided as soon as it is available.

103	*The Good Practice Guide for Assessing Discharges to Air from Industry (Ministry for the Environment, 2016) recommends that the acceptable environmental risk arising from industrial air discharges to residential receptors is 1 in 1,000,000 (10-6, GPG: Industry section 4.5.2). However the HRAR has adopted an acceptable risk of 1 in 100,000 (10^{-5},*

	HRAR section 9.2.1). Please comment on the suitability of the acceptable risk level adopted for the HRAR and assess how the guidance of the GPG: Industry may alter the conclusions of the HRAR with respect to Air Quality Effects.
The acceptable risk level of 1 in 100,000 (10^{-5}) adopted for this study was based on the recommendations of the Toxicology Advisory Group on the NES Soil (2011) (see Section 91.2 of the HHRA). The justification given for use of an acceptable risk level of 1 in 1,000,000 (10^{-6}) in the Good Practice Guide (GPG) Industry is that this value "*has been adopted by the Ministry for the Environment in a range of guidelines for the management of contaminated land*", with a subsequent reference to the 1999 guidelines for assessing and managing petroleum hydrocarbon contaminated sites in New Zealand (MfE, 1999). We understand that the intent of the GPG Industry was to be consistent with the approach used for the management of contaminated land, but it appears not to have been updated when the GPG Industry was reviewed in 2016. We consider adoption of an acceptable risk level of 10^{-5} (10 per million) is appropriate. However, the cumulative incremental lifetime cancer risk calculated in the HHRA, using conservative assumptions, was 0.23 per million and therefore even if the GPG Industry value of 1 per million was used, the conclusions of the HHRA would not change.	
104	*Table B1 of the HRAR lists 1,3-Butadiene as a threshold compound with a screening assessment criterion of 9.9µg/m3. However, the NZ Ambient Air Quality Guidelines list this contaminant as a carcinogen with an ambient air quality guideline of 2.4µg/m3 (annual average) and the US EPA IRIS database shows an Inhalation Unit Risk of 3x10-5 (µg/m3)$^{-1}$. Given this, please review the derivation of assessment criteria and categorisation of contaminants (threshold or genotoxic) for the HRAR's screening assessment and assess how any changes may impact the conclusions of the HRAR.*
It is acknowledged that 1,3-butadiene could also be included as a priority contaminant in the HHRA as the WHO has concluded that there is a high degree of confidence that it is genotoxic carcinogenic. The New Zealand ambient air quality guideline value is not based on a unit risk value, but was set to reduce ambient concentrations to as low a level as reasonably practicable. The WHO ambient air quality guidelines for Europe do not set a guideline value for 1,3-butadiene on the basis of their being inadequate data to determine a unit risk. However, as noted in the question, the US EPA IRIS database cites a unit risk of 3×10^{-5} $(\mu g/m^3)^{-1}$ and therefore this has been adopted as the toxicity criterion to evaluate the incremental cancer risk from exposure to 1,3-butadiene via inhalation. The US EPA has not set a unit risk for oral exposure as 1,3-butadiene is a gas at room temperature and pressure, making oral exposure unlikely. Therefore, only exposure via inhalation has been considered. The highest annual average concentration of 1,3-butadiene in air from the dispersed emissions from landfill gas and combustion products is predicted to be 1.66×10^{-5} $\mu g/m^3$. Multiplying this by the unit risk gives a lifetime incremental cancer risk via inhalation exposure of 4.98×10^{-10}. The cumulative lifetime incremental cancer risk via inhalation exposure to all non-threshold carcinogens (see Table 9.2 in the HHRA) was calculated to be 6.17×10^{-8} (0.0617 per million). Adding the risk of exposure to 1,3-butadiene does not change the calculated cumulative risk (rounded to three significant figures).	
105	*The predicted emission rates of contaminants to air primarily depend on the assumed rates of landfill gas (LFG) emissions. As detailed in Appendix E of the HRAR, it is assumed that the generators and flares shall combust 11,100m3/hr LFG with a 97% contaminant destruction capacity in accordance with US EPA AP-42 (2008). Further, fugitive discharges are assumed to arise only from the active tipping area (10,000m2)*

	at a rate of 110m3/hr (double the calculated 55m3/hr). AP-42 suggests that the majority of LFG shall discharge through cracks in the landfill cover and a capture rate of 75% is reasonable as a default value. The air quality report and HRAR however assume a 95% capture efficiency. Surface emission monitoring undertaken at Redvale and Whitford regularly find areas of high methane above the intermediate and final cap, showing fugitive LFG discharges occur at these comparable facilities from more than the active working face. The assumed rate of LFG discharge greatly influences the HRAR's predictions of contaminant discharges and resulting potential health risks. Accordingly, please undertake a sensitivity analysis of the potential health effects arising from the contaminants within LFG accounting for the potential that LFG discharges may be greater than assumed by the HRAR.

We do not agree with several of the statements in this question.

First, the LFG collection efficiency has not been assumed to be 95%. The LFG collection efficiency in each stage of the landfill is assumed to vary as the cell is progressively filled and the ratio of landfill surface to waste volume increases (see table below, reproduced from Table 3.2 in the Air Discharge Assessment).

Year of waste placement in stage	**LFG collection efficiency in stage**
Year 1	0%
Year 2	50%
Year 3	60%
Year 4	75%
Year 5	80%
Post filling	90%
Post closure	95%

These values are considered to be appropriate and are consistent with the discussion in the US EPA AP42 document, as reproduced below:

> *"Reported collection efficiencies typically range from 50 to 95%, with a default efficiency of 75% recommended by EPA for inventory purposes. The lower collection efficiencies are experienced at landfills with a large number of open cells, no liners, shallow soil covers, poor collection system and cap maintenance programs and/or a large number of cells without gas collection. The higher collection efficiencies may be achieved at closed sites employing good liners, extensive geomembrane-clay composite caps in conjunction with well engineered gas collection systems, and aggressive operation and maintenance of the cap and collection system."*

Second, we do not agree with the assertion that surface emission monitoring at Redvale and Whitford suggest there are significant fugitive emissions through the intermediate and final cap at these landfills. These surveys are probably poorly named, as they do not actually measure methane mass or volumetric emissions. Rather, they measure the concentration of methane a few centimetres above the surface of the landfill cap using a sensitive Flame Ionisation Detector. "Elevated" concentrations of methane (typically of the order of tens to hundreds of ppm) are sometimes detected during surface cap and cover surveys. However, the localised presence of methane does not mean that there is any appreciable flow rate. Any areas identified in these surveys are inspected and any defects (for example small cracks that are most commonly of the order of a few centimetres) are repaired or additional thickness of cover material placed over the

area. In our experience, and using odour as an indicator of LFG, the working face is a major source of LFG emissions to air at a well-run landfill under normal conditions.

The estimated volume of landfill gas that could be released, untreated, through the working face is 55.5 m^3/hour (see Appendix F2 in the HHRA). In order to provide a conservative assessment, the HRA calculations have been based on an assumed emission of 110 m^3/hour untreated LFG. Given this conservatism, we do not consider it is appropriate to evaluate the potential impacts of higher LFG emissions. If it were assumed that a portion of these emissions were released from the working face and the balance from other areas on the landfill (e.g. through defects in the cap) this would not make a material difference to the conclusions of the HHRA.

106	*The HHRA considers that the key sources of contaminants from the proposed landfill facility are leachate (potential seepage of leachate through the landfill liner and underlying soils into groundwater and leachate breakout into the surface water) and landfill gas (airborne pollutants emitted from flares and generators, and fugitive emissions of landfill gas). Insufficient information has been provided on the reasons not to take into account stormwater runoff from the vicinity of the proposed landfill area as one of the sources of contaminants. This is based on the considerations set out below:* *• Section 4.5.1 of the HHRA considers dust emission from placement of waste will be negligible beyond the immediate working area when dust control measures are in place. However, there is no supporting evidence provided such as dust emission modelling or monitoring data. Without the additional information, dust emission beyond the open working face cannot be excluded;*

Dust from the working face at a landfill is typically negligible as most waste materials are wet. All commercial and industrial wastes are accepted subject to a manifest and specific waste acceptance procedures. Potentially dusty wastes are identified through this process and their receipt and placement is carefully managed for health and safety reasons. This can include a requirement for the waste generators to wet materials prior to delivery. Dusty wastes are received with prior notice and are mixed into the waste mass during tipping to minimise the generation of dust. At least one water cart will be active on a full time basis and available to further wet dusty materials, if required.

As discussed below, stormwater monitoring at Redvale and Whitford landfills contains typical stormwater contaminants, such as zinc and copper associated with motor vehicle movements and does not indicate elevated levels of other metals that might be associated with waste materials.

	• Section 4.5.1 of the HHRA states that lightly contaminated soils will be used as daily cover and considers that the potential for dust being blown beyond the landfill footprint in any appreciable quantity is negligible due to the low concentrations in the original soil, distance to receptors and tendency for forests to filter the air flow. Again, insufficient evidence has been submitted to support this statement. In addition, the report has not considered the possibility of the soil and bonded contaminants being washed away by surface water and being transferred to the stormwater ponds. The proposed acceptance criteria (recreational land use criteria) for lightly contaminated soils to be used as cover material is unlikely to be supported in consideration of the overall good water quality present in the catchment and the surrounding rural residential zoning. *• In respect of [sic], please provide and justify alternative acceptance criteria in this regard.*

Soils used for daily cover are proposed to meet recreational land use criteria. Daily cover is used to cover the waste at the end of each working day and will therefore only be stockpiled or used within the landfill footprint. Similar to the comments above in relation to dusty wastes, it is considered very unlikely that dust from daily cover would be conveyed beyond the landfill footprint and be entrained in stormwater. Also, soils used for daily cover will rarely not be moist and non-dusty and will not be subject to disturbance by truck traffic, which is the most common source of dust generation (apart from waste) on a landfill site.

Soil meeting recreational criteria is considered acceptable for use on playing fields where direct contact with soils is anticipated (including by children) and there would typically be no treatment for stormwater runoff-off. Although it is considered very unlikely that contaminated dust would be conveyed beyond the landfill footprint and be entrained in stormwater, it is noted that stormwater from the site will be:

- treated through a stormwater treatment system meeting best practice for an Industrial and Trade Activity (ITA) site;
- will be subject to ongoing monitoring; and
- will be required to meet site-specific trigger levels developed with reference to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

The use of lightly contaminated soils as cover material within the landfill footprint is considered appropriate and is common practice at many landfills in New Zealand. We consider that the use of recreational soil acceptance criteria is conservative but is generally appropriate.

	• Section 4.4.1 of the HHRA indicates that all surface water, except for surface water coming into contact with waste in the open working face and associated areas, including the tipping pad, is treated as leachate and will pass through the stormwater treatment system prior to release to the receiving environment. There is the potential for stormwater runoff being tainted by contaminated dust potentially deposited beyond the open working face and tipping pad, as well as the contaminated soil used as daily cover; and *• it was noted during a site visit to the Redvale Landfill facility that soil was removed from the landfill open working area for considerable distances. It is understood that recreational land use criteria are used as the acceptance criteria for daily soil cover in Redvale Landfill. It is reasonable to expect that the surface water runoff from the vicinity of the landfill area is likely to be contaminated. The extent of the contamination is unknown.*

Section 9.3.1 of the Stormwater and Industrial and Trade Activity report (Technical Report P) describes the findings of a review of stormwater monitoring at Redvale and Whitford landfills. These landfills are broadly similar to the proposed ARL with respect to stormwater management practices and Redvale Landfill uses lightly contaminated soils as daily cover. The review included a detailed assessment of pH, COD, conductivity, ammonia and heavy metals including aluminium, zinc and copper, over a period of more than two decades. The only contaminant of concern which exceeded the relevant ANZECC guideline or trigger level was copper. In the case of Redvale landfill, copper results were elevated at both the upstream and downstream receiving environment monitoring sites indicating that the elevated concentrations were from alternative sources.

The stormwater monitoring at Redvale and Whitford landfills further supports that the potential for material being deposited at the working face (including daily cover) to be conveyed beyond

the landfill footprint result in contamination of stormwater is low and is very unlikely to appreciably contribute to contaminant concentrations in stormwater.

	• In light of the above commentary, please justify with evidence why stormwater runoff should not be considered as one of the sources of contaminants. Otherwise, please include this source of contaminants in the risk assessment in consideration of the above comments. This should include the consideration of additional contaminant loads from stormwater runoff in addition to the potential leachate currently assessed (8.2 L/day as specified in section 7.2 of the report as well as section 7.4) and justification of any additional mitigation measures, future monitoring programmes and the criteria for stormwater discharge.

Stormwater from the site is likely to contain typical urban stormwater contaminants, such as oils/greases and heavy metals like zinc and copper, mainly from the use of motor vehicles on site roadways. The site stormwater will be treated through a best practice treatment system for an ITA site. It is not usually considered necessary to evaluate the potential for health effects of stormwater discharges that have been treated to this standard.

The proposed stormwater monitoring programme is described in the Stormwater and Industrial and Trade Activity report (Technical Report P). Site-specific trigger levels will be developed in accordance with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (FMWQ Guidelines), taking into account existing background levels of contaminants (which are typically low). The trigger levels will be no greater than the 95% species protection Default Guideline Values (DGV) in the FMWQ Guidelines.

The DGV values are compared to the Maximum Acceptable Values (MAV) in drinking water in the following table. The only parameter where the DGV may not be protective of human health is arsenic. This has been identified previously at other landfills and taken into account in setting trigger levels. For example the stormwater trigger level (Trigger Level 1) at Redvale Landfill is set at the MAV value of 10 µg/L.

As explained above, zinc and copper are the metals most likely to be found at elevated concentrations in stormwater. The DGV for these metals are three orders of magnitude below the respective drinking water guidelines (and the site-specific stormwater trigger levels set for the ARL are likely to be lower than the DGV).

On the basis of this screening analysis, there would be no benefit in undertaking more detailed health risk assessment calculations for contaminants in stormwater.

Parameter	**FMWQ Guidelines 95% DGV (µg/L)**	**NZ Drinking Water Guidelines MAV (µg/L)**
Arsenic (III)	24	10
Arsenic (V)	13	
Cadmium	0.2	4
Chromium (III)	3.3	50
Chromium (VI)	1.0	
Copper	1.4	2,000
Lead	3.4	10
Nickel	11	80
Zinc	8	(3,000)*

*Zinc is an essential trace element. According to WHO, levels above 3,000 µg/L may not be acceptable to consumers for aesthetic reasons

107	*Please clearly identify site specific activities relevant to human health effects, including identification of the extent and locations of food harvesting and recreational uses by both Māori and the wider community in the surrounding environment. This should be included on a map as well as a description of each of these activities. It appears that a cultural value assessment report may be available which may address some of the above matters. If so, please provide a copy of this report for review.*
The requested information about Maori and community recreation has not come to light in extensive consultations or in a CVA provided initially to WMNZ. The HHRA has considered ingestion of river water, which would correspond to the potential recreational use of the river for bathing and boating. In relation to food harvesting, the HHRA has made worst case assumptions, for example that eels and watercress are continuously exposed to worst case concentrations of contaminants at the point of discharge into the unnamed stream. It is unlikely that recreational uses or food harvesting would be carried out at this location as it is within the WMNZ landholding. As exposures at other locations will be lower than the conservative scenario that has been assessed, we do not consider it is necessary to determine where these activities might occur in reality.	
108	*Section 4.6 of the HHRA provides a summary of the exposure pathway assessment. The pathway for exposure to residents has considered inhalation, as well as deposit onto roof and soil, and stock watering. Irrigation from bore water has also been considered as a pathway. However it is understood that there are current consents for surface water takes in the surrounding environment. Please provide additional information on surface water takes, and justification as to why surface water irrigation takes are not considered in the HHRA as an exposure pathway, noting the points raised in question 97.*
As explained in response to question 97, the concentrations reported in the HHRA as being in the Hōteo River are actually the concentrations in groundwater at the point of release into the River – i.e. they do not take into account the very significant dilution that would occur in surface water within the River. Taking this dilution into account, the concentrations of contaminants in the Hōteo River (arising from the landfill) will be lower than the predicted concentrations in the groundwater bore. The assessment has considered the health risks associated with the use of bore water for irrigation and potential for accumulation of contaminants in soils and uptake into homegrown produce. This assessment has concluded that there are no appreciable risks to human health. The equivalent human health risk calculations for water taken from the Hōteo River would give even lower values and are therefore not considered warranted.	
109	*Birds exist in large populations in some existing landfills. This is considered as a potential risk to health, as birds can take up pathogens from landfills and transfer them to waterways and reservoirs, potentially transmitting disease. Please confirm whether there are water supply sources or reservoirs within the vicinity of the proposed landfill. Please also justify whether microbiological contamination should be included as a contaminant of concern, and if so, provide an assessment of the potential health risk of microbiological contamination of streams associated with the proposed landfill operation and any proposed mitigation measures.*
Birds, particularly seagulls, and other pests can be attracted to landfills where they see them as a potential food source. This was particularly a problem at older style landfills or “tips” where waste	

was left exposed. The primary controls to minimise pest numbers at a modern landfill are minimising the size of the working face, operating compaction machines continuously, and applying daily cover so that waste is not exposed and available as a food source. Other forms of targeted pest control, including control of birds within the landfill if required, will be undertaken at the ARL. This will minimise the potential for effects associated with birds, such as additional excrement loading and putrid waste morsels on roofs used for water collection, which then only tend to occur with larger birds like gulls which are targeted in ongoing control programmes. The potential for birds to impact on microbiological contaminant loads in nearby waterways is considered very low assuming that nuisance bird populations are kept small, and, unlike private roof collected water supplies, municipal supplies are subject to treatment and monitoring for microbiological contamination.

Appendix D: Updated precinct provisions

Auckland Regional Landfill Precinct (I617)

I617.1 Precinct Description

The precinct applies to the Auckland Regional Landfill and its surrounds. Its purpose is to recognise the existence of, and enable the efficient construction and operation of the landfill and the associated land and activities in recognition of its role in providing the long term, safe disposal of solid waste from Auckland and surrounding regions, and for enabling renewable energy generation from the biomass within the landfill.

The Auckland Regional Landfill Precinct has two sub-precincts: Sub-precinct A, which identifies the area where waste will be placed; and Sub-precinct B, which identifies an area of the precinct where works within the Natural Stream Management Area are subject to a different activity status than the overlay. The remaining land within the precinct will be used for a range of activities associated with the landfill operations and energy generation. These associated activities include (but are not limited to) bin exchange area, stormwater treatment, access roads, soil stockpiles, gas and leachate collection and treatment, workshops, office facilities, and clay borrow.

The precinct includes objectives and policies which allow for consideration of biodiversity offsets and ecological compensation for unavoidable impacts on natural resources arising from development of a landfill within the precinct. The matters in objective 4 and policies 5 and 6 provide direction on offset and compensation for activities within the precinct which have unavoidable impacts on freshwater systems, providing direction on how the provisions of E3, E1, E15 and Appendix 8 of the Auckland Unitary Plan are to be applied, which address the circumstances in which residual adverse effects on natural resources that cannot be avoided, remedied or mitigated may be offset and compensated.

The land and the surrounding waterways, particularly the Hōteo River, have significant value to mana whenua in terms of historical, spiritual and cultural associations. Areas within and adjacent to the Auckland Regional Landfill Precinct have significant ecological values (e.g. the Sunnybrook Reserve). The objectives and policies of the Precinct requires a full assessment of potential effects and a requirement to avoid, remedy, mitigate, or offset/compensate adverse effects, including on ecological/freshwater and mana whenua values, that may be created by these activities to the extent practicable.

The underlying zoning of land within this precinct is Rural – Rural Production zone.

I617.2 Objectives [rp/dp]

1. The development and continued operation of the Auckland Regional Landfill is enabled, recognising its regional significance as essential infrastructure, and recognising the benefits of biomass being used for renewable energy generation.

2. Human health is protected from adverse effects of operational or closed landfills.

3. The Auckland Regional Landfill is designed and operated so that the adverse effects of discharges to land and water from the landfill are avoided, remedied or mitigated.

4. Adverse effects on rivers, lakes, streams and wetlands arising from the development and continued operation of the Auckland Regional Landfill are avoided, remedied or mitigated, and significant residual adverse effects are, to the extent reasonably practicable, and as

offered by the applicant, offset, or compensated where this will promote the purpose of the Resource Management Act 1991.

5. Effects on the ecological and mana whenua values from works within any Significant Ecological Area overlay or Wetland Management Area overlay areas are avoided, and effects on the ecological and mana whenua values from works within any Natural Stream Management Area overlay are avoided where practicable or are otherwise minimised.

6. The mauri of freshwater and indigenous biodiversity within those areas of the precinct not required for operations associated with the development and continued operation of the Auckland Regional Landfill is maintained and consistent with being enhanced over time.

The overlay, Auckland-wide and zone objectives apply in this precinct in addition to those specified above, except where there is a conflict, in which case these objectives take precedence.

I617.3 Policies [rp/dp]

1. Enable the development and continued operation of the Auckland Regional Landfill, and the associated renewable energy generation.

2. Require that any assessment of environmental effects for an activity that may affect mana whenua values includes an appropriate assessment of adverse effects on those values, and how those effects may be avoided, remedied or mitigated, including through making provision for mana whenua to exercise kaitiakitanga and the adoption of the Auckland Unitary Plan's Accidental Discovery Rule (E11.6.1).

3. Discharges of contaminants into water, land and air from the Auckland Regional Landfill's construction and operations shall avoid where practicable, and otherwise minimise:

    a. adverse effects on the quality of freshwater, including from contamination and sediment;
    b. adverse effects from contaminants, and the potential for these to enter freshwater from both point and non-point sources;
    c. adverse effects on mana whenua values associated with coastal water, freshwater and geothermal water, including wāhi tapu, wāhi taonga and mahinga kai; and
    d. adverse effects on the water quality of catchments and aquifers that provide water for domestic and municipal supply;
    e. adverse effects on the quality of air, including from the discharge of contaminants and odour;

    including through the adoption of the best practicable option for the treatment and discharge of stormwater, the use of industry best practice lining system and the provision of an appropriate buffer within the precinct

4. Subject to policy 5, provide for works within freshwater systems in order to provide for the development and operation of the Auckland Regional Landfill, including the reclamation of streams within Sub-Precinct A, culverts or bridges required to access the landfill.

5. Subject to policy 6, require adverse effects from the Auckland Regional Landfill's construction and operation on freshwater systems to be avoided, remedied or mitigated generally and to the extent practicable, and encourage in particular the use of offsetting or

compensation to manage significant residual adverse effects of unavoidable reclamation of stream beds and associated loss of freshwater systems.

6. Where effects cannot be avoided, remedied or mitigated, provide for offsetting or compensation, thereby enabling the Auckland Regional Landfill as infrastructure, while recognising that:

   a. not all significant residual adverse effects will be able to be fully offset or compensated, however a ratio of at least 1:1 is expected;
   b. any offset or compensation package may be staged over the long term and sites should be identified in the following order of preference – within the precinct, within the Hōteo River catchment, within the Kaipara Harbour catchment, and within the Auckland Region.

The underlying zone, Auckland-wide and overlay policies apply in this precinct in addition to those specified above, except where there is a conflict, in which case these policies take precedence. In particular, policy I617.3(3) is intended to take precedence over E13.3(4).

I617.4 Activity Table

Table I617.4.1 Activity table specifies the activity status of land use and development activities in the Auckland Regional Landfill Precinct pursuant to sections 9 and 11, 13, 14 and 15 of the Resource Management Act 1991. Any reference to an activity includes its construction, operation and maintenance. This Activity Table applies instead of any other rule in the Unitary Plan for the purposes of the activities listed[1].

Table I617.4.1 *Activity Table (rp/dp)*

Activity		Activity status
New landfills		
(A1)	Landfill in Sub-precinct A	D
(A2)	Discharges to air from landfills in Sub-Precinct A	D
(A3)	Discharges to land and water from landfills in Sub-precinct A that are otherwise categorised as non-complying	D
(A4)	Landfill outside of Sub-precinct A	NC
(A5)	Discharges to air, land and water from landfills outside of Sub-Precinct A	NC
Existing landfills		
(A6)	Discharges to air from existing landfills in Sub-Precinct A	RD
(A7)	Discharges to land and water from existing landfills in Sub-precinct A unless a more lenient activity status applies	RD
Activities in lakes, rivers, streams and wetlands		
(A8)	Reclamation, drainage, diversion or disturbance of any lakes, rivers,	D

[1] Specifically, the rules in this table are intended to replace E3.4.1 (A49) E13.4.1 (A9), E14.4.1 (A160), and H19.8.1 (A67), and is intended to apply instead of any plan ~~change to make~~ rules which classify landfills or associated activities as non-complying.

	streams (including intermittent streams) and wetlands outside overlays that are otherwise categorised as non-complying.	
(A9)	Reclamation, drainage, diversion or disturbance of any lakes, rivers, streams (including intermittent streams) and wetlands inside Natural Stream Management Area and Significant Ecological Area overlays unless a more lenient activity status applies pursuant to the overlay rule.	NC
Renewable energy		
(A10)	Energy generation from waste biomass, that is otherwise categorised as non-complying	D
(A11)	Discharges to air, land or water from energy generation from waste biomass, that are otherwise categorised as non-complying	D
General		
(A12)	Office or workshop associated with landfill	D
(A13)	Bin exchange area associated with landfill	D
(A14)	Except for (A4), (A5) and (A9) above, any activity classified as a non-complying activity elsewhere in the Unitary Plan associated with any landfill activity	D
(A15)	Any landfill activity that does not comply with the restricted discretionary or discretionary activity standards in I617.6	NC

Table I617.4.2 *Activity Table – Sub-precinct B*

Table I617.4.2 specifies the activity status of activities in, on, under, or over the bed of lakes, rivers, streams and wetlands within Sub-precinct B, pursuant to sections 13 and 14 of the Resource Management Act 1991. This Activity Table applies instead of any other rule in the Unitary Plan for the purposes of the activities listed.[2]

Activity		**Activity status**
(A1)	Works within lakes, rivers, streams (including intermittent streams) and wetlands within Sub-precinct B, including reclamation, drainage, diversion or disturbance of any watercourses, or construction of structures unless a more lenient activity status applies.	D

[2] Specifically, the rules in this table are intended to replace E3.4.1 (A33) and E3.4.1 (A49) within the sub-precinct.

I617.5. Notification

1. Any application for resource consent for an activity listed in Table I617.4.1 Activity table above will be subject to the normal tests for notification under the relevant sections of the Resource Management Act 1991, except where I617.5(2) applies.
2. Any application under Rule I617.4.1 (A1), (A2), (A4), (A5) or (A15) will be publicly notified.
3. When deciding who is an affected person in relation to any activity for the purposes of section 95E of the Resource Management Act 1991 the Council will give specific consideration to those persons listed in Rule C1.13(4).

I617.6 Standards

I617.6(1) Restricted Discretionary Standards

Activities listed as restricted discretionary activities in Table I617.4.1 must comply with the following restricted discretionary activity standards.

1. The discharge must be associated with an existing, legally authorised landfill or ancillary activity.
2. Any placement of waste shall only occur within Sub-Precinct A, shown on Precinct Plan 1.
3. A lining system must be installed prior to waste being placed within any area of Sub-Precinct A. The ~~proposed~~ lining system for the landfill must be one of the following types:

    a. Type 1 lining system (Leachate drainage material, with underlying cushion geotextile to protect the geomembrane, 1.5 mm HDPE geomembrane, and 600 mm compacted clay with a coefficient of permeability $k < 1 \times 10^{-9}$ m/s); or
    b. Type 2 lining system (Leachate drainage material, with underlying cushion geotextile to protect the geomembrane, 1.5 mm HDPE geomembrane, Geosynthetic clay liner (GCL), and ~~or~~ 600 mm compacted clay with a coefficient of permeability $k < 1 \times 10^{-8}$ m/s); or
    c. Any other lining system that provides equal or better protection than a Type 1 or Type 2 lining system described above.
4. There shall be no offensive or objectionable odour at the Precinct boundary caused by the landfilling operation, in the opinion of a suitably qualified enforcement officer when assessed in accordance with the '*Good Practice Guide for Assessing and Managing Odour', (Ministry for the Environment, 2016).*

5. No works, other than ecological restoration or enhancement works, shall occur within any Wetland Management Area overlay, or within any Significant Ecological Area overlay, or within any Outstanding Natural Landscape overlay, or in any Natural Stream Management Area overlay (except Sub-precinct B).

6. The maximum airspace volume of the landfill must not exceed 28.5 Mm^3.

I617.6(2) Discretionary Standards

Activities listed as discretionary activities in Table I617.4.1 must comply with the following discretionary activity standards.

1. Any placement of waste shall only occur within Sub-Precinct A, shown on Precinct Plan 1.

2. A lining system must be installed prior to waste being placed within any area of Sub-Precinct A. The ~~proposed~~ lining system for the landfill must be one of the following types:

    a. Type 1 lining system (Leachate drainage material, with underlying cushion geotextile to protect the geomembrane, 1.5 mm HDPE geomembrane, and 600 mm compacted clay with a coefficient of permeability $k < 1 \times 10^{-9}$ m/s); or
    b. Type 2 lining system (Leachate drainage material, with underlying cushion geotextile to protect the geomembrane, 1.5 mm HDPE geomembrane, Geosynthetic clay liner (GCL), and ~~or~~ 600 mm compacted clay with a coefficient of permeability $k < 1 \times 10^{-8}$ m/s); or
    c. Any other lining system that provides equal or better protection than a Type 1 or Type 2 lining system described above.

3. There shall be no offensive or objectionable odour at the Precinct boundary caused by the landfilling operation, in the opinion of a suitably qualified enforcement officer when assessed in accordance with the '*Good Practice Guide for Assessing and Managing Odour', (Ministry for the Environment, 2016).*

4. No works, other than ecological restoration or enhancement works, shall occur within any Wetland Management Area overlay, or within any Significant Ecological Area overlay, or in any Natural Stream Management Area overlay (except Sub-precinct B).

5. The maximum airspace volume of the landfill must not exceed 28.5 Mm^3.

I617.7. Assessment – controlled activities

There are no controlled activities in this precinct.

I617.8. Assessment – restricted discretionary activities

I617.8.1 Matters of discretion

1. For discharge of contaminants into air from all restricted discretionary activities (A6):

    a. the matters in Policy E14.3(1); and
    b. location of site and activity; and
    c. site and plant layout.
    d. quantity, quality and type of discharge, including biological contaminants, and any effects arising from that discharge;
    e. sensitivity of receiving environment and separation distances between the activity and any sensitive land uses;
    f. protocols for waste acceptance;

g. odour, dust, visible emissions and hazardous air pollutant mitigation measures;
h. monitoring requirements and management plans; and
i. Closure and after-care plans (if the landfill is likely to close within the duration of the consent).

2. For other discharges from all restricted discretionary activities (A7):

a. the quality and quantity of any discharge including methods for the treatment and disposal of contaminants;
b. the method of discharge and adverse effects arising from the method chosen;
c. the best practicable options for reducing adverse effects;
d. the location of any discharge point;
e. the rate and frequency of any discharge;
f. monitoring requirements, management plans and consent duration;
g. the effects on mana whenua values; and
h. closure and after-care plans (if the landfill is likely to close within the duration of the consent).

I617.8.2 Assessment criteria

Discharges to air from legally established landfills

The Council will consider the relevant assessment criteria below for restricted discretionary activities:

1. The degree to which Auckland Ambient Air Quality Targets are likely to be met where people are likely to be exposed to the specified contaminants for the relevant averaging period.
2. Whether the amount of separation between the activity discharging contaminants into air and existing or potential activities sensitive to the air discharges is sufficient to mitigate adverse effects on the environment, health and amenity
3. The extent to which adverse effects are avoided, remedied or mitigated including appropriate emissions control technology and use of management practices.
4. Where applicable, the degree to which offsetting can remedy or mitigate adverse effects considering the proximity of the offset to where the effects of the discharge occur and the effective duration of the offset
5. Whether there are practicable location and method options that cause less adverse effects and can still achieve the applicant's objectives
6. The extent to which the odour and dust level meet the expectations for the Medium air quality – dust and odour area (Rural).
7. Whether the assessment methods, including monitoring and modelling are appropriate to the scale of the discharge and any potential adverse effects
8. Whether discharge into air are minimised as far as practicable, where appropriate through
    a. use of best practicable option emissions control and management practices: or
    b. minimisation of fugitive emissions:
9. the adequacy of the site management plan including:
    a. operation of the site
    b. placement and compaction of waste material
    c. daily operating procedures
    d. waste acceptance controls and monitoring;
    e. response to natural hazards and unexpected discharges;

f. Vermin and bird management;
g. load inspection records; and
h. monitoring, testing and sampling documentation

10. the adequacy of the site aftercare plan including:
    a. aftercare activities to address the risk posed by the contaminants to the environment: and
    b. timing and standard of aftercare activities

Discharges to land and water from legally established landfills

The Council will consider the relevant assessment criteria below for restricted discretionary activities:

1. potential adverse effects (including cumulative effects) are appropriately minimised or mitigated, taking into consideration all of the following:

    a. the nature of the contaminants and associated discharge to the receiving environment;
    b. the sensitivity of the receiving environment, and its susceptibility to the adverse effects of the contaminants;
    c. the extent to which contaminants from the site contribute to incremental and cumulative adverse effects on receiving environments including adverse effects on biodiversity, community and mana whenua uses and values
    d. whether it is practicable to reduce existing adverse effects including site and operational constraints;
    e. the adequacy of the site management plan including:
        I. operation of the site;
        II. placement and compaction of waste material;
        III. daily operating procedures;
        IV. waste acceptance controls and monitoring;
        V. response to natural hazards and unexpected discharges;
        VI. Vermin and bird management;
        VII. load inspection records; and
        VIII. monitoring, testing and sampling documentation
    f. the adequacy of the site aftercare plan including:
        I. aftercare activities to address the risk posed by the contaminants to the environment; and
        II. timing and standard to aftercare activities

I617.9. Special information requirements

There are no special information requirements in this precinct.

I617.10. Precinct plan

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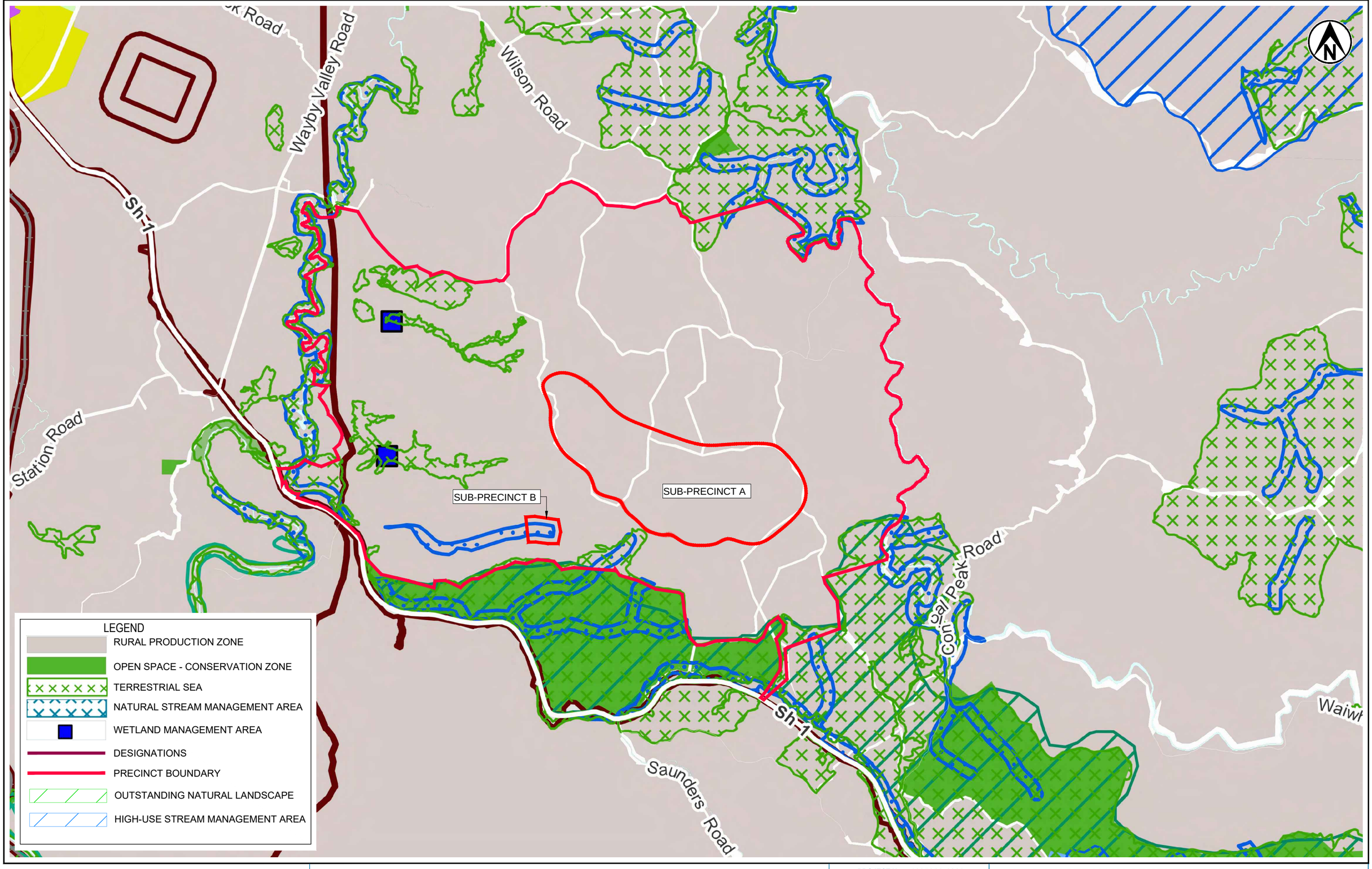

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SCALE 1:25,000

0 500 1000 1500 (m)

Unitary Plan sourced from Auckland Council GeoMaps

PROJECT No.	1005069.1200	
DESIGNED	RJB	Jun.19
DRAWN	LIWA	Nov.19
CHECKED	RJB	Nov. 19
APPROVED	DATE	

CLIENT **WASTE MANAGEMENT NZ LTD**

PROJECT **AUCKLAND REGIONAL LANDFILL**

TITLE PRIVATE PLAN CHANGE
PRECINCT PLAN 1

SCALE (A3) 1:25,000 FIG No. FIGURE 1 REV 3

Appendix C: Clause 23 response March 2020

Tonkin+Taylor

Job No: 1005069.2000
4 March 2020

Auckland Council
135 Albert Street
Auckland CBD
Auckland 1010

Attention: Peter Vari

Dear Peter

Further Clause 23 response: Auckland Regional Landfill - Private Plan Change

Further to your email dated 27 February 2020 requesting further information pursuant to Clause 23 of Schedule 1 of the Resource Management Act 1991 (RMA), we write to provide a response to the matter outlined therein. Council's technical reviewer has raised the below:

> *Re-stating question 8 to provide greater clarity.*
>
> *Question 8: Provide an assessment that the site is suitable for accepting persistent toxic compounds over intermediate and longer term periods. This assessment should include an assessment of potential impact of climate change and extreme weather events and the environment/human health risks associated with the failure of engineering controls.*

We note that the question being asked is not a clarification of the previously asked question, which was "*Please provide further information on the type of environmental risks associated with various types/size of landfills which could be located in sub-precinct A.*" The restated question seeks clarification of the suitability of the site for providing containment of persistent contaminants including in the long term.

We do not consider it appropriate to undertake a specific assessment of persistent contaminant migration for a plan change which does not authorise any activities. As we have previously noted in the Private Plan Change request and in our earlier Clause 23 responses, it is important to recognise that the proposed precinct rules will not authorise establishment of a landfill, and that establishing any type of landfill within the precinct, including its associated waste acceptance criteria and engineered controls, would be subject to a discretionary resource consent process. As a fully discretionary process, Council would have full remit to consider and control potential effects on human health and the environment, as well as considering whether there might need to be any specific limitations or restrictions on any particular types of waste intended to be disposed of in the landfill. The proposed precinct rules have intentionally retained a discretionary status for new landfills to allow for a full assessment of any future application and a full scope for imposition of appropriate conditions on any consent granted under those rules, rather than attempting to limit Council's discretion in any way.

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The Private Plan Change request contains sufficient information to demonstrate that this site is appropriate for landfill development. Commentary on the key factors for long term containment of contaminants is provided below. Our responses refer to information provided in the Private Plan Change request submitted 17 July 2019 and the Clause 23 responses provided on 15 November 2019 and 3 February 2020.

- Waste acceptance criteria are a key factor in ensuring appropriate long term containment, as they control the properties and characteristics of the leachate and are aligned with the design of the engineered controls and lining system. However, as previously stated, we do not consider that district or regional plan rules are the appropriate place to list out waste streams and waste acceptance criteria. We are not aware of any examples where plan rules have been set for landfill waste acceptance criteria. There is no single agreed list of waste acceptance criteria which would be appropriate to refer to in the precinct provisions and, more importantly, waste acceptance criteria will evolve over time as more information becomes available and technologies emerge to pre-treat or contain certain wastes. Consequently, we consider that the controls on waste acceptance are best dealt with as part of consenting any future landfill within the precinct, at which time Council would have full discretion to consider appropriate waste acceptance criteria and the corresponding engineered controls. Any consent conditions can also appropriately incorporate mechanisms to review waste acceptance criteria over the life of the consent.
- To make it clear that waste acceptance criteria should form a key consideration for future consenting processes in the precinct, proposed policy 3 has been amended to include "adoption of appropriate waste acceptance criteria informed by up-to-date knowledge of contaminants of concern".
- In addition to appropriate waste acceptance criteria, potential effects on the surrounding environment will be largely avoided by the design and construction of an appropriate landfill lining system which captures the leachate. The nature of the lining system will be considered through a resource consent process for the landfill under the precinct provisions and would be subject to technical guidance as outlined below.
- We note that in the preamble to the revised question, Council's technical reviewer has referred to old technical guidance for landfills (from 8 and 18 years ago). The precinct provisions require a lining system through the resource consent process which meets the most recent guidance for New Zealand, namely the Technical Guidelines for Disposal to Land (WasteMINZ, 2018).
- The proposed ARL lining system is comprised of several layers, including an HDPE geomembrane, Geosynthetic Clay Liner (GCL) and compacted clay layer. Best available information suggests that an HDPE geomembrane in a lining system in conditions similar to ARL is anticipated to provide contaminant containment for 400 to 750 years (Ewais et al, 2018).
- The performance of the HDPE geomembrane in the proposed ARL lining system is supported by the underlying low permeability clay/GCL layers which are natural minerals and provide additional and enduring containment in association with the HDPE geomembrane, and attenuation of chemicals, if any, that may ultimately seep through the primary HDPE geomembrane lining component.
- It is important to note that the lining system is intended to capture the leachate from the waste. Over time, the components of the waste which are leachable will be collected via the leachate collection system and typically be re-injected back into the landfill, with any surplus removed for treatment. The majority of persistent contaminants will form insoluble compounds or bind strongly onto retained material in the waste mass. Therefore, concentrations of contaminants in the leachate will reduce over time, as will the amount of

leachate produced. Consequently, in the very long term, the total amounts of contaminants in the leachate would be expected to be negligible, as the contaminants will be bound within the solid waste mass and therefore will not leach into the surrounding environment if the lining system becomes less effective.

- In terms of climate change, at a high level, the precinct is not vulnerable to sea level rise, and the base of the landfill is located at approximately 80m RL so is not at risk from changes to flooding or changes in course from the Hōteo, which is at approximately 25m RL as it passes the precinct. As a discretionary activity, there is ample ability for the Council to impose conditions that would require any on-site stormwater management measures (eg ponds etc), to accommodate any increased rainfall that might result from climate change.
- A report was prepared as part of the separate resource consent process – named the "Risk Management Assessment" prepared by AECOM (Technical Report S). It is an independent technical assessment of the potential risks of the proposed Auckland Regional Landfill. It considers the technical assessments completed for the application, the proposed resource consent conditions and the management and mitigation proposed. Its purpose is to determine whether potential risks have been considered and are adequately controlled or mitigated. It assesses the potential risk scenarios that could reasonably be foreseen and whether the proposal includes appropriate design, construction and management to mitigate these risks based on the proposal defined in the application. This report was further expanded upon in the s92 responses, providing further clarification of how the risk assessment had been prepared. This demonstrates that the engineering design described in the resource consent application has appropriately responded to foreseeable risks and shows that these risks are able to be addressed through the resource consent process. We consider that this report provides sufficient information around potential climate change and weather event risks in relation to a potential landfill development on the subject site to demonstrate, for the purposes of this plan change, that the site is broadly appropriate for landfill development.
- Overall, the Geotechnical Interpretive Report (Technical Report B) and the Seismic Hazard Assessment (Technical Report C) has confirmed that the underlying geology within Sub Precinct A combined with engineering controls will provide good containment. The precinct land is not close to any active faults, and suitable soils are located within the precinct for liner construction and landfill operation.
- Regarding the suitability of the groundwater system below the site for landfill development, as set out in the Hydrogeological Assessment (Technical Report E) the regional groundwater is located at a significant depth below the WMNZ landholdings, separated from shallow groundwater by low permeability unweathered bed rock.

Conclusion

Overall, we consider that the extensive suite of investigations and technical reports prepared in support of the resource consent application demonstrate that the site is appropriate for landfill development. As future consent processes to establish a landfill on the precinct will be discretionary, issues such as waste acceptance and engineered controls will be appropriately addressed through the consenting process.

We consider that we have now provided sufficient information for the proposed plan change to be understood. In particular, we consider that this response provides sufficient information to satisfy Clause 23(1)(a) and (b), namely the nature of the request in respect of the effect it will have on the environment, and the way in which any adverse effects may be mitigated.

We trust that there is now sufficient information available for you to continue processing the application. Please do not hesitate to contact Rachel Signal-Ross (09 352 2995) if you require further clarification of any aspects of this letter. We look forward to assisting your team further in the

Clause 25 process, and we would greatly appreciate being kept informed of the private plan change request's progress and an expected timeframe for a Clause 25 decision. This will help us ensure that the resource consent application will be ready to be notified jointly with the private plan change request.

Tonkin & Taylor Ltd

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