Existing View

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Viewpoint Details

NZTM Easting	: 1 747 693 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 937 422 mN	Vertical Field of View	: 25°
Elevation/Eye Height	: 134m / 1.7m	Projection	: NA
Date of Photography	: 9:35am 29 January 2025 NZDT	Image Reading Distance @ A3 is 50 cm	

Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from Potter Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 10D

Proposed View showing ARL-TP Redvale & consented planted Stockpile 4

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

NZTM Easting	: 1 747 693 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 937 422 mN	Vertical Field of View	: 25°
Elevation/Eye Height	: 134m / 1.7m	Projection	: NA
Date of Photography	: 9:35am 29 January 2025 NZDT	Image Reading Distance @ A3 is 50 cm	

Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from Potter Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager [redacted] | Drawn: JMy | Checked: TLi

VS 10E

Proposed View at completion with grassing of slopes

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

NZTM Easting	: 1 747 693 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 937 422 mN	Vertical Field of View	: 25°
Elevation/Eye Height	: 134m / 1.7m	Projection	: NA
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Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from Potter Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager [redacted] | Drawn: JMy | Checked: TLi

VS 10F

Proposed View showing ARL-TP Redvale & consented planted Stockpile 4

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 747 693 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 937 422 mN	Vertical Field of View	: 25°
Elevation/Eye Height	: 134m / 1.7m	Projection	: NA
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ARL TRANSITION PROJECT - REDVALE

View from Potter Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project [redacted] | Drawn: JMy | Checked: TLi

VS 10G

Existing View

Proposed View showing ARL-TP Redvale & consented planted Stockpile 4

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 539 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 940 595 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 100m / 1.7m	Projection	: Rectilinear
Date of Photography	: 2:45pm 30 January 2025 NZDT	Image Reading Distance @ A3 is 20 cm	

Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from Top Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 11A

Proposed View showing ARL-TP Redvale & consented planted Stockpile 4

Proposed View at completion with grassing of slopes

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 539 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 940 595 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 100m / 1.7m	Projection	: Rectilinear
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Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from Top Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager [redacted] | Drawn: JMy | Checked: TLi

VS 11B

Proposed View at completion with grassing of slopes

Proposed View at completion with grassing and planting

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 539 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 940 595 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 100m / 1.7m	Projection	: Rectilinear
Date of Photography	: 2:45pm 30 January 2025 NZDT	Image Reading Distance @ A3 is 20 cm	

Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from Top Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 11C

Existing View

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 539 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 940 595 mN	Vertical Field of View	: 25°
Elevation/Eye Height	: 100m / 1.7m	Projection	: NA
Date of Photography	: 2:45pm 30 January 2025 NZDT	Image Reading Distance @ A3 is 50 cm	

Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from Top Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 11D

Proposed View showing ARL-TP Redvale & consented planted Stockpile 4

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 539 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 940 595 mN	Vertical Field of View	: 25°
Elevation/Eye Height	: 100m / 1.7m	Projection	: NA
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ARL TRANSITION PROJECT - REDVALE

View from Top Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 11E

Proposed View at completion with grassing of slopes

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 539 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 940 595 mN	Vertical Field of View	: 25°
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ARL TRANSITION PROJECT - REDVALE

View from Top Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 11F

Proposed View at completion with grassing and planting

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 539 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 940 595 mN	Vertical Field of View	: 25°
Elevation/Eye Height	: 100m / 1.7m	Projection	: NA
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Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from Top Road looking Northwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 11G

Existing View

Proposed View showing ARL-TP Redvale & consented planted Stockpile 4

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 198 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 942 160 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 112m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:05pm 30 January 2025 NZDT	Image Reading Distance @ A3 is 20 cm	

Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from East Coast Road looking Southwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 12A

Proposed View showing ARL-TP Redvale & consented planted Stockpile 4

Proposed View at completion with grassing of slopes

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 198 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 942 160 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 112m / 1.7m	Projection	: Rectilinear
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Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from East Coast Road looking Southwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted]z | Drawn: JMy | Checked: TLi

VS 12B

Proposed View at completion with grassing of slopes

Proposed View at completion with grassing and planting

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 198 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 942 160 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 112m / 1.7m	Projection	: Rectilinear
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Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from East Coast Road looking Southwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 12C

Existing View

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 198 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 942 160 mN	Vertical Field of View	: 25°
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ARL TRANSITION PROJECT - REDVALE

View from East Coast Road looking Southwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 12D

Proposed View showing ARL-TP Redvale & consented planted Stockpile 4

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 198 mE	Horizontal Field of View	: 40°
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ARL TRANSITION PROJECT - REDVALE

View from East Coast Road looking Southwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 12E

Proposed View at completion with grassing of slopes

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 198 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 942 160 mN	Vertical Field of View	: 25°
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Data Sources: Photography - BML; 3D Model - 1092369.000-MOD-OPT-C1.dxf - Tonkin & Taylor

ARL TRANSITION PROJECT - REDVALE

View from East Coast Road looking Southwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 12F

Proposed View at completion with grassing and planting

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 198 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 942 160 mN	Vertical Field of View	: 25°
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ARL TRANSITION PROJECT - REDVALE

View from East Coast Road looking Southwest

Date: 16 December 2025 Revision: 1

Plan prepared by Boffa Miskell Limited

Project Manager: [redacted] | Drawn: JMy | Checked: TLi

VS 12G

Together. Shaping Better Places.

Boffa Miskell is a leading New Zealand environmental consultancy with nine offices throughout Aotearoa. We work with a wide range of local, international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, Te Hīhiri (cultural advisory), engagement, transport advisory, climate change, graphics, and mapping. Over the past five decades we have built a reputation for creativity, professionalism, innovation, and excellence by understanding each project's interconnections with the wider environmental, social, cultural, and economic context.

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09 358 2526	09 358 2526	07 960 0006	07 571 5511	04 385 9315	03 548 8551	03 366 8891	03 441 1670	03 470 0460

20 July 2026
Job No: 1092369.0000

Auckland Council
135 Albert Street
Auckland 1010

Attention: Warwick Pascoe

Dear Warwick

Redvale Landfill Expansion
Responses to Auckland Council Comments
Tranche 3

This letter provides the third tranche of responses to the comments received from Auckland Council on draft technical reports prepared for WM New Zealand (WMNZ) for inclusion in a proposed substantive application for resource consent under the Fast-Track Approvals Act 2024. The following appendix details the responses to the comments received from Auckland Council for each specialist area.

This letter includes the following appendices:

- Appendix A: Stormwater, ITA and Sediment

To track responses to Auckland Council, we have provided a table below to identify which comments have been received and what responses are being included in this third tranche.

Tonkin & Taylor Ltd | 1 Fanshawe St, Auckland Central, Auckland 1010, New Zealand
PO Box 5271, Victoria Street West, Auckland 1142 P +64-9-355 6000 E akl@tonkintaylor.co.nz

Specialist Area	Comments received on draft report	Comments received from	Response prepared for Tranche 1	Response prepared for Tranche 2	Response prepared for Tranche 3	Response prepared by	Meeting
Landfill engineering	Yes (27/03/2026)	Walter Starke (Jacobs)	No	Yes	N/A	Andrew Shallard (Tonkin + Taylor)	Yes (29/04/26)
Geotechnical	Yes (1/04/2026)	Kyle Li (Auckland Council)	Yes	N/A	N/A	Andrew Stiles (Tonkin + Taylor)	No
Dam Assessment	N/A		N/A				
Air Quality	Yes (2/07/2026)	Louis Boamponsem	No	No	No (response being prepared as part of next tranche)		
Health Risk							
Hydrogeology	Yes (1/04/2026)	Stephen Collins (Beca)	Yes	N/A	N/A	Leon Pemberton (Tonkin + Taylor)	No
Stormwater & ITA	Yes (16/04/24)	Hillary Johnston (Tektus)	No	No	Yes	Rob Van de Munckhof (Tonkin + Taylor)	No
Waste Acceptance	Yes (30/03/2026)	Stanley Howell (Jacobs)	Yes	N/A	N/A	Penny Kneebone (Tonkin + Taylor)	Yes (24/04/26)
Bond	Yes (21/05/2026)	Compliance Monitoring (Auckland Council)	N/A	N/A	N/A		
Ecology	Yes (13/05/2026)	Jason Smith (Morphum)	N/A	N/A	N/A		No
Wildlife Hazard Assessment							

Specialist Area	Comments received on draft report	Comments received from	Response prepared for Tranche 1	Response prepared for Tranche 2	Response prepared for Tranche 3	Response prepared by	Meeting
Economics	Yes (9/04/26)	Tim Denne (Resource Economics)	No	No	No (Updated reports to be recirculated shortly)		Yes (29/01/26)
Landscape & Visual	Yes (20/03/2026)	Peter Kensington (Auckland Council)	No	Yes	N/A	Tom Lines (Boffa Miskell)	No
Noise & Vibration	Yes (20/03/2026)	Jon Styles (Auckland Council)	No	Yes	N/A	Mat Cottle (Marshall Day Acoustics)	Yes (10/04/26)
Traffic/Transport	Yes (27/03/2026)	Philips Augustine (Auckland Council) Neil Stone (Auckland Transport)	Yes	N/A	N/A	Don McKenzie (Don McKenzie Consulting)	No
Aviation	N/A						

Applicability

This report has been prepared for the exclusive use of our client WM New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will share this information as part of engagement regarding an application under the Fast-track Approvals Act 2024 and that Auckland Council may use this information for the purpose of reviewing the application to provide feedback to WM New Zealand.

Tonkin & Taylor Ltd

Report prepared by:

.....

Keeley Clayton
Senior Planner

Report prepared by:

.....

Gina Buckland
Planner

Authorised for Tonkin & Taylor Ltd by:

.....

Simonne Eldridge
Project Director

20-Jul-26

Appendix A Stormwater, ITA and Sediment

A1 Stormwater, ITA & Sediment – Redvale Landfill Expansion

Table A 1: Response (Rob Van de Munckhof) to Auckland Council (Hillary Johnston – Tektus) comments on the Draft Stormwater, ITA and Sediment Assessment

#	Question	Response
1	*A bit more detail and assessment of the existing flood hazards and impacts of the extended footprint should be provided within the more detailed report* (in relation to PC120). This is partially addressed within the assessment. Section 3.4 outlines that for the existing catchments peak flows from the ponds are less than the pre-development peak for all rainfall events modelled (2, 10, 100 year). Section 3.5 outlines that even though the pond catchments for Pond 1 and Pond 2 will change, the outlet flows are not proposed to change, meaning that the existing outlet peak flow will also be maintained. I would like to seek clarification that Revised Pond 1 and Pond 2 have sufficient volume within them to accommodate additional runoff from the increased catchments in these rainfall events. Consideration of PC120 has been provided at a very high level in the Referral Application (Planning) Report dated November 2025. Please let me know if a further assessment has been provided in any of the updated documentation, I could not see an updated planning assessment one within the One Drive folder.	As confirmed by the calculations outlined in the response to Question 2 below, the difference in peak flows between pre-development and post-development scenarios is less than the current detention volumes in Ponds 1 and 2, confirming that both ponds have sufficient capacity to accommodate additional runoff from the increased catchments across all modelled rainfall events (2, 10, and 100-year). Proposed Plan Change 120 (PC120) proposes (among other things) to amend the provisions of Chapter E36 of the Auckland Unitary Plan – Operative in Part (AUP) relating to natural hazards, including flood hazard risk. Auckland Council Geomaps identify the Redvale Landfill as being subject to flood hazards including the 1% Annual Exceedance Probability (AEP) floodplain, flood prone areas and overland flow paths and therefore subject to the provisions contained in Chapter E36. The flood plain layers included in the Auckland Council Geomaps system were developed based on the Regionwide Rural Rapid Flood Model Build Report, May 2023 which utilised 2016 LIDAR Information. The updated flood model was developed following the Auckland Anniversary 2023 flooding events. The model was based on available LIDAR information and no site-specific drainage information was included. The Flood Hazard Areas identified by PC120 are based on the above hydraulic modelling including the depth and velocity of flood waters and are used in the classification of risk of flood hazards (in conjunction with the sensitivity of activities) to determine the rules of PC120 that apply. The modelling is acknowledged to be indicative only. In the case of the Redvale site, this means that information regarding the on-site water management system, such as the location of culverts, stormwater ponds and diversion systems, was not considered. The development of the Redvale Landfill commenced in the early 1990s within a former lime quarry. As part of the development of the site, significant changes to the natural drainage systems have been undertaken including the development of a number of stormwater ponds to provide sediment and stormwater management and manage peak flows. Further, the on-going design and contours of the landfill site have been designed to ensure appropriate overland drainage from both operational and capped areas. The mapped flood plain, includes areas of the landfill site which are subject to ongoing development as well as the on-site treatment ponds which have been designed to manage flows up to the 1% AEP event. This includes both the extent of the existing landfill footprint, and the proposed extended footprint with calculations undertaken to demonstrate that the ponds can manage flows up to the 1% AEP event. Overall, it is considered that the mapped flood plain is not representative of the actual flooding risks on the site, and that there is no evidence to support the presence of a 1% AEP flood plain within the site, particularly considering the existing infrastructure in place.

<table>
<tr><td></td><td></td><td>In addition to the assessment of PC120 above, a more detailed statutory assessment of PC120 will be provided in the AEE to be submitted with the substantive application.</td></tr>
<tr><td>2</td><td>I am anticipating that the more detailed report includes relevant appendices and calculations (including for the current stormwater systems to confirm sizing, and comparative calculations for peak flow in the 2, 10, and 100 year events - all mentioned within the summary).
Assessment has been provided that compares the existing ponds and proposed expanded ponds designs to the current design requirements which confirms that they will remain sufficiently sized to provide treatment of the water quality volume (and sediment control). Assessment has also been provided that confirms that for all existing ponds, peak flows from the ponds are less than the pre-development peak for all rainfall events modelled (2, 10, 100 year).</td><td>Calculations of the stormwater system have been undertaken including calculations of the existing peak flows and 24 rainfall volumes based on the catchment area and rainfall at the time the ponds were last consented (being 2013) and those based on current catchment and rainfall volumes to confirm that the ponds have sufficient capacity for the increased catchments.
The calculations show that, without any detention provision, peak flows under the proposed scenario would increase compared to the original pre-development scenario. However, the difference in peak flows between the original pre-development and the proposed post-development scenario is less than the current detention volumes in Ponds 1 and 2, confirming that the Ponds are sufficiently sized to accommodate the proposed stormwater volumes.
A summary of the pre and post development 24 hours volumes are outlined below.
Pond 1: Pre-development based on 2013 calculations and post-development at 34 hectare catchment 2026 calculations
<table>
<tr><td></td><td>2013 design pre-development 24 hour volumes</td><td>Post-development 24 hour volumes</td><td>Difference</td></tr>
<tr><td>2 year</td><td>12,744 m^3</td><td>14,081 m^3</td><td>1,337 m^3</td></tr>
<tr><td>10 year</td><td>23,496 m^3</td><td>25,829 m^3</td><td>2,333 m^3</td></tr>
<tr><td>100 year</td><td>47,000 m^3</td><td>48,380 m^3</td><td>1,380 m^3</td></tr>
</table>
Pond 2: Pre-development based on 2013 calculations and post-development at 11.4 ha catchment 2026 calculations
<table>
<tr><td></td><td>2013 design pre-development 24 hour volumes</td><td>Post-development 24 hour volumes</td><td>Difference</td></tr>
<tr><td>2 year</td><td>3,289 m^3</td><td>4,753 m^3</td><td>1,464 m^3</td></tr>
<tr><td>10 year</td><td>6,063 m^3</td><td>8,649 m^3</td><td>2,586 m^3</td></tr>
<tr><td>100 year</td><td>12,126 m^3</td><td>14,961 m^3</td><td>2,835 m^3</td></tr>
</table>
Pond 1: Pre-development and post-development based on 2026 calculations with allowance for CC
<table>
<tr><td></td><td>Pre-development 24 hour volumes</td><td>Post-development 24 hour volumes</td><td>Difference</td></tr>
<tr><td>2 year</td><td>15,205 m^3</td><td>20,173 m^3</td><td>4,968 m^3</td></tr>
</table>
</td></tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td>
<table>
<tr><td>10 year</td><td>29,249 m^3</td><td>37,314 m^3</td><td>8,065 m^3</td></tr>
<tr><td>100 year</td><td>51,432 m^3</td><td>63,627 m^3</td><td>12,195 m^3</td></tr>
</table>
Pond 2: Pre-development and post-development based on 2026 calculations with allowance for CC
<table>
<tr><td></td><td>Pre-development 24 hour volumes</td><td>Post-development 24 hour volumes</td><td>Difference</td></tr>
<tr><td>2 year</td><td>3,924 m^3</td><td>6,754 m^3</td><td>2,830 m^3</td></tr>
<tr><td>10 year</td><td>7,547 m^3</td><td>12,497 m^3</td><td>4,950 m^3</td></tr>
<tr><td>100 year</td><td>13,269 m^3</td><td>21,318 m^3</td><td>8,049 m^3</td></tr>
</table>
Calculations for the existing pond systems will be included in the final report to be submitted with the substantive application, with no changes proposed to Ponds 3 and 4.
</td>
</tr>
<tr>
<td>3</td>
<td>Section 2.1 outlines that 'There is one waterbody identified as a natural inland wetland in the Ecological Values Assessment, south-west of Stockpile 4. This appears to be a small western tributary to the Rangitopuni Stream which is also associated with existing overland flow paths.' I have assumed that this is why the reasons for consent under Regulation 54B(3) and 54B(4) of the NES:F (as they related to the diversion and discharge of stormwater) have been included. Confirmation would be helpful.</td>
<td>A preliminary assessment of the resource consent triggers was included in the referral application. Reasons for consent will be confirmed in the Assessment of Environmental Effects to be submitted as part of the substantive application to the Panel.</td>
</tr>
<tr>
<td>4</td>
<td>In terms of the diversion and discharge consent sought (E8), typically we would discuss total impervious area, existing and proposed, within our assessment. I understand this to include permanent access roads around the base of the landfill, potentially haul roads, and buildings. An approximate indication of these areas (m^2) on the site would be helpful.</td>
<td>The stormwater catchments for the landfill include the landfill access road, the ancillary areas including the workshops and the landfill gas generators and flare, the office building and the landfill footprint itself.
The main impervious areas are the landfill access road and ancillary areas which cover approximately 28,000 m^2. The remaining 60 ha is the landfill footprint which varies from hard packed gravel, open earthworks areas and capped areas which are grassed and stabilise. The expansion of the landfill will utilise the existing landfill access road and ancillary facilities with some minor expansions associated with the new MPI platform (ATF Pad). This will result in the impervious areas increasing to approximately 30,000 m^2 and the landfill catchment increasing to approximately 68 ha.</td>
</tr>
</table>

		
5	Similarly for the Industrial or Trade Activity component (E33), we would normally discuss the total Industrial Trade Activity Area within our assessment. An approximate indication of these areas would also be helpful	The Industrial Trade Activity (ITA) Areas include both the landfill footprint as well as the ancillary activities including the workshops, the landfill gas generators and flares and the access roads. The proposed total ITA area is approximately 70 hectares as shown on Figure 3 Stormwater Catchments of the Stormwater, ITA & Sediment report.

7 August 2026
Job No: 1092369.0000

Auckland Council
135 Albert Street
Auckland 1010

Attention: Warwick Pascoe

Dear Warwick

Redvale Landfill Expansion
Responses to Auckland Council Comments
Tranche 4

This letter provides the fourth tranche of responses to the comments received from Auckland Council on draft technical reports prepared for WM New Zealand (WMNZ) for inclusion in a proposed substantive application for resource consent under the Fast-Track Approvals Act 2024. The following appendix details the responses to the comments received from Auckland Council for each specialist area.

This letter includes the following appendices:

- Appendix A: Air Quality
- Appendix B: Health Risk

To track responses to Auckland Council, we have provided a table below to identify which comments have been received and what responses are being included in this fourth tranche.

Tonkin & Taylor Ltd | 1 Fanshawe St, Auckland Central, Auckland 1010, New Zealand
PO Box 5271, Victoria Street West, Auckland 1142 P +64-9-355 6000 E akl@tonkintaylor.co.nz

Specialist Area	Comments received on draft report	Comments received from	Response prepared for Tranche 1	Response prepared for Tranche 2	Response prepared for Tranche 3	Response prepared for Tranche 4	Response prepared by	Meeting
Landfill engineering	Yes (27/03/2026)	Walter Starke (Jacobs)	No	Yes	N/A	N/A	Andrew Shallard (Tonkin + Taylor)	Yes (29/04/26)
Geotechnical	Yes (1/04/2026)	Kyle Li (Auckland Council)	Yes	N/A	N/A	N/A	Andrew Stiles (Tonkin + Taylor)	No
Dam Assessment	N/A		N/A					
Air Quality	Yes (2/07/2026)	Louis Boamponsem	No	No	No	Yes	Jenny Simpson (Tonkin + Taylor)	No
Health Risk	Yes (22/07/2026)	Sharon Tang	No	No	No	Yes	Jenny Simpson (Tonkin + Taylor)	No
Hydrogeology	Yes (1/04/2026)	Stephen Collins (Beca)	Yes	N/A	N/A	N/A	Leon Pemberton (Tonkin + Taylor)	No
Stormwater & ITA	Yes (16/04/24)	Hillary Johnston (Tektus)	No	No	Yes	N/A	Rob Van de Munckhof (Tonkin + Taylor)	No
Waste Acceptance	Yes (30/03/2026)	Stanley Howell (Jacobs)	Yes	N/A	N/A	N/A	Penny Kneebone (Tonkin + Taylor)	Yes (24/04/26)
Bond	Yes (21/05/2026)	Compliance Monitoring (Auckland Council)	N/A	N/A	N/A	N/A		No
Ecology	Yes (13/05/2026)	Jason Smith (Morphum)	N/A	N/A	N/A	N/A		No
Wildlife Hazard Assessment	N/A							

Specialist Area	Comments received on draft report	Comments received from	Response prepared for Tranche 1	Response prepared for Tranche 2	Response prepared for Tranche 3	Response prepared for Tranche 4	Response prepared by	Meeting
Economics	Yes (9/04/26)	Tim Denne (Resource Economics)	No	No	No	Updated reports to be recirculated shortly		Yes (29/01/26)
Landscape & Visual	Yes (20/03/2026)	Peter Kensington (Auckland Council)	No	Yes	N/A	N/A	Tom Lines (Boffa Miskell)	No
Noise & Vibration	Yes (20/03/2026)	Jon Styles (Auckland Council)	No	Yes	N/A	N/A	Mat Cottle (Marshall Day Acoustics)	Yes (10/04/26)
Traffic/Transport	Yes (27/03/2026)	Philips Augustine (Auckland Council) Neil Stone (Auckland Transport)	Yes	N/A	N/A	N/A	Don McKenzie (Don McKenzie Consulting)	No
Aviation	N/A							

Applicability

This report has been prepared for the exclusive use of our client WM New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will share this information as part of engagement regarding an application under the Fast-track Approvals Act 2024 and that Auckland Council may use this information for the purpose of reviewing the application to provide feedback to WM New Zealand.

Tonkin & Taylor Ltd

Report prepared by:

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Keeley Clayton
Senior Planner

Report prepared by:

.....

Gina Buckland
Planner

Authorised for Tonkin & Taylor Ltd by:

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Simonne Eldridge
Project Director

7-Aug-26

Appendix A Air Quality

A1 Air Quality – Redvale Landfill Expansion

Table A 1: Response (Jenny Simpson) to Auckland Council (Louis Boamponsem) comments on the Draft Air Quality and Odour Technical Assessment

#	Question	Response
1	**Odour assessment methodology and modelling** • Consider adding a short discussion of acute / upset odour events, separate from the chronic odour modelling. This would help demonstrate that the report has considered both routine odour risk and the less frequent but potentially more significant events that can still drive offensive or objectionable effects.	An extra paragraph has been added to Section 7.1.1 which is as follows: *Offensive and objectionable odour effects can occur from acute exposure, (i.e a single occurrence of a very high intensity odour), or chronic exposure (i.e. where lower intensity odour events occur on multiple occasions and/or for longer durations). The FIDOL factors can take account of both acute and chronic effects. In T+T's experience, odour effects from landfills are more likely to arise from chronic exposure than acute exposure.*
2	**Source control and operational odour management** • Expand the explanation of how the morning delay in putrescible waste acceptance is expected to reduce effects in the known complaint window. This would help connect the proposed operational change more directly to the observed early-morning complaints pattern.	As discussed in Section 7.2.2, the period where there has been the highest number of complaints is from 7:00 am to 10:30 am. This time period corresponds with a combination of factors, including cool, calm morning weather conditions that are less conducive to odour dispersion, a higher likelihood of residents being at home, and the commencement of site operations such as the removal of daily cover and the arrival of waste. Delaying waste acceptance until later in the morning allows atmospheric conditions to improve, reducing the likelihood of odour reaching receptors during the vulnerable window. We consider this makes the rationale for delaying waste placement during the cooler months (May to August) sufficiently clear.

3	**Landfill gas management and its relationship to odour**
	• Integrate recent landfill gas monitoring performance more directly into the odour assessment, rather than treating gas management mainly as engineering background. This is important because the effectiveness of odour control depends heavily on the success of fugitive LFG control, cap integrity, and gas field balancing.
	• Add a concise summary of recent perimeter probe exceedances, surface methane TL2 exceedances, and gas well tuning issues in the main report. That would give readers a clearer picture of the actual current gas control challenges that sit behind the odour baseline.
	• Summarise how repeated methane hotspots are identified, remediated, and escalated if cover repair alone is insufficient. This would help demonstrate that the proposed odour
		• The link between fugitive LFG and odour is discussed in Sections 1.4, 3.1, 3.2.2, 3.5.1, 3.5.3, 4.1, 4.3.1, 4.3.2 and 4.3.3. We consider this has been satisfactorily addressed. In summary, LFG that is not effectively captured in the LFG management system and escapes to air is described as fugitive LFG. Fugitive LFG is a potential source of odour. LFG is controlled through an active gas extraction system, with individual gas wells installed and balanced at least once a month throughout the landfill. LFG collected from each extraction well is conveyed to the Energy Centre, where it is combusted in generators to produce electricity for export to the grid. The effectiveness of LFG capture to minimise fugitive LFG as a source of off-site odour is routinely assessed through:
		  ○ weekly walkovers carried about by the gas technicians;
		  ○ monthly surface methane emissions monitoring for intermediate cover and quarterly in areas of final cover; and
		  ○ deploying a monthly methane drone to provide a rapid site-wide assessment of potential fugitive methane emissions across the landfill.
		• Perimeter probes are used to detect any sub-surface migration of LFG outside the landfill footprint. Sub-surface migration of LFG is unlikely to be a source of odour off-site but could pose a flammable risk if methane accumulated in confined spaces. The perimeter gas probes have been monitored monthly since the landfill opened in 1995. Any methane TL2 exceedances (>5% methane) in the perimeter probes are included in the monthly report to Auckland Council. Between 1997 and 2009, there were a small number of

	outcome is supported by a practical and evolving gas-control system, not simply by static source assumptions. • Strengthen the discussion linking fugitive LFG control with off-site odour risk in both the baseline and proposed scenarios. This would make the odour effects narrative more integrated and better grounded in actual landfill performance.	TL2 exceedances in probes P9 and P10. There were no perimeter probe TL2 exceedances between 2009 and 2020. Since May 2020, there have been a small number of exceedances (nine) of the TL2 at P15. Each exceedance is investigated, including evaluating the well field data and measuring VOC and hydrogen sulphide concentrations (as indicators of LFG). The investigations into exceedances of the TL2 at P15 have concluded that fugitive landfill gas is unlikely to be the cause of elevated methane measurements. The gas wells are tuned at least once a month to maintain the optimal vacuum to maximise LFG capture whilst avoiding drawing air into the waste mass. TL2 values in the gas wells are set for temperature (>65°C), CO (>1000 ppm) and residual nitrogen (>20%) and any exceedances are reported to Auckland Council in the monthly report. Temperature and CO are indicators of a possible subsurface fire, which could occur if air is drawn into the waste mass. Elevated nitrogen can indicate air ingress into the waste mass and landfill gas extraction system (i.e. an indicator of conditions that could increase the risk of a fire). Most of the reported TL2 exceedances relate to elevated residual nitrogen concentrations. The most common reasons for elevated nitrogen include insufficient depth of waste over the well or a well becoming submerged by leachate or groundwater. Immediate remedial actions generally involve reducing the vacuum in that area. • We understand that "methane hotspots" refers to elevated surface methane concentrations measured during the walkover surveys. As described in the Landfill Management Plan, surface methane TL2 exceedances identified in the walkovers are investigated (including investigation of the well field in that area) and remedied as soon as practicable. Remediation usually involves placing more clay over the hotspot and further track-rolling it. If cover repair is insufficient, laterals extending from an existing well or a temporary well are installed at the hotspot to capture the fugitive gas. • See response to the first point above. No changes to the report are considered necessary.
4	**LEU / BeneVap odour and contaminant assessment** • Be more explicit about the variability in LEU odour stack testing between June and September 2025 and explain why the modelling input selected is considered representative. This would make the LEU odour conclusion more transparent and reduce the risk that the selected source term appears cherry-picked.	• More information, including comparison with LEU odour emission monitoring data from Shoal Bay landfill, Darwin, has been added to the report in Section 7.5.4.2 of the report: *T+T has also reviewed odour emissions testing from BeneVap LEUs installed at Shoal Bay Landfill, Darwin. The testing was also undertaken in accordance with AS/NZS 4323.3:2001. The testing reports note that due to the high levels of moisture in the emission the odour samples bags were diluted beyond the suggested limit in AS4323.3. The testing company indicated they considered this was required to avoid condensation forming in the sample bags. The dilution rate used is not stated but it is likely that it was calculated to ensure the diluted sample was maintained above the dew point at ambient temperature, similar to the method set out in Ontario (Canada) stack testing guidance.* *The odour concentrations recorded at Shoal Bay Landfill are shown in Table Error**! No text of specified style in document.**.2. The average odour concentration recorded at Shoal Bay Landfill was much lower (around half) the odour concentration recorded at Redvale Landfill in the September 2025 testing.*

- Clarify the extent to which the LEU is expected to remain operational over the life of the proposal and whether LEU effects are therefore time-limited.
  This matters because the LEU is described as eventually needing to be decommissioned to allow filling, which has implications for both odour and contaminant effects over time.
- Expand the explanation of what leachate management arrangement will replace the LEU once it is decommissioned.
  This would help readers understand the future operational configuration and whether there are any trade-offs between reduced LEU air effects and increased off-site leachate transport.

Table** Error! No text of specified style in document.**.2: Shoal Bay Landfill BeneVap odour concentrations

Date	Average odour concentration (OU)
17/12/2020	7,523
5/03/2021	5,687
9/02/2022	8,996
9/02/2022	10,039
9/02/2022	9,856
10/08/2022	8,450
10/08/2022	9,190
10/08/2022	7,759
19/10/2022	8,215
19/10/2022	8,501
19/10/2022	8,151
5/02/2023	7,172
5/02/2023	7,293
5/06/2023	8,472
Average	8,236

For the purposes of dispersion modelling, an odour emission rate of 10,730 OU/s was adopted. This was based on the median odour emission rate (rounded up) from the September 2025 testing. This is considered a reasonable (but likely conservative) estimate, based on a comparison with the monitoring data from Shoal Bay Landfill.

- The timing of decommissioning of the LEU is not currently known. Decommissioning of the LEU may result in more leachate being tanked off-site for disposal. As the leachate tanks and pump system (for off-site disposal) is fully enclosed, this is not expected to have any implications for odour or contaminants, other than eliminating the emissions from the LEU itself.
- Leachate will be tanked off site following the decommissioning of the LEU which does not alter onsite operations. The future leachate management arrangement is not considered relevant to the effects of discharges to air from the Project.
- Additional clarification has been added to Section 1.6 of the report, which is as follows:

	• Clarify how PFAS, mercury, benzene, and broader VOC issues are scoped between the air quality report and the health risk assessment. This would help avoid any perception that relevant LEU-related contaminants have been selectively narrowed or omitted from the air effects discussion.	*A wide range of different VOCs are present in LFG and leachate. The SHRA assesses the potential cumulative effects of exposure to VOCs, reduced sulphur compounds, mercury and per- and polyfluoroalkyl substances (PFAS) which can be emitted from several different sources at the landfill (generally at very low concentrations). For this reason, in relation to VOCs (including benzene) and mercury, the scope of this air quality assessment is limited to:* • *A screening assessment of VOC and mercury emissions from the LEU; and* • *An evaluation of the available air quality monitoring data for key VOC contaminants in comparison with New Zealand air quality standards and guidelines.*
5	**Energy Centre contaminant assessment** • Provide a clearer explanation of which contaminants have actual site-specific ambient monitoring and which rely on proxies or default rural background assumptions. This would improve transparency around the strengths and limitations of the contaminant assessment. • Expand the description of the NO_2 monitoring programme, including location, intended duration, interpretation framework, and how the results will be used. This would make the monitoring programme look like a deliberate risk-reduction / uncertainty-management measure rather than a passing mention. • Clarify why older SO_2 ambient monitoring remains representative of the current and future Energy Centre operation, or otherwise identify any limitations. This would strengthen reliance on that dataset as a key line of evidence supporting the conservative nature of the modelling. • Add a brief cross-reference to the generator stack testing evidence showing strong real-world combustion performance. This would reinforce the report's contaminant conclusions with direct operational evidence from the site rather than relying mainly on model inputs.	• The only ambient air quality monitoring relied on in the Air Quality Assessment is for SO_2, which is discussed in Section 8.2 of the report. We consider this is sufficiently clear. • No additional information is available on the NO_2 monitoring at this time. • New sentences added to Section 8.2 clarifying that there were 14 generators installed during the monitoring period, and therefore ambient SO_2 concentrations measured during the 2019 to 2021 period are likely to be representative of current levels and of the worst-case. This includes the following: *WMNZ commissioned Watercare Services Limited to undertake monitoring of SO2 in the air around Redvale Landfill from July 2019 to July 2021. Over the monitoring period there were 14 generators installed at the Site (currently there are 15 however typically only 14 are operating at any one time). Therefore, current levels of ambient SO2 are likely to be similar to the concentrations measured during the 2019 to 2021 period.* • We consider the generator stack testing is adequately addressed in Section 8.3 of the report.
6	**Leachate and operational context** • Expand the leachate section to acknowledge recent wet-weather operational pressure, including elevated leachate levels, seep/breakout management, and off-site tankering reliance. This would provide a more realistic picture of the	• These questions appear related to leachate management more generally, rather than air quality and odour effects of the Project. While leachate breakouts could be a localised source of odour, this has not been identified as a significant ongoing issue at the Redvale Landfill. For this reason, no changes have been made to the report. • The weekly walkover inspections by the gas technicians include visual inspections for leachate breakouts. Leachate breakouts occur more commonly during wet weather, when water/leachate can become perched

	operational environment in which the LEU and odour controls have to function. • Explain more clearly how the proposal to 2036 will be supported by resilient leachate management capacity, especially in wetter years. This is important because leachate stress can affect overall landfill management performance, including odour risk, seepage, and operational flexibility.	in the waste mass. Fixes for leachate breakouts usually involve excavating around the leachate breakout area, pumping the leachate out and then placing more cover. In recent years, there have been extreme weather events such as Cyclone Gabrielle, which have resulted in elevated leachate levels in the base of the landfill. To manage these conditions, additional resources have been directed towards leachate removal, including increased off-site tankering and use of the LEU (BeneVap), to maintain operational performance. The current leachate management strategy has demonstrated its effectiveness at dealing with unexpected wet weather events and will remain resilient until 2036. Tankering of leachate off-site offers a fast and flexible option of dealing with increased leachate quantities during wetter years.
7	**Adaptive management, and report usability** • Set out clearer adaptive-management triggers linked to complaint rates, verified odour detections, surface methane exceedances, perimeter probe results, and ambient monitoring outcomes. This would make the report more persuasive by showing what practical response framework would apply if performance deteriorates after consent is granted.	We consider the response framework is appropriately discussed in the various sub-sections in Section 3 of the report supported by the detail set out in the Landfill Management Plan to be submitted with the application.

Appendix B Health Risk

A2 Health Risk – Redvale Landfill Expansion

Table A 2: Response (Jenny Simpson) to Auckland Council (Sharon Tang) comments on the Draft Screening Health Risk Assessment

#	Question	Response
	The technical logic of the SHRA appears generally sound and the risk assessment framework is appropriate. However, the conclusions relating to roof water quality, irrigation pathways relating to the Class 2 landfill extension area and stormwater discharges, and potential off-site landfill gas migration would benefit from additional supporting evidence and discussion to strengthen the overall assessment and improve transparency of the risk characterisation process.	Noted. Specific responses to questions are provided below.
1	The SHRA has in general followed appropriate screening risk assessment process for hazard identification and assessment, exposure assessment and risk characterisation. It generally provides sufficient detail and justification regarding potential contaminant sources, off-site human receptors and exposure pathways. The Conceptual Site Model (CSM) identifies complete or partially complete exposure pathways, including: a. Inhalation of airborne contaminants arising from emissions from landfill gas (LFG) generators, the leachate evaporator (BeneVap), and fugitive LFG emissions; b. Potential exposure via irrigation of a commercial tomato crop using water from the Rangitopuni Stream that may contain contaminants from site stormwater or leachate, in the event of seepage through the lining system; c. The potential exposure pathways involving groundwater use for drinking or irrigation, contact recreation or dust deposition on roofs and soil have been screened out due to the absence of plausible source-receptor linages and/or the volatile nature of contaminants such as VOCs and reduced sulphur compounds. (Please note additional comments on dust deposition are provided in the latter points)	No response required
2	The SHRA has adopted an approach that assesses the combined off-site effects of the existing consented landfill and the proposed landfill expansion. While this approach does not distinguish the specific contributions of the Project from the existing activities, the assessment of cumulative oof-site effects is ultimately of greater relevance when evaluating potential human health risks associated with the proposed expansion over its expected operational timeframe and scale.	No response required

3	I generally concur with the methodology used in the SHRA for hazard identification and assessment, as well as the cumulative risk assessment approach adopted for risk characterisation. However, there are several aspects of exposure assessment for which where additional information or justification would be beneficial: a. The SHRA shows that concerns have been raised regarding the potential impact of the project on local roof-collected drinking water supplies. However, there is limited information in the SHRA regarding whether such issues currently exist, or the extent of any existing impacts associated with the operation of the current Redvale Landfill. If such information is unavailable, testing of roof-collected drinking water supplies at relevant sensitive receptors within the surrounding rural environment should be considered as an initial step in identifying whether a problem exists. The information would assist in understanding existing conditions and could help support the conclusions of the screen health risk assessment. b. The SHRA indicates that dust emissions associated with waste placement are expected to be negligible beyond approximately 100 m from the active working face. While the nearest sensitive receptors are reported to be approximitely140 m from the closest point of waste placement, the proximity of these receptors, together with the proposed extension of the landfill area, may warrant further consideration of potential dust deposition effects on roof-collected drinking water supplies. The water quality testing recommended in Comment 3a may assist in determining whether further assessment is required. c. Seepage of leachate through the lining system into groundwater, and subsequently to the Rangitopuni Stream, was modelled in the Hydrological Assessment for Class 1 landfill area only, but not for the Class 2 extension. The modelling results have subsequently been relied upon in the SHRA. The Hydrological Assessment indicates that this approach was adopted because the Waste Acceptance Criteria (WAC) for the Class 2 extension are largely based on national technical guidelines, which are considered protective of both ecological and irrigation receptors. However, this explanation alone does not appear sufficient to justify the different assessment approach adopted for Class 1 and Class 2 extension areas, as the same rational could also be applied to the Class 1 landfill. While the SHRA notes that long-term groundwater monitoring downgradient of the existing landfill has shown no significant changes in groundwater quality over time and no evidence of leachate impacts, additional justification for excluding the Class 2 extension from the modelling assessment would be desirable. d. The assessment of irrigation-related health risks associated with the commercial tomato farm appears to consider only the leachate-via-groundwater pathway, whereas the stormwater pathway to the Rangitopuni Stream has been identified in the SHRA as a complete exposure pathway. The	a. The question about possible impacts on roof collected drinking water was raised by Dairy Flat School. In discussion with the school, WM collected samples of the roof collected water and had it tested by Hills Laboratory. The lab testing showed the water at the school was within the relevant Maximum Acceptable Values (MAVs) for drinking water. We understand Auckland Council has undertaken further testing, which also shows compliance with the MAVs. Testing of roof collected drinking water is not considered necessary given the negligible level of risk shown in the SHRA. b. It is important to note that the Project does not extend the Class 1 landfill footprint , as suggested in the question. It will therefore not increase potential dust exposure at dwellings beyond that which has already occurred, or will occur, under the existing consents. The receptors referred to in this question are the closest receptors to the landfill footprint and are located along Horseshoe Bush Road, to the north of the landfill. In this area, the edge of the landfill footprint is generally about 150 m from properties on Horseshoe Bush Road, with the closest dwelling estimated to be approximately 140 m from the landfill footprint. The available separation distances are considered adequate to avoid adverse dust deposition effects, including on roofs used to collect drinking water, provided standard dust controls continue to be implemented. For context, the Project will include placement of additional non-putrescible waste along the northern edge of the existing consented landfill footprint. However, within 50 m of the landfill edge, which corresponds to approximately 150 m to 200 m from neighbouring dwellings, the additional waste depth will range from 0 m at the landfill edge to approximately 7 m. The volume and duration of waste placement within 200 m of dwellings will therefore be relatively limited. On this basis, testing of roof-collected drinking water is not considered warranted given the available separation distances, the dust controls used and absence of known issues from current (and historic) landfill operations in this area. c. The rationale for not undertaking fate and transport modelling of potential leachate seepage through the Class 2 landfill liner is set out in Section 5.3 of the Hydrogeological Assessment Report. There were no issues raised with this approach in Auckland Council's comments on that report. The different assessment approaches adopted for the Class 1 and Class 2 landfill areas reflect the different Waste Acceptance Criteria (WAC) proposed for each landfill area. T+T considers that fate and transport modelling is not strictly required for either a Class 1 or Class 2 landfill to demonstrate that the risk of adverse effects from leachate seepage through the lining system is low, provided the relevant WAC from the WasteMINZ Technical Guidelines are adopted and the site and environmental context are consistent with the risk assessment used to derive those criteria. For this Project, fate and transport modelling was undertaken for the Class 1 landfill because the proposed WAC differ from the standard Class 1 WAC in the WasteMINZ Technical Guidelines for several contaminants. The modelling was therefore used to assess

	rational provided in the SHRA for excluding further consideration of this pathway is considered somewhat limited: • No statistically significant changes in water quality have been observed between upstream and downstream monitoring locations within the Rangitopuni Stream that can be attributed to existing site activities; • No material changes are anticipated with the landfill extension; • Monitoring data from site stormwater discharge generally show **low** concentrations of contaminants. It is noted that the Stormwater, ITA and Sediment Assessment identify some alignment between monitoring results from the site discharge and the receiving environment. Although stormwater runoff from operational areas is treated prior to discharge, there is limited information available in the reports to better understand stormwater discharge quality and stream water quality in relation to contaminants of potential human health concern. Additional discussions and supporting information are recommended, including consideration of whether any monitoring results indicate potential leachate influence within the stormwater system. Given that the SHRA considers the unlikely event of leachate breakout through liner system as a potential exposure pathway, it would be logical to undertake further assessment of the stormwater pathway before reaching a conclusion regarding irrigation-related risks. e. To better understand the potential risks associated with the irrigation pathway, it is recommended that the SHRA include a discussion of the actual the stream water is granted as an irrigation source for a commercial tomato farm, it is recommended to include a discussion of the actual water quality of the Rangitopuni Stream in relation to its use as an irrigation source for a commercial tomato-growing operation. While the stream is consented for irrigation use, commentary regarding the suitability of the stream water quality from a human health perspective would strengthen the assessment and help support the conclusion that risks associated with this pathway are negligible. f. The SHRA indicates that the project is not expected to materially increase the maximum annual rate of LFG collection and destruction at the Energy Centre. Nevertheless, it is recommended that the assessment include commentary on the potential for off-site migration of landfill gas, supported by available landfill gas monitoring data and consideration of the distances between the landfill and the neighbours' buildings. Such information would provide additional confidence that off-site exposure risks associated with landfill gas migration remain adequately controlled.	whether those alternative acceptance criteria would remain protective of ecological and irrigation receptors in the site-specific context of the Project. This is not the case for the Class 2 landfill as the Class 2 WAC follows the standard criteria contained in the WasteMINZ Technical Guidelines and therefore the site and environmental context for the Class 2 area are consistent with the assumptions underpinning the risk assessment used to derive those criteria. d. Water quality in the sediment retention pond outlets is discussed in Section 7 of the Stormwater, ITA and Sediment Assessment. The parameters that are monitored against trigger levels include parameters that would be indicators of the presence of leachate, such as ammoniacal nitrogen and conductivity. The data shows no evidence of any changes or increasing trends in stormwater quality with monitoring results generally below any relevant guideline values and the existing trigger values, with only occasional exceedances with no allowance for mixing within the receiving environment. The stormwater management system is designed to avoid leachate entering site stormwater. In the unlikely event that leachate was able to enter the stormwater system, this would be detected by continuous monitoring at the pond inlet and outlet, and the discharge would be stopped. Therefore, the combination of engineering controls at the landfill, monitoring and contingency measures, should ensure there is negligible risk of ongoing discharges of leachate into the Rangitopuni Stream or any associated human health risk from the use of water from the stream to irrigate tomatoes. e. Water quality in the Rangitopuni Stream is discussed in Section 2 of the Stormwater, ITA and Sediment Assessment and the monitoring results are presented in Appendix C. The Stormwater, ITA and Sediment Assessment concludes that water quality within the Rangitopuni Stream is typical of streams located within the rural/urban boundary in the Auckland Region. Streams of this nature would not generally be considered appropriate as a source of potable water without treatment. A comparison of the in-stream monitoring data for key metals against the New Zealand Drinking Water Standards (DWS) indicates that concentrations of aluminium and manganese exceed the DWS <u>upstream</u> of the landfill but would not exceed recreational water quality criteria (based on an assumed 100 mL per day incidental ingestion). There is no statistically significant impact of the landfill discharges on downstream concentrations of metals, including aluminium or manganese. Therefore, any health risks associated with exposure to metals from water in the Stream are considered to be unrelated to the Project. f. Sub-surface migration of LFG off-site could pose a flammable risk if methane accumulated in confined spaces. The scope of the SHRA does not include physical hazards (such as fire and explosion) therefore no changes have been made to the report, however further commentary is provided below.

		No changes are proposed to the current controls to minimise the risk of sub-surface migration of LFG. As described in Section 3.7 of the existing Landfill Management Plan (Landfill Gas Management Plan), perimeter probes are used to detect any sub-surface migration of LFG outside the landfill footprint. The perimeter gas probes have been monitored monthly since the landfill opened in 1995. Any methane TL2 exceedances (>5% methane) in the perimeter probes are included in the monthly report to Auckland Council. Between 1997 and 2009, there were a small number of TL2 exceedances in probes P9 and P10. There were no perimeter probe TL2 exceedances between 2009 and 2020. Since May 2020, there have been a small number of exceedances (nine) of the TL2 at P15. Each exceedance is investigated, including evaluating the well field data and measuring VOC and hydrogen sulphide concentrations (as indicators of LFG). The investigations into exceedances of the TL2 at P15 have concluded that fugitive landfill gas is unlikely to be the cause of elevated methane measurements.