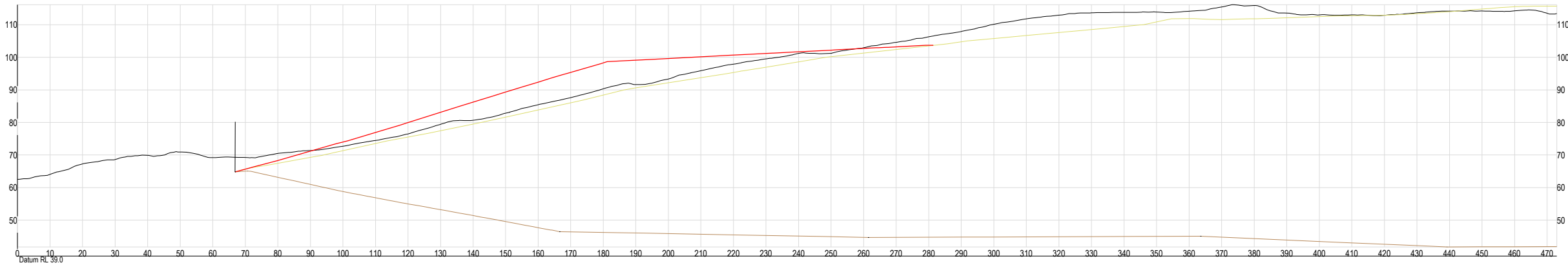
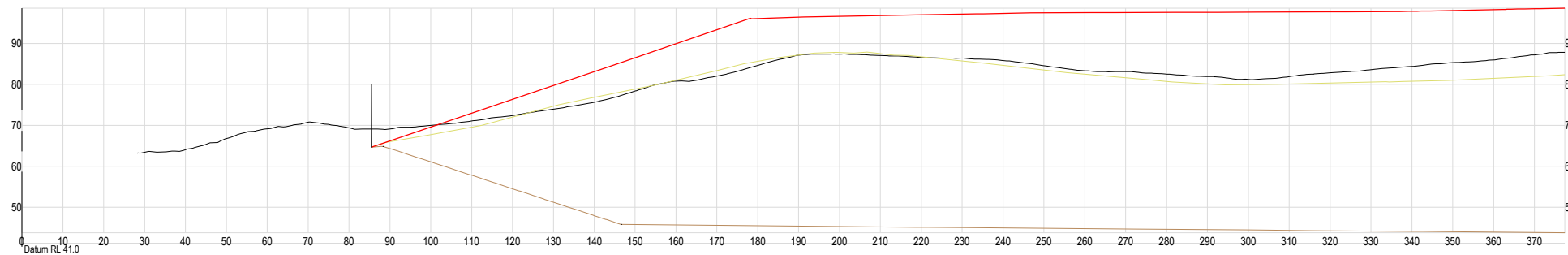


Appendix C Cross-Sections and Bund Profiles

- C1 Cross-sections N1, N2 and N2a**
- C2 Cross-sections E1, E2 and E3**
- C3 Cross-sections S1, MF1, MF2 and MF3**

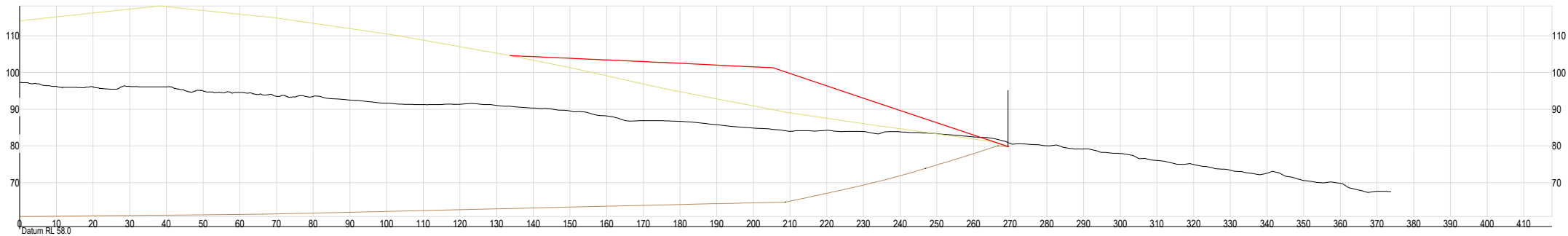


N2a CROSS SECTION
FIG A1
SCALE (A1) 1:750
SCALE (A3) 1:1500



N2 CROSS SECTION
FIG A1
SCALE (A1) 1:750
SCALE (A3) 1:1500

EXISTING GROUND LEVEL
PROPOSED CAP DESIGN
PROPOSED CL2 BASEGRADE DESIGN
CONSENTED CAP DESIGN
PROPOSED PERIMETER BUND
EXISTING BASEGRADE



N1 CROSS SECTION
FIG A1
SCALE (A1) 1:750
SCALE (A3) 1:1500



- NOTES**
- FOR LOCATION OF CROSS-SECTIONS SEE FIGURE A1
 - REFER TO TEXT OF GEOTECHNICAL ASSESSMENT REPORT, JUNE 2025 FOR DISCUSSION

DESIGNED KJUN
DRAWN MELP
DESIGN CHECKED
FIGURE CHECKED

NOT FOR CONSTRUCTION

APPROVED DATE

FIGURE STATUS
PRELIMINARY DRAFT
PROJECT PHASE
CONSENT DESIGN

THIS DRAWING IS NOT TO BE USED
FOR CONSTRUCTION PURPOSES
UNLESS SIGNED AS APPROVED

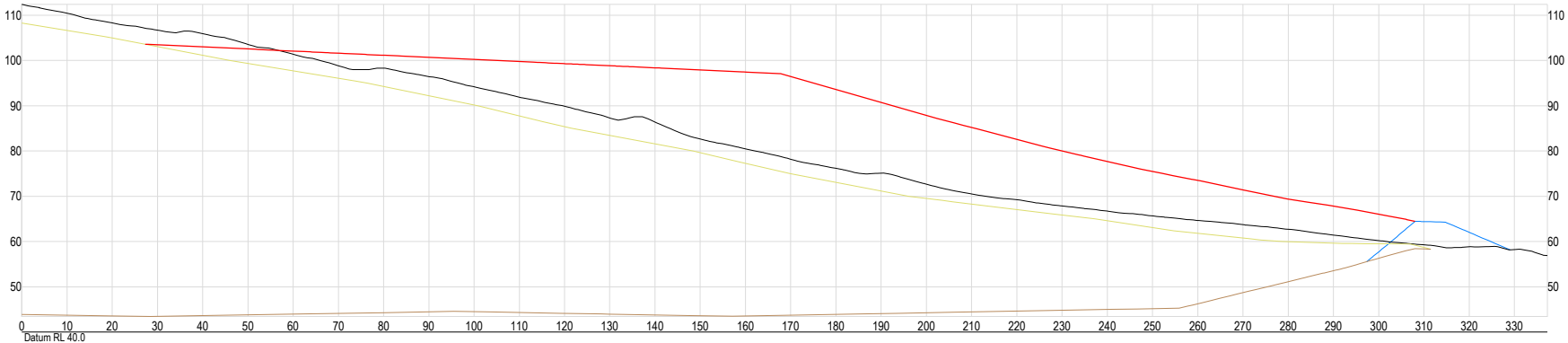
CLIENT WM NEW ZEALAND
PROJECT ARL TP

TITLE CROSS SECTIONS N1, N2 AND N2a

SCALE (A1) 1:750

FIG No. FIGURE C1

REV 1



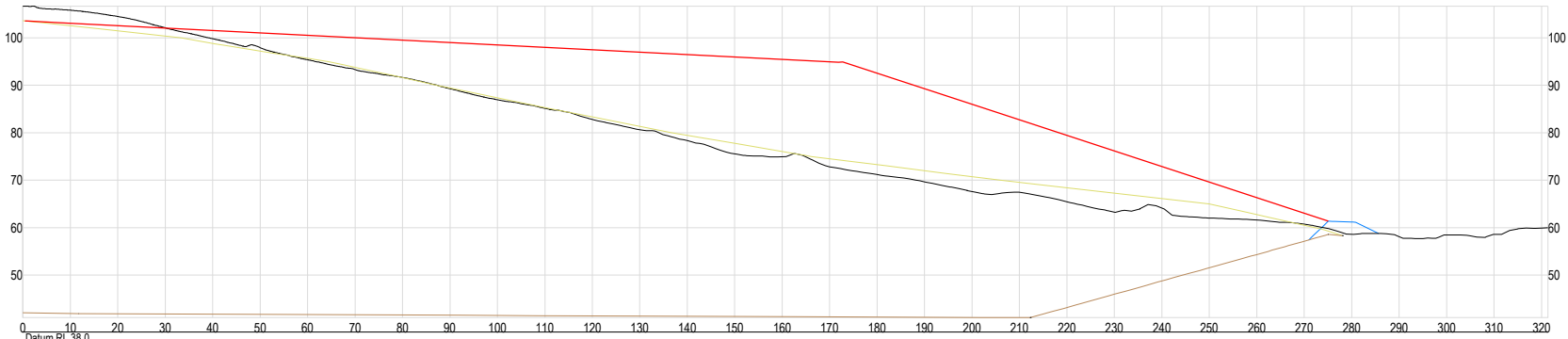
E3

CROSS SECTION

FIG A1

SCALE (A1) 1:750

SCALE (A3) 1:1500



SECTION E2

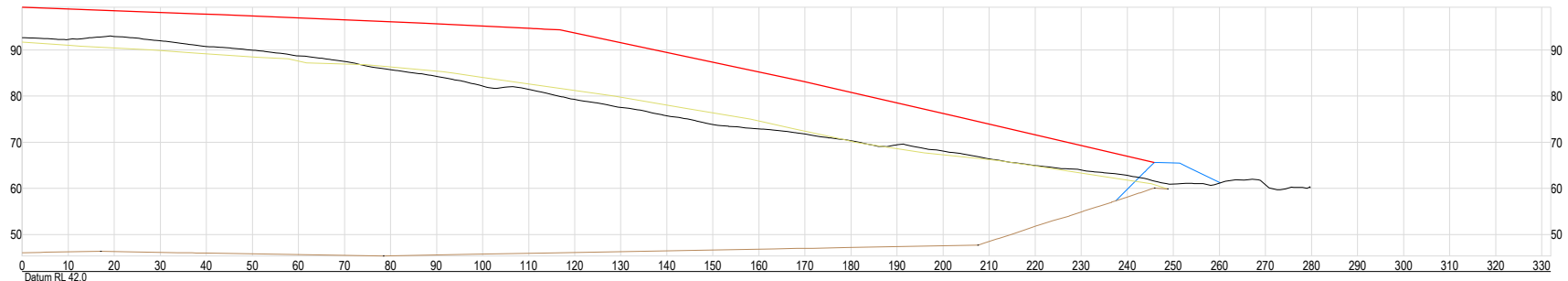
E2

CROSS SECTION

FIG A1

SCALE (A1) 1:750

SCALE (A3) 1:1500



E1

CROSS SECTION

FIG A1

SCALE (A1) 1:750

SCALE (A3) 1:1500



1:750 (A1)
1:1500 (A3)



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- NOTES
1. FOR LOCATION OF CROSS-SECTIONS SEE FIGURE A1

2. REFER TO TEXT OF GEOTECHNICAL ASSESSMENT REPORT, JUNE 2025 FOR DISCUSSION

DESIGNED	KJUN	APR.25	FIGURE STATUS
DRAWN	MELP	MAY.25	PRELIMINARY DRAFT
DESIGN CHECKED	DES.	DATE	PROJECT PHASE
FIGURE CHECKED	CAD	DATE	CONSENT DESIGN

NOT FOR CONSTRUCTION

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED AS APPROVED

APPROVED

DATE

CLIENT **WM NEW ZEALAND**

PROJECT **ARL TP**

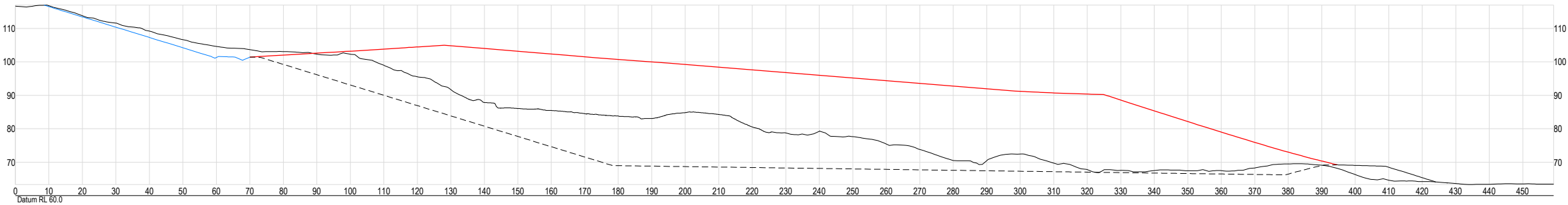
TITLE CROSS SECTIONS E1, E2 AND E3

DRAFT

SCALE (A1) 1:750

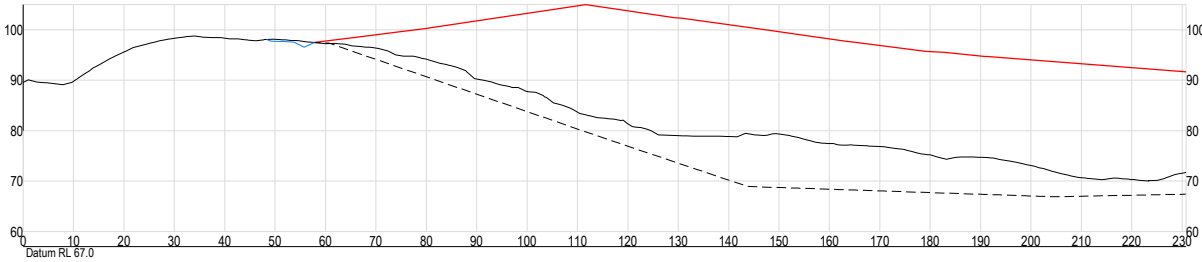
FIG No. FIGURE C2

REV 1



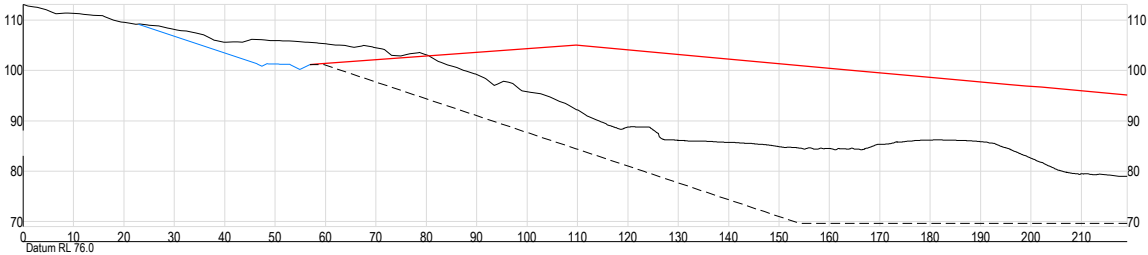
MF3 CROSS SECTION

FIG A1SCALE (A1) 1:750SCALE (A3) 1:1500



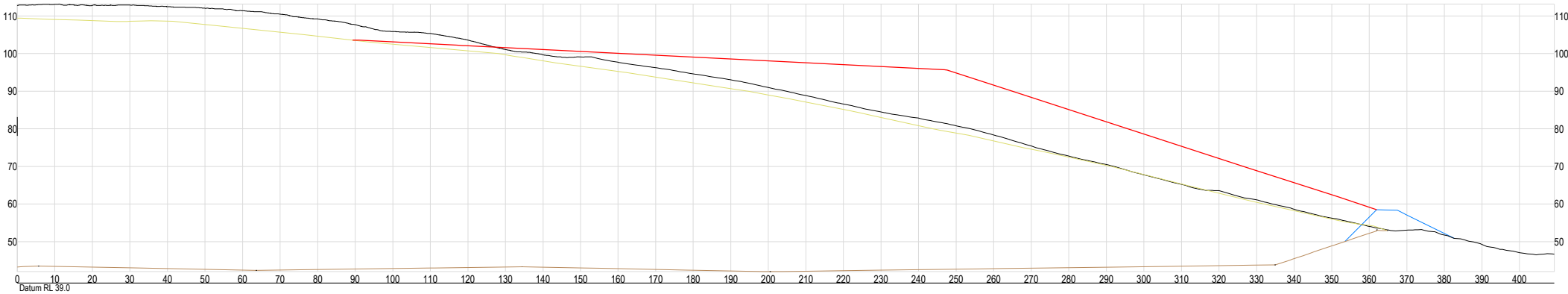
MF2 CROSS SECTION

FIG A1SCALE (A1) 1:750SCALE (A3) 1:1500



MF1 CROSS SECTION

FIG A1SCALE (A1) 1:750SCALE (A3) 1:1500



S1 CROSS SECTION

FIG A1SCALE (A1) 1:750SCALE (A3) 1:1500



1:750 (A1)
1:1500 (A3)



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NOTES	
1. FOR LOCATION OF CROSS-SECTIONS SEE FIGURE A1	
2. REFER TO TEXT OF GEOTECHNICAL ASSESSMENT REPORT, JUNE 2025 FOR DISCUSSION	

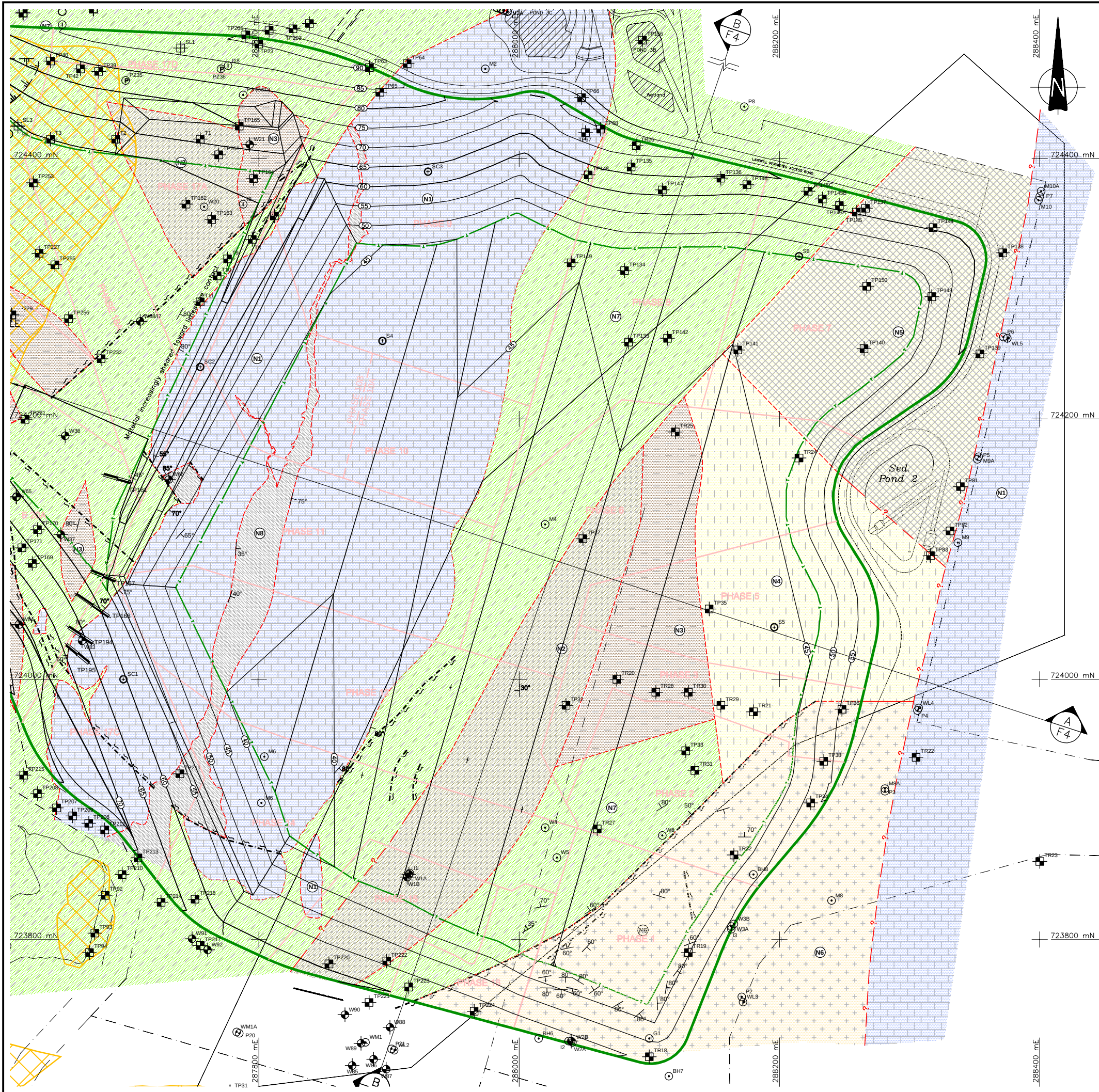
DESIGNED	KJUN	APR.25	FIGURE STATUS PRELIMINARY DRAFT PROJECT PHASE CONSENT DESIGN
DRAWN	MELP	MAY.25	
DESIGN CHECKED			
FIGURE CHECKED			
NOT FOR CONSTRUCTION			THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED AS APPROVED
APPROVED			
DATE			

CLIENT	WM NEW ZEALAND
PROJECT	ARL TP
TITLE	CROSS SECTIONS S1, MF1, MF2 AND MF3
SCALE (A1)	1:750
FIG No.	FIGURE C3
REV	1

Appendix D Engineering Geology Plans

D1 Eastern Property

D2 Western Property



LEGEND

Existing ground contour (2013) (5m Interval)
Proposed Basegrade contour (2012)
Toe of Highwalls
Line A
PHASE 7 Phase Boundaries
Inferred fault trace/shear zone
Measured dip and dip direction
Boreholes
Piezometer
Inclinometer
Shaft
Test Pits
Trench
Inferred Thrust Fault
Shear Key

NORTHLAND ALLOCHTHON

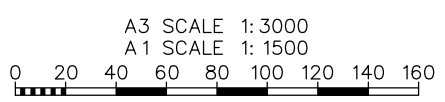
N1 Limestone
N2 Blocky Mudstone and Siltstone
N3 Brown carbonaceous Mudstone
N4 White crushed Mudstone
N5 Cemented Siltstone, blocky
N6 Grey blocky Siltstone and Mudstone
N7 Green to dark grey-green pervasively sheared Mudstone
N8 Calcareous grey Mudstone

WAIEMATA GROUP

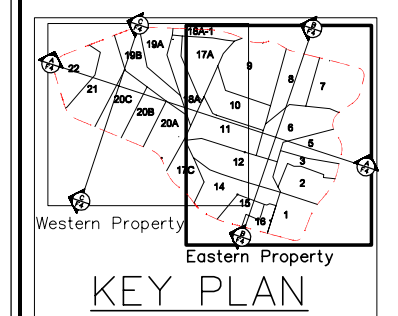
(Post Emplacement)
Grey clayey, silt, fine very weak SANDSTONE and fine sandy SILTSTONE
(Pre - Emplacement)
Light orange, pink, red-purple and grey very weak to weak clayey silty fine SANDSTONE and sandy Siltstone

AUTOCLASTIC BRECCIA
Grey to red-brown to grey green very weak BRECCIA of mudstone /siltstone in a silt/clay matrix.

OTHER
Stockpiled Fill



- NOTES :**
- N1, N2 etc refer to material types as defined in the Technical Specification.
 - Refer to previous Geotechnical Reports for test pit and borehole logs.
 - Testpits and boreholes are correct in plan position only. Subsequent earthworks are likely to have changed surface elevation.
 - Boundaries and distribution of geological units approximate only and inferred from available information.
 - Basegrade shown is the 2010 Revised Basegrade
 - Cell Phase Layout as currently advised by TPI
 - Drawing to be read in conjunction with text of "Geotechnical Review Report, 29331-300 , November 2013"
 - Existing contours as at Aug 2012 (provided by Precision Aerial Surveys Ltd).



2	Revised naming 18A-1 to 17D		
1	Revised issue	APS	Aug.13
0	First Issue	APS	Aug.13
REVISION DESCRIPTION		BY	DATE
DESIGNED :		APS	Aug.13
DRAWN :		JATG	Aug.13
DESIGN CHECKED :			
DRAFTING CHECKED :			
REFERENCE :			

CADFILE : \\29331-GEO-Figure 3_4.dwg
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Environmental and Engineering Consultants
105 Carlton Gore Road, Newmarket, Auckland
Tel. (09) 355 6000 Fax. (09) 307 0265
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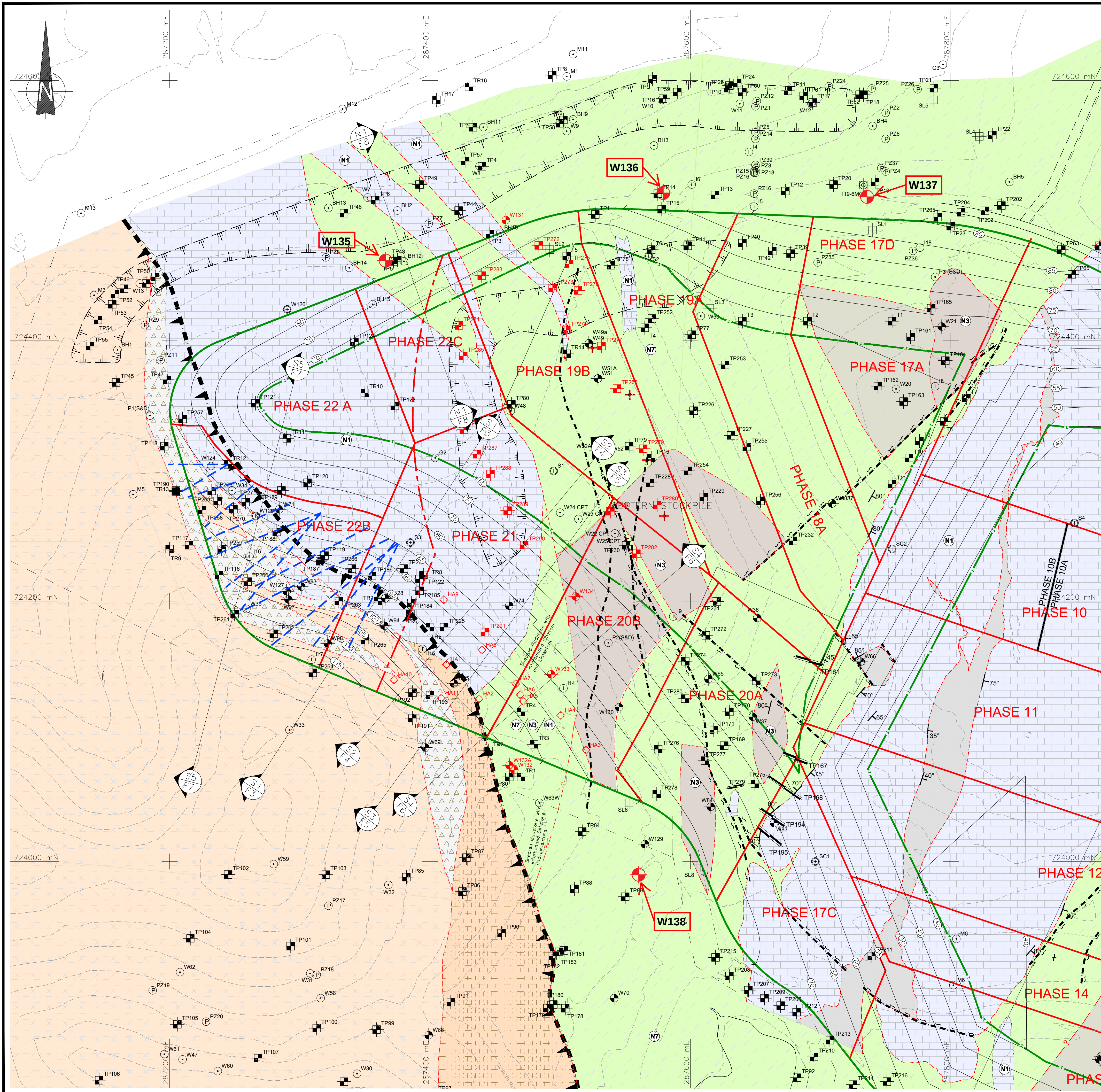
WM New Zealand

**Redvale Landfill
ARL - TP**

Engineering
Geological Plan
Eastern Property

Figure D1

DRAWING STATUS: PRELIMINARY DRAFT



LEGEND

Existing ground contour (2018) (5m Interval)

Proposed Basegrade contour (2010)

Toe of Highwalls

Line A

PHASE 7 Phase Boundaries

Phase 22 Boundary assumed for August 2015 Geotechnical Assessment

Inferred fault trace/ shear zone

Measured dip and dip direction

Boreholes

Piezometer

Inclinometer

Shaft

Test Pits

Trench

(2017) Borehole/Test Pits

(2017) Handauger Boreholes

Drilled Horizontal Drain

Inferred Thrust Fault

Shear Key

NORTHLAND ALLOCHTHON

N1 Limestone

N2 Blocky Mudstone and Siltstone

N3 Brown carbonaceous Mudstone

N4 White crushed Mudstone

N5 Cemented Siltstone, blocky

N6 Grey blocky Siltstone and Mudstone

N7 Green to dark grey-green pervasively sheared Mudstone

N8 Calcareous grey Mudstone

WAITEMATA GROUP

(Post Emplacement)

Grey clayey, silt, fine very weak SANDSTONE and fine sandy SILTSTONE

(Pre - Emplacement)

Light orange, pink, red-purple and grey very weak to weak clayey silty fine SANDSTONE and sandy Siltstone

AUTOCLASTIC BRECCIA

Grey to red-brown to grey green very weak BRECCIA of mudstone /siltstone in a silt/clay matrix.

ORIGINAL IN COLOUR

A3 SCALE 1:3000

A1 SCALE 1:1500

0 20 40 60 80 100 120 140 160

- NOTES :
- N1, N2 etc refer to material types as defined in the Technical Specification.
 - Refer to previous Geotechnical Reports for test pit and borehole logs.
 - Testpits and boreholes are correct in plan position only. Subsequent earthworks are likely to have changed surface elevation.
 - Boundaries and distribution of geological units approximate only and inferred from available information.
 - Cell Phase Layout as currently advised by WMNZ
 - Drawing to be read in conjunction with text of "Phase 21, Phase 22B, and Phase 22C Geotechnical Assessment Report, 1004846.0203, April 2019".
 - Existing contours supplied by Waste Management, June 2018 contours surveyed by Precision Aerial Surveys (PAS) modified as follows:
 - July 2016 contours surveyed by PAS used under western limerock stockpile.
 - June 2003 contours surveyed by Stimpson Surveyors used beneath trees at top of Southern Highwall.

W137

Additional 2024 boreholes

0	First Issue		
REVISION DESCRIPTION	BY	DATE	
DESIGNED :	APS	Mar. 19	
DRAWN :	KAH	Mar. 19	
DESIGN CHECKED :			
DRAFTING CHECKED :			
REFERENCE :			

CADFILE : \\1004846.0203-F2.dwg

APPROVED :

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WM New Zealand

Redvale Landfill

ARL - TP

Engineering Geology Plan

Western Property

showing Additional Boreholes

DRAWING STATUS: PRELIMINARY DRAFT

SCALES (AT A1 SIZE)

AS SHOWN

Figure D2

REV. 0

Appendix E Recent Geotechnical Investigations

E1 Borehole W135

E2 Borehole W136

E3 Borehole W137

E4 Borehole W138

BOREHOLE LOG

BOREHOLE No.:

W135

SHEET: 1 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 17/10/2024

FINISH DATE: 17/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: Northern Boundary Access Road

CO-ORDINATES: 724455.91 mN
(EDENTM1949) 287366.92 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 79.70m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total
Station\Surveyed

GEOLOGICAL UNIT	MATERIAL DESCRIPTION SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation	Rock Weathering UW SW MW CW RW	Rock Strength Q_{sp} σ_{ci} σ_{cs} σ_{cm} σ_{cm} σ_{cm}	Sampling Method Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	ROCK MASS DISCONTINUITIES				Description & Additional Observations	Water Level (Ref #) / Fluid Loss (%) 25 50 75	Casing HQ	Installation	Core Box No
									Defect Log	Fracture Spacing (mm) 2000 1000 500 300 100 50 20	RQD (%)						
Fill	0.00m: Cobbly GRAVEL; light grey. Medium dense, dry, poorly graded; gravel, coarse, up to 50 mm sub-rounded to angular grey (fill - embankment) 0.15m: Gravelly SILT, some cobbles; bluish grey. Very stiff to hard, dry to moist, poorly graded, up to 30 mm sub-angular to angular grey (fill - embankment)					79	1										
	1.50m: Gravelly SILT, trace clay; bluish grey. Very stiff to hard, dry to moist, poorly graded; gravel, fine, up to 5 mm sub-angular to angular grey (fill - embankment)					78	2										
	2.90m: Clayey SILT, some gravel; bluish grey. Very stiff to hard, dry to moist, poorly graded (fill - embankment)					77	3										
	4.50m: Organic CLAY, some silt, trace gravel; grey and mottled orange. Very stiff, moist, medium to high plasticity wood fragments (partially decomposed) (fill - embankment) 4.70m: Gravelly CLAY; grey and mottled orange. Very stiff, moist, medium to high plasticity (fill - embankment) 4.87m: Clayey SILT, minor gravel; dark grey and mottled orange. Very stiff to hard, dry to moist, low to medium plasticity (fill - embankment) 5.00m: Gravelly COBBLES, minor silt; grey. Loose to medium dense, dry to moist, poorly graded; cobbles, up to 60 mm sub-					76	4										
						75	5										

Box 0.00-3.60m

Design Groundwater Depth 10.30mBGL (69.40mRL) measured in PZ40 at 10:27AM on 23 October 2024.

BOREHOLE LOG

BOREHOLE No.:

W135

SHEET: 2 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 17/10/2024

FINISH DATE: 17/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: Northern Boundary Access Road

CO-ORDINATES: 724455.91 mN
(EDENTM1949) 287366.92 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 79.70m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total
Station/Surveyed

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	Rock Weathering	Rock Strength	Sampling Method	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	ROCK MASS DISCONTINUITIES				Water Level (Ref #) / Fluid Loss (%)	Casing	Installation	Core Box No
										Defect Log	Fracture Spacing (mm)	RQD (%)	Description & Additional Observations				
Fill	rounded to angular grey (fill - embankment) 5.35m: CORE LOSS - Suspect loose granular material dropped out of barrel							74									
	6.00m: CLAY, some organic, minor cobbles; grey with streaked orange. Stiff to very stiff, moist to wet, medium to high plasticity wood fragments (partially decomposed) (fill - embankment)							73									
Tauranga Group	7.50m: Gravelly SILT, some organic, minor clay; light grey. Very stiff to hard, moist to wet, non-plastic to low plasticity; organics, rootlets rootlets (fill - embankment)							72									
	8.19m: Silty CLAY, minor organic, trace gravel; brownish grey. Very stiff, moist; organics, rootlets rootlets (partially decomposed) (fill - embankment)							71									
	8.25m: CLAY, minor organic; greenish grey. Stiff to very stiff, moist to wet, medium plasticity carbonaceous flecks (Alluvium - Pleistocene).							70									
	9.00m: Silty CLAY, some sand, trace organic; pinkish grey. Stiff, moist to wet, medium to high plasticity carbonaceous flecks (Alluvium - Pleistocene).							69									
	9.36m: Silty CLAY, trace organic; reddish grey and speckled orange. Stiff, moist to wet, medium to high plasticity carbonaceous flecks (Alluvium - Pleistocene).																
	9.92m: Silty SAND, trace organic; brownish grey. Medium dense, moist, well graded carbonaceous flecks; sand, fine (Alluvium - Pleistocene).																
	10.20m: CLAY, trace organic; greenish grey. Firm to stiff, moist to wet, high plasticity carbonaceous material (Alluvium - Pleistocene).																
	10.75m: CLAY, some organic; dark greenish grey. Stiff, moist to wet, medium to high plasticity carbonaceous flecks and																

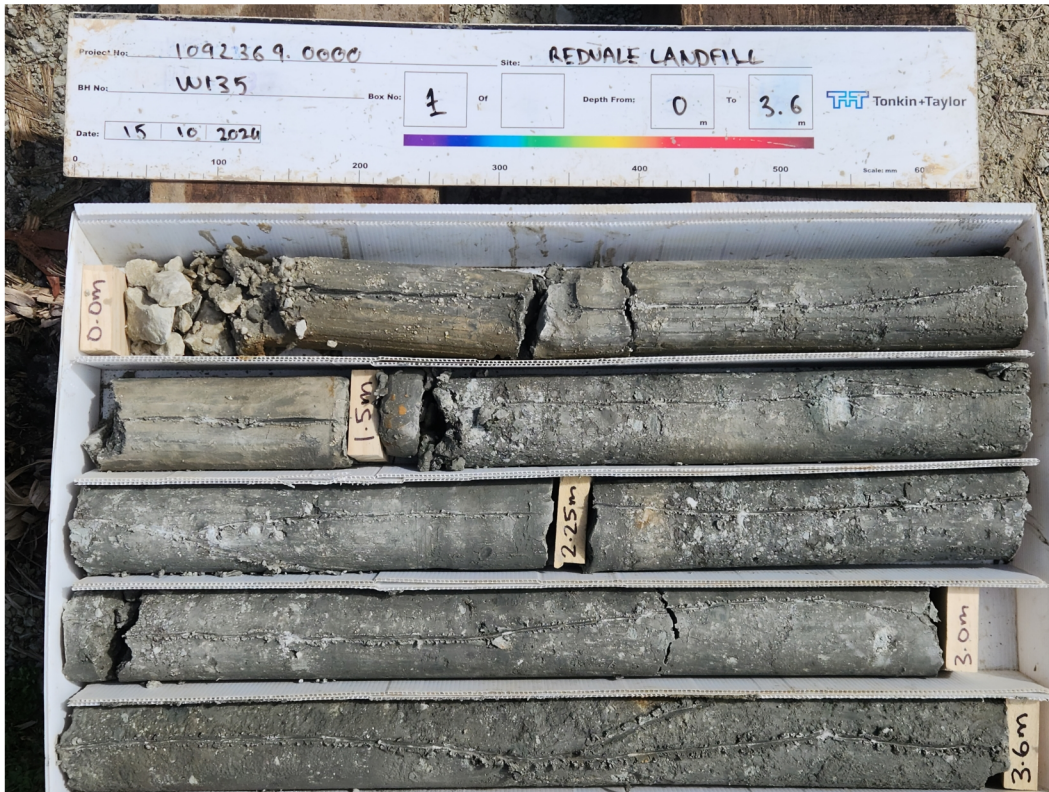
10.30m: PZ40 23/10/2024 10:27:00 am
69.40mRL

Design Groundwater Depth 10.30mBGL (69.40mRL) measured in PZ40 at 10:27AM on 23 October 2024.

CORE PHOTOS

BOREHOLE No.: W135
Hole Location: Northern Boundary Access Road
SHEET: 1 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	724455.911 mN 287366.921 mE	DRILL TYPE: DF250T	HOLE STARTED: 17/10/2024
R.L.:	79.70m	METHOD: Rotary cored	HOLE FINISHED: 17/10/2024
DATUM:	NZVD2016	LOGGED BY: CHST	CHECKED: APS



0.00-3.60m

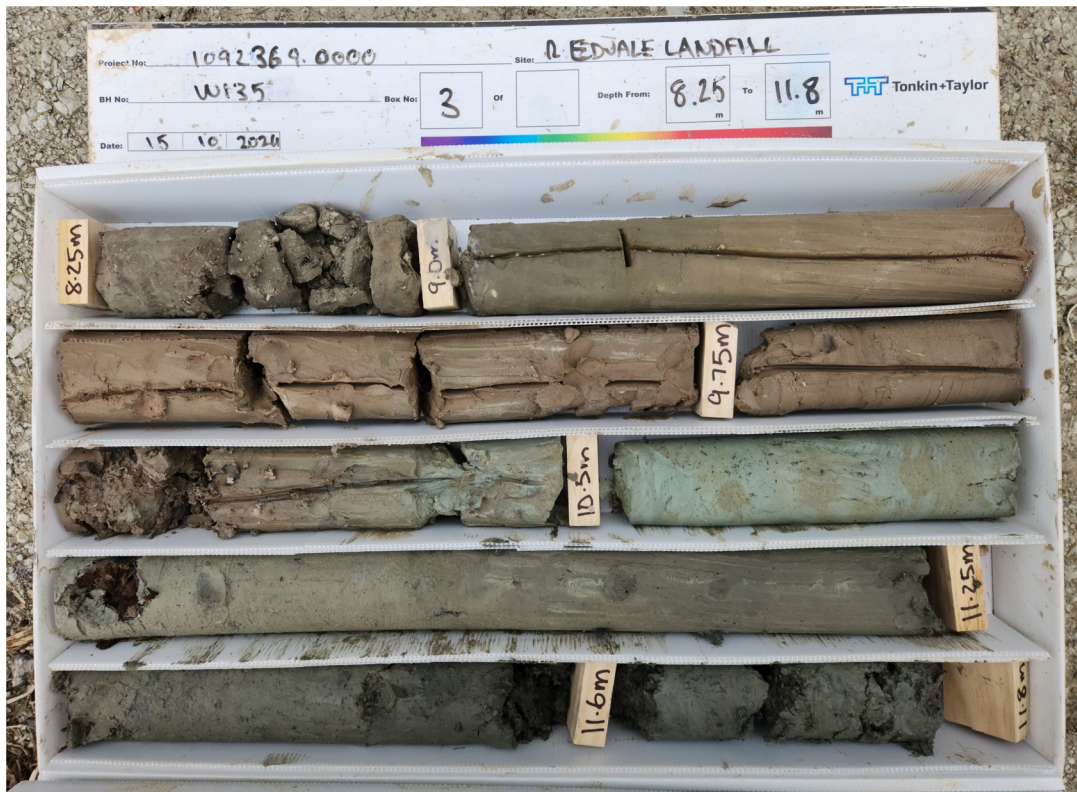


3.60-8.25m

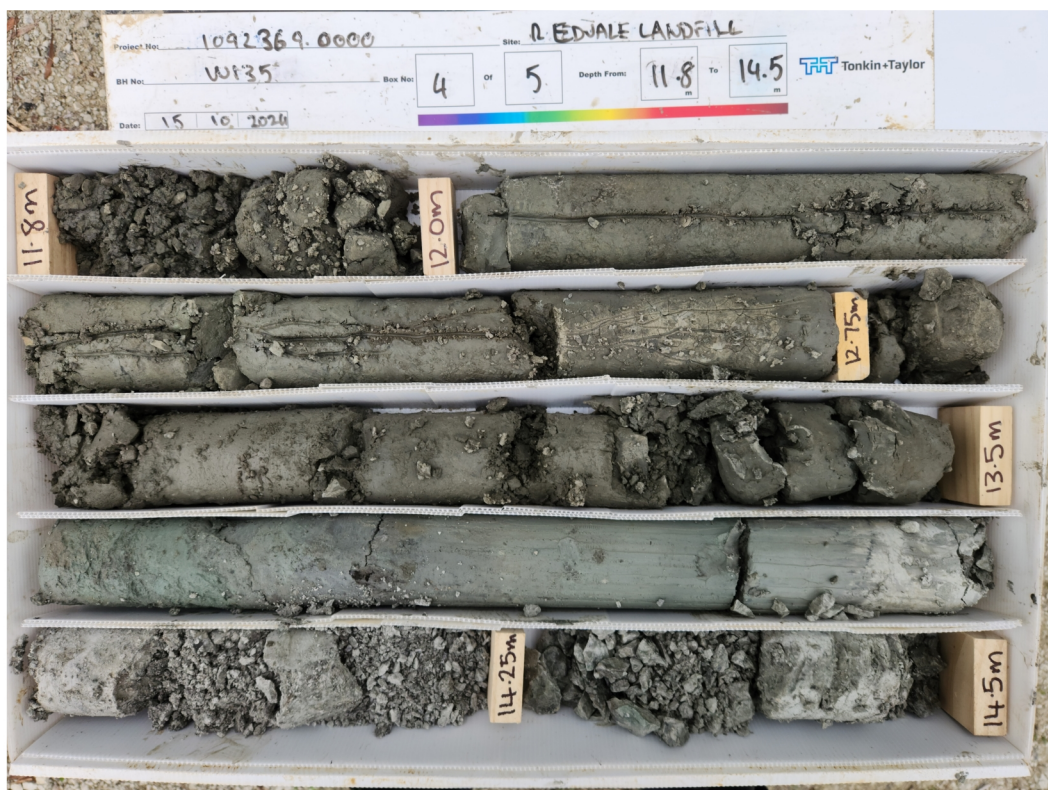
CORE PHOTOS

BOREHOLE No.: W135
Hole Location: Northern Boundary Access Road
SHEET: 2 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	724455.911 mN 287366.921 mE	DRILL TYPE: DF250T	HOLE STARTED: 17/10/2024
R.L.:	79.70m	METHOD: Rotary cored	HOLE FINISHED: 17/10/2024
DATUM:	NZVD2016	LOGGED BY: CHST	CHECKED: APS



8.25-11.80m



11.80-14.50m

CORE PHOTOS

BOREHOLE No.: **W135**

Hole Location: Northern Boundary Access Road

SHEET: 3 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	724455.911 mN 287366.921 mE	DRILL TYPE: DF250T	HOLE STARTED: 17/10/2024
R.L.:	79.70m	METHOD: Rotary cored	HOLE FINISHED: 17/10/2024
DATUM:	NZVD2016		DRILLED BY: Drillforce Ltd
			LOGGED BY: CHST
			CHECKED: APS



14.50-15.50m

BOREHOLE LOG

BOREHOLE No.:
W136

SHEET: 1 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 15/10/2024

FINISH DATE: 15/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: Northern Boundary Access Road

CO-ORDINATES: 724508.83 mN
(EDENTM1949) 287576.21 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 78.45m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total Station\Surveyed

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	Rock Weathering	Rock Strength	Sampling Method	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	ROCK MASS DISCONTINUITIES				Description & Additional Observations	Water Level (Ref #) / Fluid Loss (%)	Casing	Installation	Core Box No
	SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation									Defect Log	Fracture Spacing (mm)	RQD (%)						
Fill	0.00m: Clayey GRAVEL, some cobbles; light brownish grey. Loose to medium dense, moist, poorly graded; fill includes, plastic; gravel, medium to coarse, up to 60 mm (fill)						78											
	0.60m: Gravelly CLAY; bluish grey. Stiff to very stiff, moist; gravel, fine to medium grey (fill - embankment)						1											
	2.36m: Clayey GRAVEL, some sand; dark bluish grey. Medium dense to dense, moist, poorly graded; gravel, medium to coarse, up to 60 mm (fill - embankment)						2											
	3.26m: Gravelly CLAY; dark grey with mixed bluish grey. Stiff to very stiff, moist, poorly graded; gravel, medium to coarse, up to 60 mm (fill - embankment)						3											
	3.50m: Silty GRAVEL, some clay; dark grey with mixed bluish grey. Loose to medium dense, moist to wet, poorly graded; gravel, medium to coarse, up to 50 mm (fill - embankment)						4											
	4.07m: Gravelly COBBLES, some clay; dark bluish grey. Medium dense, moist, poorly graded; cobbles, up to 150 mm sub-angular to angular (fill - embankment)						5											
	4.30m: Gravelly CLAY; bluish grey. Stiff to very stiff, moist, poorly graded; gravel, coarse, up to 60 mm (fill - embankment)																	
Tauranga Group	4.57m: CLAY, some gravel; dark grey and mottled orange. Very stiff, moist (fill - embankment)																	
	5.07m: CLAY, minor gravel; dark grey and orange. Very stiff, moist, high plasticity (Alluvium - Pleistocene).																	

Design Groundwater Depth 4.43mBGL (74.02mRL) measured in PZ41 at 10:30AM on 23 October 2024.

BOREHOLE LOG

BOREHOLE No.:
W136

SHEET: 2 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 15/10/2024

FINISH DATE: 15/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: Northern Boundary Access Road

CO-ORDINATES: 724508.83 mN
(EDENTM1949) 287576.21 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 78.45m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total Station/Surveyed

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	Rock Weathering	Rock Strength	Sampling Method	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	ROCK MASS DISCONTINUITIES				Water Level (Ref #) / Fluid Loss (%)	Casing	Installation	Core Box No
										Defect Log	Fracture Spacing (mm)	RQD (%)	Description & Additional Observations				
Tauranga Group	[CONT] 5.07m: CLAY, minor gravel; dark grey and orange. Very stiff, moist, high plasticity (Alluvium - Pleistocene).							6									
	6.14m: Organic CLAY, some silt; grey with banded orange. Very stiff, moist, high plasticity wood fragments (partially decomposed) (Alluvium - Pleistocene).							72									
Tauranga Group	6.50m: CORE LOSS - Suspect obstruction in front of barrel, Wood obstructing barrel.							7									
	7.50m: Organic CLAY; bluish grey and banded orange. Stiff to very stiff, moist to wet, high plasticity wood fragments (partially decomposed) wood and roots (Alluvium - Pleistocene).							71									
	7.88m: CLAY, trace organic; dark bluish grey. Stiff to very stiff, moist, high plasticity carbonaceous flecks and rootlets (Alluvium - Pleistocene).							8									
	8.44m: CLAY; dark bluish grey. Very stiff, moist, high plasticity (Alluvium - Pleistocene).							70									
	8.65m: Silty CLAY, trace organic; dark bluish grey. Very stiff to hard, moist, medium to high plasticity; organics, rootlets rootlets (partially decomposed) (Alluvium - Pleistocene).							9									
								69									
Hukerenui Mudstone	9.80m: Unweathered, Greenish Grey, MUDSTONE, Extremely weak.							10									
	10.30m: Unweathered, Dark Bluish Grey, MUDSTONE, Extremely weak.							68									

Design Groundwater Depth 4.43mBGL (74.02mRL) measured in PZ41 at 10:30AM on 23 October 2024.

BOREHOLE LOG

BOREHOLE No.:
W136

SHEET: 3 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 15/10/2024

FINISH DATE: 15/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: Northern Boundary Access Road

CO-ORDINATES: 724508.83 mN
(EDENTM1949) 287576.21 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 78.45m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total Station\Surveyed

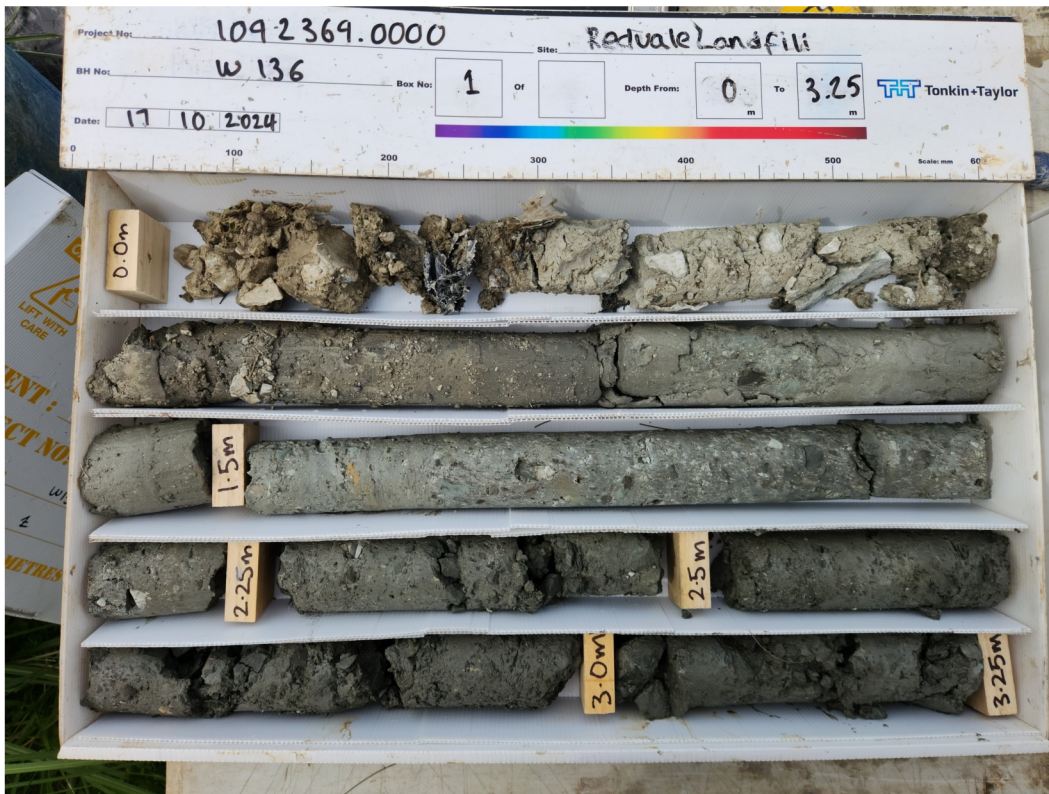
GEOLOGICAL UNIT	MATERIAL DESCRIPTION	Rock Weathering	Rock Strength	Sampling Method	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	ROCK MASS DISCONTINUITIES				Water Level (Ref #) / Fluid Loss (%)	Casing	Installation	Core Box No
	SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation									Defect Log	Fracture Spacing (mm)	RQD (%)	Description & Additional Observations				
Hukerenui Mudstone	[CONT] 10.30m: Unweathered, Dark Bluish Grey, MUDSTONE, Extremely weak.	UW	VS	SW	100		67				2000	100		25			
	12.00m: Unweathered, Dark Bluish Grey, broken, Shelly, MUDSTONE, Extremely weak to very weak.	UW	VS	SW	100		12				200	100		50			
	13.00m: Unweathered, Dark Grey, MUDSTONE, Extremely weak to very weak.	UW	VS	SW	100		13				200	100		75			
							66										
							65										
							14										
							64										
							15										
							63										
							16										
							2										
	15.5m: Target depth																

Design Groundwater Depth 4.43mBGL (74.02mRL) measured in PZ41 at 10:30AM on 23 October 2024.

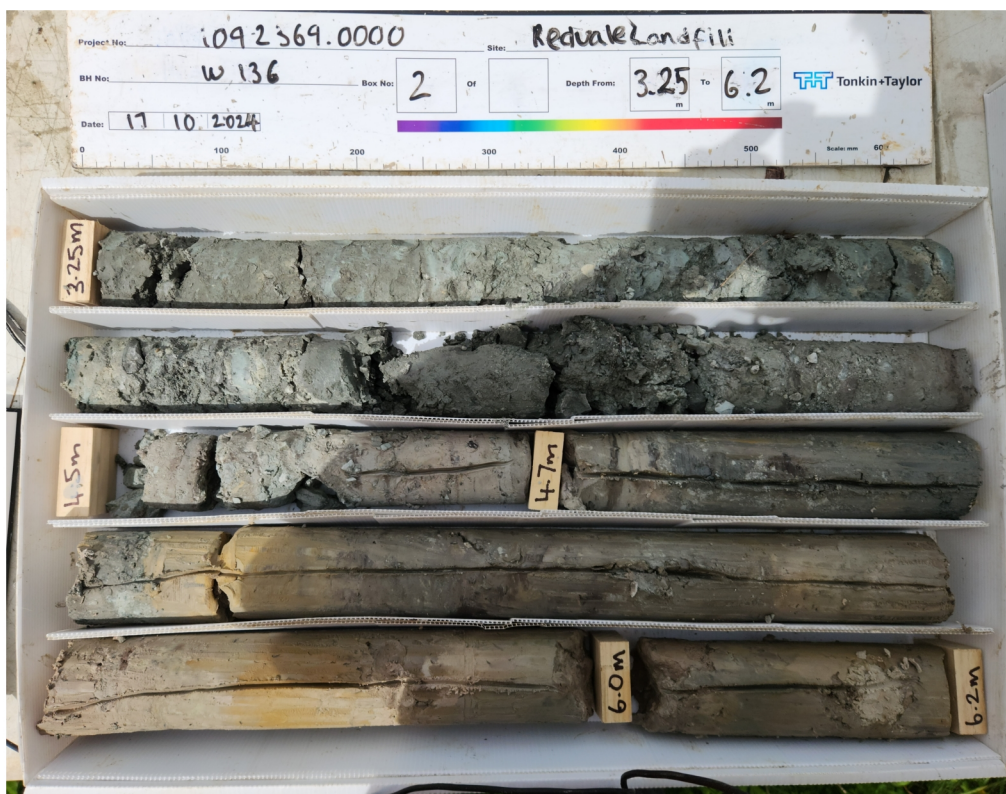
CORE PHOTOS

BOREHOLE No.: W136
Hole Location: Northern Boundary Access Road
SHEET: 1 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	724508.83 mN 287576.21 mE	DRILL TYPE: DF250T	HOLE STARTED: 15/10/2024
R.L.:	78.45m	METHOD: Rotary cored	HOLE FINISHED: 15/10/2024
DATUM:	NZVD2016	LOGGED BY: CHST	CHECKED: APS



0.00-3.25m



3.25-6.20m

CORE PHOTOS

BOREHOLE No.: W136
Hole Location: Northern Boundary Access Road
SHEET: 2 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	724508.83 mN 287576.21 mE	DRILL TYPE: DF250T	HOLE STARTED: 15/10/2024
R.L.:	78.45m	METHOD: Rotary cored	HOLE FINISHED: 15/10/2024
DATUM:	NZVD2016	LOGGED BY: CHST	CHECKED: APS

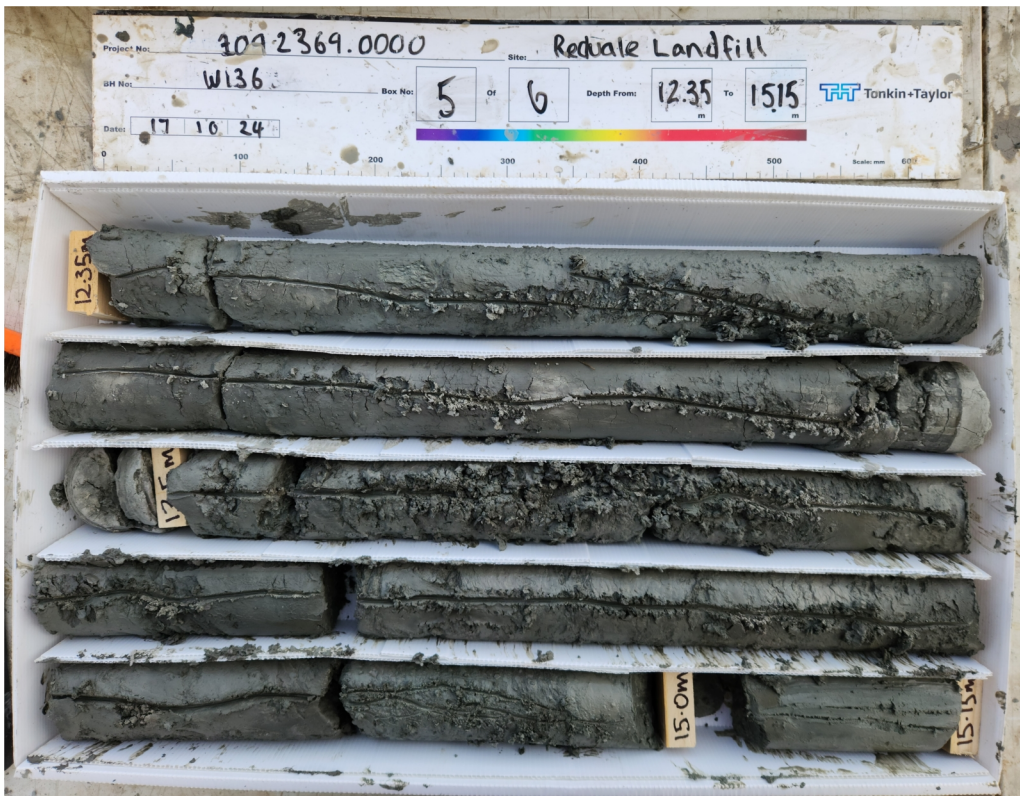


6.20-10.10m



10.10-12.35m

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	724508.83 mN 287576.21 mE	DRILL TYPE: DF250T	HOLE STARTED: 15/10/2024
R.L.:	78.45m	METHOD: Rotary cored	HOLE FINISHED: 15/10/2024
DATUM:	NZVD2016		DRILLED BY: Drillforce Ltd
			LOGGED BY: CHST
			CHECKED: APS



12.35-15.15m



15.15-15.50m

BOREHOLE LOG

BOREHOLE No.:

W137

SHEET: 1 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 21/10/2024

FINISH DATE: 21/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: Northern Boundary Access Road

CO-ORDINATES: 724503.85 mN
(EDENTM1949) 287735.05 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 88.85m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total
Station/Surveyed

GEOLOGICAL UNIT	MATERIAL DESCRIPTION SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation	Rock Weathering UW SW MW CW RW	Rock Strength Q_{sp} σ_{ci} σ_{cs} σ_{cm} σ_{cm} σ_{cm}	Sampling Method Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	ROCK MASS DISCONTINUITIES				Water Level (Ref #) / Fluid Loss (%)	Casing	Installation	Core Box No
									Defect Log	Fracture Spacing (mm)	RQD (%)	Description & Additional Observations				
Fill	0.00m: Clayey medium to coarse GRAVEL, some sand, minor organics; light brownish grey. Medium dense, moist, poorly graded. Gravel, up to 30mm, sub-rounded to angular; organics, rootlets. (fill - embankment).															
	0.30m: Gravelly CLAY, some sand; dark bluish grey. Very stiff to hard, moist, poorly graded; gravel, fine to medium, sub-rounded to angular. (fill - embankment).															
	0.55m: Clayey medium to coarse GRAVEL, minor sand; dark bluish grey. Medium dense, moist to wet, poorly graded. Gravel, sub-rounded to angular, unweathered to slightly weathered, moderately strong, limestone. (fill - embankment).															
	1.32m: Clayey medium to coarse GRAVEL, some sand; brownish grey with streaked orange. Medium dense to dense, moist, poorly graded. Gravel, up to 60mm, sub-rounded to angular, unweathered, moderately strong, limestone. (fill - embankment).															
	1.50m: Gravelly CLAY, some sand; bluish grey. Dense, moist, medium plasticity; gravel, medium to coarse, up to 50mm, sub-angular to angular, unweathered, moderately strong, limestone. (fill - embankment).															

Box 0.00-2.85m

Design Groundwater Depth 10.66mBGL (78.19mRL) measured in PZ43 at 10:34AM on 23 October 2024.

BOREHOLE LOG

BOREHOLE No.:
W137

SHEET: 2 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 21/10/2024

FINISH DATE: 21/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: Northern Boundary Access Road

CO-ORDINATES: 724503.85 mN
(EDENTM1949) 287735.05 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 88.85m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total Station\Surveyed

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	Rock Weathering	Rock Strength	Sampling Method	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	ROCK MASS DISCONTINUITIES				Description & Additional Observations	Water Level (Ref #) / Fluid Loss (%)	Casing	Installation	Core Box No
	SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation									Defect Log	Fracture Spacing (mm)	RQD (%)						
Fill	[CONT] 1.50m: Gravelly CLAY, some sand; bluish grey. Dense, moist, medium plasticity; gravel, medium to coarse, up to 50mm, sub-angular to angular, unweathered, moderately strong, limestone. (fill - embankment).	UW F																

10.66m :PZ43 23/10/ 2024 10:34:00 am
78.19mRL

Design Groundwater Depth 10.66mBGL (78.19mRL) measured in PZ43 at 10:34AM on 23 October 2024.

BOREHOLE LOG

BOREHOLE No.:

W137

SHEET: 3 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 21/10/2024

FINISH DATE: 21/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: Northern Boundary Access Road

CO-ORDINATES: 724503.85 mN
(EDENTM1949) 287735.05 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 88.85m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total
Station/Surveyed

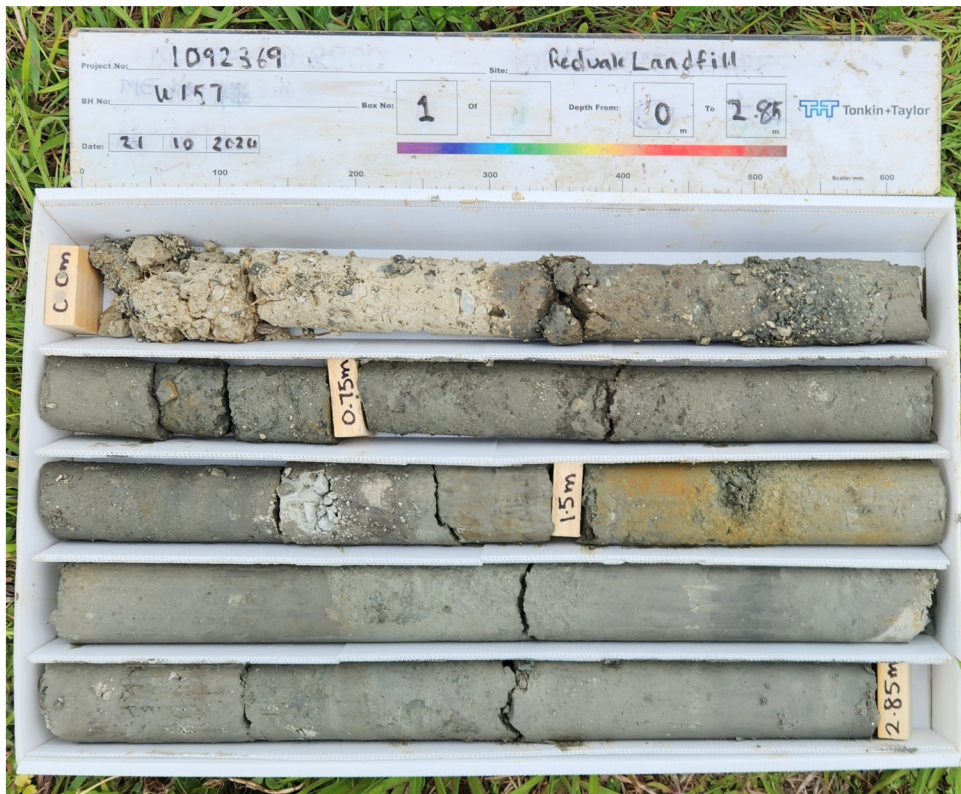
GEOLOGICAL UNIT	MATERIAL DESCRIPTION SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation	Rock Weathering USW SW MSW HSW CWS VWS WS SWS VWS WS	Rock Strength USW SW MSW HSW CWS VWS WS SWS VWS WS	Sampling Method Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	Defect Log	Fracture Spacing (mm) 2000 1000 500 200 100 50 20	ROCK MASS DISCONTINUITIES		Description & Additional Observations	Water Level (Ref #) / Fluid Loss (%) 25 50 75	Casing	Installation	Core Box No
Tauranga Group	high plasticity; gravel, medium to coarse, up to 40mm, sub-angular to angular, unweathered, moderately strong, white, limestone. (fill - embankment).																
	10.90m: CLAY, trace wood and trace gravel; light brownish grey. Stiff to very stiff, moist to wet, high plasticity; gravel, fine to medium. (Alluvium - Pleistocene).																
	11.08m: CLAY, minor organics; grey with streaked orange. Stiff, moist to wet, medium to high plasticity; organics, wood fragments (partially decomposed). (Alluvium - Pleistocene).																
	11.90m: Fine SAND; light greyish brown. Medium dense, moist, well graded. (Alluvium - Pleistocene).																
	12.00m: CLAY, minor organics, trace gravel; orange mottled light grey. Stiff to very stiff, moist, medium to high plasticity; organics, wood fragments (partially decomposed). (Alluvium - Pleistocene).																
	12.18m: Gravelly CLAY, trace organic flecks; black flecked dark grey; gravel, fine to medium; organics, carbonaceous flecks. (Alluvium - Pleistocene).																
	12.35m: CORE LOSS - Suspect material dropped out of barrel.																
	12.75m: CLAY; orange streaked light grey. Stiff to very stiff, moist, high plasticity. (Alluvium - Pleistocene).																
	13.28m: CLAY, trace organic flecks; orange streaked light grey. Firm to stiff, moist, high plasticity; organics, carbonaceous flecks. (Alluvium - Pleistocene).																
	13.50m: Silty CLAY, some organics; orange mottled light greyish brown. Stiff to very stiff, moist, medium to high plasticity; organics, timber fragments (partially decomposed). (Alluvium - Pleistocene).																
Northland Allocthon (Mangakahia Complex)	14.13m: Silty CLAY; dark brownish grey. Stiff to very stiff, moist, medium plasticity. (Alluvium - Pleistocene).																
	14.25m: Unweathered to slightly weathered, dark bluish grey, fissile, sheared with polished surfaces, MUDSTONE. Extremely weak.																
	15.5m: Target depth																

Design Groundwater Depth 10.66mBGL (78.19mRL) measured in PZ43 at 10:34AM on 23 October 2024.

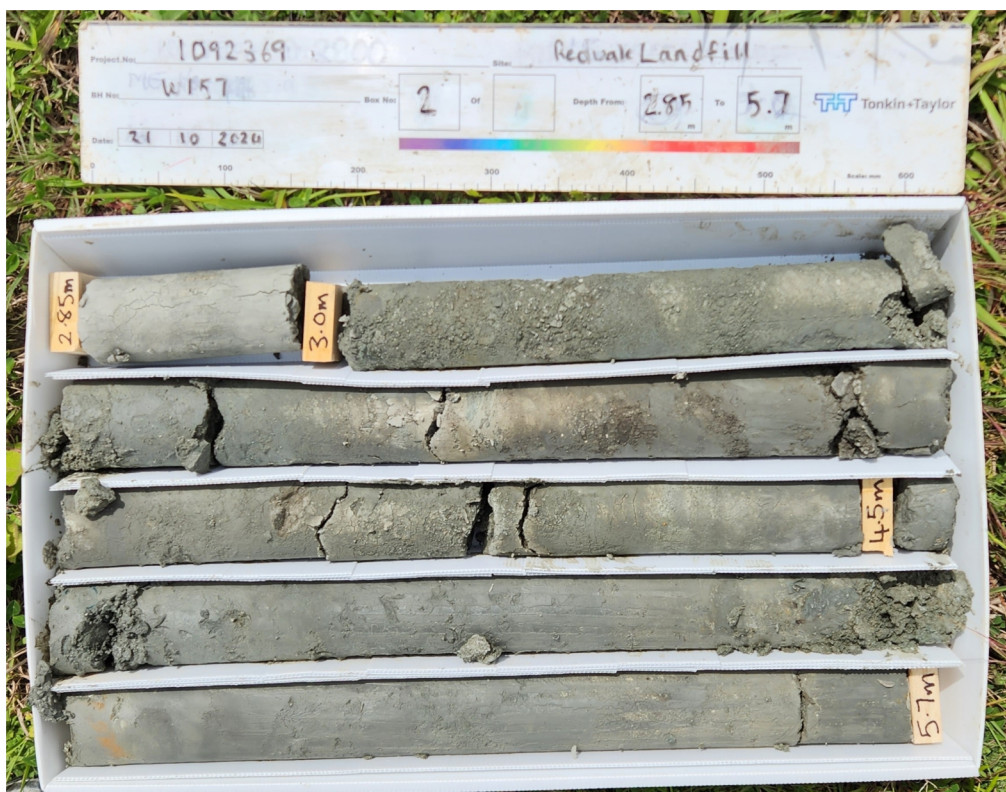
CORE PHOTOS

BOREHOLE No.: **W137**
Hole Location: Northern Boundary Access Road
SHEET: 1 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	724503.85 mN 287735.05 mE	DRILL TYPE: DF250T	HOLE STARTED: 21/10/2024
R.L.:	88.85m	METHOD: Rotary cored	HOLE FINISHED: 21/10/2024
DATUM:	NZVD2016	LOGGED BY: CHST	CHECKED: APS



0.00-2.85m

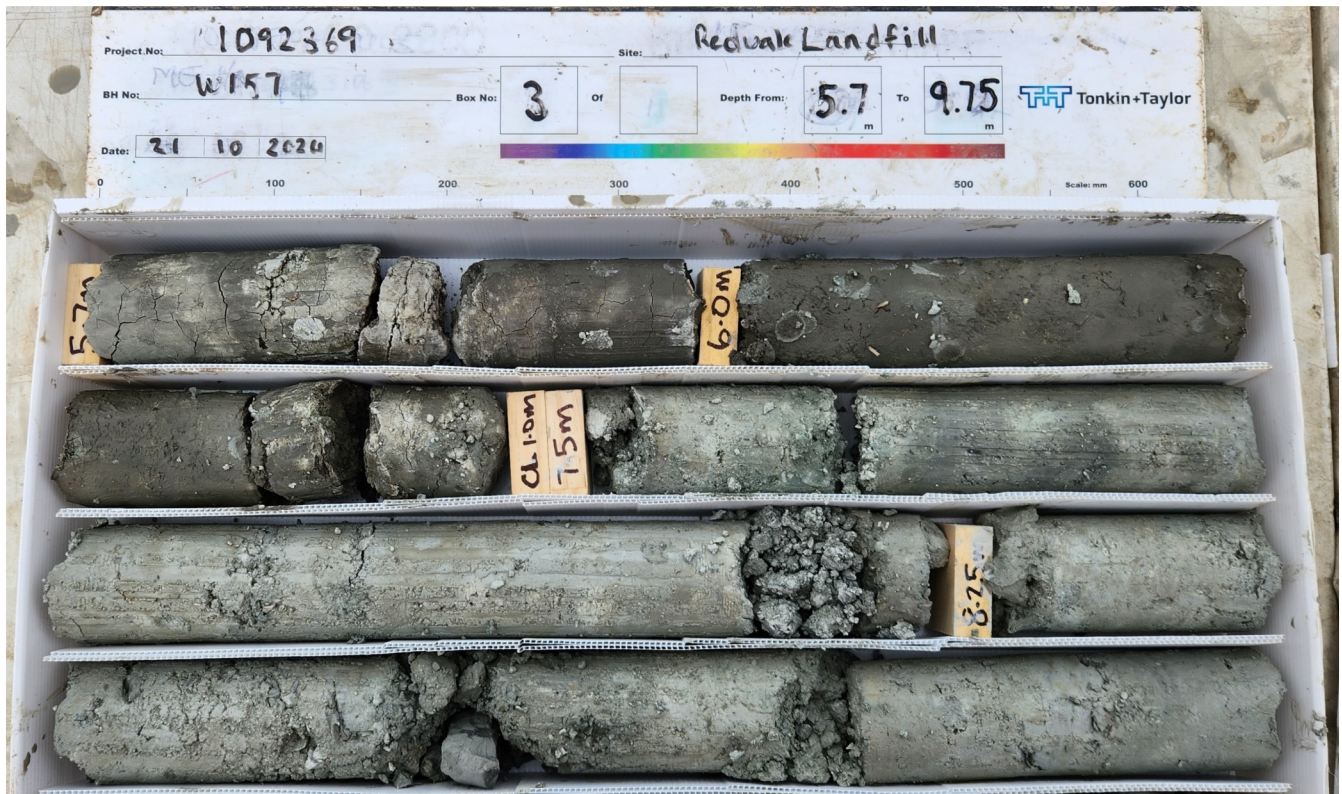


2.85-5.70m

CORE PHOTOS

BOREHOLE No.: **W137**
Hole Location: Northern Boundary Access Road
SHEET: 2 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	724503.85 mN 287735.05 mE	DRILL TYPE: DF250T	HOLE STARTED: 21/10/2024
R.L.:	88.85m	METHOD: Rotary cored	HOLE FINISHED: 21/10/2024
DATUM:	NZVD2016	LOGGED BY: CHST	CHECKED: APS



5.70-9.75m



9.75-13.65m

CORE PHOTOS

BOREHOLE No.: **W137**
 Hole Location: Northern Boundary Access Road
 SHEET: 3 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	724503.85 mN 287735.05 mE	DRILL TYPE: DF250T	HOLE STARTED: 21/10/2024
R.L.:	88.85m	METHOD: Rotary cored	HOLE FINISHED: 21/10/2024
DATUM:	NZVD2016		DRILLED BY: Drillforce Ltd
			LOGGED BY: CHST
			CHECKED: APS



13.65-15.50m

BOREHOLE LOG

BOREHOLE No.:
W138

SHEET: 1 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 22/10/2024

FINISH DATE: 22/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: South of managed fill area

CO-ORDINATES: 723897.20 mN
(EDENTM1949) 287559.79 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 78.38m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total Station\Surveyed

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	Rock Weathering	Rock Strength	Sampling Method	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	ROCK MASS DISCONTINUITIES				Water Level (Ref #) / Fluid Loss (%)	Casing	Installation	Core Box No
										Defect Log	Fracture Spacing (mm)	RQD (%)	Description & Additional Observations				
	SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation	UW SW PW CW RW	Q10 Q15 Q20 Q25 Q30 Q35 Q40 Q45 Q50	IS SS WS WS WS WS WS WS WS							2000 1500 1000 500 200 100 50 20			25 50 75			
Fill	0.00m: CORE LOSS - Suspect loose granular material dropped out of barrel							78									
	0.45m: Gravelly CLAY, some silt; orange and yellow mottled dark brown. Soft to firm, moist, well graded; gravel, medium to coarse, up to 40 mm sub-angular to angular (fill)																
	0.80m: Gravelly CLAY, minor cobbles; orange speckled dark grey. Very stiff, moist; gravel, medium to coarse; cobbles, up to 70 mm sub-angular limestone (fill)							1									
	1.55m: Gravelly CLAY, some sand; dark grey with banded yellow. Firm to stiff, moist to wet, poorly graded; gravel, medium to coarse, up to 10 mm sub-angular limestone (fill)							2									
	2.50m: CORE LOSS - Suspect loose granular material dropped out of barrel							3									
	3.00m: Gravelly SILT, some clay; grey with mixed yellow. Soft, moist to wet, medium plasticity; gravel, medium to coarse, up to 40 mm sub-angular to angular limestone (fill)																
	3.15m: Gravelly SILT, some clay; dark grey with speckled green and yellow. Firm, moist, poorly graded; gravel, medium to coarse, up to 20 mm sub-angular to angular limestone (fill)							4									
	4.20m: CLAY, some gravel; dark grey with speckled black, yellow and orange black. Very stiff, moist, poorly graded; fill includes, plastic; gravel, medium to coarse, up to 20 mm sub-angular to angular limestone (fill).							5									
	4.50m: Clayey GRAVEL; dark grey and black with speckled yellow. Medium dense, moist, poorly graded; fill includes, plastic; gravel, medium to coarse, up to 20 mm sub-angular to angular limestone (fill)																
	4.85m: Gravelly CLAY; dark grey with speckled red and yellow. Stiff, moist, poorly graded; gravel, medium to coarse, up to 20 mm sub-angular to angular limestone (fill)																
													4.81m: PZ44 5/11/2024 09:30:00 am 73.57mRL				
													5.26m: PZ45 5/11/2024 09:27:00 am 73.12mRL				

Design Groundwater Depth 4.81mBGL (73.57mRL) measured in PZ44 at 09:30AM on 5 November 2024.

BOREHOLE LOG

BOREHOLE No.:
W138

SHEET: 3 OF 3

DRILLED BY: Leon Mahara

LOGGED BY: CHST

CHECKED: APS

START DATE: 22/10/2024

FINISH DATE: 22/10/2024

CONTRACTOR: Drillforce Ltd

PROJECT: Redvale Landfill: Project Rex

JOB No.: 1092369.0000.400

LOCATION: South of managed fill area

CO-ORDINATES: 723897.20 mN
(EDENTM1949) 287559.79 mE

DIRECTION:

ANGLE FROM HORIZ.: -90°

R.L. GROUND: 78.38m

R.L. COLLAR:

DATUM: NZVD2016

SURVEY: Total Station\Surveyed

GEOLOGICAL UNIT	MATERIAL DESCRIPTION		Rock Weathering	Rock Strength	Sampling Method	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	ROCK MASS DISCONTINUITIES				Water Level (Ref #) / Fluid Loss (%)	Casing	Installation	Core Box No
	SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation										Description & Additional Observations							
Northland Allochthon (Mangakahia Complex)	[CONT] 8.70m: Unweathered, Bluish Grey, broken and sheared with polished surfaces, MUDSTONE, Extremely weak.		UW SW PW CW VW	VS S MS WS VWS	Q S W VW			67			2000 1000 500 200 100 60 20		10.53-12.00m: DD, 5°, UNST, R	25 50 75				
								12										
								66					12.40m: J, 35°, UN, R					
								13										
								65										
								14										
								64										
								15						----- PZ45 15.1mBGL				
								63										
15.5m: Target depth								62									Box 13.50-15.50m	
								16									Box 10.65-13.50m	

Design Groundwater Depth 4.81mBGL (73.57mRL) measured in PZ44 at 09:30AM on 5 November 2024.

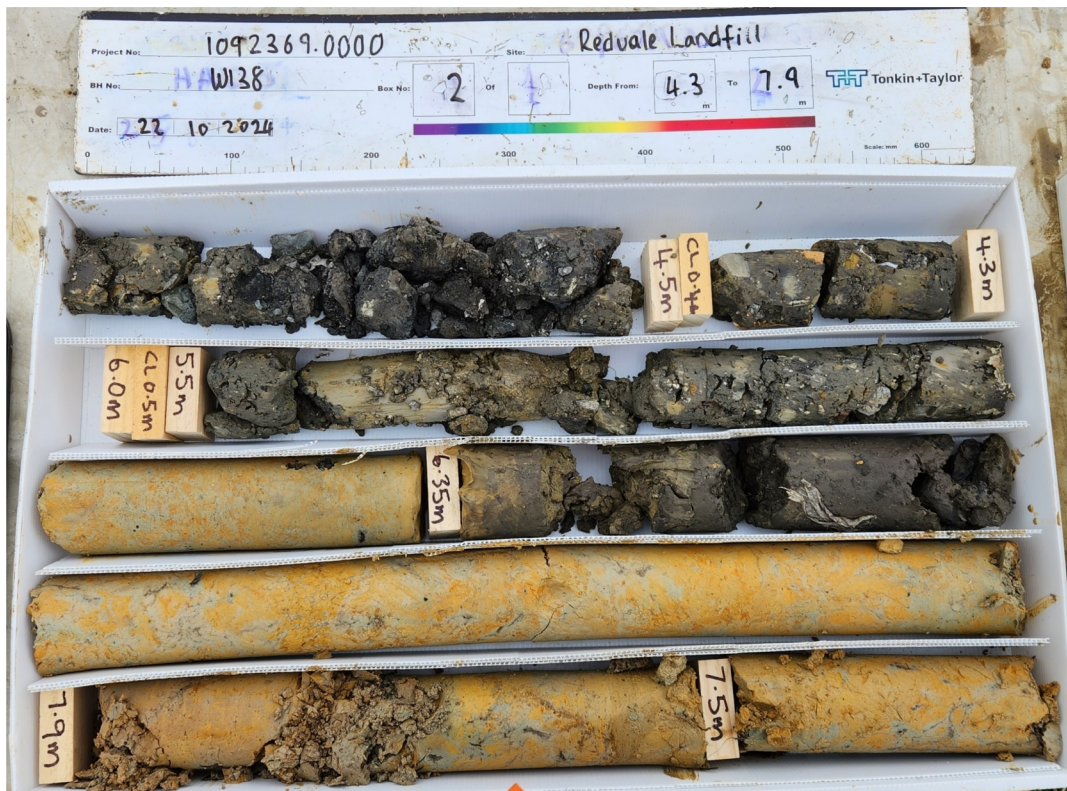
CORE PHOTOS

BOREHOLE No.: W138
Hole Location: South of managed fill area
SHEET: 1 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	723897.20 mN 287559.79 mE	DRILL TYPE: DF250T	HOLE STARTED: 22/10/2024
R.L.:	78.38m	METHOD: Rotary cored	HOLE FINISHED: 22/10/2024
DATUM:	NZVD2016	LOGGED BY: CHST	CHECKED: APS



0.00-4.30m



4.30-7.90m

CORE PHOTOS

BOREHOLE No.: **W138**
Hole Location: South of managed fill area
SHEET: 2 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	723897.20 mN 287559.79 mE	DRILL TYPE: DF250T	HOLE STARTED: 22/10/2024
R.L.:	78.38m	METHOD: Rotary cored	HOLE FINISHED: 22/10/2024
DATUM:	NZVD2016	LOGGED BY: CHST	CHECKED: APS



7.90-10.65m

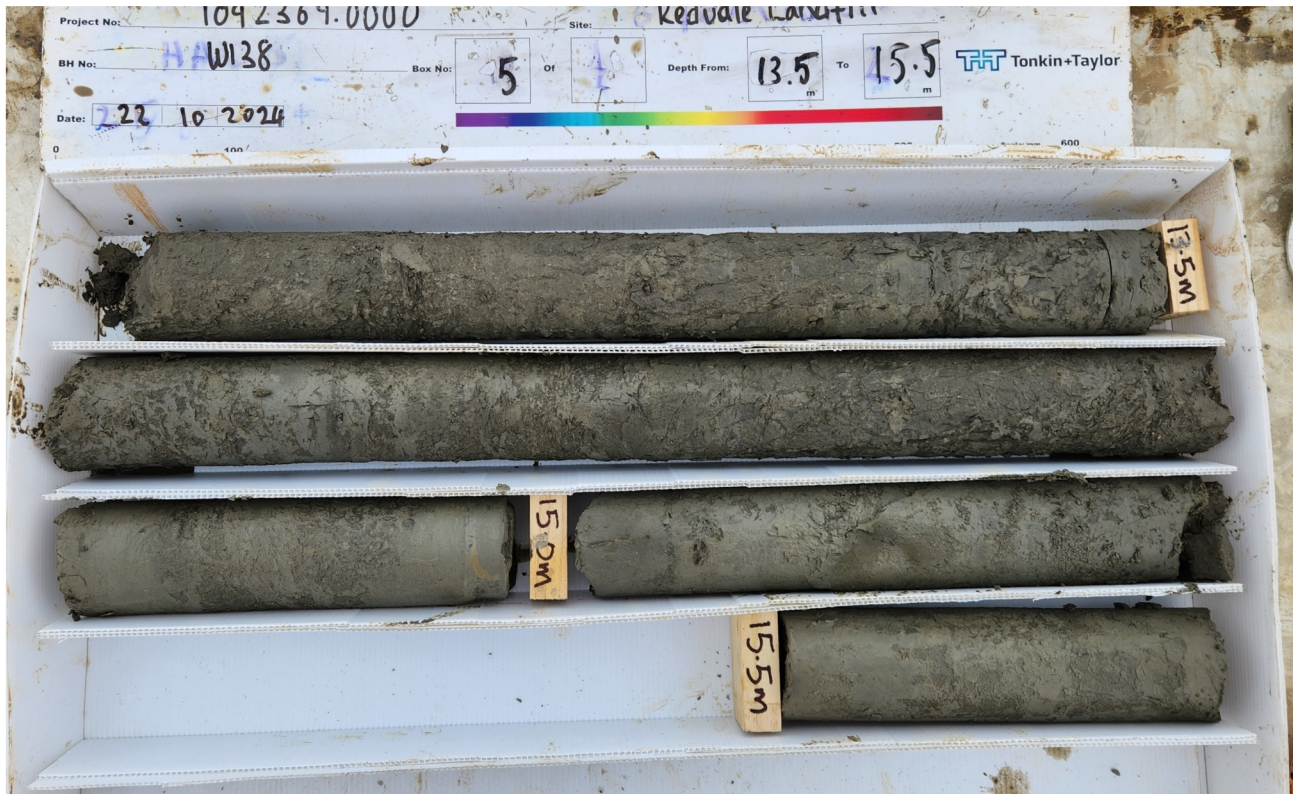


10.65-13.50m

CORE PHOTOS

BOREHOLE No.: **W138**
 Hole Location: South of managed fill area
 SHEET: 3 OF 3

PROJECT: Redvale Landfill: Project Rex		LOCATION: Landfill Access Road, Dairy Flat 0794 JOB No.: 1092369.0000.400	
CO-ORDINATES: (EDENTM1949)	723897.20 mN 287559.79 mE	DRILL TYPE: DF250T	HOLE STARTED: 22/10/2024
R.L.:	78.38m	METHOD: Rotary cored	HOLE FINISHED: 22/10/2024
DATUM:	NZVD2016		DRILLED BY: Drillforce Ltd
			LOGGED BY: CHST
			CHECKED: APS



13.50-15.50m