

Appendices





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Appendix A Drawings

Appendix A1 – Report Drawings

Appendix A2 – Historic Drawings



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Appendix A1

Report Drawings

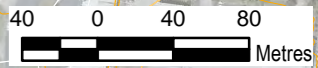
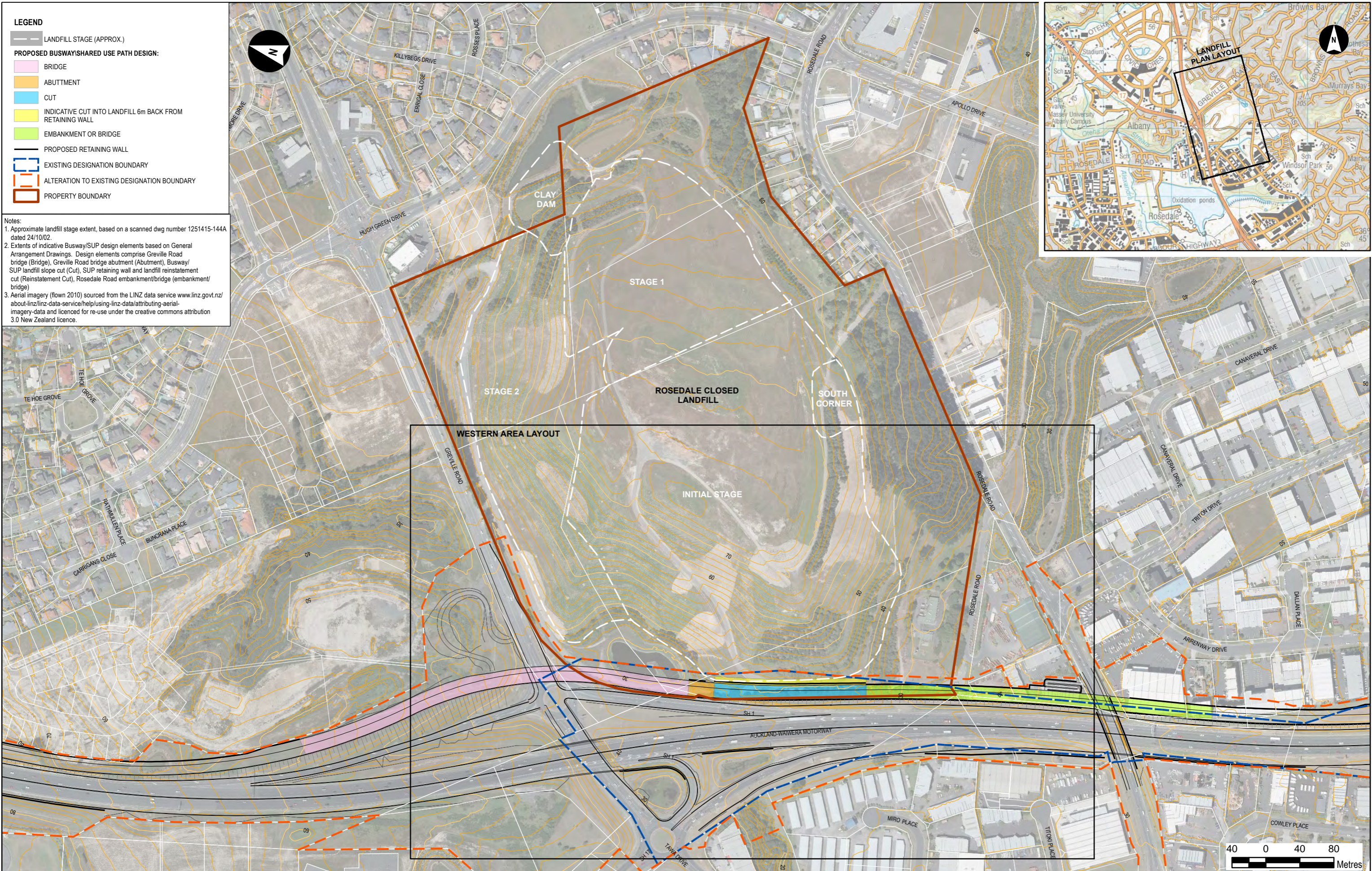


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- LEGEND**
- LANDFILL STAGE (APPROX.)
 - PROPOSED BUSWAY/SHARED USE PATH DESIGN:**
 - BRIDGE
 - ABUTTMENT
 - CUT
 - INDICATIVE CUT INTO LANDFILL 6m BACK FROM RETAINING WALL
 - EMBANKMENT OR BRIDGE
 - PROPOSED RETAINING WALL
 - EXISTING DESIGNATION BOUNDARY
 - ALTERATION TO EXISTING DESIGNATION BOUNDARY
 - PROPERTY BOUNDARY

Notes:

1. Approximate landfill stage extent, based on a scanned dwg number 1251415-144A dated 24/10/02.
2. Extents of indicative Busway/SUP design elements based on General Arrangement Drawings. Design elements comprise Greville Road bridge (Bridge), Greville Road bridge abutment (Abutment), Busway/SUP landfill slope cut (Cut), SUP retaining wall and landfill reinstatement cut (Reinstatement Cut), Rosedale Road embankment/bridge (embankment/bridge)
3. Aerial imagery (flown 2010) sourced from the LINZ data service www.linz.govt.nz/about/linz-data-service/help/using-linz-data/attribution-aerial-imagery-data and licenced for re-use under the creative commons attribution 3.0 New Zealand licence.



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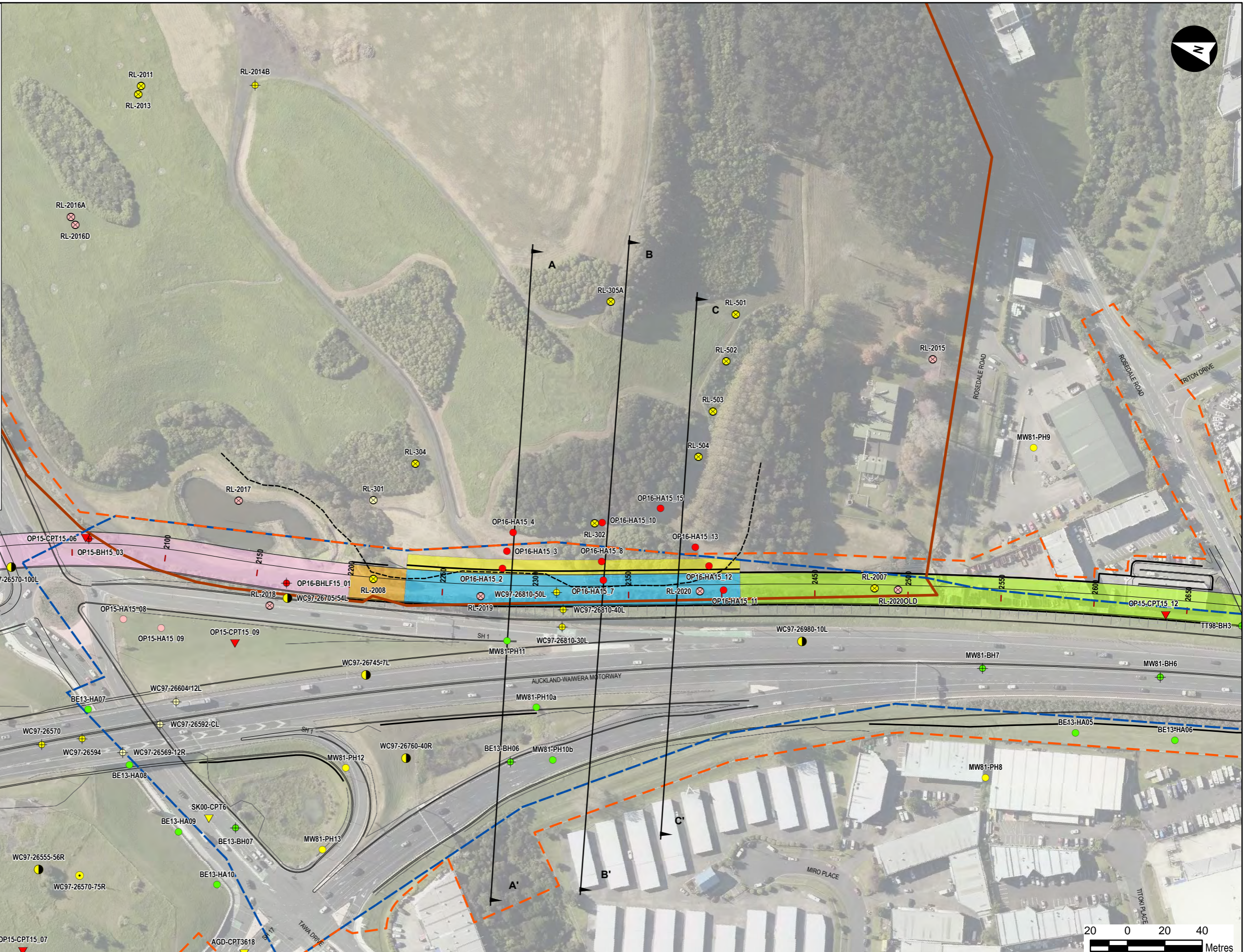
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DRAWN	
C.SCOTT	
DESIGNED	
A.AMPUTCH	
CHECKED	
N.CRAMPION	

FOR INFORMATION
NOT FOR CONSTRUCTION

APPROVED _____ DATE _____

PROJECT	NORTHERN CORRIDOR IMPROVEMENTS					
TITLE	ROSEDALE LANDFILL SITE PLAN					
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
	250310	3PRE	2ENV	SKT	2325	A

- LEGEND**
- GEOLOGICAL SECTION LINE**
- HISTORICAL GEOTECHNICAL INVESTIGATIONS**
- GIFR (OPUS 2015)**
- ROTARY CORE
 - CONE PENETRATION TEST
 - HAND AUGER
 - WASH DRILL - NO DATA
 - HAND AUGER - NO DATA
- PGAR (OPUS 2014)**
- ROTARY CORE
 - HAND AUGER
- ADDITIONAL GI**
- ROTARY CORE
 - CONE PENETRATION TEST
 - MACHINE AUGER
 - WASH DRILL
 - HAND AUGER
 - TEST PIT
 - DYNAMIC CONE PENETRATION TEST
 - ROTARY CORE - NO DATA
 - WASH DRILL - NO DATA
- PROPOSED BUSWAY/SHARED USE PATH DESIGN:**
- 2100 CHAINAGE
 - BRIDGE
 - ABUTTMENT
 - CUT
 - INDICATIVE CUT INTO LANDFILL 6m BACK FROM RETAINING WALL
 - EMBANKMENT OR BRIDGE
 - INDICATIVE EDGE OF LANDFILL
 - PROPOSED RETAINING WALL
 - ALTERATION TO EXISTING DESIGNATION BOUNDARY
 - EXISTING DESIGNATION BOUNDARY
 - PROPERTY BOUNDARY



Notes:
 1. Historical Geotechnical investigation data supplied by Aurecon, received 07/09/16.
 2. Extents of indicative Busway/SUP design elements based on General Arrangement Drawings. Design elements comprise Greville Road bridge (Bridge), Greville Road bridge abutment (Abutment), Busway/SUP landfill slope cut (Cut), SUP retaining wall and landfill reinstatement cut (Reinstatement Cut), Rosedale Road embankment/bridge (embankment/bridge)
 3. Aerial imagery (flown 2016) sourced from NZ Transport Agency.



REV	DATE	REVISION DETAILS	APPROVED
A	23.09.16	FIRST ISSUE	
B	14.10.16	SECOND ISSUE - BUSWAY/SUP CHAINAGE & EDGE OF LANDFILL	

SCALE	SIZE
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DRAWN	
C.SCOTT	
DESIGNED	
A.AMPUTCH	
CHECKED	
N.CRAMPION	

FOR INFORMATION
NOT FOR CONSTRUCTION

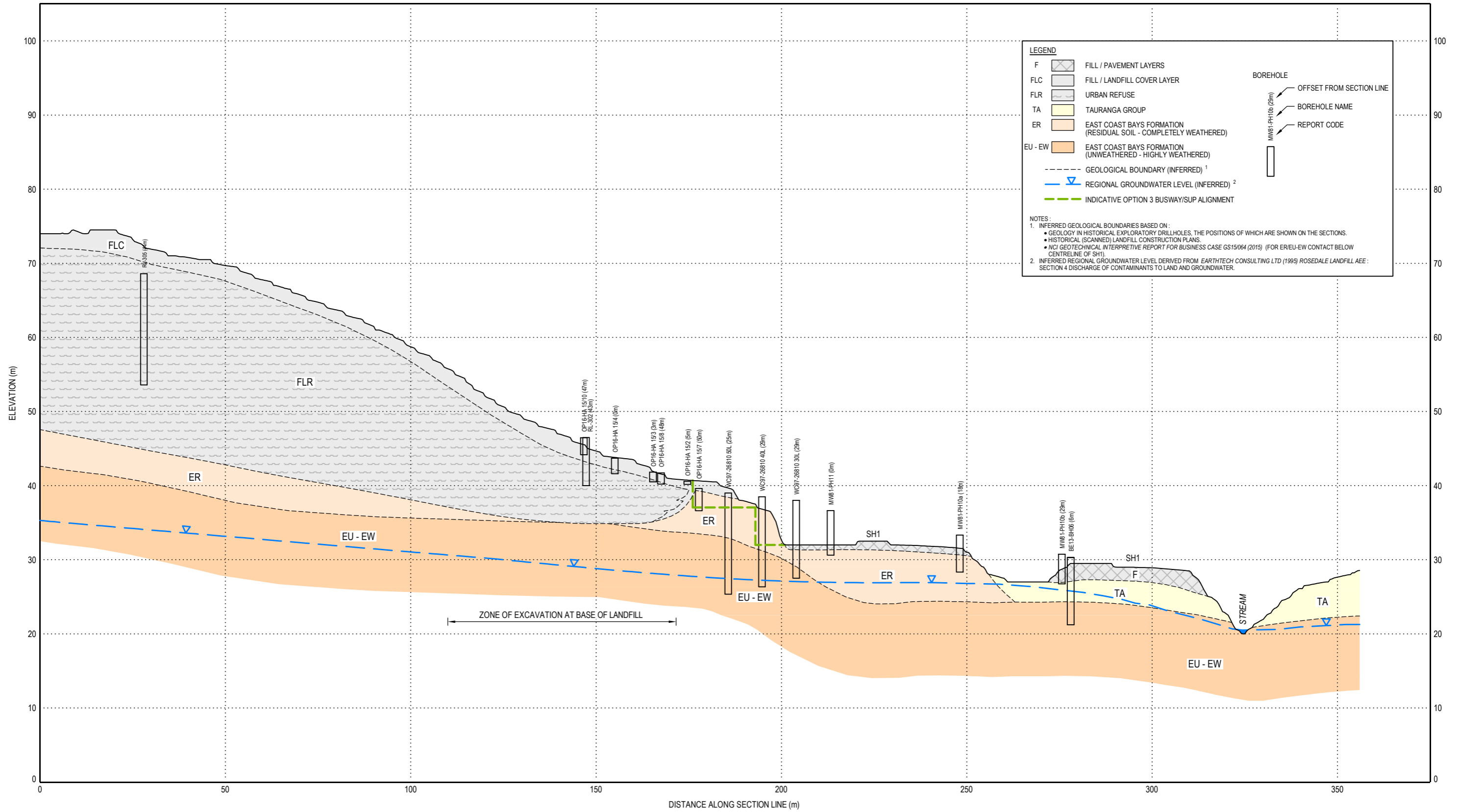
APPROVED

DATE

CLIENT	NORTHERN CORRIDOR IMPROVEMENTS					
PROJECT	ROSEDALE LANDFILL - WESTERN AREA HISTORICAL GEOTECHNICAL INVESTIGATIONS					
TITLE						
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
	250310	3PRE	2ENV	SKT	2326	B

EAST

WEST



CLIENT

REV	DATE	REVISION DETAILS	APPROVED
A	23.09.16	FIRST ISSUE	

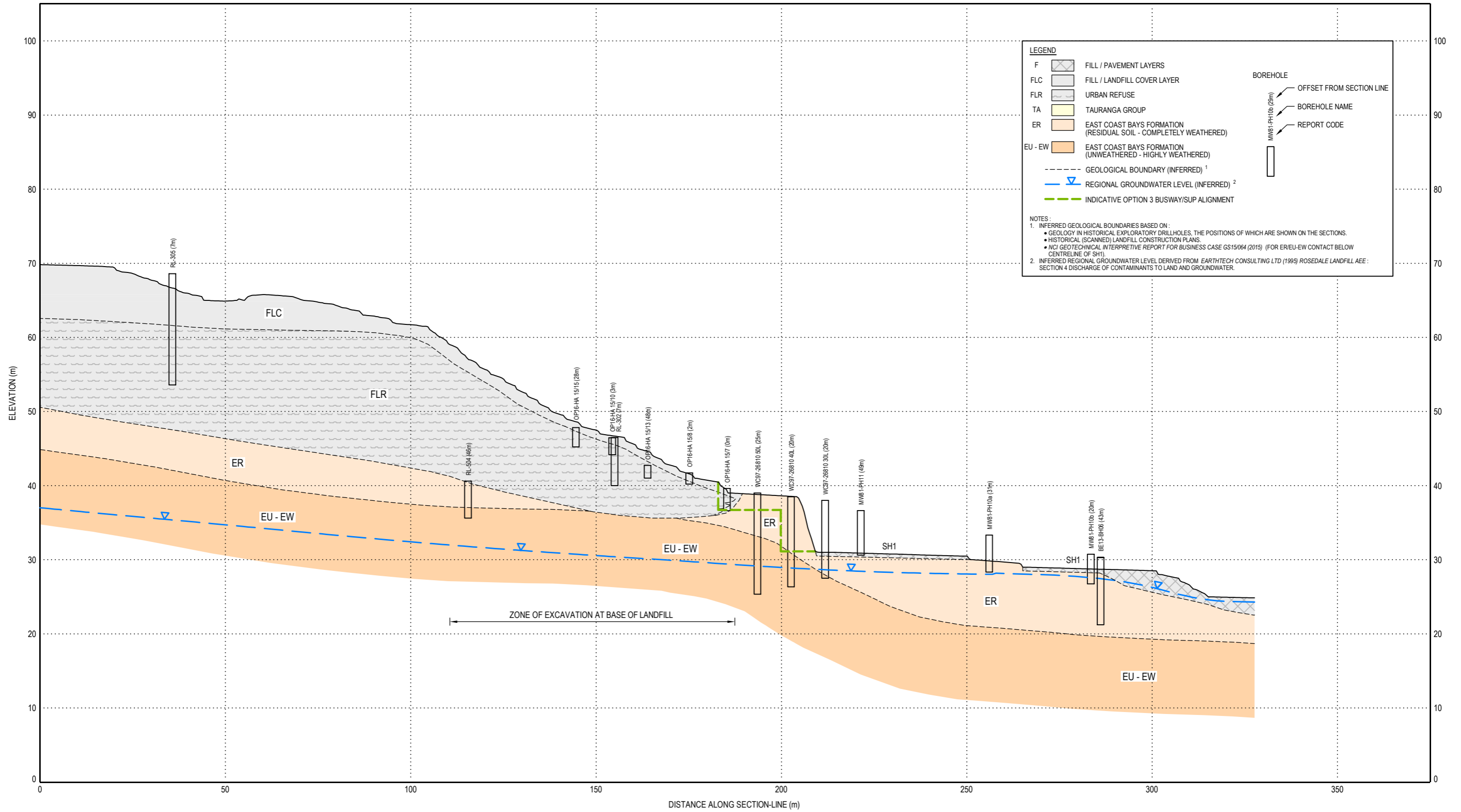
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DRAWN	
D.ROSSITER	
DESIGNED	
G.PINCHES	
CHECKED	
P.KIRK	

PRELIMINARY NOT FOR CONSTRUCTION	APPROVED	DATE
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PROJECT	NORTHERN CORRIDOR IMPROVEMENTS				
TITLE	ROSEDALE LANDFILL CONCEPTUAL GEOLOGICAL CROSS SECTION A-A'				
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER
250310	250310	3PRE	2ENV	SKT	2345
					REV
					A

EAST

WEST



LEGEND

- F [Symbol] FILL / PAVEMENT LAYERS
- FLC [Symbol] FILL / LANDFILL COVER LAYER
- FLR [Symbol] URBAN REFUSE
- TA [Symbol] TAURANGA GROUP
- ER [Symbol] EAST COAST BAYS FORMATION (RESIDUAL SOIL - COMPLETELY WEATHERED)
- EU - EW [Symbol] EAST COAST BAYS FORMATION (UNWEATHERED - HIGHLY WEATHERED)
- - - - - GEOLOGICAL BOUNDARY (INFERRED) ¹
- ▽— REGIONAL GROUNDWATER LEVEL (INFERRED) ²
- — — — — INDICATIVE OPTION 3 BUSWAY/SUP ALIGNMENT

BOREHOLE

- [Symbol] OFFSET FROM SECTION LINE
- [Symbol] BOREHOLE NAME
- [Symbol] REPORT CODE

NOTES:

- INFERRED GEOLOGICAL BOUNDARIES BASED ON:
 - GEOLOGY IN HISTORICAL EXPLORATORY DRILLHOLES, THE POSITIONS OF WHICH ARE SHOWN ON THE SECTIONS.
 - HISTORICAL (SCANNED) LANDFILL CONSTRUCTION PLANS.
 - NCI GEOTECHNICAL INTERPRETIVE REPORT FOR BUSINESS CASE GS15064 (2015) (FOR EREU-EW CONTACT BELOW CENTRELINE OF SH1).
- INFERRED REGIONAL GROUNDWATER LEVEL DERIVED FROM EARTHTECH CONSULTING LTD (1995) ROSEDALE LANDFILL AEE: SECTION 4 DISCHARGE OF CONTAMINANTS TO LAND AND GROUNDWATER.



REV	DATE	REVISION DETAILS	APPROVED
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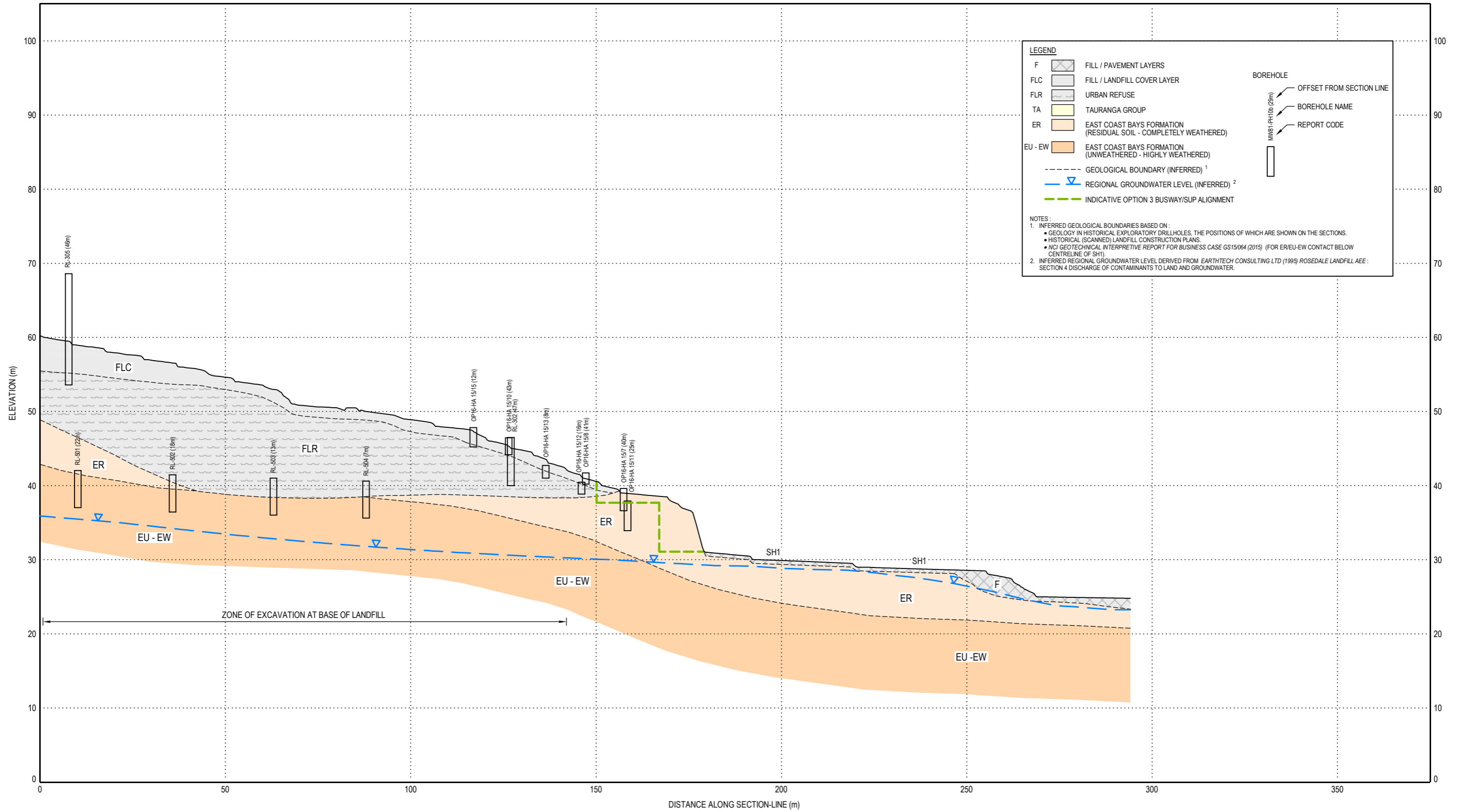
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D.ROSSITER	
DESIGNED	
G.PINCHES	
CHECKED	
P.KIRK	

PRELIMINARY NOT FOR CONSTRUCTION	APPROVED	DATE
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PROJECT	NORTHERN CORRIDOR IMPROVEMENTS				
TITLE	ROSEDALE LANDFILL CONCEPTUAL GEOLOGICAL CROSS SECTION B-B'				
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER
250310	-	3PRE	-	2ENV - SKT	2346
REV	A				

EAST

WEST



LEGEND

- F [Pattern] FILL / PAVEMENT LAYERS
- FLC [Pattern] FILL / LANDFILL COVER LAYER
- FLR [Pattern] URBAN REFUSE
- TA [Pattern] TAURANGA GROUP
- ER [Pattern] EAST COAST BAYS FORMATION (RESIDUAL SOIL - COMPLETELY WEATHERED)
- EU - EW [Pattern] EAST COAST BAYS FORMATION (UNWEATHERED - HIGHLY WEATHERED)
- - - - - GEOLOGICAL BOUNDARY (INFERRED) ¹
- - - - - REGIONAL GROUNDWATER LEVEL (INFERRED) ²
- - - - - INDICATIVE OPTION 3 BUSWAY/SUP ALIGNMENT

BOREHOLE

- [Symbol] OFFSET FROM SECTION LINE
- [Symbol] BOREHOLE NAME
- [Symbol] REPORT CODE

NOTES:

- INFERRED GEOLOGICAL BOUNDARIES BASED ON:
 - GEOLOGY IN HISTORICAL EXPLORATORY DRILLHOLES, THE POSITIONS OF WHICH ARE SHOWN ON THE SECTIONS.
 - HISTORICAL (SCANNED) LANDFILL CONSTRUCTION PLANS.
 - NCI GEOTECHNICAL INTERPRETIVE REPORT FOR BUSINESS CASE GS15/064 (2015) (FOR ER/EU-EW CONTACT BELOW CENTRELINE OF SH1).
- INFERRED REGIONAL GROUNDWATER LEVEL DERIVED FROM EARTHTECH CONSULTING LTD (1995) ROSEDALE LANDFILL AEE: SECTION 4 DISCHARGE OF CONTAMINANTS TO LAND AND GROUNDWATER.



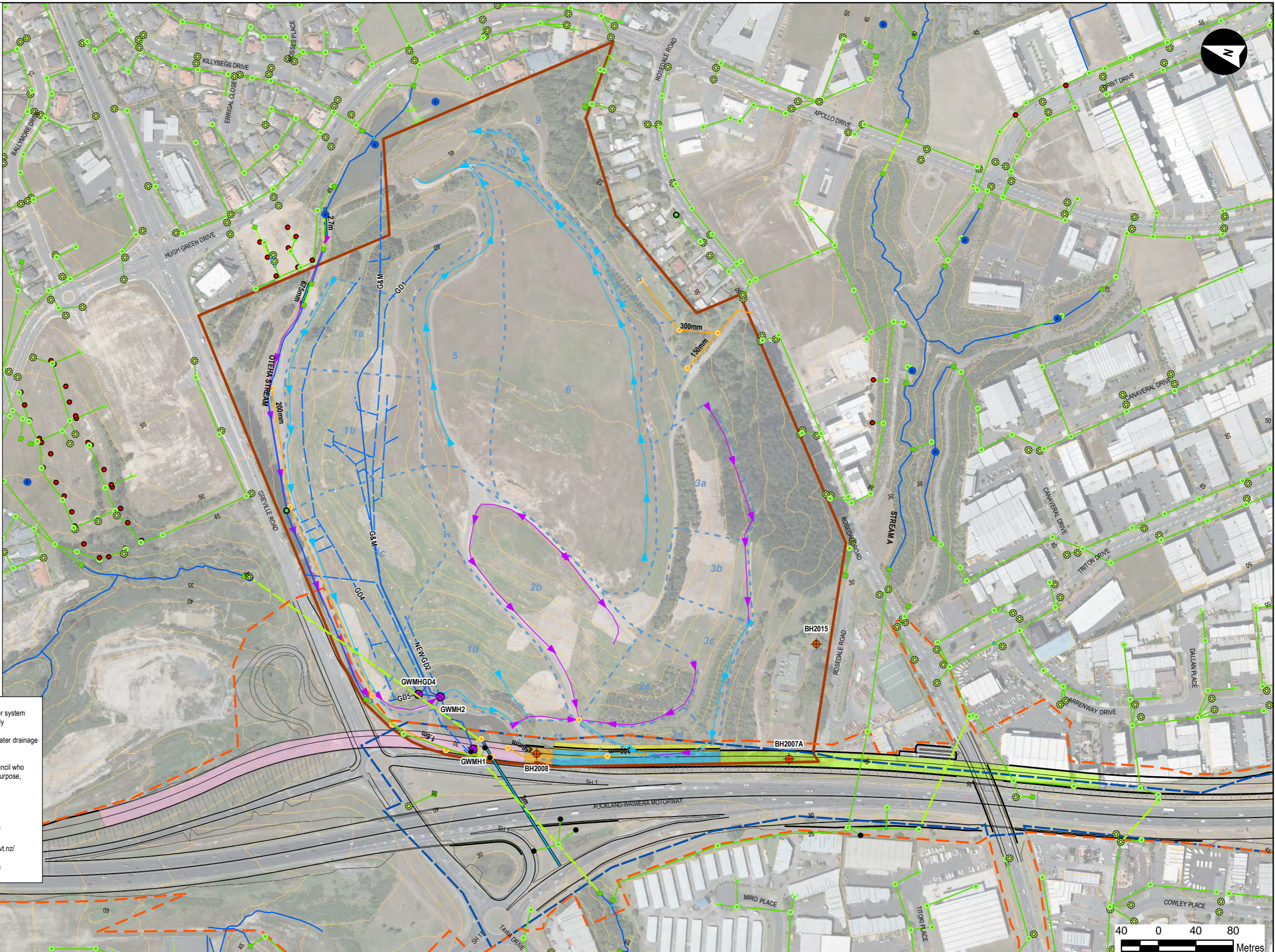
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DRAWN	
D.ROSSITER	
DESIGNED	
G.PINCHES	
CHECKED	
P.KIRK	

PRELIMINARY NOT FOR CONSTRUCTION	APPROVED	DATE
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PROJECT	NORTHERN CORRIDOR IMPROVEMENTS				
TITLE	ROSEDALE LANDFILL CONCEPTUAL GEOLOGICAL CROSS SECTION C-C'				
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER
250310	-	3PRE	-	2ENV - SKT	2347
					REV
					A

- LEGEND**
- AUCKLAND COUNCIL STORM WATER POINTS:**
- MANHOLE
 - CATCHPIT
 - CAPPED END
 - NODE
 - JOINT
 - INLET OR OUTLET
 - DETENTION POND
 - CONNECTION POINT
 - UNKNOWN
- AUCKLAND COUNCIL STORM WATER LINES:**
- WATERCOURSE OR OPEN DRAIN
 - MAIN
 - BOX CULVERT
 - PERFORATED
 - DRAINS - PRIVATE
- LANDFILL STORMWATER FEATURES**
- CONCRETE CHANNEL
 - GRASS CHANNEL
 - SW PIPE
 - SW CULVERT
 - SW STRUCTURE
 - SW MANHOLE
 - SW CATCHMENT
- LANDFILL GROUNDWATER FEATURES**
- GW SLOTTED PIPE
 - GW UNSLOTTED PIPE
 - GW MONITORING BORE
 - GW MONITORING MANHOLE
- PROPOSED BUSWAY/SHARED USE PATH DESIGN:**
- BRIDGE
 - ABUTMENT
 - CUT
 - INDICATIVE CUT INTO LANDFILL 6m BACK FROM RETAINING WALL
 - EMBANKMENT OR BRIDGE
 - PROPOSED RETAINING WALL
 - ALTERATION TO EXISTING DESIGNATION BOUNDARY
 - EXISTING DESIGNATION BOUNDARY
 - PROPERTY BOUNDARY



Notes:

1. Landfill stormwater infrastructure based on a scanned copy of the stormwater system Envirowaste drawing number 125-1412-235 dated 08/08. May not be spatially accurate.
2. Landfill groundwater infrastructure based on a scanned copy of the groundwater drainage system Envirowaste as built drawing number 1251412-147A dated 10/03/03. May not be spatially accurate.
3. Auckland Council SW information provided under licence from Auckland Council who make no claims as to its reliability, accuracy or adequacy for any particular purpose, received 30/03/16.
4. Extents of indicative Busway/SUP design elements based on General Arrangement Drawings. Design elements comprise Greville Road bridge (Bridge), Greville Road bridge abutment (Abutment), Busway/SUP landfill slope cut (Cut), SUP retaining wall and landfill reinstatement cut (Reinstatement Cut), Rosedale Road embankment/bridge (embankment/bridge)
5. Aerial imagery (flown 2010) sourced from the LINZ data service www.linz.govt.nz/about-linz-data-service/help/using-linz-data/attribution-aerial-imagery-data and licenced for re-use under the creative commons attribution 3.0 New Zealand licence.



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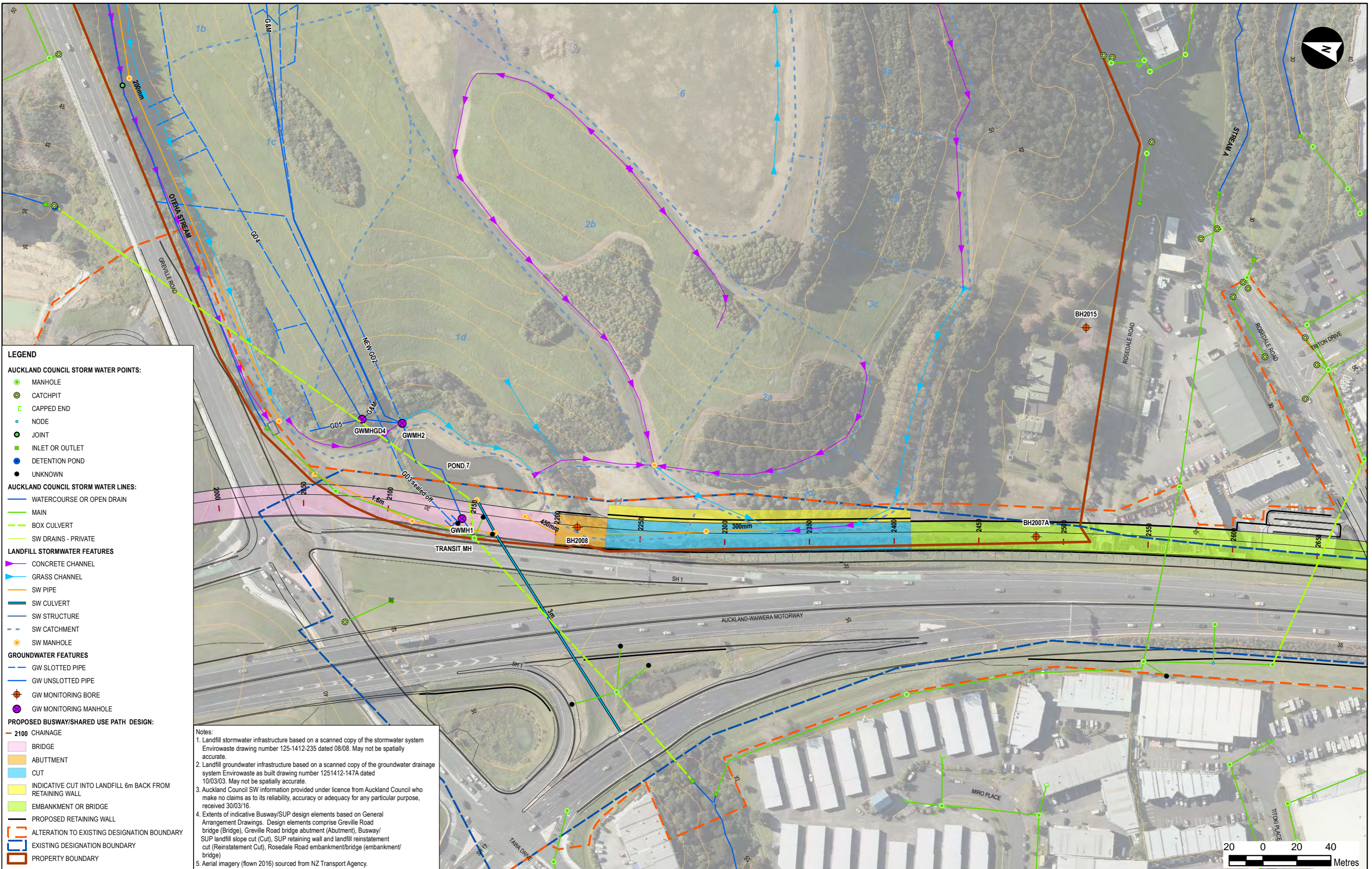
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DRAWN	C.SCOTT	DESIGNED	A. AMPUTCH
CHECKED	N. CRAMPTON		

FOR INFORMATION
NOT FOR CONSTRUCTION

APPROVED

DATE

CLIENT	NORTHERN CORRIDOR IMPROVEMENTS				
PROJECT	ROSEDALE LANDFILL GROUNDWATER AND STORMWATER PLAN				
TITLE					
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER
	250310	3PRE	2ENV	SKT	2327
					REV
					A



LEGEND

AUCKLAND COUNCIL STORM WATER POINTS:

- MANHOLE
- CATCHPIT
- CAPPED END
- NODE
- JOINT
- INLET OR OUTLET
- DETENTION POND
- UNKNOWN

AUCKLAND COUNCIL STORM WATER LINES:

- WATERCOURSE OR OPEN DRAIN
- MAIN
- BOX CULVERT
- SW DRAINS - PRIVATE

LANDFILL STORMWATER FEATURES

- CONCRETE CHANNEL
- GRASS CHANNEL
- SW PIPE
- SW CULVERT
- SW STRUCTURE
- SW CATCHMENT
- SW MANHOLE

GROUNDWATER FEATURES

- GW SLOTTED PIPE
- GW UNSLOTTED PIPE
- GW MONITORING BORE
- GW MONITORING MANHOLE

PROPOSED BUSWAY/SHARED USE PATH DESIGN:

- 2100 CHAINAGE
- BRIDGE
- ABUTTMENT
- CUT
- INDICATIVE CUT INTO LANDFILL 6m BACK FROM RETAINING WALL
- EMBANKMENT OR BRIDGE
- PROPOSED RETAINING WALL
- ALTERATION TO EXISTING DESIGNATION BOUNDARY
- EXISTING DESIGNATION BOUNDARY
- PROPERTY BOUNDARY

Notes:

- Landfill stormwater infrastructure based on a scanned copy of the stormwater system Envirowaste drawing number 125-1412-235 dated 08/08. May not be spatially accurate.
- Landfill groundwater infrastructure based on a scanned copy of the groundwater drainage system Envirowaste as built drawing number 1251412-147A dated 10/03/03. May not be spatially accurate.
- Auckland Council SW information provided under licence from Auckland Council who make no claims as to its reliability, accuracy or adequacy for any particular purpose, received 30/03/16.
- Extents of indicative Busway/SUP design elements based on General Arrangement Drawings. Design elements comprise Greville Road bridge (Bridge), Greville Road bridge abutment (Abutment), Busway/SUP landfill slope cut (Cut), SUP retaining wall and landfill reinstatement cut (Reinstatement Cut), Rosedale Road embankment/bridge (embankment/bridge)
- Aerial imagery (flown 2016) sourced from NZ Transport Agency.



REV	DATE	REVISION DETAILS	APPROVED
A	23.09.16	FIRST ISSUE	
B	14.10.16	SECOND ISSUE - BUSWAY/SUP CHAINAGE	










SCALE	SIZE
1:2,000	A3
DRAWN	
C.SCOTT	
DESIGNED	
A.AMPUTCH	
CHECKED	
N.CRAMPION	

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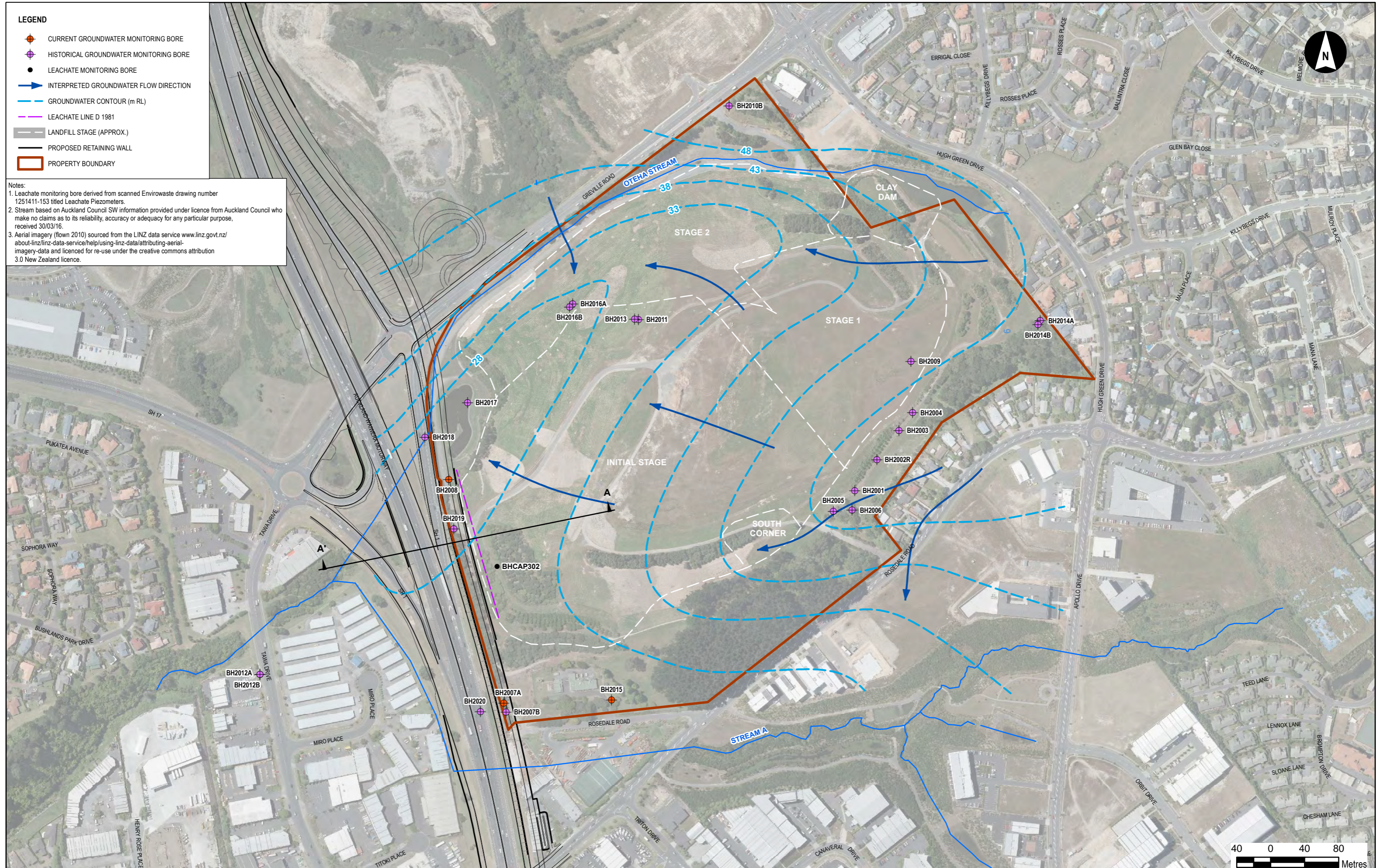
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PROJECT	NORTHERN CORRIDOR IMPROVEMENTS					
TITLE	ROSEDALE LANDFILL - WESTERN AREA GROUNDWATER AND STORMWATER PLAN					
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
	250310	3PRE	2ENV	SKT	2328	B

LEGEND

-  CURRENT GROUNDWATER MONITORING BORE
-  HISTORICAL GROUNDWATER MONITORING BORE
-  LEACHATE MONITORING BORE
-  INTERPRETED GROUNDWATER FLOW DIRECTION
-  GROUNDWATER CONTOUR (m RL)
-  LEACHATE LINE D 1981
-  LANDFILL STAGE (APPROX.)
-  PROPOSED RETAINING WALL
-  PROPERTY BOUNDARY

Notes:
 1. Leachate monitoring bore derived from scanned Envirowaste drawing number 1251411-153 titled Leachate Piezometers.
 2. Stream based on Auckland Council SW information provided under licence from Auckland Council who make no claims as to its reliability, accuracy or adequacy for any particular purpose, received 30/03/16.
 3. Aerial imagery (flown 2010) sourced from the LINZ data service www.linz.govt.nz/about/linz-data-service/help/using-linz-data/attribution-aerial-imagery-data and licenced for re-use under the creative commons attribution 3.0 New Zealand licence.



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DRAWN	C.SCOTT	DESIGNED	A.PERWICK
CHECKED	N. CRAMPTON		

FOR INFORMATION
NOT FOR CONSTRUCTION

APPROVED _____ DATE _____

PROJECT	NORTHERN CORRIDOR IMPROVEMENTS					
TITLE	ROSDALE LANDFILL HYDROGEOLOGY PLAN					
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
	250310	3PRE	2ENV	SKT	2329	A

LEGEND

LEACHATE SYSTEM STRUCTURES

- MANHOLE
- GAS COMPOUND WELL AND PUMP
- PUMP STATION
- + FLUSHING POINT

LEACHATE SYSTEM PIPES

- PUMPING LINE
- GRAVITY LINE
- UNSLOTTED PIPE
- SLOTTED PIPE SURROUNDED BY SCORIA

GAS INFRASTRUCTURE (SURVEYED)¹

- ACTIVE GAS EXTRACTION WELL
- INACTIVE GAS EXTRACTION WELL
- + GAS SAMPLING POINT
- LEACHATE GAS EXTRACTION
- CONDENSATE DROPOUT
- VALVE

GAS INFRASTRUCTURE (ENVIROWASTE)¹

- ACTIVE GAS EXTRACTION WELL
- INACTIVE GAS EXTRACTION WELL
- + GAS SAMPLING POINT
- ACTIVE LEACHATE GAS EXTRACTION
- INACTIVE LEACHATE GAS EXTRACTION
- CONDENSATE DROPOUT
- VALVE
- STUB
- PUMP STATION

GAS INFRASTRUCTURE (ENVIROWASTE)¹

- GAS - 63-100mm RETICULATION PIPE
- GAS - 160mm RETICULATION PIPE
- GAS - 200mm RETICULATION PIPE

GAS MONITORING (SURVEYED)²

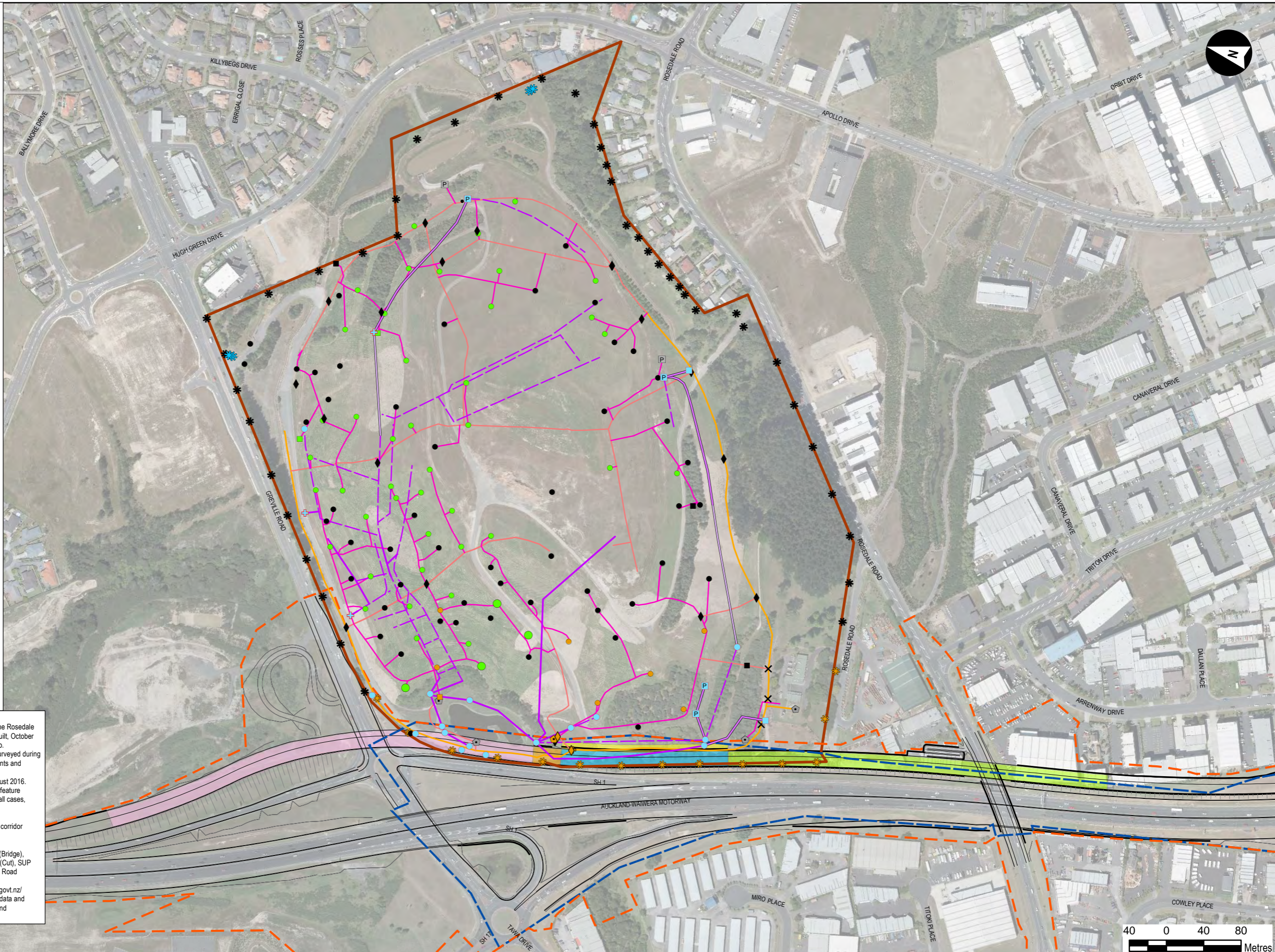
- + MIGRATION PROBE

GAS MONITORING (ENVIROWASTE)¹

- * MIGRATION PROBE
- * DEEP MIGRATION PROBES

PROPOSED BUSWAY/SHARED USE PATH DESIGN:

- BRIDGE
- ABUTMENT
- CUT
- INDICATIVE CUT INTO LANDFILL 6m BACK FROM RETAINING WALL
- EMBANKMENT OR BRIDGE
- PROPOSED RETAINING WALL
- - - ALTERATION TO EXISTING DESIGNATION BOUNDARY
- - - EXISTING DESIGNATION BOUNDARY
- - - PROPERTY BOUNDARY



Notes:
 1. Gas monitoring and infrastructure primarily based on a scanned copy of the Rosedale Landfill Gas Reticulation Plan, Drawing number 125-1422-38, Issue: As-built, October 2009 (Air Quality Management Plan - Rosedale Closed Landfill, Report No. 42073048/R001/c, URS, July 2015). With the exception of the features surveyed during July – August 2016 (refer Note 2 below), the location of the monitoring points and infrastructure has not been confirmed by services location/surveying.
 2. Gas monitoring and infrastructure features located by survey in July –August 2016.
 3. The surveyed gas location of a feature is shown where the location of the feature from the scanned Envirowaste plan and the survey location coincide. In all cases, the feature name from the Envirowaste plan is retained.
 4. Leachate infrastructure is derived from the scanned Envirowaste plan no. 125-1412-148 RevC 12/05/08 (Preliminary site investigation: northern corridor improvements project, BECA, 8th Oct 2015).
 5. Extents of indicative Busway/SUP design elements based on General Arrangement Drawings. Design elements comprise Greville Road bridge (Bridge), Greville Road bridge abutment (Abutment), Busway/SUP landfill slope cut (Cut), SUP retaining wall and landfill reinstatement cut (Reinstatement Cut), Rosedale Road embankment/bridge (embankment/bridge).
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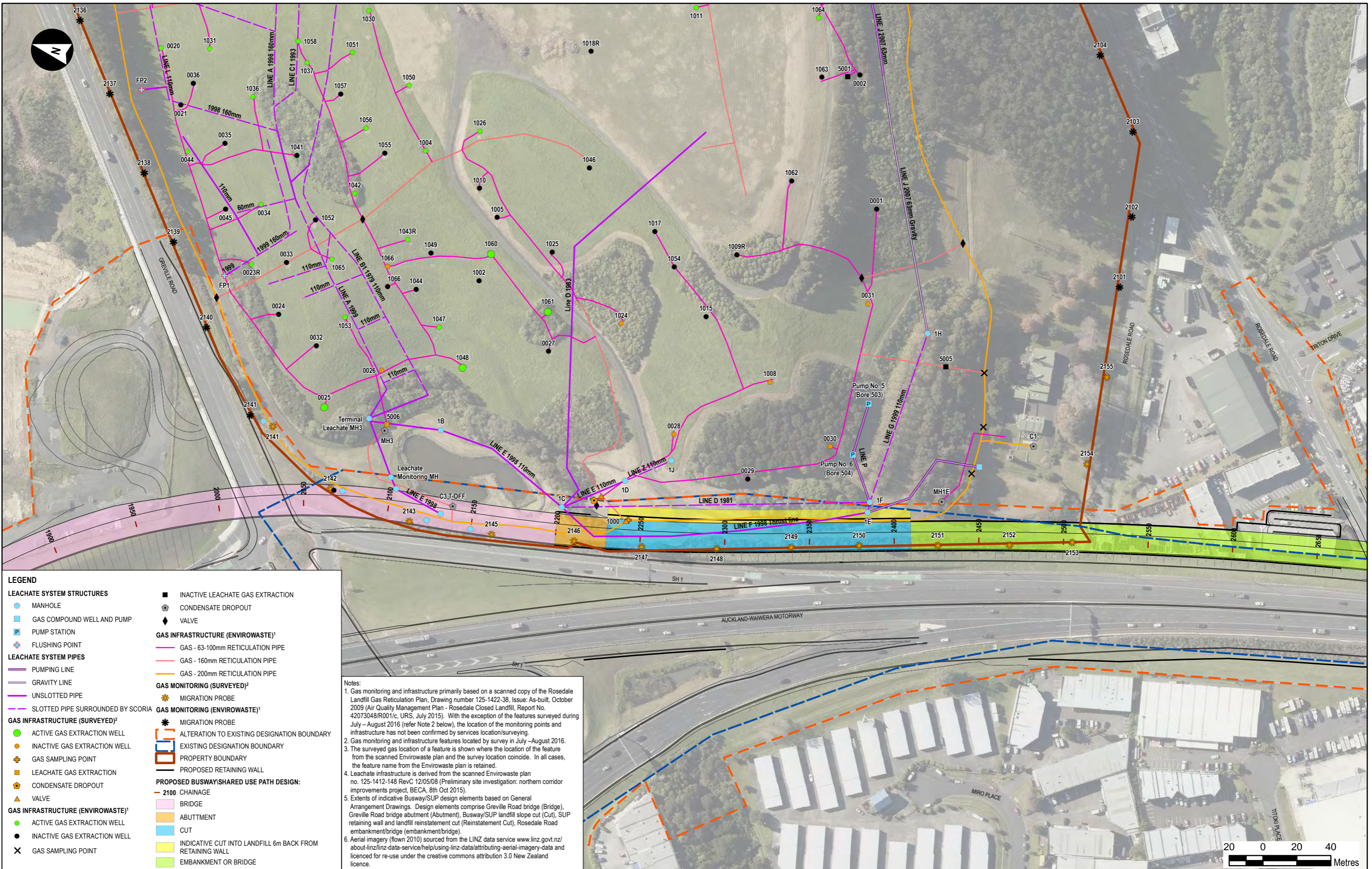
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A	23.09.16	FIRST ISSUE	

SCALE	SIZE
1:4,000	A3
DRAWN	C.SCOTT
DESIGNED	S.PEARCE & A.AMPUTCH
CHECKED	N.CRAMPION

FOR INFORMATION
NOT FOR CONSTRUCTION

APPROVED _____ DATE _____

PROJECT	NORTHERN CORRIDOR IMPROVEMENTS				
TITLE	ROSEDALE LANDFILL GAS AND LEACHATE MONITORING & INFRASTRUCTURE				
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER
	250310	3PRE	2ENV	SKT	2348
					REV
					A



LEGEND

LEACHATE SYSTEM STRUCTURES	■ INACTIVE LEACHATE GAS EXTRACTION
● MANHOLE	◆ CONDENSATE DROPOUT
■ GAS COMPOUND WELL AND PUMP	◆ VALVE
■ PUMP STATION	
■ FLUSHING POINT	
LEACHATE SYSTEM PIPES	
■ PUMPING LINE	
■ GRAVITY LINE	
■ UNSLOTTED PIPE	
■ SLOTTED PIPE SURROUNDED BY SCORIA	
GAS INFRASTRUCTURE (SURVEYED)²	
● ACTIVE GAS EXTRACTION WELL	■ MIGRATION PROBE
● INACTIVE GAS EXTRACTION WELL	■ MIGRATION PROBE
■ GAS SAMPLING POINT	■ ALTERATION TO EXISTING DESIGNATION BOUNDARY
■ LEACHATE GAS EXTRACTION	■ EXISTING DESIGNATION BOUNDARY
■ CONDENSATE DROPOUT	■ PROPERTY BOUNDARY
■ VALVE	■ PROPOSED RETAINING WALL
GAS INFRASTRUCTURE (ENVIROWASTE)¹	
● ACTIVE GAS EXTRACTION WELL	■ 2100 CHAINAGE
● INACTIVE GAS EXTRACTION WELL	■ BRIDGE
■ GAS SAMPLING POINT	■ ABUTMENT
	■ CUT
	■ INDICATIVE CUT INTO LANDFILL 6m BACK FROM RETAINING WALL
	■ EMBANKMENT OR BRIDGE

Notes:

- Gas monitoring and infrastructure primarily based on a scanned copy of the Rosedale Landfill Gas Reticulation Plan, Drawing number 125-1422-38, Issue: As-built, October 2009 (Air Quality Management Plan - Rosedale Closed Landfill, Report No. 42073048/R001/c, URS, July 2015). With the exception of the features surveyed during July - August 2016 (refer Note 2 below), the location of the monitoring points and infrastructure has not been confirmed by services location/surveying.
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REV	DATE	REVISION DETAILS	APPROVED
A	23.09.16	FIRST ISSUE	
B	14.10.16	SECOND ISSUE - BUSWAY/SUP CHAINAGE	

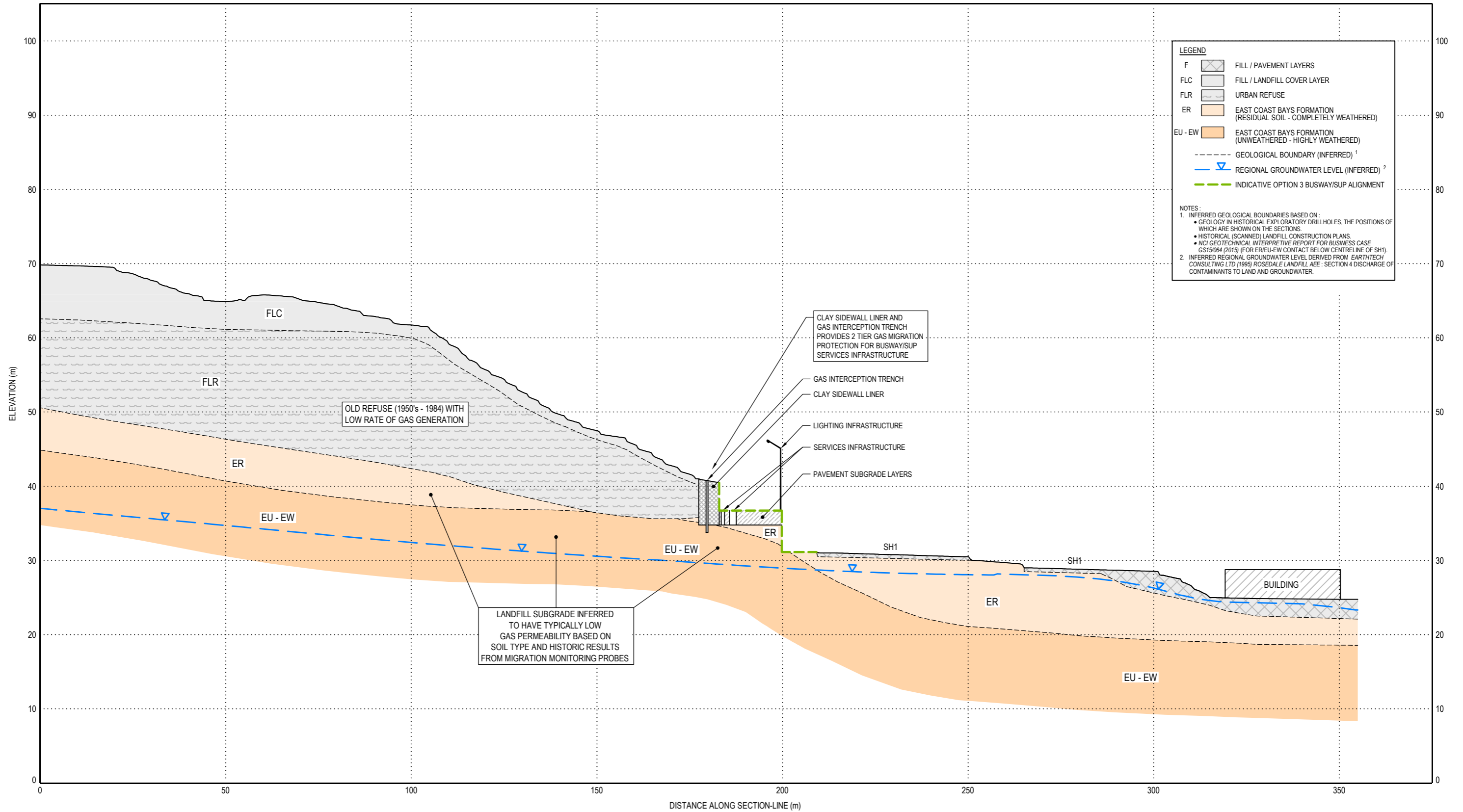
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DRAWN	C.SCOTT
DESIGNED	S.PEARCE & A.AMPUTCH
CHECKED	N.CRAMPION

FOR INFORMATION	NOT FOR CONSTRUCTION
APPROVED	DATE

PROJECT	NORTHERN CORRIDOR IMPROVEMENTS				
TITLE	ROSEDALE LANDFILL - WESTERN AREA GAS AND LEACHATE MONITORING & INFRASTRUCTURE				
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER
250310	250310	3PRE	2ENV	SKT	2330
REV	B				

EAST

WEST



CLIENT

REV	DATE	REVISION DETAILS	APPROVED
A	23.09.16	FIRST ISSUE	

SCALE	SIZE
H 1:1000 V 1:500	A3
DRAWN	
D.ROSSITER	
DESIGNED	
A.RUMSBY	
CHECKED	
N.CRAMPION	

PRELIMINARY NOT FOR CONSTRUCTION
APPROVED
DATE

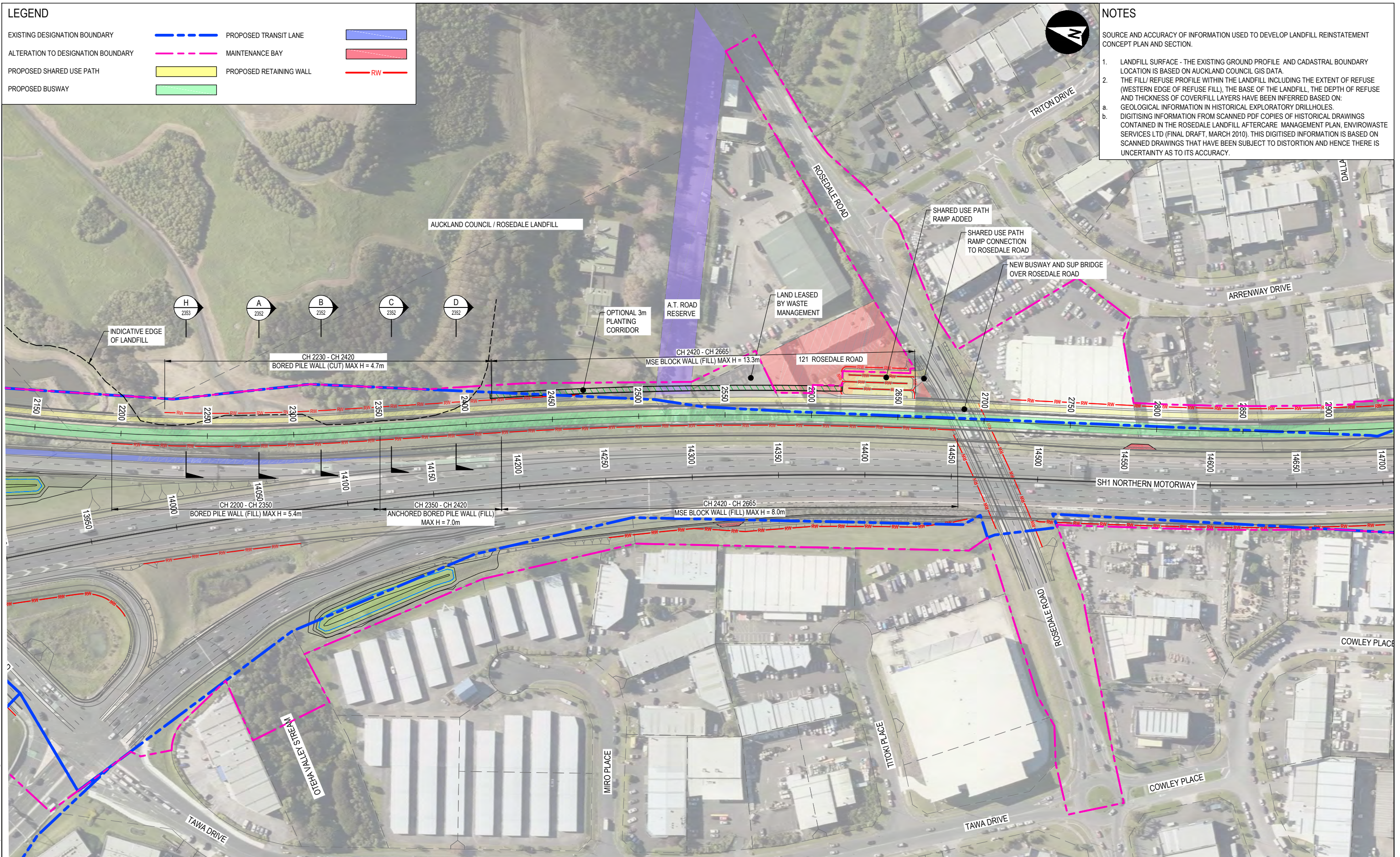
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TITLE	ROSEDALE LANDFILL CONCEPTUAL LANDFILL GAS MIGRATION MODEL				
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER
250310	250310	3PRE	2ENV	SKT	2331
REV	A				

LEGEND

EXISTING DESIGNATION BOUNDARY		PROPOSED TRANSIT LANE	
ALTERATION TO DESIGNATION BOUNDARY		MAINTENANCE BAY	
PROPOSED SHARED USE PATH		PROPOSED RETAINING WALL	
PROPOSED BUSWAY		RW	

NOTES

- SOURCE AND ACCURACY OF INFORMATION USED TO DEVELOP LANDFILL REINSTATEMENT CONCEPT PLAN AND SECTION.
- LANDFILL SURFACE - THE EXISTING GROUND PROFILE AND CADASTRAL BOUNDARY LOCATION IS BASED ON AUCKLAND COUNCIL GIS DATA.
 - THE FILL/ REFUSE PROFILE WITHIN THE LANDFILL INCLUDING THE EXTENT OF REFUSE (WESTERN EDGE OF REFUSE FILL), THE BASE OF THE LANDFILL, THE DEPTH OF REFUSE AND THICKNESS OF COVER/FILL LAYERS HAVE BEEN INFERRED BASED ON:
 - GEOLOGICAL INFORMATION IN HISTORICAL EXPLORATORY DRILLHOLES.
 - DIGITISING INFORMATION FROM SCANNED PDF COPIES OF HISTORICAL DRAWINGS CONTAINED IN THE ROSEDALE LANDFILL AFTERCARE MANAGEMENT PLAN, ENVIROWASTE SERVICES LTD (FINAL DRAFT, MARCH 2010). THIS DIGITISED INFORMATION IS BASED ON SCANNED DRAWINGS THAT HAVE BEEN SUBJECT TO DISTORTION AND HENCE THERE IS UNCERTAINTY AS TO ITS ACCURACY.

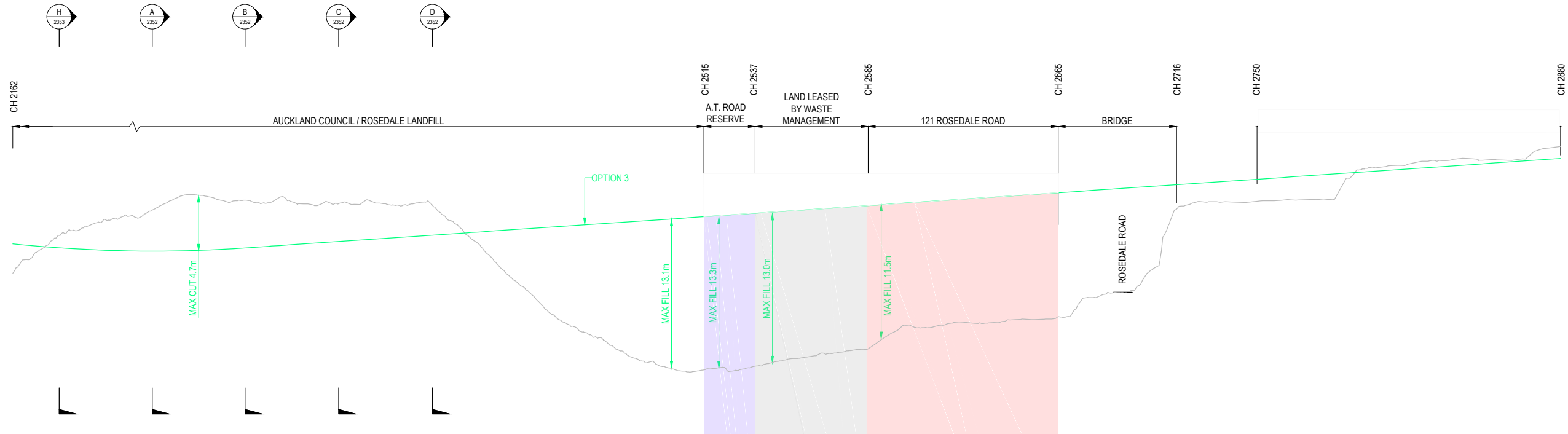


OPTION 3

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SCALE 1:1000

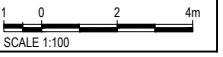
CLIENT		REV	DATE	REVISION DETAILS	APPROVED	SCALE	SIZE	PRELIMINARY NOT FOR CONSTRUCTION	PROJECT	NORTHERN CORRIDOR IMPROVEMENTS					
		A	05/10/16	PRELIMINARY ISSUE	G. MOORE	1:1000	A1								
						DRAWN		APPROVED	TITLE						
						J. LOZANO			ROSEDALE LANDFILL ALIGNMENT PLAN - OPTION 3						
						DESIGNED				PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
						M. FAN				250310	3PRE	2ENV	SKT	2350	A
						CHECKED									
						G. MOORE									





DATUM = 20.000

DISTANCE	EXISTING LEVELS	DESIGN LEVELS - OPTION 3	LEVEL DIFFERENCE
2220	36.936	36.936	0.000
2230	36.705	36.705	0.000
2240	36.606	36.606	0.000
2250	36.553	36.553	0.000
2260	36.488	36.488	0.000
2270	36.419	36.419	0.000
2280	36.345	36.345	0.000
2290	36.259	36.259	0.000
2300	36.163	36.163	0.000
2310	36.058	36.058	0.000
2320	35.944	35.944	0.000
2330	35.821	35.821	0.000
2340	35.690	35.690	0.000
2350	35.551	35.551	0.000
2360	35.405	35.405	0.000
2370	35.252	35.252	0.000
2380	35.093	35.093	0.000
2390	34.929	34.929	0.000
2400	34.761	34.761	0.000
2410	34.589	34.589	0.000
2420	34.414	34.414	0.000
2430	34.236	34.236	0.000
2440	34.055	34.055	0.000
2450	33.871	33.871	0.000
2460	33.684	33.684	0.000
2470	33.494	33.494	0.000
2480	33.301	33.301	0.000
2490	33.106	33.106	0.000
2500	32.909	32.909	0.000
2510	32.710	32.710	0.000
2520	32.509	32.509	0.000
2530	32.306	32.306	0.000
2540	32.101	32.101	0.000
2550	31.894	31.894	0.000
2560	31.685	31.685	0.000
2570	31.474	31.474	0.000
2580	31.261	31.261	0.000
2590	31.046	31.046	0.000
2600	30.829	30.829	0.000
2610	30.610	30.610	0.000
2620	30.389	30.389	0.000
2630	30.166	30.166	0.000
2640	29.941	29.941	0.000
2650	29.714	29.714	0.000
2660	29.485	29.485	0.000
2670	29.253	29.253	0.000
2680	29.019	29.019	0.000
2690	28.783	28.783	0.000
2700	28.545	28.545	0.000
2710	28.305	28.305	0.000
2720	28.063	28.063	0.000
2730	27.819	27.819	0.000
2740	27.573	27.573	0.000
2750	27.325	27.325	0.000
2760	27.075	27.075	0.000
2770	26.823	26.823	0.000
2780	26.569	26.569	0.000
2790	26.313	26.313	0.000
2800	26.055	26.055	0.000
2810	25.795	25.795	0.000
2820	25.533	25.533	0.000
2830	25.269	25.269	0.000
2840	25.003	25.003	0.000
2850	24.735	24.735	0.000
2860	24.465	24.465	0.000
2870	24.193	24.193	0.000
2880	23.919	23.919	0.000
2890	23.643	23.643	0.000
2900	23.365	23.365	0.000



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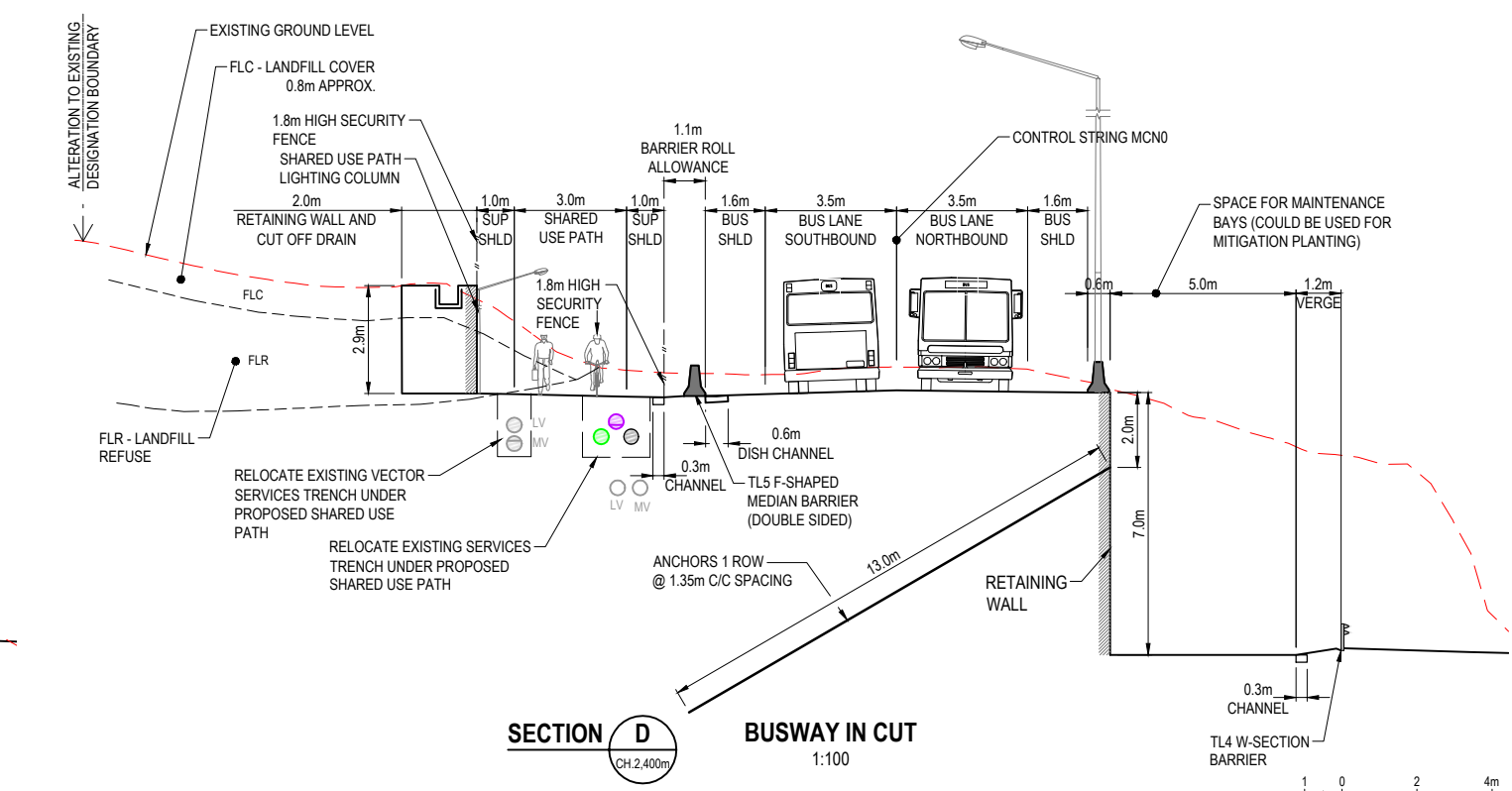
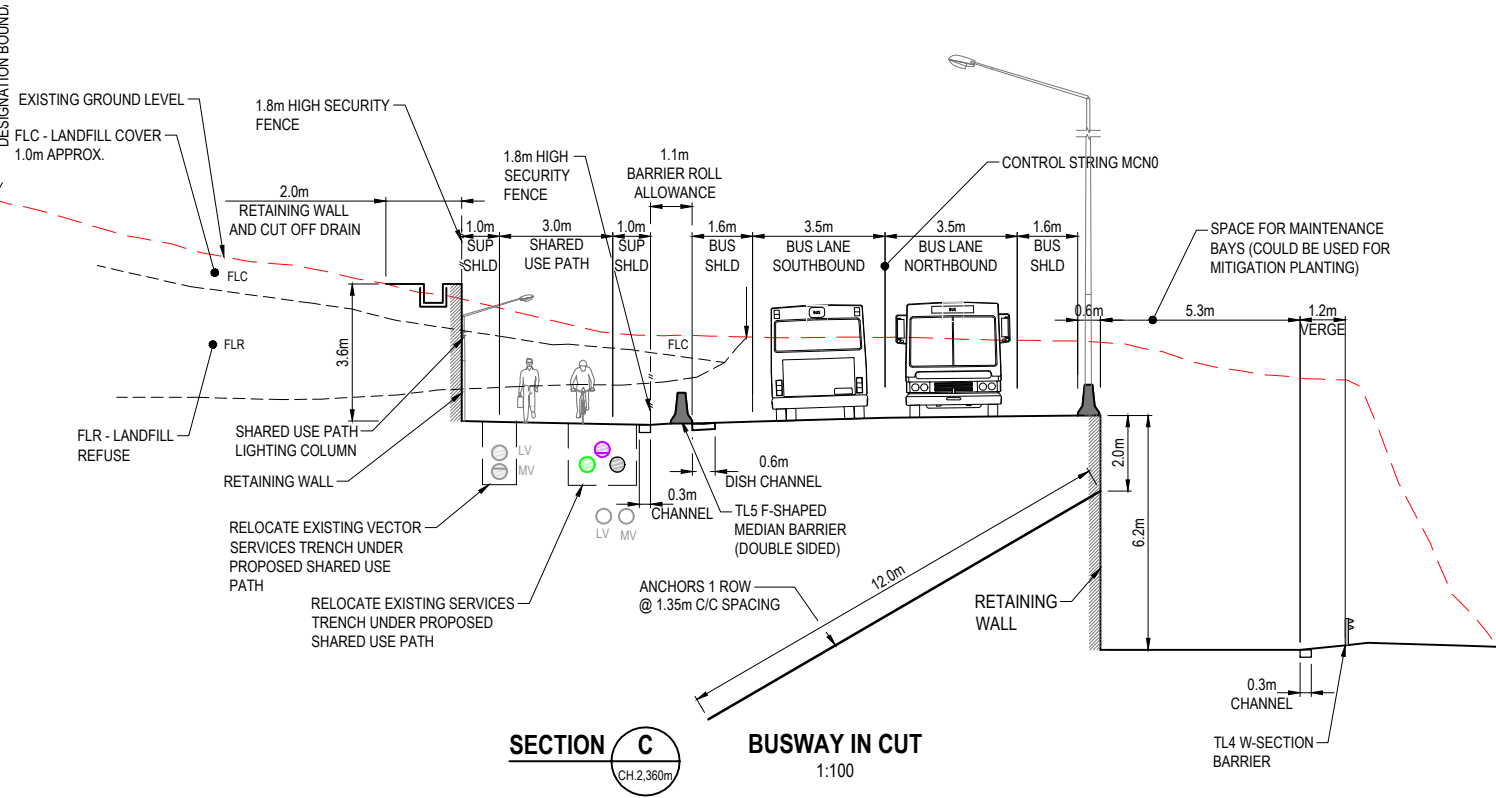
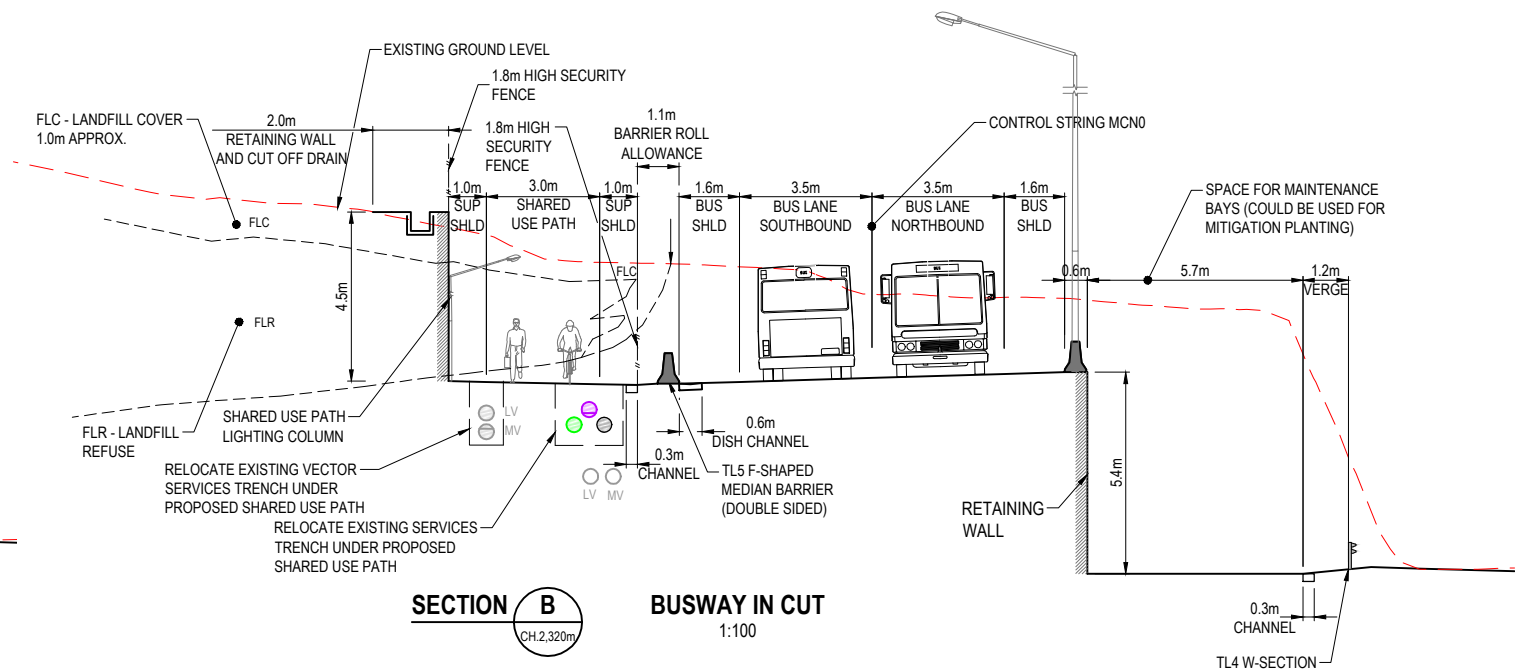
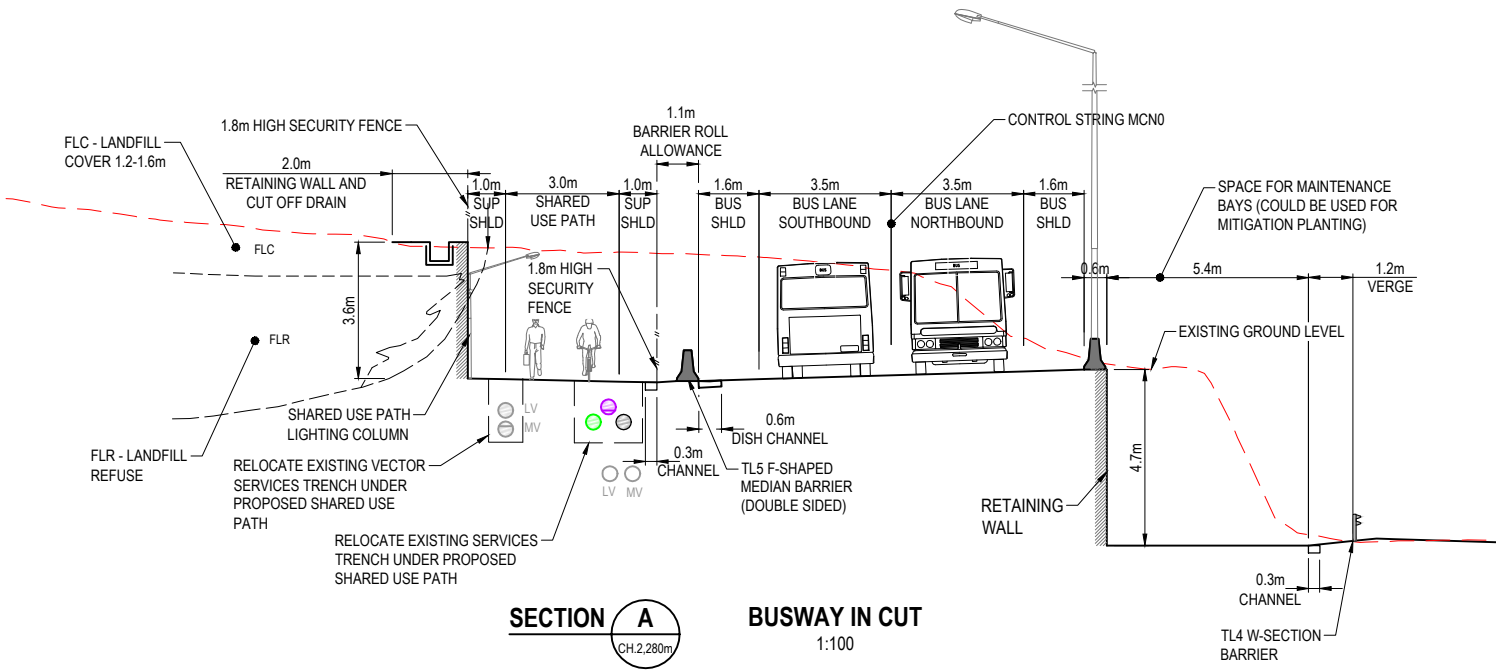


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		A	05/10/16	PRELIMINARY ISSUE	G. MOORE	1:100	A1			ROSEDALE LANDFILL LONG SECTION - OPTION 3						
						DRAWN J. LOZANO		APPROVED								
						DESIGNED M. FAN		DATE								
						CHECKED G. MOORE				DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
										250310	250310	3PRE	2ENV	SKT	2351	A

NOTES

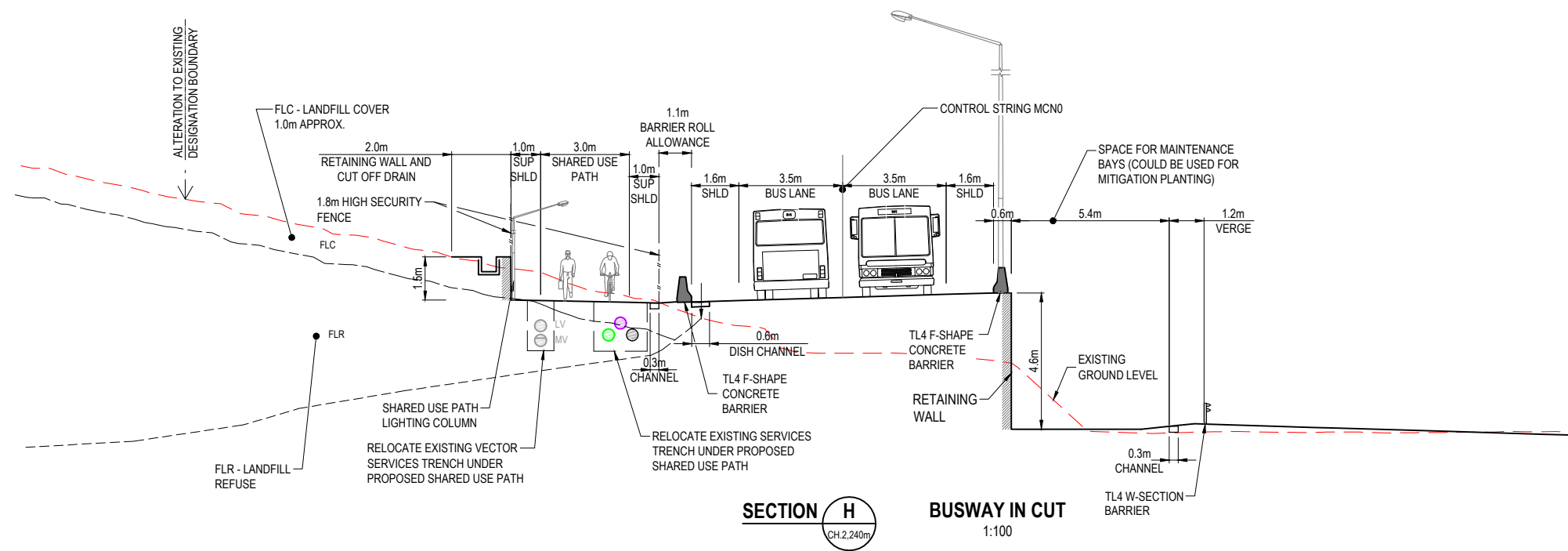
SOURCE AND ACCURACY OF INFORMATION USED TO DEVELOP LANDFILL REINSTATEMENT CONCEPT PLAN AND SECTION.

1. LANDFILL SURFACE - THE EXISTING GROUND PROFILE AND CADASTRAL BOUNDARY LOCATION IS BASED ON AUCKLAND COUNCIL GIS DATA.
2. THE FILL / REFUSE PROFILE WITHIN THE LANDFILL INCLUDING THE EXTENT OF REFUSE (WESTERN EDGE OF REFUSE FILL), THE BASE OF THE LANDFILL, THE DEPTH OF REFUSE AND THICKNESS OF COVER/FILL LAYERS HAVE BEEN INFERRED BASED ON:
 - a. GEOLOGICAL INFORMATION IN HISTORICAL EXPLORATORY DRILLHOLES.
 - b. DIGITISING INFORMATION FROM SCANNED PDF COPIES OF HISTORICAL DRAWINGS CONTAINED IN THE ROSEDALE LANDFILL AFTERCARE MANAGEMENT PLAN, ENVIROWASTE SERVICES LTD (FINAL DRAFT, MARCH 2010). THIS DIGITISED INFORMATION IS BASED ON SCANNED DRAWINGS THAT HAVE BEEN SUBJECT TO DISTORTION AND HENCE THERE IS UNCERTAINTY AS TO ITS ACCURACY.



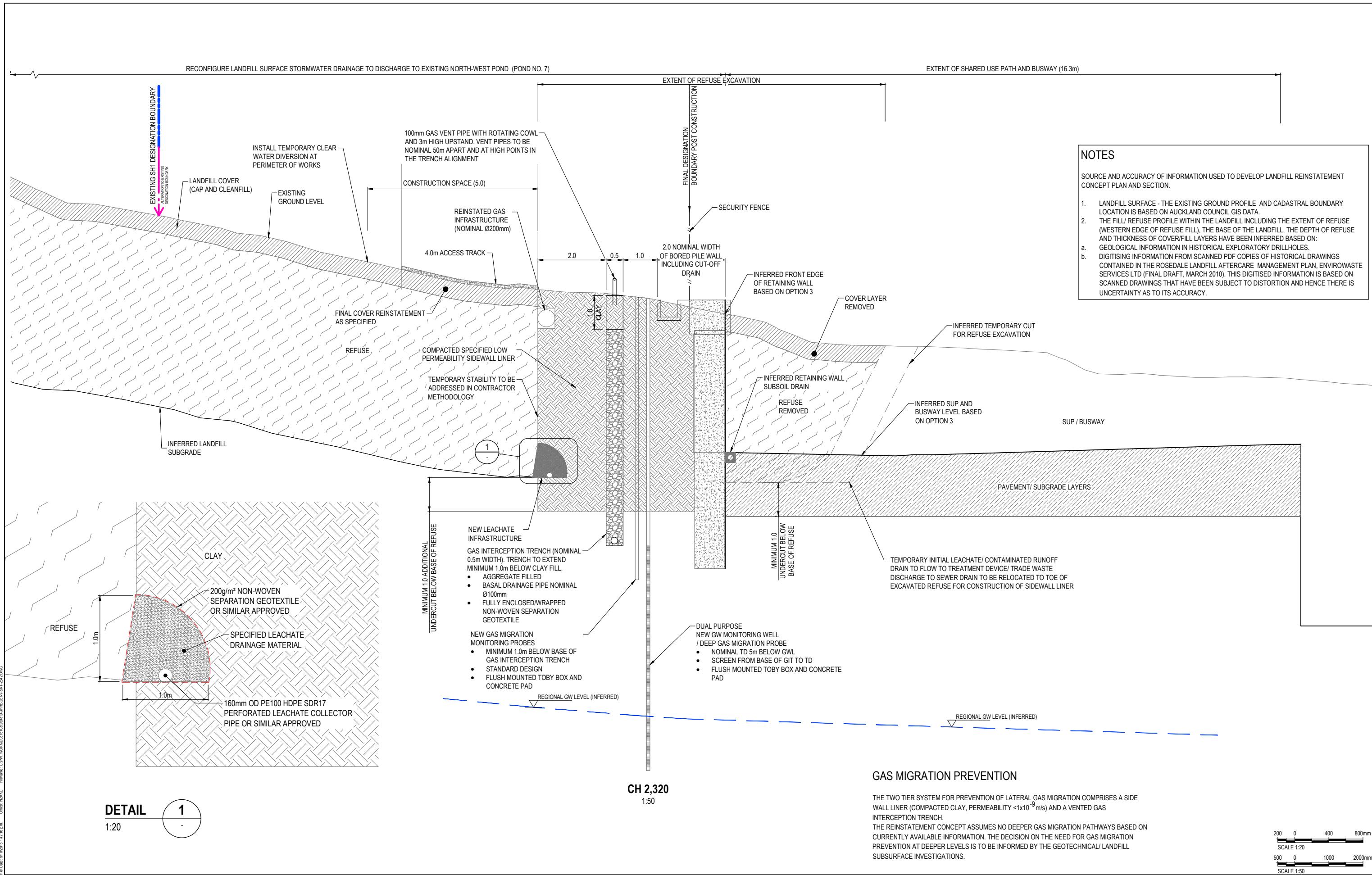
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 Client: NZTA

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		APPROVED DATE	TITLE ROSEDALE LANDFILL TYPICAL SECTIONS - OPTION 3 SHEET 1 OF 2	DRAWN J. LOZANO	DESIGNED M. FAN	CHECKED G. MOORE	DRAWING No. 250310	PROJECT No. 250310	STAGE 3PRE	WP 2ENV	TYPE SKT



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CLIENT		REV	DATE	REVISION DETAILS	APPROVED	SCALE	SIZE	PRELIMINARY NOT FOR CONSTRUCTION	PROJECT	NORTHERN CORRIDOR IMPROVEMENTS						
aurecon		A	05/10/16	PRELIMINARY ISSUE	G. MOORE	1:100	A1			ROSEDALE LANDFILL TYPICAL SECTIONS - OPTION 3 SHEET 2 OF 2						
NZ TRANSPORT AGENCY WAKA KOTAHI						DRAWN J. LOZANO		APPROVED		TITLE						
						DESIGNED M. FAN		DATE								
						CHECKED G. MOORE				DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
										250310	3PRE	2ENV	SKT		2353	A



NOTES

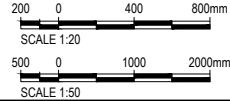
SOURCE AND ACCURACY OF INFORMATION USED TO DEVELOP LANDFILL REINSTATEMENT CONCEPT PLAN AND SECTION.

- LANDFILL SURFACE - THE EXISTING GROUND PROFILE AND CADASTRAL BOUNDARY LOCATION IS BASED ON AUCKLAND COUNCIL GIS DATA.
- THE FILL/ REFUSE PROFILE WITHIN THE LANDFILL INCLUDING THE EXTENT OF REFUSE (WESTERN EDGE OF REFUSE FILL), THE BASE OF THE LANDFILL, THE DEPTH OF REFUSE AND THICKNESS OF COVER/FILL LAYERS HAVE BEEN INFERRED BASED ON:
 - GEOLOGICAL INFORMATION FROM HISTORICAL EXPLORATORY DRILLHOLES.
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GAS MIGRATION PREVENTION

THE TWO TIER SYSTEM FOR PREVENTION OF LATERAL GAS MIGRATION COMPRISES A SIDE WALL LINER (COMPACTED CLAY, PERMEABILITY $<1 \times 10^{-9}$ m/s) AND A VENTED GAS INTERCEPTION TRENCH.

THE REINSTATEMENT CONCEPT ASSUMES NO DEEPER GAS MIGRATION PATHWAYS BASED ON CURRENTLY AVAILABLE INFORMATION. THE DECISION ON THE NEED FOR GAS MIGRATION PREVENTION AT DEEPER LEVELS IS TO BE INFORMED BY THE GEOTECHNICAL/ LANDFILL SUBSURFACE INVESTIGATIONS.

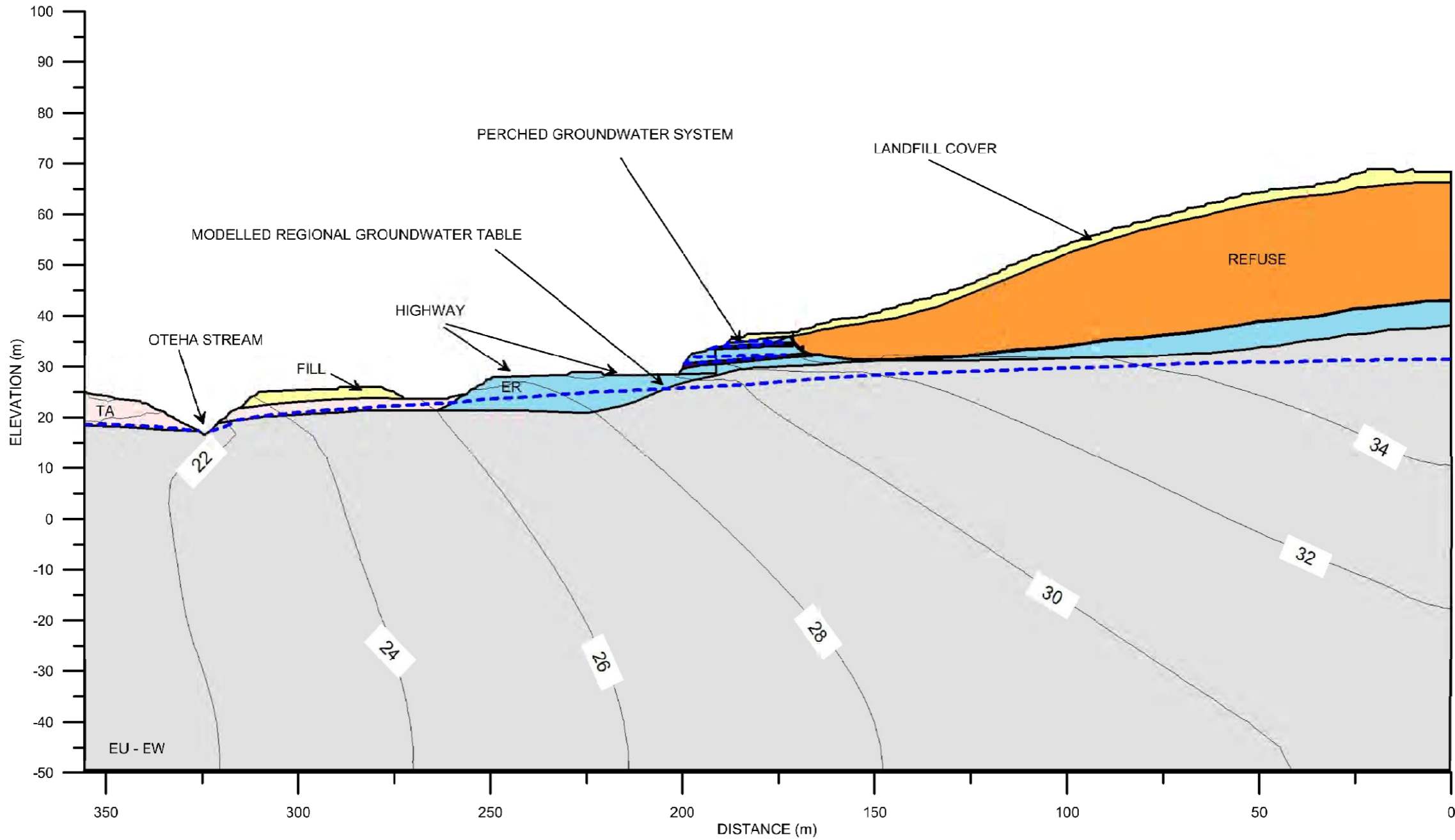


CLIENT		REV	DATE	REVISION DETAILS	APPROVED	SCALE	SIZE	PRELIMINARY NOT FOR CONSTRUCTION	PROJECT	NORTHERN CORRIDOR IMPROVEMENTS					
		A	05/10/16	PRELIMINARY ISSUE	G. MOORE	AS SHOWN	A1								
DRAWN							APPROVED		PROJECT	LANDFILL REINSTATEMENT CONCEPT CROSS SECTION					
DESIGNED							DATE		TITLE						
CHECKED									DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
G. MOORE									250310	250310	3PRE	2ENV	SKT	2342	A



File Name: C:\PI\WORK\2016\11\02\2016\3PRE_3ENV_SKT_2342.DWG
 Plot Date: 21/02/2016 14:15:56
 Client: NZTA

NOTES:
 1. GREY LINES AND LABELS INDICATE GROUNDWATER HEAD CONTOURS (m RL)
 2. DOTTED BLUE LINE INDICATES 0 kPa GROUNDWATER PRESSURE HEAD (GROUNDWATER TABLE)



REV	DATE	REVISION DETAILS	APPROVED
A	23.09.16	FIRST ISSUE	

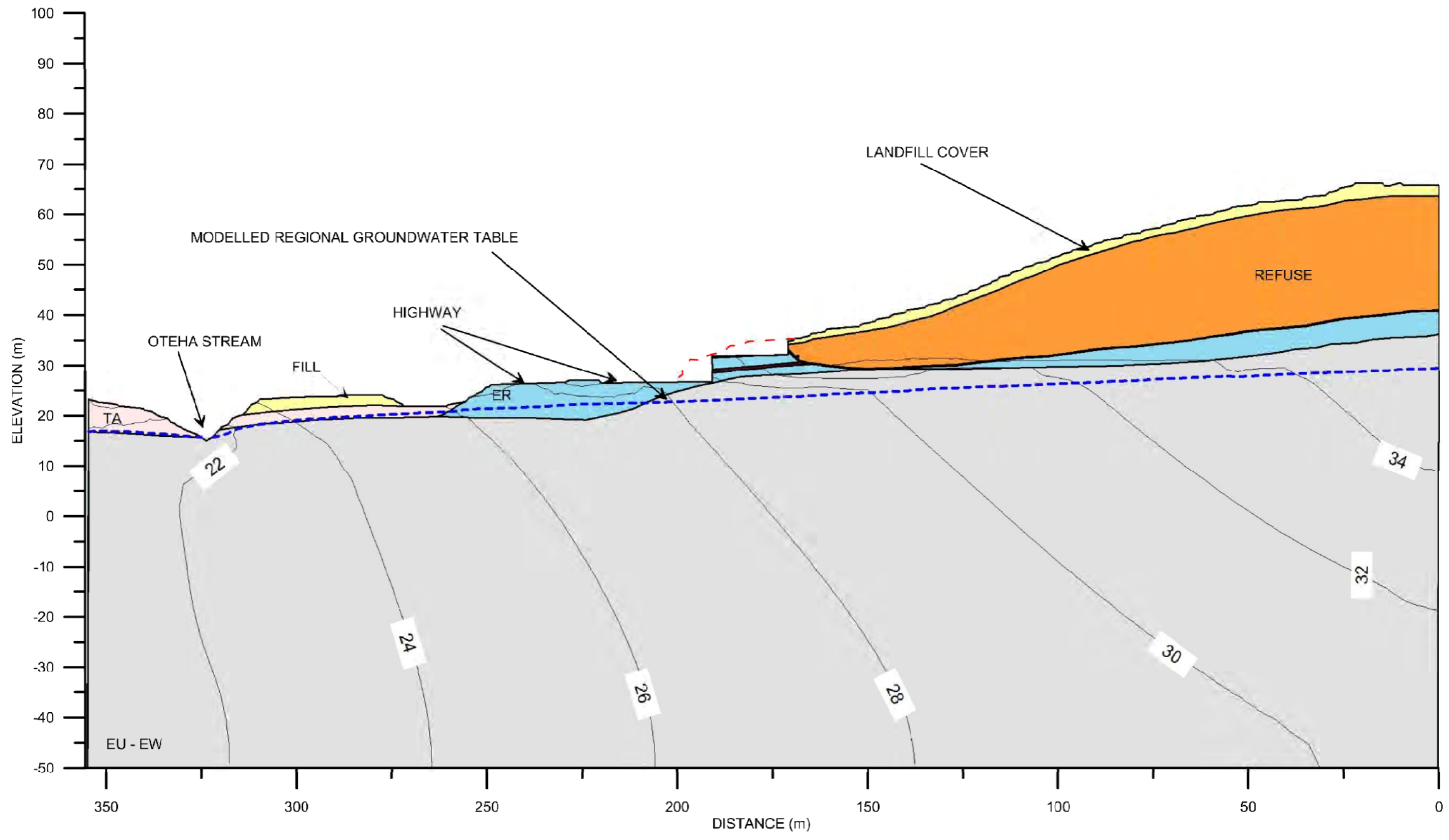
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1:1,250	A3
DRAWN	
C.SCOTT	
DESIGNED	
A.PERWICK	
CHECKED	
N.CRAMPION	

FOR INFORMATION
 NOT FOR CONSTRUCTION

APPROVED _____ DATE _____

PROJECT	NORTHERN CORRIDOR IMPROVEMENTS				
TITLE	ROSEDALE LANDFILL MODELLED HYDROGEOLOGICAL SYSTEM - EXISTING CONDITIONS				
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER
	250310	3PRE	2ENV	SKT	2343
					REV
					A

- NOTES:
 1. GREY LINES AND LABELS INDICATE GROUNDWATER HEAD CONTOURS (m RL)
 2. DOTTED BLUE LINE INDICATES 0 kPA GROUNDWATER PRESSURE HEAD (GROUNDWATER TABLE)
 3. RED DOTTED LINE INDICATES EXISTING TOPOGRAPHY



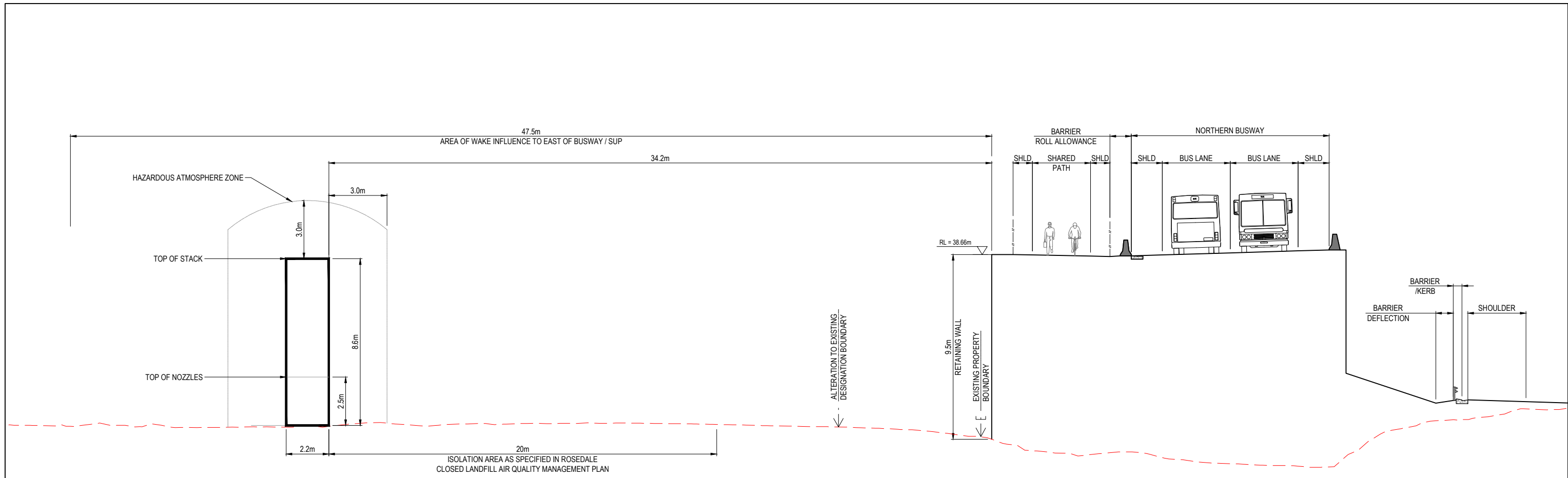
REV	DATE	REVISION DETAILS	APPROVED
A	23.09.16	FIRST ISSUE	

SCALE	SIZE
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DRAWN	
C.SCOTT	
DESIGNED	
A.PERWICK	
CHECKED	
N.CRAMPION	

FOR INFORMATION
NOT FOR CONSTRUCTION

APPROVED _____ DATE _____

PROJECT	NORTHERN CORRIDOR IMPROVEMENTS					
TITLE	ROSEDALE LANDFILL MODELLED HYDROGEOLOGICAL SYSTEM - CUT EXCAVATION					
DRAWING No.	PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
	250310	3PRE	2ENV	SKT	2344	A

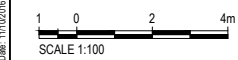


NOTES:

1. STRUCTURAL INFLUENCE ZONE BASED ON 5 TIMES THE HEIGHT OF THE BUSWAY/SUP EMBANKMENT (i.e. 9.5m) (GUIDELINE FOR DETERMINATION OF GOOD ENGINEERING PRACTICE STACK HEIGHT (USEPA, 1985, EPA-450/4-80-023R)).
2. AUXILLARY FLARE LOCATED BEHIND (10m SOUTH) OF MAIN FLARE. HAZARDOUS ATMOSPHERE ZONE TO AUXILLARY FLARE SIMILAR TO MAIN FLARE.
3. HAZARDOUS ATMOSPHERE ZONE FROM CATEGORISATION OF SITES FOR GENERIC HAZARDOUS AREA CLASSIFICATIONS, PREPARED FOR AUCKLAND COUNCIL BY AECOM, AUGUST 2015.

SECTION - CH 2470

PROPOSED TYPICAL SECTION ROSEDALE LANDFILL
1:100



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REV	DATE	REVISION DETAILS	APPROVED	SCALE	SIZE	PRELIMINARY	PROJECT
A	11/10/16	PRELIMINARY ISSUE	G. MOORE	1:100	A1	NOT FOR CONSTRUCTION	NORTHERN CORRIDOR IMPROVEMENTS
				DRAWN		APPROVED	
				J. LOZANO		DATE	TITLE
				DESIGNED			BUSWAY / SHARED USE PATH
				M. FAN			TYPICAL SECTIONS AT ROSEDALE LANDFILL
				CHECKED			OPTION 3 - FLARE TOWER
				G. MOORE			
DRAWING No.		PROJECT No.	STAGE	WP	TYPE	NUMBER	REV
250310		3PRE	2ENV	SKT	2354	A	