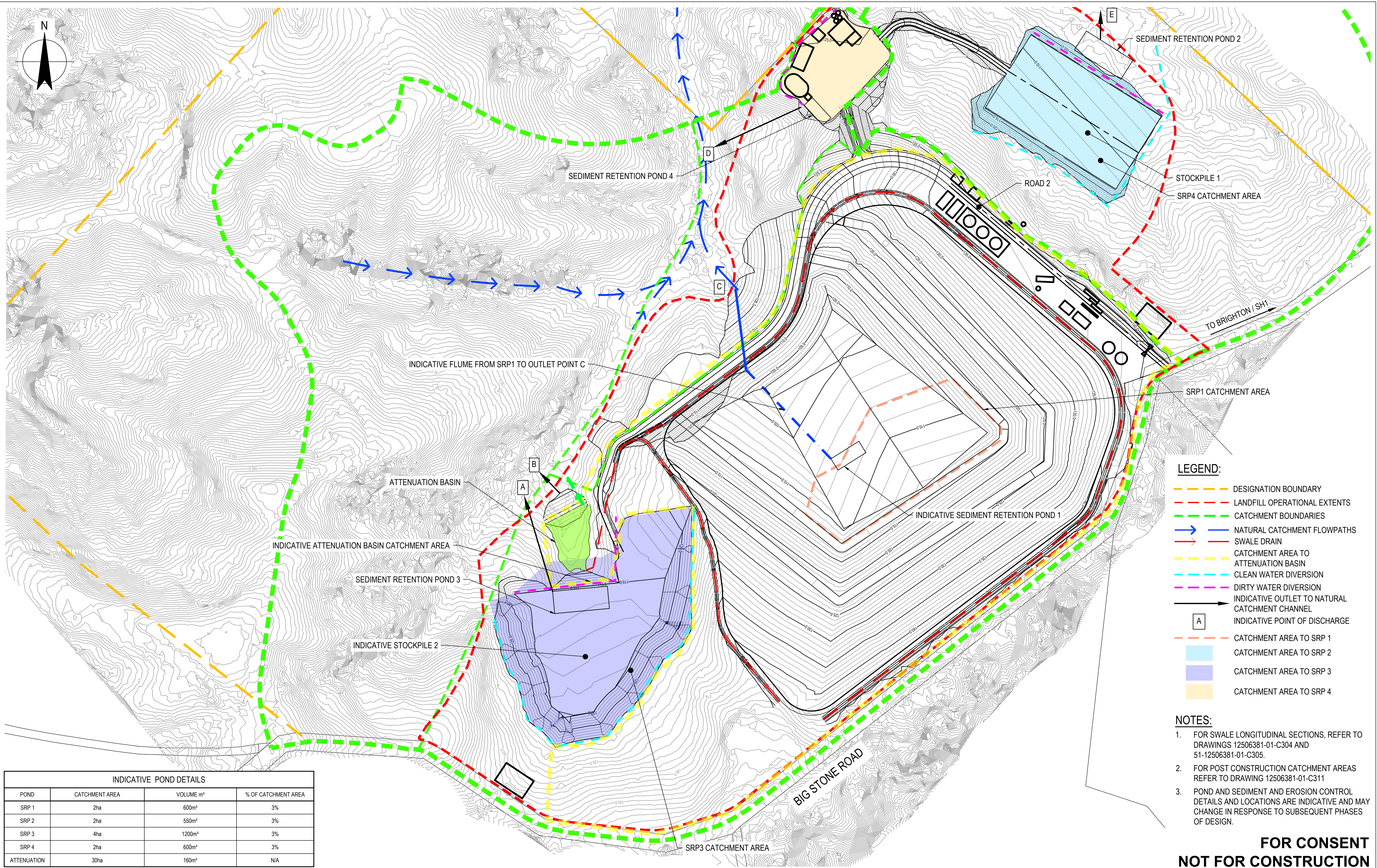


Appendix 4: Concept Design Plans



INDICATIVE POND DETAILS			
POND	CATCHMENT AREA	VOLUME m ³	% OF CATCHMENT AREA
SRP 1	2ha	600m ³	3%
SRP 2	2ha	550m ³	3%
SRP 3	4ha	1200m ³	3%
SRP 4	2ha	600m ³	3%
ATTENUATION	30ha	160m ³	N/A

- LEGEND:**
- DESIGNATION BOUNDARY
 - LANDFILL OPERATIONAL EXTENTS
 - CATCHMENT BOUNDARIES
 - NATURAL CATCHMENT FLOWPATHS
 - SWALE DRAIN
 - CATCHMENT AREA TO ATTENUATION BASIN
 - CLEAN WATER DIVERSION
 - DIRTY WATER DIVERSION
 - INDICATIVE OUTLET TO NATURAL CATCHMENT CHANNEL
 - A INDICATIVE POINT OF DISCHARGE
 - CATCHMENT AREA TO SRP 1
 - CATCHMENT AREA TO SRP 2
 - CATCHMENT AREA TO SRP 3
 - CATCHMENT AREA TO SRP 4

- NOTES:**
- FOR SWALE LONGITUDINAL SECTIONS, REFER TO DRAWINGS 12506381-01-C304 AND 51-12506381-01-C305.
 - FOR POST CONSTRUCTION CATCHMENT AREAS REFER TO DRAWING 12506381-01-C311
 - POND AND SEDIMENT AND EROSION CONTROL DETAILS AND LOCATIONS ARE INDICATIVE AND MAY CHANGE IN RESPONSE TO SUBSEQUENT PHASES OF DESIGN.

**FOR CONSENT
NOT FOR CONSTRUCTION**

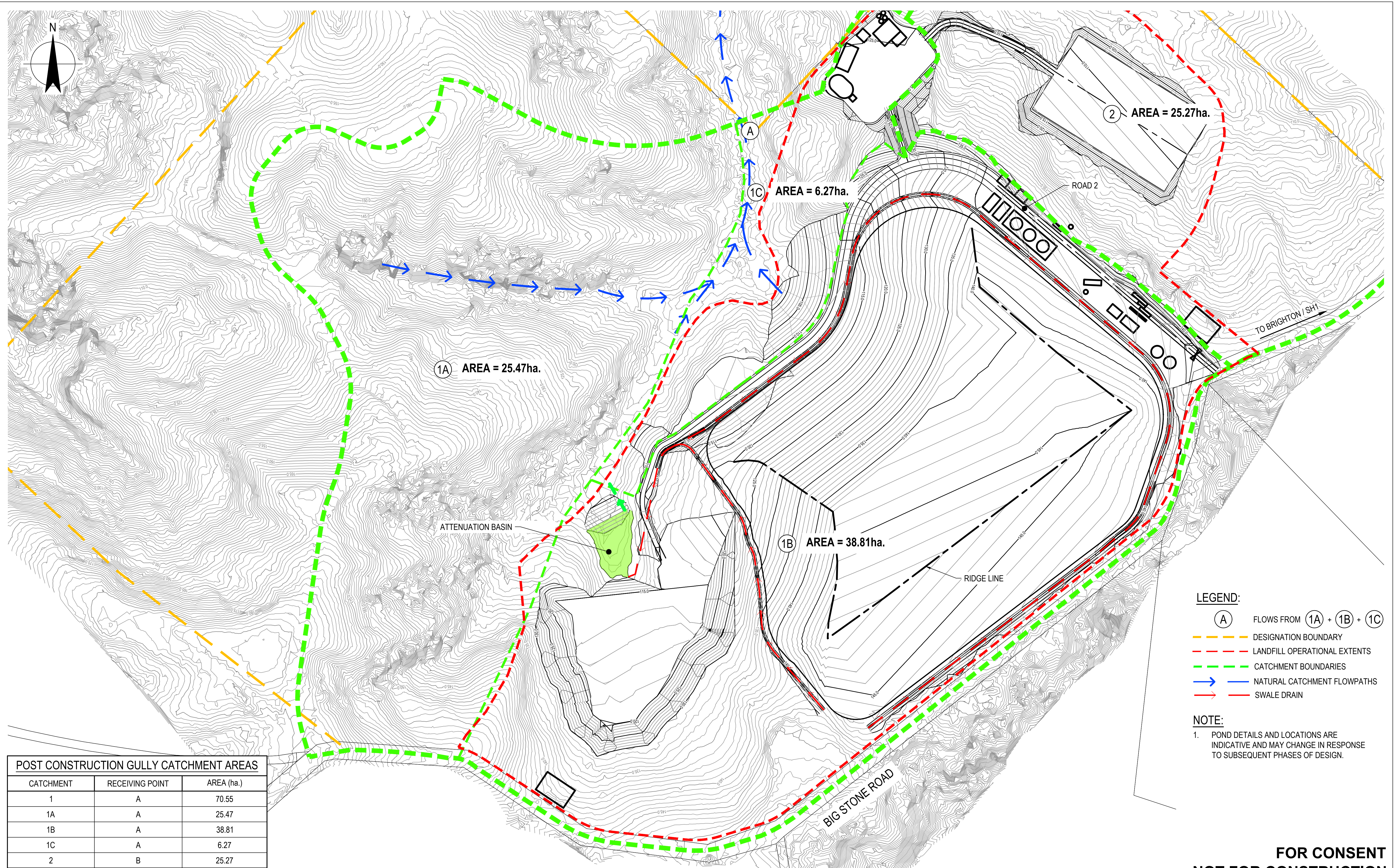
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
1		ISSUE FOR CONSENT	JF	NE*	SD*	21.05.21



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Drafting Check	G. DOUGHERTY*	Design Check	N. ELDRED*
Approved (Project Director)	S. DOUGLASS*		
Date	21.05.21		
Scale	1:2000		

Client	DUNEDIN CITY COUNCIL		
Project	SMOOTH HILL LANDFILL		
Title	CONSTRUCTION STAGE CATCHMENTS		
Original Size	A1	Drawing No:	12506381-01-C310
		Rev:	1



1A AREA = 25.47ha.

1C AREA = 6.27ha.

2 AREA = 25.27ha.

1B AREA = 38.81ha.

ATTENUATION BASIN

RIDGE LINE

- LEGEND:**
- (A) FLOWS FROM (1A) + (1B) + (1C)
 - DESIGNATION BOUNDARY
 - LANDFILL OPERATIONAL EXTENTS
 - CATCHMENT BOUNDARIES
 - NATURAL CATCHMENT FLOWPATHS
 - SWALE DRAIN

NOTE:

- POND DETAILS AND LOCATIONS ARE INDICATIVE AND MAY CHANGE IN RESPONSE TO SUBSEQUENT PHASES OF DESIGN.

POST CONSTRUCTION GULLY CATCHMENT AREAS		
CATCHMENT	RECEIVING POINT	AREA (ha.)
1	A	70.55
1A	A	25.47
1B	A	38.81
1C	A	6.27
2	B	25.27

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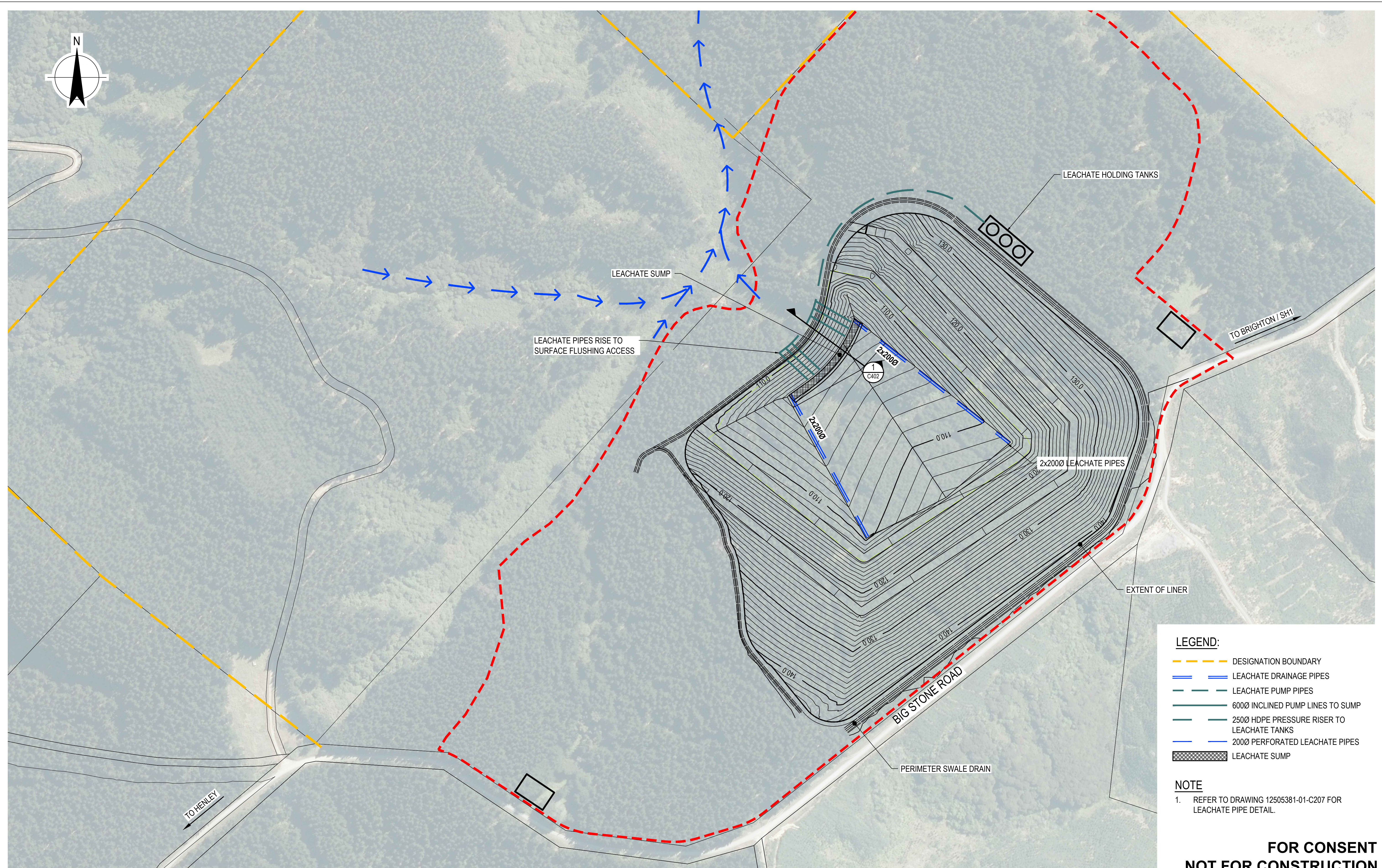
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Approved (Project Director)	S. DOUGLASS*		
Date	21.05.21		
Scale	1:2000		

Client	DUNEDIN CITY COUNCIL		
Project	SMOOTH HILL LANDFILL		
Title	POST CONSTRUCTION CATCHMENTS		
Original Size	A1	Drawing No:	12506381-01-C311
		Rev:	1



LEGEND:

- DESIGNATION BOUNDARY
- LEACHATE DRAINAGE PIPES
- LEACHATE PUMP PIPES
- 6000 INCLINED PUMP LINES TO SUMP
- 2500 HDPE PRESSURE RISER TO LEACHATE TANKS
- 2000 PERFORATED LEACHATE PIPES
- LEACHATE SUMP

NOTE

- REFER TO DRAWING 12505381-01-C207 FOR LEACHATE PIPE DETAIL.

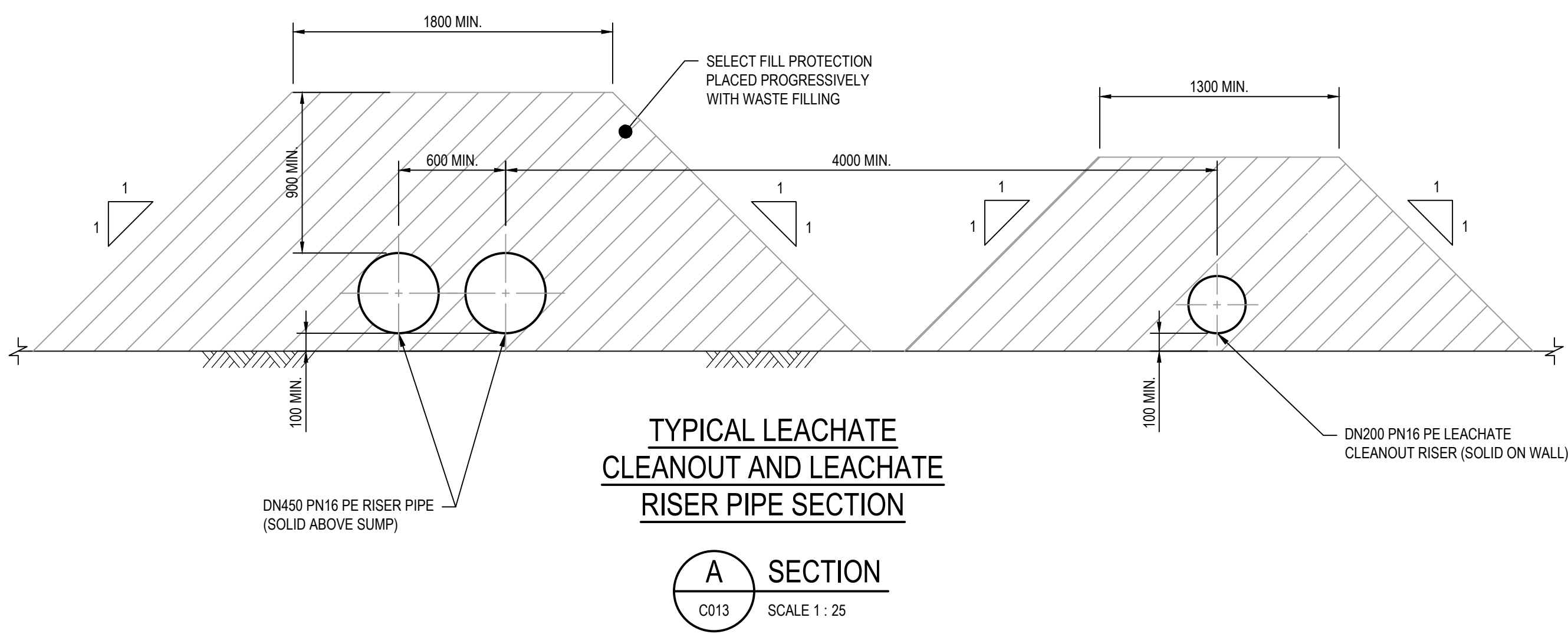
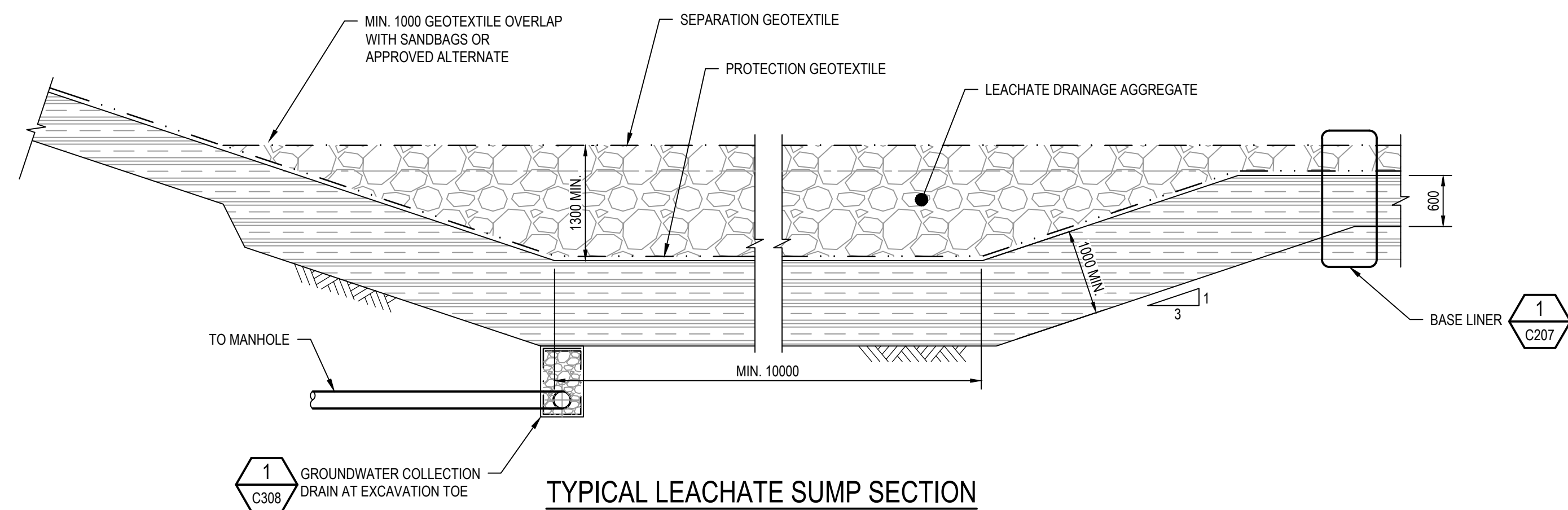
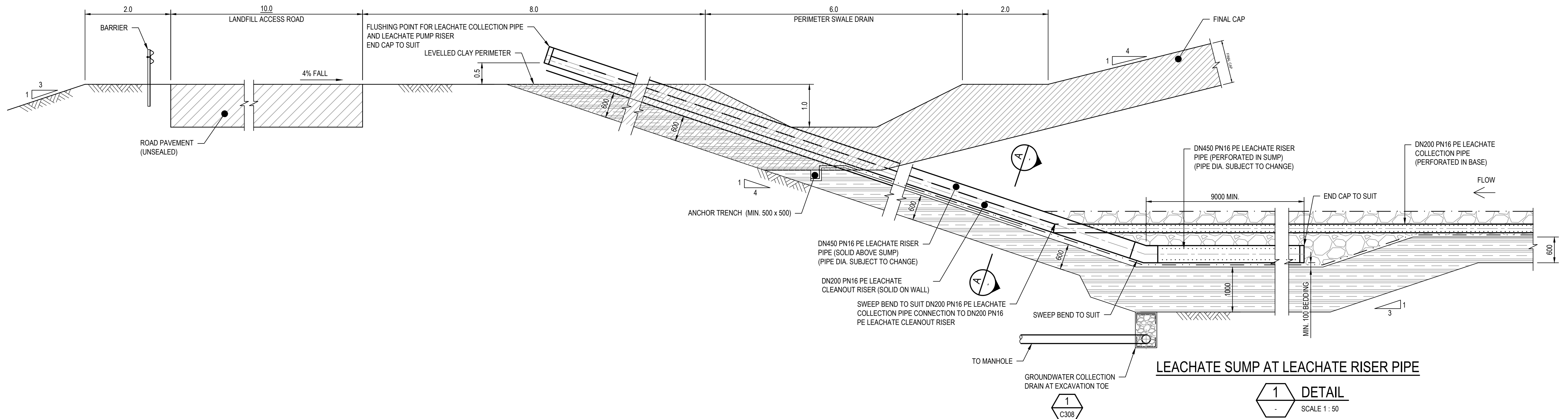
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2	RE-ISSUE FOR CONSENT		JF	NE*	SD*	21.05.21
1	FOR CONSENT		SLP	NE*	SD*	14.08.20



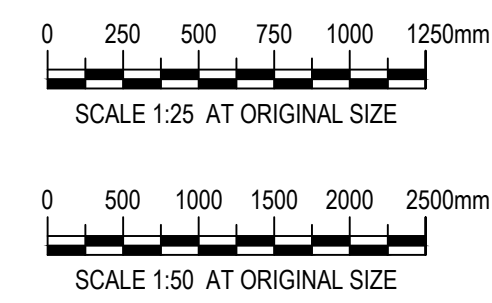
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	Drafting Check G. DOUGHERTY* Design Check N. ELDRED*	Original Size A1
	Approved (Project Director) S. DOUGLASS* Date 14.08.20	Drawing No: 12506381-01-C401
	Scale 1:2000 This Drawing must not be used for Construction unless signed as Approved	Rev: 2



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1	FOR CONSENT		SLP	NE*	SD*	14.08.20

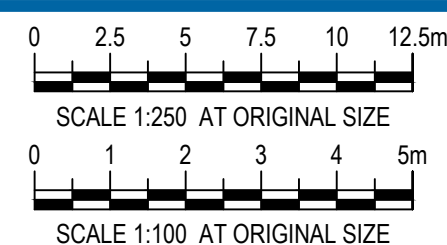
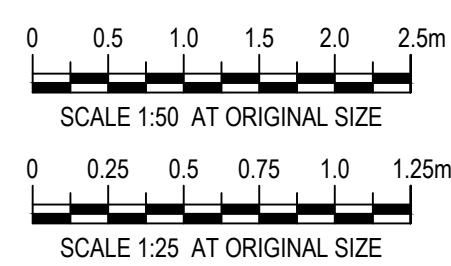
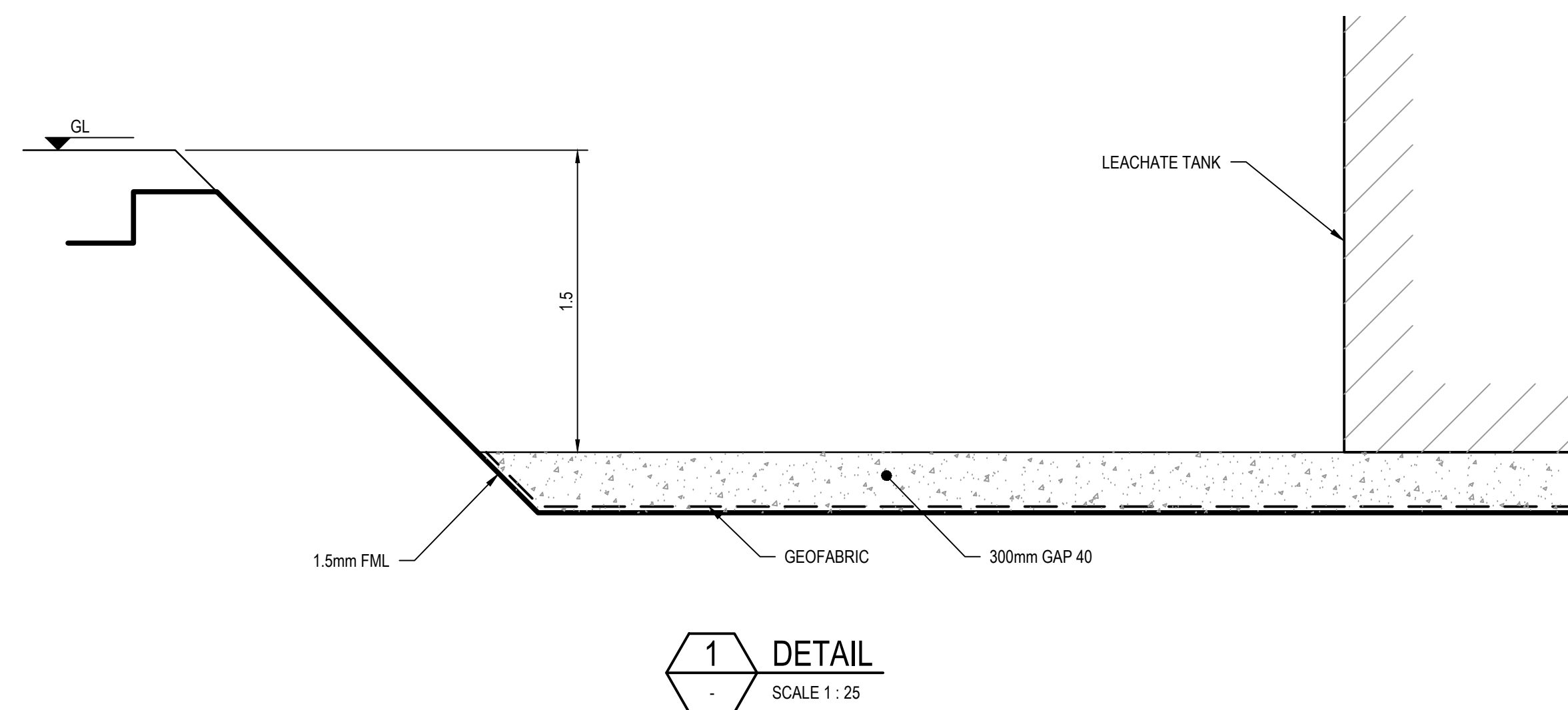
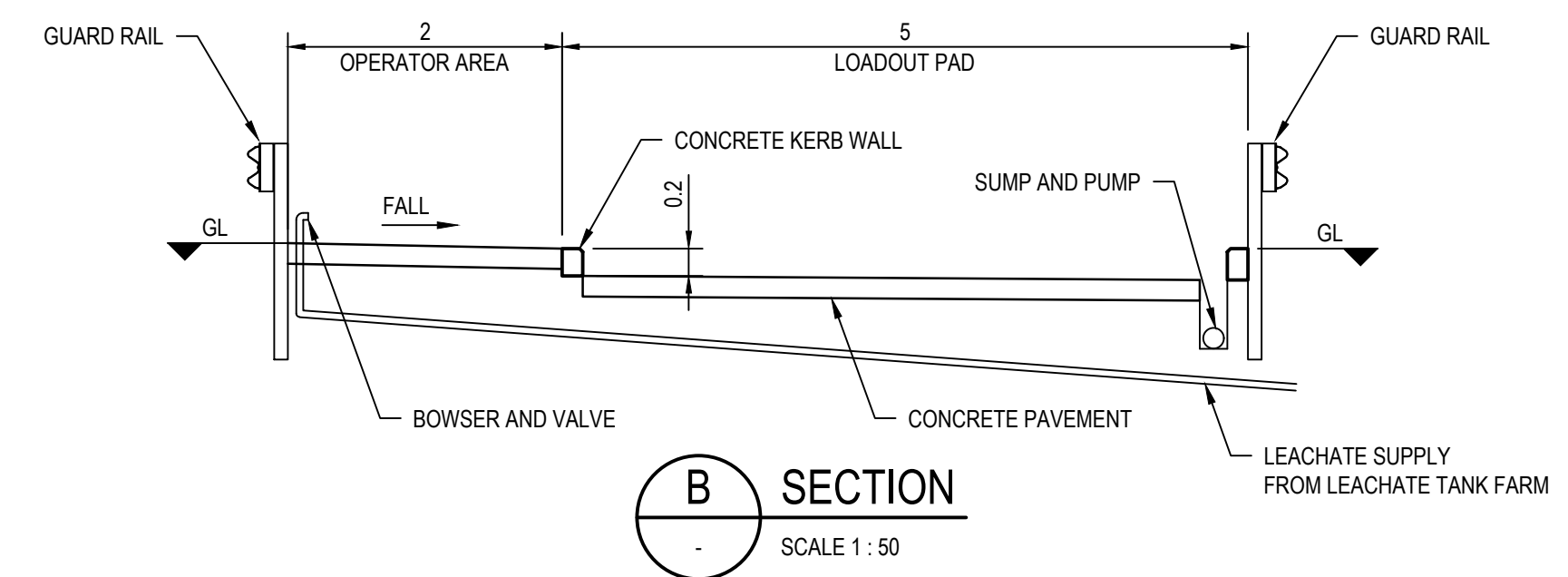
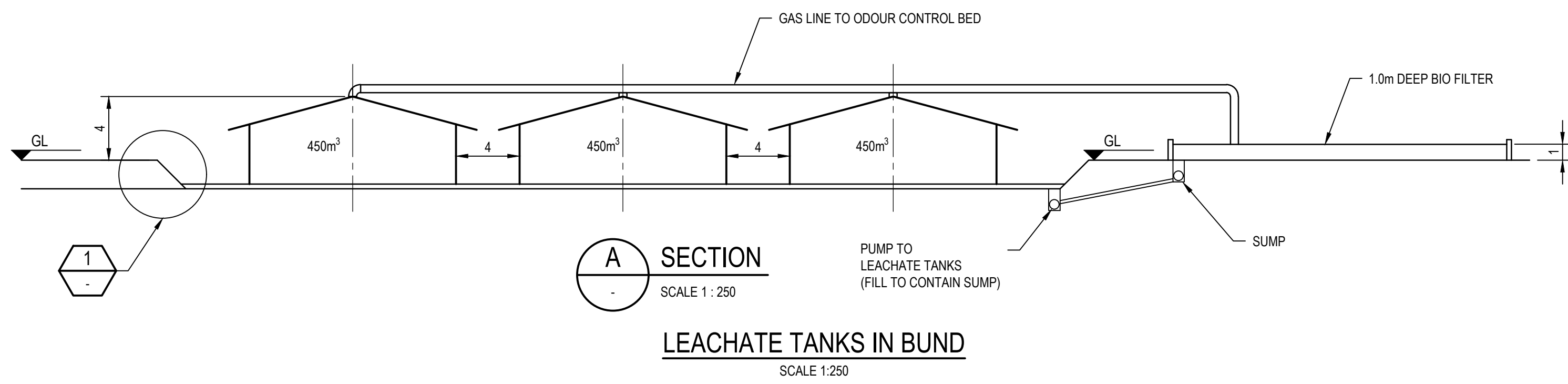
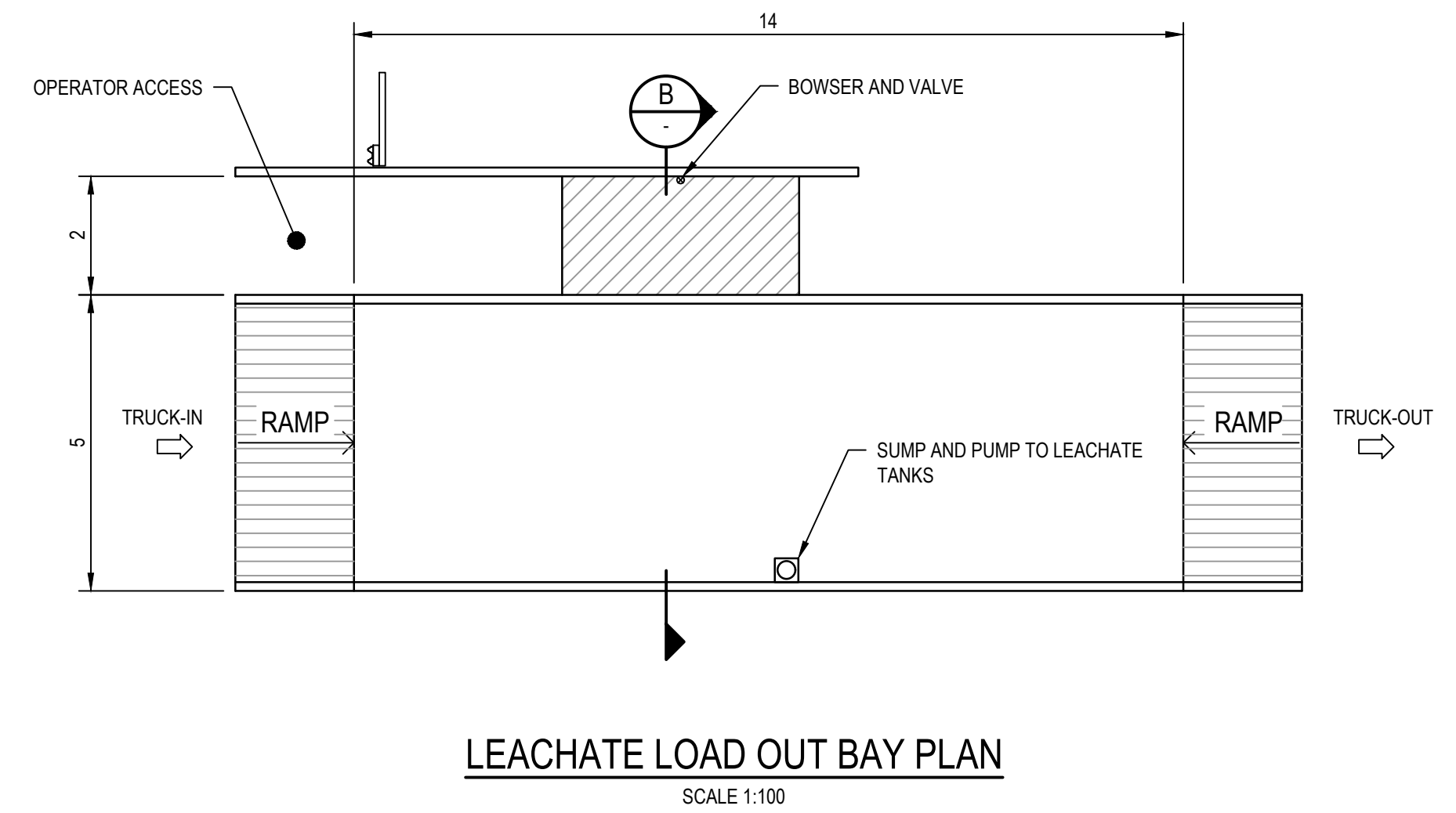
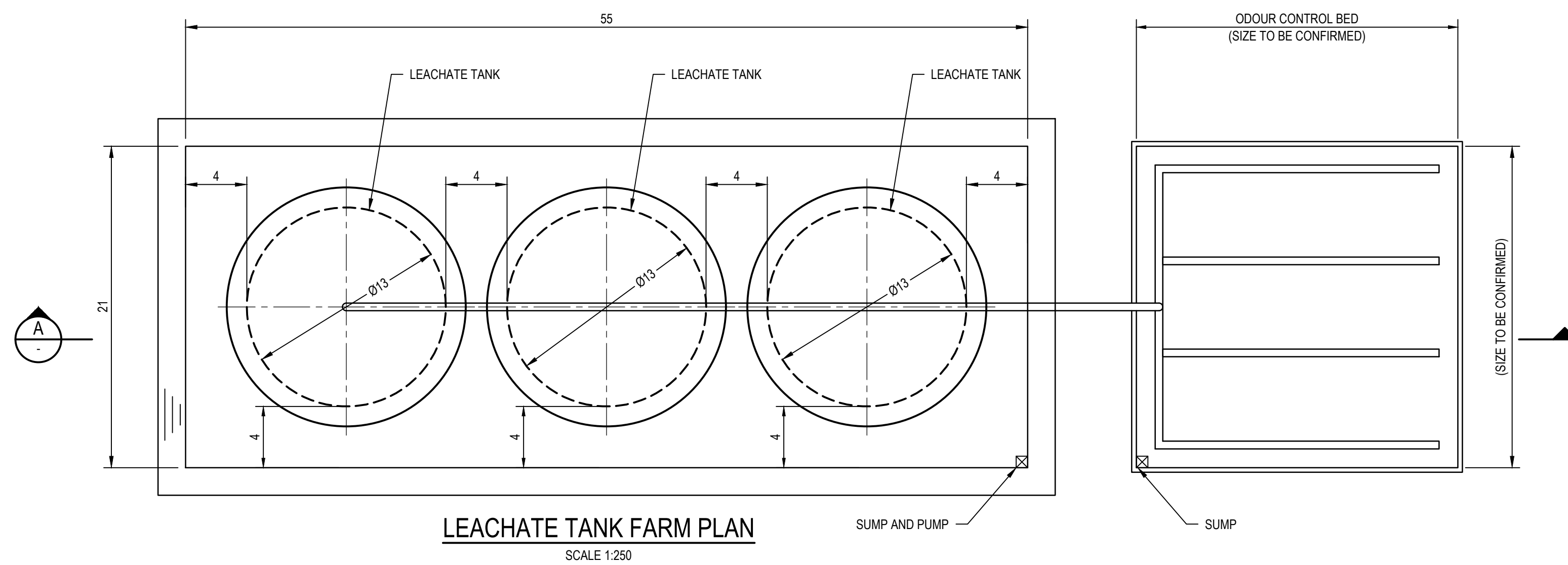


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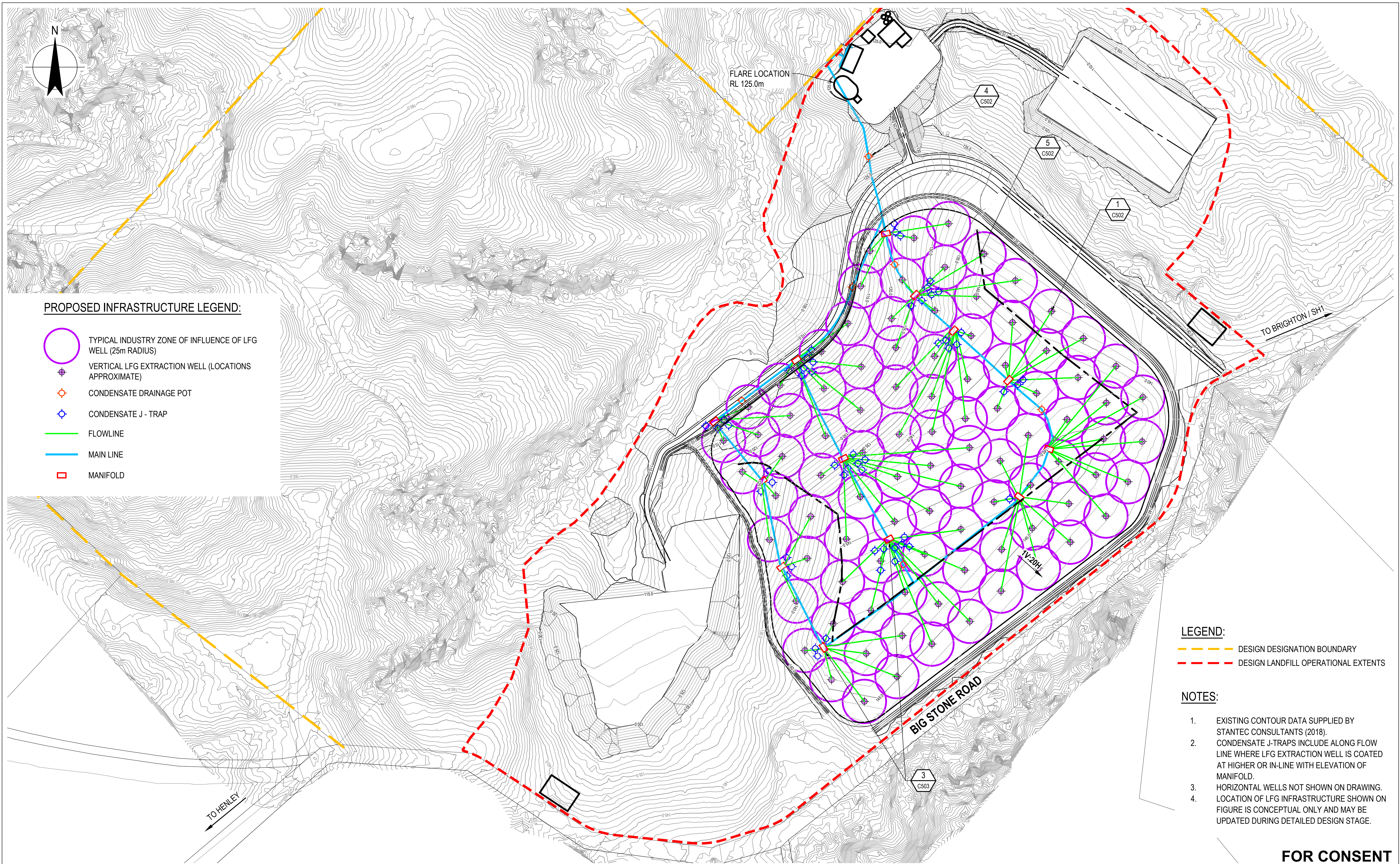
Drawn	R. GERONIMO	Designer	R. COOMBE
Drafting Check	G. DOUGHERTY*	Design Check	N. ELDRED*
Approved (Project Director)	S. DOUGLASS*		
Date	14.08.20		
Scale	AS SHOWN		

Client	DUNEDIN CITY COUNCIL		
Project	SMOOTH HILL LANDFILL		
Title	TYPICAL LEACHATE DRAINAGE DETAILS		
Original Size	A1	Drawing No:	12506381-01-C402
Rev:	2		



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	Drafting G. DOUGHERTY*	Design Check N. ELDRED*	
	Approved (Project Director) S. DOUGLASS*	Date 14.08.20	
	Scale AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	
Original Size A1 Drawing No: 12506381-01-C403 Rev: 2			

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PROPOSED INFRASTRUCTURE LEGEND:

- TYPICAL INDUSTRY ZONE OF INFLUENCE OF LFG WELL (25m RADIUS)
- VERTICAL LFG EXTRACTION WELL (LOCATIONS APPROXIMATE)
- CONDENSATE DRAINAGE POT
- CONDENSATE J - TRAP
- FLOWLINE
- MAIN LINE
- MANIFOLD

LEGEND:

- DESIGN DESIGNATION BOUNDARY
- DESIGN LANDFILL OPERATIONAL EXTENTS

NOTES:

1. EXISTING CONTOUR DATA SUPPLIED BY STANTEC CONSULTANTS (2018).
2. CONDENSATE J-TRAPS INCLUDE ALONG FLOW LINE WHERE LFG EXTRACTION WELL IS COATED AT HIGHER OR IN-LINE WITH ELEVATION OF MANIFOLD.
3. HORIZONTAL WELLS NOT SHOWN ON DRAWING.
4. LOCATION OF LFG INFRASTRUCTURE SHOWN ON FIGURE IS CONCEPTUAL ONLY AND MAY BE UPDATED DURING DETAILED DESIGN STAGE.

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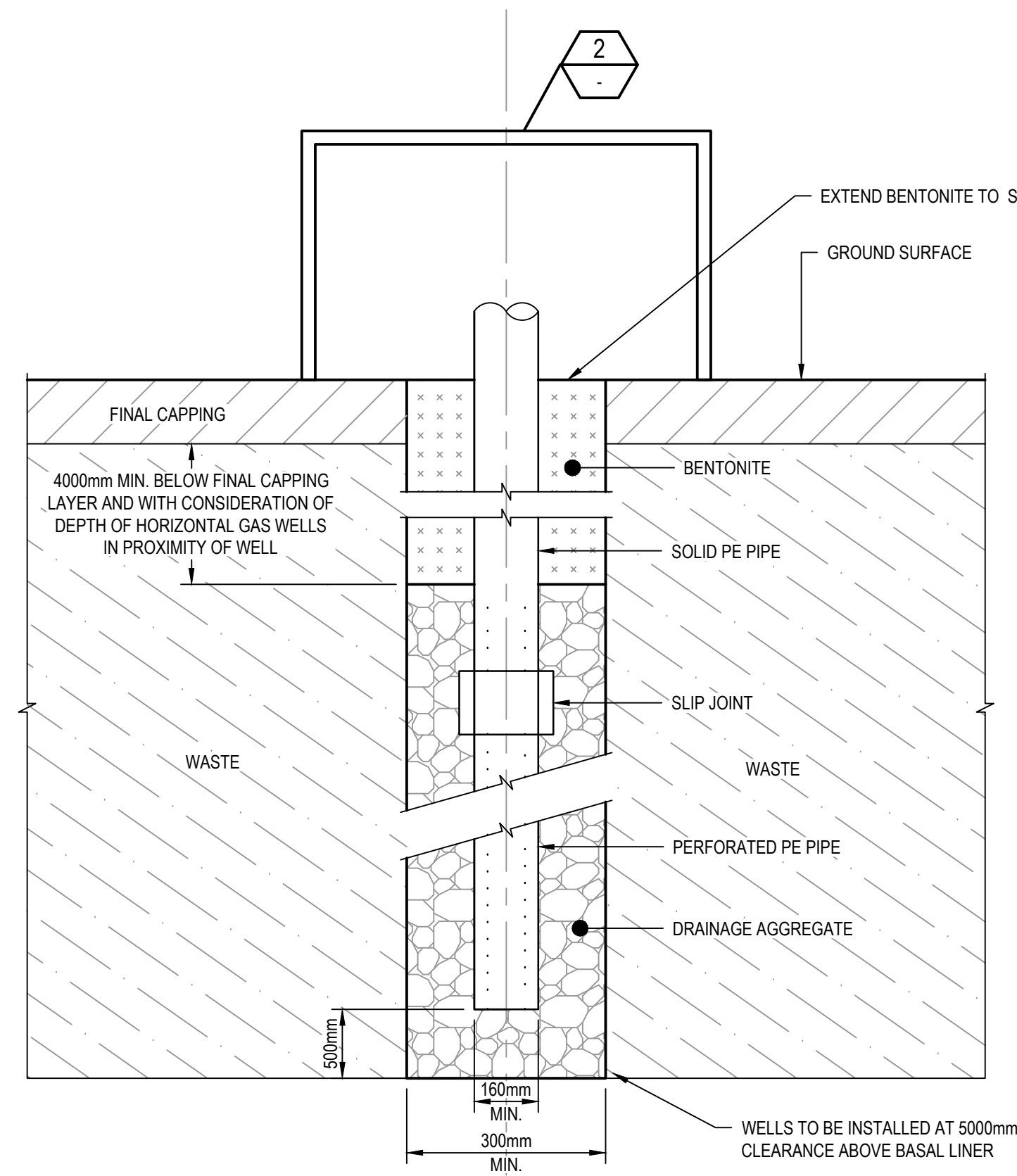
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
2	RE-ISSUE FOR CONSENT		RG	NE*	SD*	21.05.21
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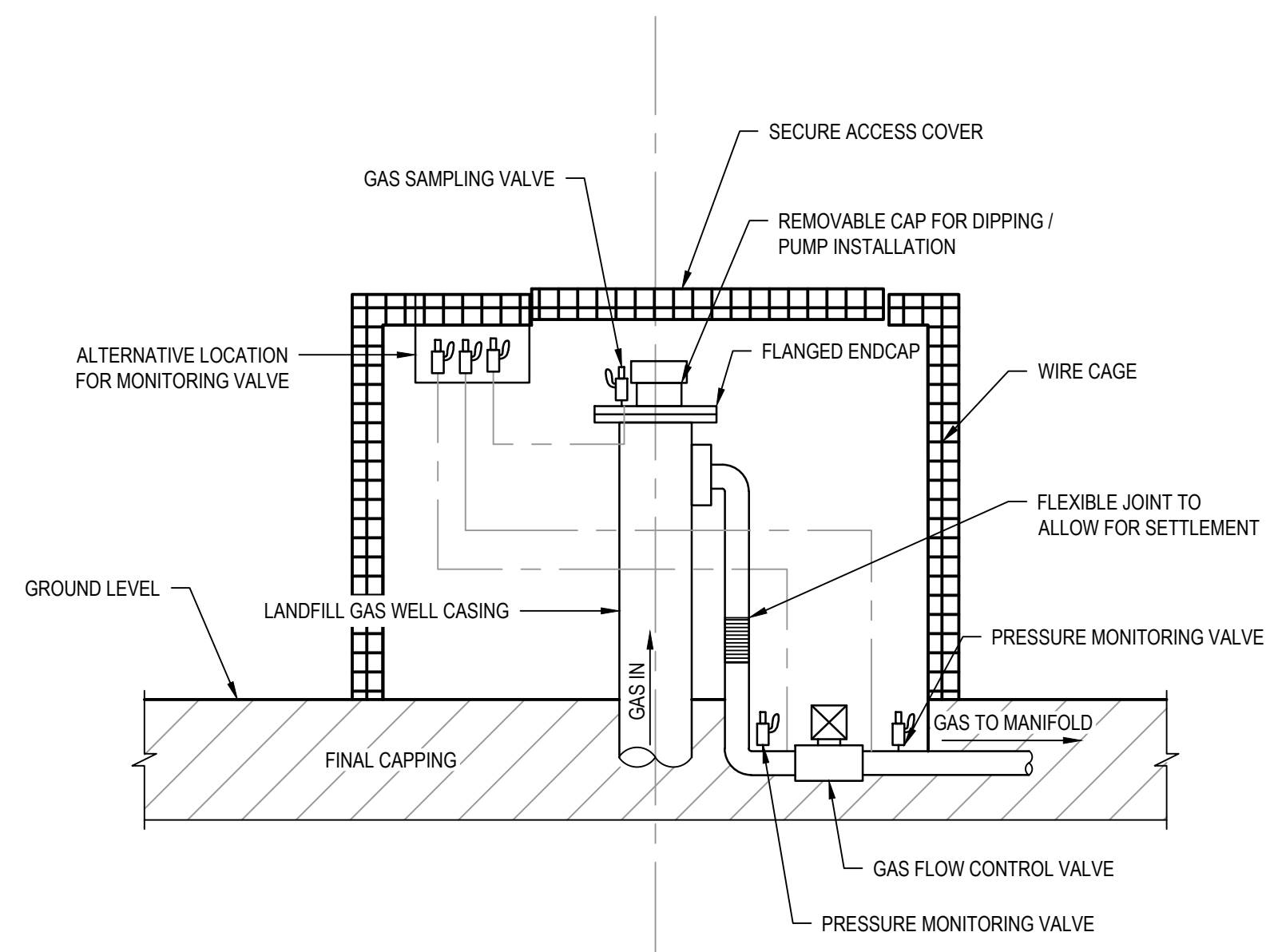
Drawn	R. GERONIMO	Designer	M. WELSH
Drafting Check	G. DOUGHERTY*	Design Check	N. ELDRED*
Approved (Project Director)	S. DOUGLASS*		
Date	14.08.20		
Scale	1 : 2000		

Client	DUNEDIN CITY COUNCIL		
Project	SMOOTH HILL LANDFILL		
Title	LANDFILL GAS MANAGEMENT CONCEPTUAL SYSTEM LAYOUT		
Original Size	A1	Drawing No:	12506381-01-C501
		Rev:	2



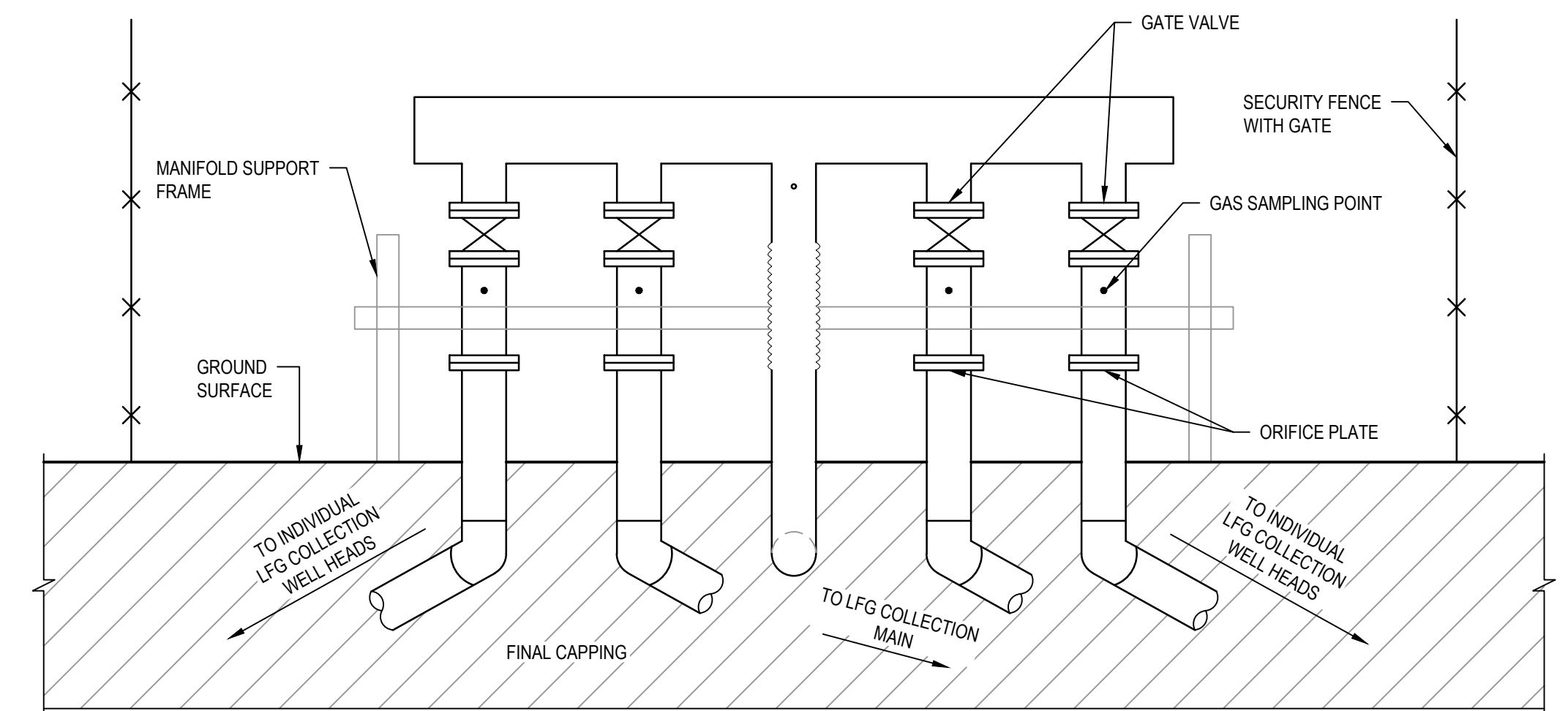
1 DETAIL
C501 N.T.S.

LANDFILL GAS COLLECTION WELL (VERTICAL) (TYP.)



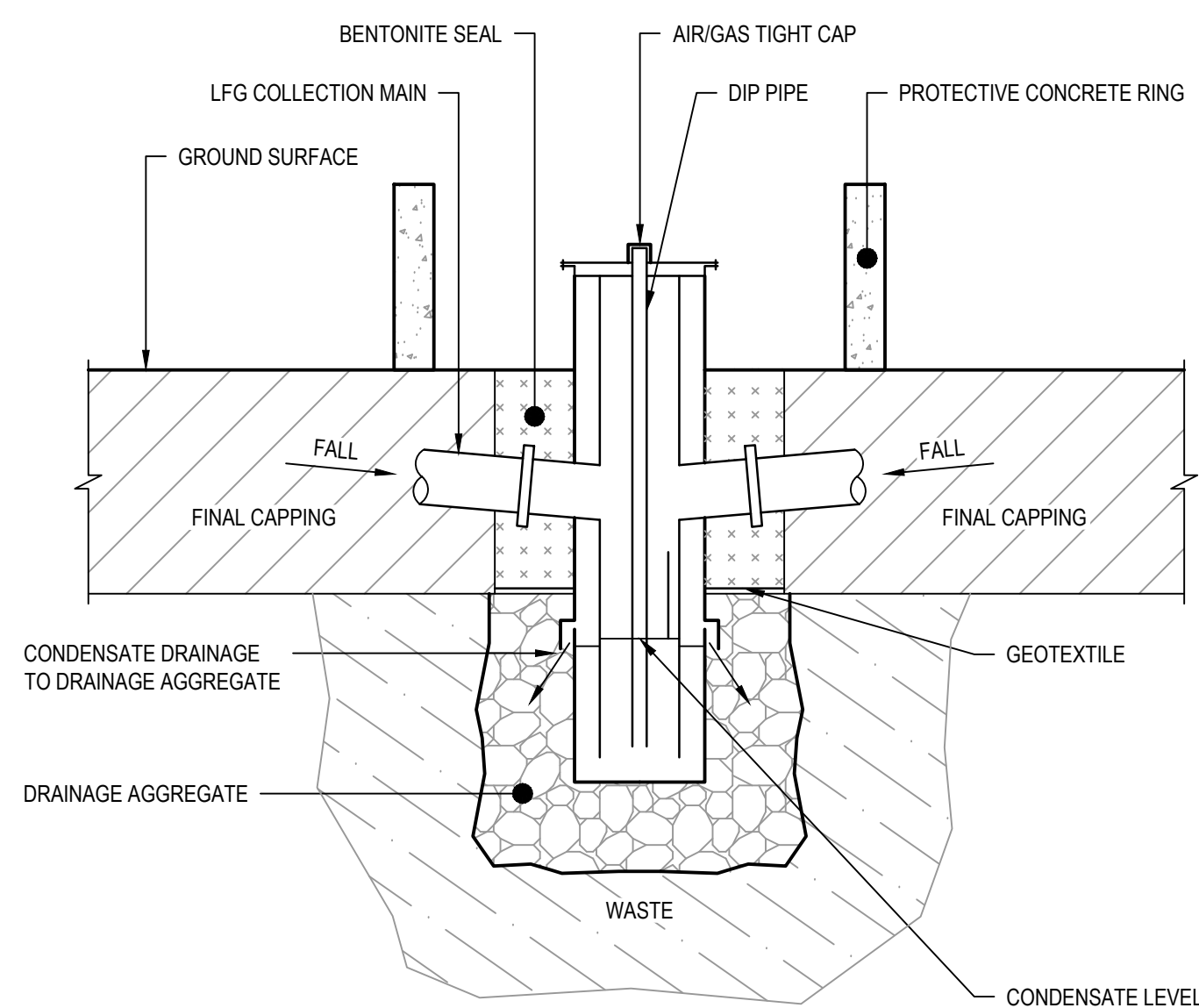
2 DETAIL
N.T.S.

LANDFILL GAS COLLECTION WELL HEAD (TYP.)



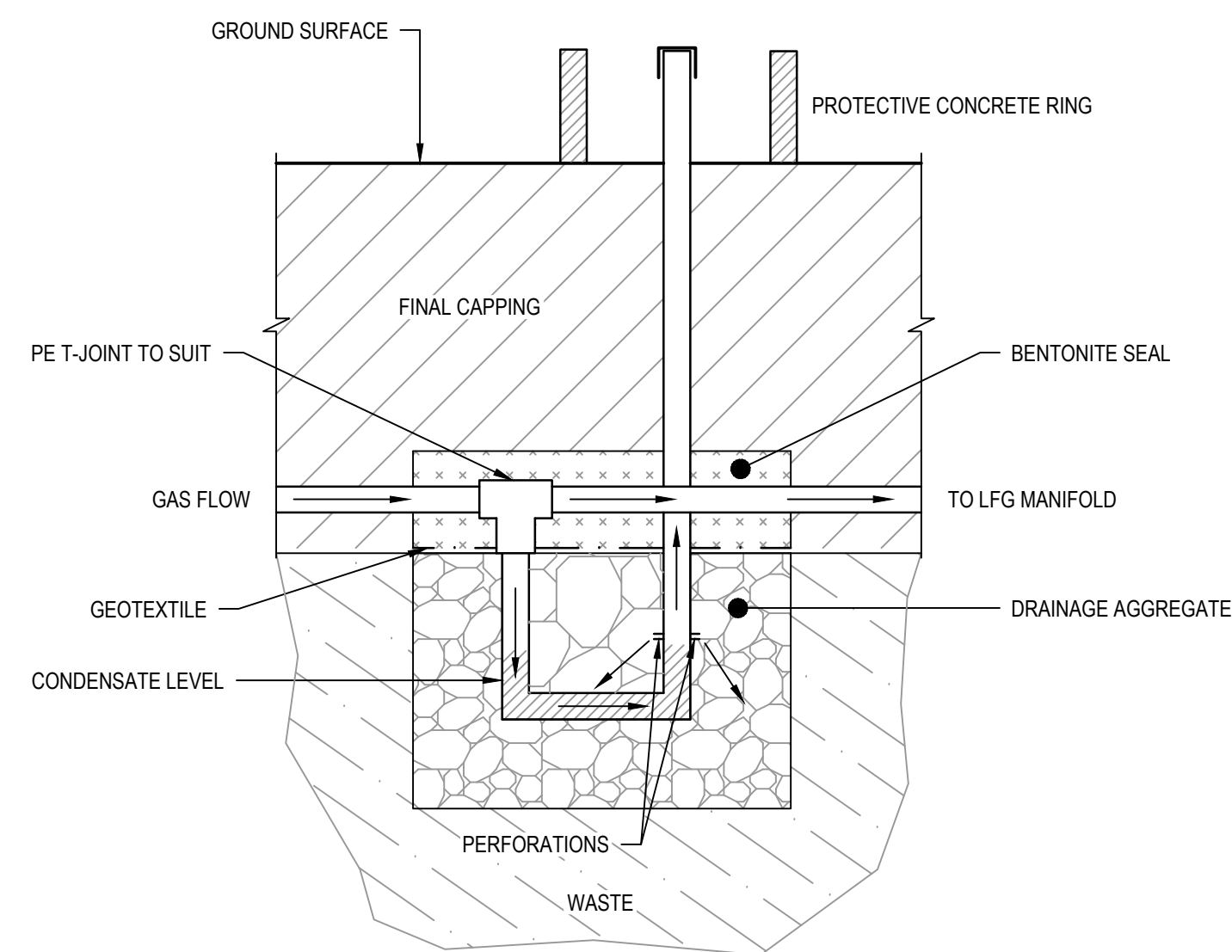
3 DETAIL
C501 N.T.S.

LANDFILL GAS MANIFOLD (TYP.)



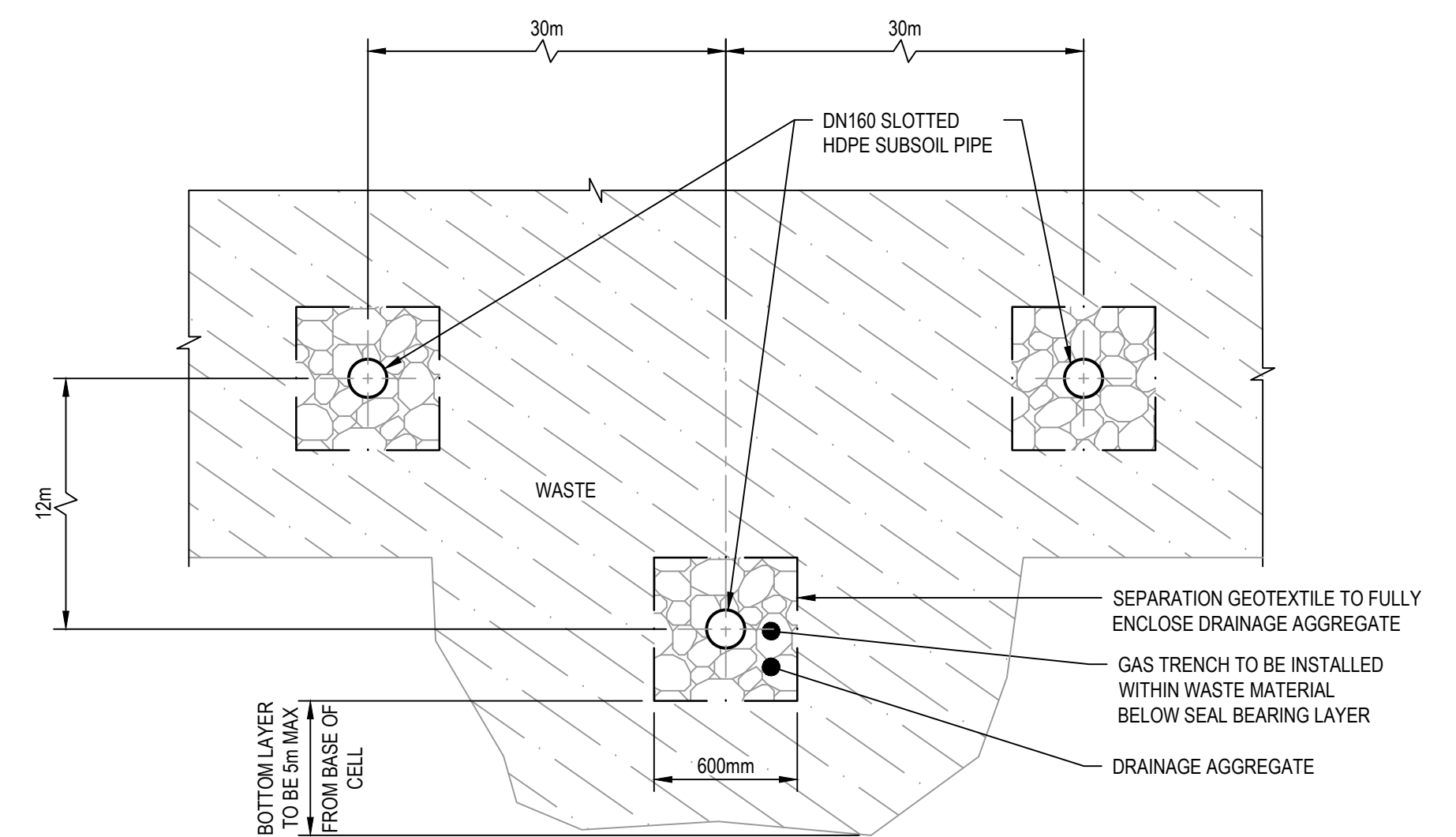
4 DETAIL
C501 N.T.S.

CONDENSATE DRAINAGE POT (TYP.)



5 DETAIL
C501 N.T.S.

J-TRAP (TYP.)



6 DETAIL
N.T.S.

HORIZONTAL LFG WELL
(SEE NOTE 1)

NOTES:

- LAYOUT OF HORIZONTAL LFG WELLS NOT SHOWN ON PLAN C501 DUE TO 3D NATURE.
- NOT FOR CONSTRUCTION.

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Drafting Check G. DOUGHERTY* Design Check N. ELDRED*
Approved (Project Director) S. DOUGLASS*
Date 14.08.20

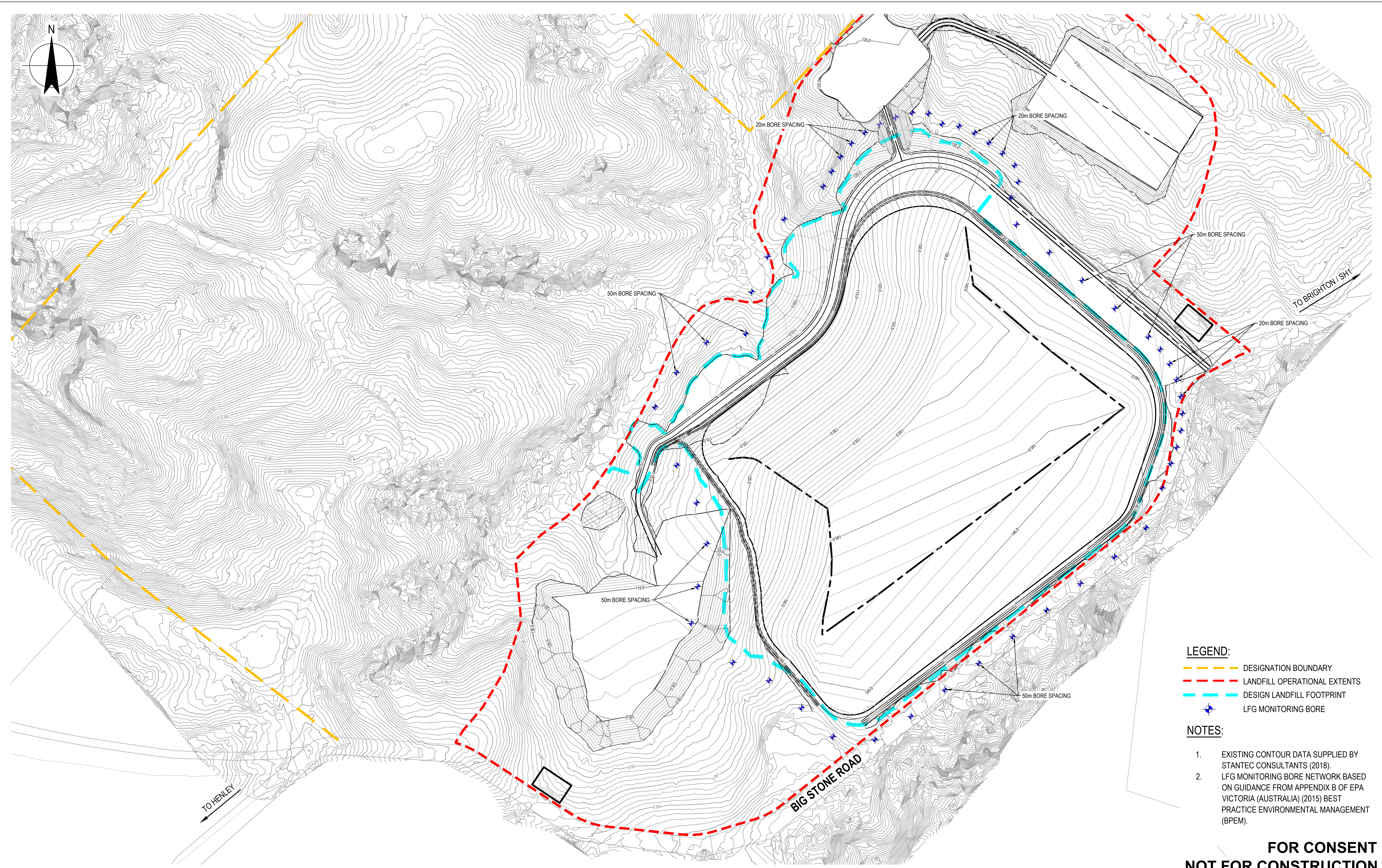
Scale NOT TO SCALE

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Client **DUNEDIN CITY COUNCIL**
Project **SMOOTH HILL LANDFILL**
Title **LANDFILL GAS MANAGEMENT DETAILS SHEET**

Original Size **A1** Drawing No: **12506381-01-C502**

Rev: 2



- LEGEND:**
- DESIGNATION BOUNDARY
 - LANDFILL OPERATIONAL EXTENTS
 - DESIGN LANDFILL FOOTPRINT
 - ★ LFG MONITORING BORE

- NOTES:**
1. EXISTING CONTOUR DATA SUPPLIED BY STANTEC CONSULTANTS (2018).
 2. LFG MONITORING BORE NETWORK BASED ON GUIDANCE FROM APPENDIX B OF EPA VICTORIA (AUSTRALIA) (2015) BEST PRACTICE ENVIRONMENTAL MANAGEMENT (BPEM).

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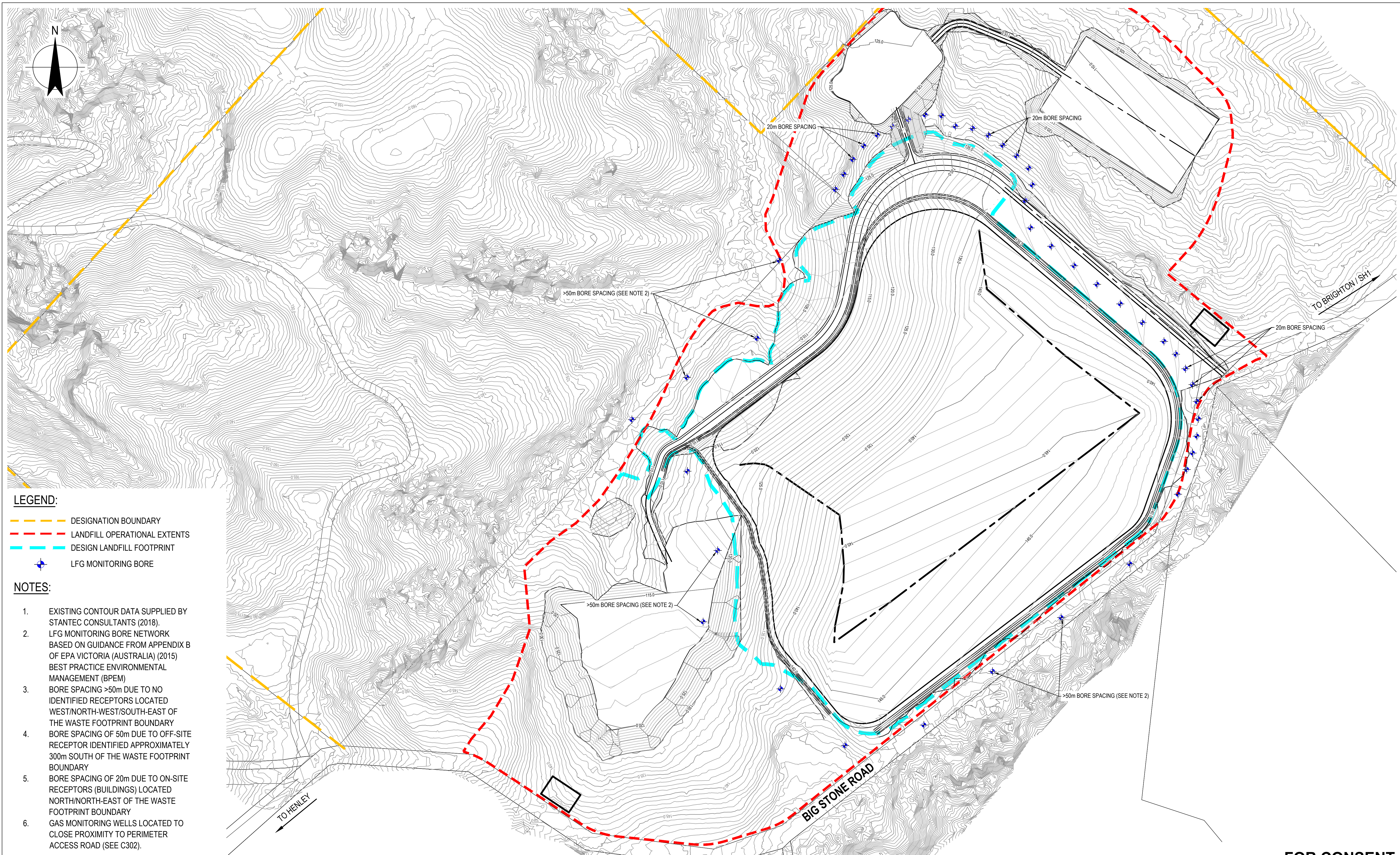
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
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Drafting Check	G. DOUGHERTY*	Design Check	N. ELDRED*
Approved (Project Director)	S. DOUGLASS*		
Date	14.08.20		
Scale	1 : 2000		

Client	DUNEDIN CITY COUNCIL		
Project	SMOOTH HILL LANDFILL		
Title	LANDFILL GAS MANAGEMENT		
	LFG BORE MONITORING NETWORK (EXTREME)		
Original Size	A1	Drawing No:	12506381-01-C503
		Rev:	2



LEGEND:

- DESIGNATION BOUNDARY
- LANDFILL OPERATIONAL EXTENTS
- DESIGN LANDFILL FOOTPRINT
- + LFG MONITORING BORE

NOTES:

1. EXISTING CONTOUR DATA SUPPLIED BY STANTEC CONSULTANTS (2018).
2. LFG MONITORING BORE NETWORK BASED ON GUIDANCE FROM APPENDIX B OF EPA VICTORIA (AUSTRALIA) (2015) BEST PRACTICE ENVIRONMENTAL MANAGEMENT (BPEM)
3. BORE SPACING >50m DUE TO NO IDENTIFIED RECEPTORS LOCATED WEST/NORTH-WEST/SOUTH-EAST OF THE WASTE FOOTPRINT BOUNDARY
4. BORE SPACING OF 50m DUE TO OFF-SITE RECEPTOR IDENTIFIED APPROXIMATELY 300m SOUTH OF THE WASTE FOOTPRINT BOUNDARY
5. BORE SPACING OF 20m DUE TO ON-SITE RECEPTORS (BUILDINGS) LOCATED NORTH/NORTH-EAST OF THE WASTE FOOTPRINT BOUNDARY
6. GAS MONITORING WELLS LOCATED TO CLOSE PROXIMITY TO PERIMETER ACCESS ROAD (SEE C302).

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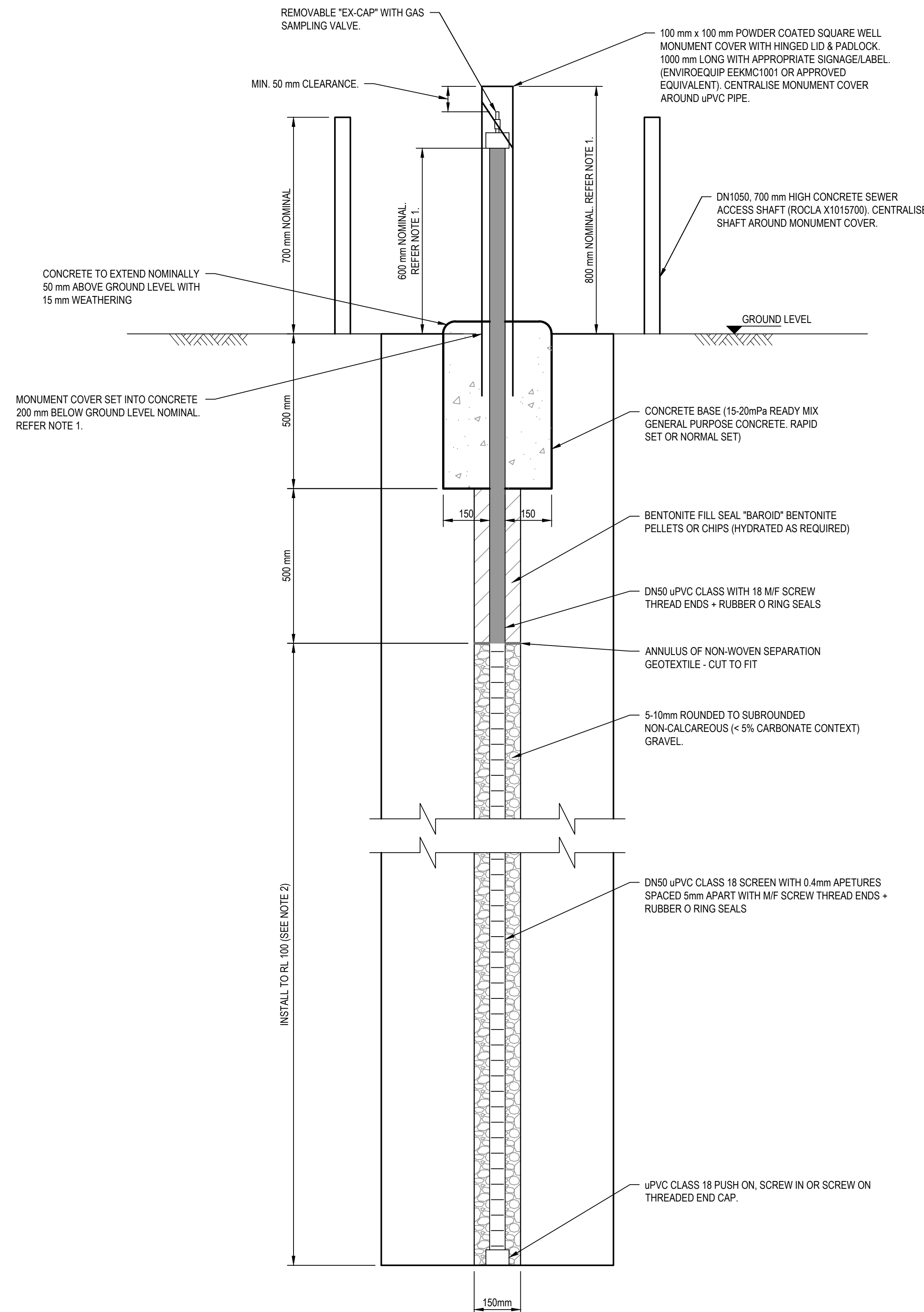
No	Revision	Note	Drawn	Job Manager	Project Director	Date
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1	FOR CONSENT		SLP	NE*	SD*	14.08.20



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Drafting Check	G. DOUGHERTY*	Design Check	N. ELDRED*
Approved (Project Director)	S. DOUGLASS*		
Date	14.08.20		
Scale	1 : 2000		

Client	DUNEDIN CITY COUNCIL		
Project	SMOOTH HILL LANDFILL		
Title	LANDFILL GAS MANAGEMENT LFG BORE MONITORING NETWORK (RECOMMENDED)		
Original Size	A1	Drawing No:	12506381-01-C504
		Rev:	2



NOTES:

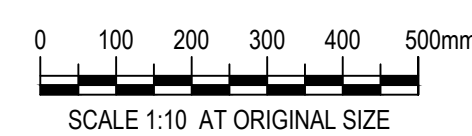
1. ADJUST MONUMENT COVER AS REQUIRED TO ALLOW READY REMOVAL OF "EX-CAP" DURING FUTURE MONITORING EVENTS AND TO ALLOW MONUMENT COVER TO FULLY CLOSE.
2. RL 100 IS THE LOWEST DESIGN LINER SURFACE LEVEL.

6 DETAIL
C501 SCALE 1:10

LANDFILL GAS MONITORING BORE (TYP.)

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No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
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	Approved (Project Director) S. DOUGLASS*	Date 14.08.20		
	Scale 1:10	This Drawing must not be used for Construction unless signed as Approved		