
**Report on Preliminary Geotechnical
Investigation and Effluent Disposal
Assessment**

**Vacy Village South Stage 5 Residential
Subdivision**

598 Gresford Road, Vacy NSW

Prepared for Cornish Group No. Six Pty Ltd

Project 91432.06

30 April 2026

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

Signature

Date

Author

30 April 2026

Reviewer

30 April 2026



Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

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Infrastructure & Development Consulting Pty Ltd DA Civil Drawings dated 10.03.2026

Draft drawing P000385.04B.DP dated December 2025

Report on Preliminary Geotechnical Investigation and Effluent Disposal Assessment

Vacy Village South Stage 5 Residential Subdivision

598 Gresford Road, Vacy NSW

1. Introduction

This report prepared by Douglas Partners Pty Ltd (Douglas) presents the results of a preliminary geotechnical investigation and effluent disposal assessment undertaken in connection with a proposed residential subdivision known as Vacy Village South Stage 5 at 598 Gresford Road, Vacy NSW (the site). The investigation was commissioned by email instructing to proceed dated 5 July 2024 from David Bobyreff of Cornish Group No. Six Pty Ltd and was undertaken with reference to Douglas' proposal 91432.06.P.001.Rev0 dated 15 April 2024.

It is understood that the proposed development will include the creation of 18 residential lots, internal roadways, and access off Gresford Road (refer Infrastructure and Development Consulting (IDC) drawing "Subdivision Plan" Appendix D). It is also understood that earthworks would include filling of existing farm dams, as well as cut and fill for road construction and stormwater management.

The aim of the investigation was to assess the subsurface soil and groundwater conditions across the site in order to provide the following preliminary comments:

- Subsurface and groundwater conditions at the test locations;
- Excavation conditions;
- Site preparation and earthworks;
- Indicative site classification in accordance with AS 2870 (2011) (to be confirmed after earthworks and subject to final building locations);
- Preliminary footing options for residential structures;
- Recommended design subgrade California bearing ratio (CBR) and flexible pavement thickness design for internal roads;
- Anticipated construction difficulties and potential solutions; and
- Ability of the soils within the proposed subdivision to accept effluent, indicative disposal areas and potential site and soil improvements, if required.

The investigation included the excavation of 33 test pits and laboratory testing of selected samples. The details of the field and laboratory work are presented in this report, together with comments and recommendations on the items listed above.

The preliminary geotechnical investigation and effluent disposal assessment was undertaken in conjunction with a preliminary site investigation (contamination) which has been reported separately (Douglas, 2025).

The effluent disposal assessment was undertaken with reference to the following documents:

- “On-site Domestic Wastewater Management” (AS 1547, 2012);
- “On-site Sewage Management for Single Households” (DLG, 1998);
- “Onsite Wastewater Management” (DPHI, 2025);
- “On-site Sewage Management (OSSM) Policy” (DSC, 2015a); and
- “On-site Sewage Development Assessment Framework (DAF) (DSC, 2015b).

This report must be read in conjunction with all appendices including the notes provided in Appendix A.

2. Site Description

The site comprises approximately 21 ha of Lot 123 Deposited Plan 1063557, and is located at 598 Gresford Road, Vacy. The overall development area is bounded to the north-east by Gresford Road, a rural residential property to the north and rural, undeveloped land on the remaining sides (refer Drawing 1 (R.002) in Appendix D). The site lies on the eastern extent of Mt Johnstone, which is around 280 m higher in elevation.

The site consists of a rural property with the following pertinent features (refer to photographs in Appendix B and Figure 1 to Figure 10 below):

- Site vegetation mainly consisted of grass with sporadic mature trees (refer Figure 1 and Figure 2 below, and Photos 1 to 18);
- Sandstone was observed outcropping in the western and southern portions of the site (Photos 9 and 11);
- Several localised and shallow drainage depressions (less than 0.3 m deep) were observed within the central part of the site (refer light blue lines on Drawing 1 (R.002) in Appendix D, Photo 8, Figure 7 and Figure 8). The surface within these drainage depressions generally fell towards a gully in the central, northern part of the site. During the site walkover, it was noted that some areas within these drainage depressions were damp, with increased vegetation;
- Two incised drainage channels or gullies were observed within the northern and central, northern parts of the site. Both gullies slope down to the north and north-east, joining at the northern corner of Proposed Lot 505, where an existing culvert crosses Gresford Road, refer dark blue lines on Drawing 1 (R.002) in Appendix D, Figure 9 and Figure 10. The incised drainage channels or gullies showed evidence of erosion and contained pooled water (in parts) during the site walkover (refer Figure 4 to Figure 6 and Photos 10 to 13). Mature eucalyptus trees were observed along the banks of the incised drainage channels / gullies;
- A third gully from Mt Johnstone follows the south-eastern site boundary (refer deep blue lines on Drawing 1 (R.002) in Appendix D and Figure 3 below);
- Boggy / saturated ground conditions were observed predominantly within lower lying areas in the north-eastern portion of the site, along the north-eastern site boundary (Photo 1) and locally within the shallow drainage depressions in the central part of the site;
- Minimal to no signs of erosion was observed across the greater site;

- The site gently falls to the north-east and north-north-east at a slope of between 3° and 6° towards the Paterson River (approximately 610 m north-east of the site). Site slopes within Proposed Lots 501, 503, 504, 506 and 514 to 516 were generally <6% and between 6% and 10% within Proposed Lots 502, 505, 507-513, 517 and 518;
- Eight farm dams, ranging in diameter from 10.5 m to 27 m, were located within the site;
- All dams contained water, with algae and reeds / vegetation observed in most dams;
- Localised soil stockpiles were observed directly adjacent some dams (likely excavated materials from dam construction). Stockpiled materials were consistent with natural soils observed at the site;
- A ninth dam is situated on approximately 30 m south-west of the south-western site boundary (refer Drawing 1 (R.002) in Appendix D); and
- A bright green grassed area (possible effluent disposal area) was observed in the backyard of the residential property located directly adjacent the north-western boundary of the site (Photos 15 and 16).



Figure 1: Looking west from the eastern corner of the site, Mt Johnstone in the background

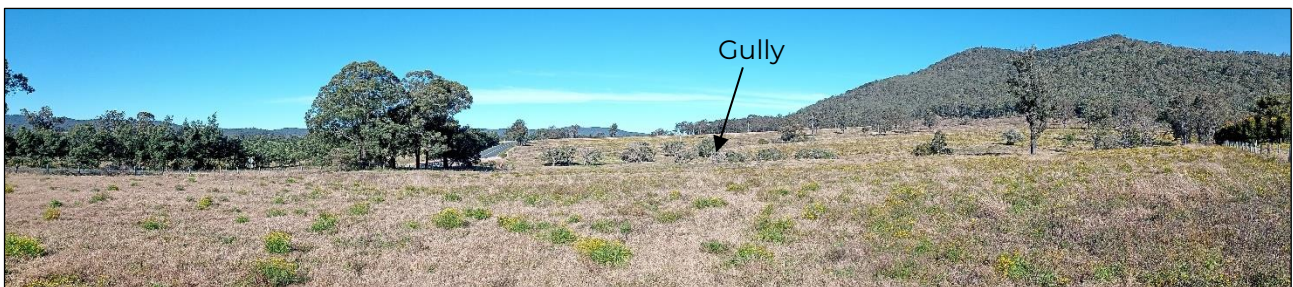


Figure 2: Looking south-east from the northern part of the site, Gresford Road on left hand side of photo, Mt Johnstone in background on right and incised drainage channel or gully draining to culvert crossing Gresford Road



Figure 3: Looking south-west along the major gully on the south-eastern site boundary



Figure 4: Looking north-east along the gully in the northern part of the site (defined banks, pooled water and change in vegetation evident). Photo taken from Proposed Lot 507



Figure 5: Looking north-east across the gully in the central, northern part of the site. Photo taken from Proposed Lot 505. Gresford Road in background



Figure 6: Looking north along the gully in the central, northern part of the site. Photo taken from Proposed Lot 517. Gresford Road in background



Figure 7: Looking south-west along a drainage depression in the central part of the site. Photo taken from Proposed Lot 511



Figure 8: Looking south-west along a drainage depression in the central part of the site. Photo taken from Proposed Lot 510



Figure 9: Looking south-west across the site from the culvert crossing on Gresford Road (image from Google Maps street view dated Aug 2023)



Figure 10: Looking north-east from the culvert crossing on Gresford Road. Significant erosion downstream of the culvert (image from Google Maps street view dated Aug 2023)

3. Published Data

3.1 Regional Geology

Reference to the NSW Geological Survey 1:250,000 map indicates that the site is underlain by Carboniferous aged Mount Johnstone Formation which typically comprises boulder conglomerate, lithic arenites with interbeds of laminated sandstone, shales, carbonaceous shales, poor coal, tuffs and minor cherts. It is noted that the map shows that Quaternary aged alluvium is located approximately 45 m to the east of the site.

3.2 Soil Landscape

Reference to the Newcastle Soil Landscape Sheet indicates that the site is located within the Vacy transferral soil landscape, characterised by gentle footslopes, undulating low hills on Carboniferous sediments in the Paterson Mountains region. Slopes are 2 - 10%, local relief is up to 40 m and elevation to 100 m.

Limitations associated with this soil landscape include high run-on, high water erosion hazard, localised seasonal waterlogging, foundation hazard, localised rock outcrop hazard, localised salinity hazard and localised poor drainage.

3.3 Acid Sulfate Soils

Reference to the NSW acid sulfate soil (ASS) map indicates that the site has no known history of containing acid sulfate soils.

3.4 Hydrogeology

There are eight unnamed farm dams spread out across the site, as well as two incised drainage channels or gullies running through the central and northern parts of the site, draining to a culvert at the northern corner of the Proposed Lot 505 and a third gully along the south-east site boundary. These incised drainage channels or gullies act as drainage lines during periods of rainfall with the surface water then discharge into the Paterson River (approximately 610 m north-east of the site). The localised shallow drainage depressions observed within the central part of the site likely receive run-on from Mt Johnstone and direct surface water towards the incised drainage channels or gullies.

Based on review of the Flora and Fauna Assessment (LE, 2025), the two incised drainage channels or gullies within the northern part of the site (within Proposed Lots 504 to 508, 517 and 518, refer Drawings 1 (R.002) and 2 (R.002) in Appendix D) are validated second order watercourses. The watercourses connect at the northern corner of Proposed Lot 505 and are assumed to flow intermittently with localised areas of pooled water. The localised shallow drainage depressions observed during the field work, are not considered watercourses using the NRAR Waterfront Land Assessment Tool (LE, 2025).

A search of the publicly available registered groundwater bore database indicated that there were no registered groundwater bores within 1 km of the site.

Based on the regional topography and the inferred flow direction of nearby water courses, the anticipated flow direction of groundwater beneath the site is to the north-east, towards Paterson River, the likely receiving surface water body for the groundwater flow path.

3.5 Flooding

The site lies within the Paterson River catchment.

Reference to the Stage 5 flood evacuation response (IDC, 2026) suggests the following:

- Flooding at Vacy is associated with long-duration riverine behaviour and forecast-driven warning conditions. Councils Patterson River Flood Study identifies the 36-hour duration as the critical 1% annual exceedance probability (AEP) event and the 72-hour duration as critical for the probable maximum flood (PMF) event;
- The proposed lots are primarily flood free for the modelled 1% AEP flood event (refer Figure 11 below); and
- Proposed Lots 504 to 506 are partially impacted along the north-eastern lot boundary and Gresford Road for the modelled PMF event (refer Figure 12 below). Estimated flood depths ranged between 0 m and 2 m.



Figure 11: 1% AEP flooding extent (excerpt from IDC (2026))

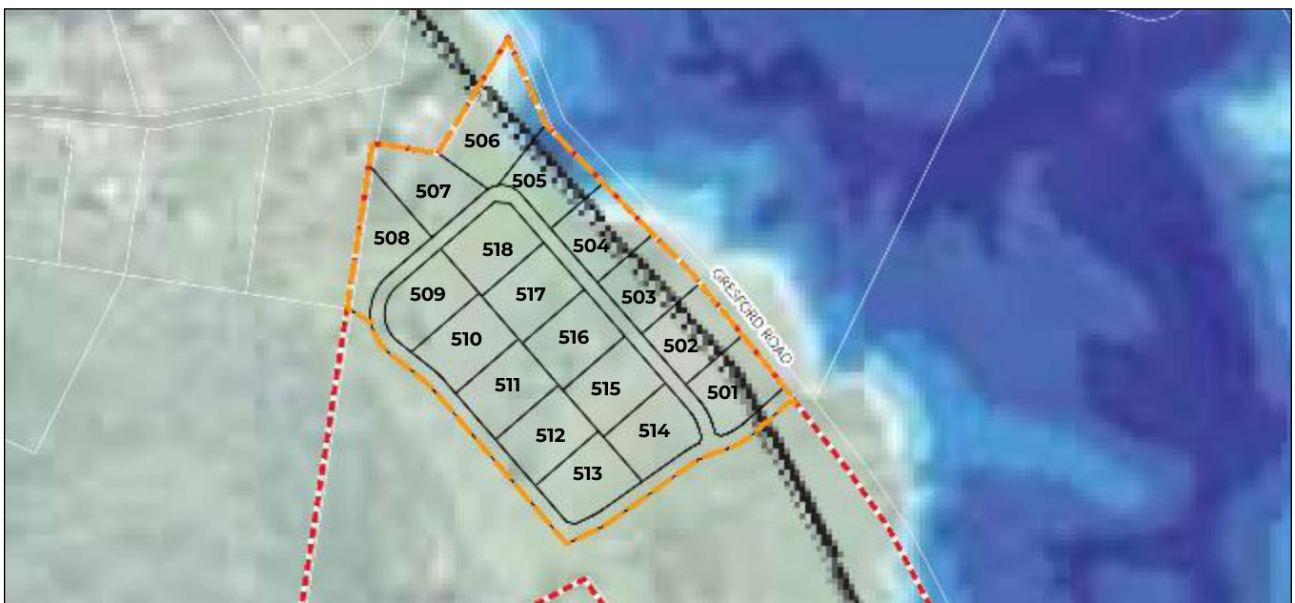


Figure 12: PMF flooding extent (excerpt from IDC (IDC, 2026))

3.6 Salinity

Reference to soil profiles and salinity observations from the NSW Central Resource for Sharing and Enabling Environmental Data (SEED) information system eSPADE (<https://www.environment.nsw.gov.au/eSpade2Webapp>) indicated evidence of salting at one observed location within the northern portion of the site.

3.7 Land Capability Hazard Classification

Reference to Figure 5-5 from the Dungog Shire Council (DSC), On-site Sewage Management Technical Manual (BMT Group, 2015) indicates that the Land Capability Hazard Classification for the site is High Hazard.

Reference to Table 2-5 (BMT Group, 2015), indicates that a cumulative impact assessment would be required for the proposed development where the following criteria is not met:

- All proposed lots contain at least 4,000 m² of Useable Land; and
- All proposed effluent management areas meet or exceed DSC setback distances for watercourses, dams, creeks and drains.

3.8 Climate

Reference to Figure 8-1 (BMT Group, 2015) the site is located within the southern rainfall zone, which adopts Paterson (Tocal AWS) rainfall data.

The median rainfall data and mean evaporation data, from the Paterson (Tocal AWS) weather station are summarised in Table 1 and have been used to calculate the hydraulic balance area/s within this report.

Table 1: Available Climate Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Paterson (Tocal AWS) Median Rainfall (mm)	82.8	95.2	109.2	70.1	58.7	55.2	32	32.5	36.4	53.6	69	69.5
Paterson (Tocal AWS) Mean Evaporation (mm)	189.1	148.4	130.2	96	74.4	63	74.4	102.3	132	161.2	174	204.6
Crop Factor (BMT Group, 2015)	0.7	0.7	0.7	0.6	0.5	0.45	0.4	0.45	0.55	0.65	0.7	0.7

4. Field Work

4.1 Field Work Methods

The field work was undertaken between 25 and 30 July 2024 and comprised the excavation of 33 test pits (designated Pits 1 to 33) with a five-tonne excavator. The pits were excavated with a combination of a 450 mm blade bucket and a 300 mm toothed bucket, to depths ranging between 0.6 m and 2.0 m (refusal on bedrock) (target depth of 3.0 m). The approximate test locations are shown on Drawing 1 (R.002) in Appendix D.

The test locations were set out by an environmental engineer from Douglas by measuring from existing site features who also logged the subsurface profile in each pit and took regular samples for laboratory testing and identification purposes. Dynamic cone penetrometer testing (DCPs) was undertaken at each pit location. Pocket penetrometer tests (PP) were performed at selected depths and locations.

At the completion of logging and sampling, the pits were reinstated with excavated spoil, tamped in layers using the back of the bucket, then mounded and wheel rolled at the surface.

The coordinates and surface levels at the pits were recorded using a differential GPS, which has a horizontal and vertical accuracy of approximately 0.1 m. It is important to note that Douglas is not a registered surveyor, hence the test locations are considered approximate only.

4.2 Field Work Results

The subsurface conditions encountered in the test pits are detailed in the test pit logs in Appendix B. These should be read in conjunction with the notes about this report and the explanatory notes in Appendix A which comment on the pit sampling methods, soil descriptions, and symbols and abbreviations used in their preparation. The results of the DCPs and PPs are presented graphically on the logs. Photographs of the conditions encountered within the test pits are presented at the base of the test pit logs.

In general, subsurface conditions across the site consisted of topsoil overlying residual clay, then inferred bedrock at test pit refusal. Siltstone and sandstone were exposed in the base of the test pits, with refusal encountered on this material. Sand was also locally encountered in Pit 5 from 0.35 m to 1.2 m depth, above the weathered sandstone.

Based the subsurface conditions encountered in the pits, the subsurface profiles have been categorised into broad geotechnical units according to their inferred geological history, as follows and summarised in Table 2 below:

- Unit 1: Topsoil, generally comprising silty sand, clayey sand, clayey silty sand, silty clay or silty sandy clay with organics and rootlets;
- Unit 2: Residual soils:
 - o Unit 2a: generally comprising firm, or firm to stiff sandy clay. Soft sandy clay encountered in Pit 4;
 - o Unit 2b: generally comprising stiff to hard silty clay, sandy clay and sandy gravelly clay.
- Unit 3: Siltstone / Sandstone: observed in the base of the test pits, estimated to be very low strength or stronger, and highly weathered.

Table 2: Summary of Geotechnical Units at Test Pit Locations

Pit	Depth Below Existing Ground Level (m)			
	Unit 1 (Topsoil)	Unit 2a (Residual Firm to stiff)	Unit 2b (Residual Stiff to hard)	Unit 3 / Refusal (Siltstone / Sandstone)
1	0 - 0.1	-	0.1 - 1.1	1.1
2	0 - 0.15	-	0.15 - 0.85	0.85
3	0 - 0.15	-	0.15 - 0.7	0.7
4	0 - 0.15	0.15 - 0.9 ¹	-	0.9
5	0 - 0.15	-	0.15 - 1.2 ²	1.2
6	0 - 0.1	-	0.1 - 0.8	0.8
7	0 - 0.15	-	0.15 - 0.75	0.75
8	0 - 0.15	-	0.15 - 0.85	0.85
9	0 - 0.1	-	0.1 - 1.25	1.25
10	0 - 0.2	-	0.2 - 0.8	0.8
11	0 - 0.15	-	0.15 - 1.15	1.15
12	0 - 0.1	0.1 - 0.35	0.35 - 0.8	0.8
13	0 - 0.1	-	0.1 - 0.9	0.9
14	0 - 0.1	-	0.1 - 0.7	0.7
15	0 - 0.15	-	0.15 - 0.95	0.95
16	0 - 0.1	-	0.1 - 1.25	1.25
17	0 - 0.15	-	0.15 - 1.5	1.5
18	0 - 0.15	-	0.15 - 1.2	1.2
19	0 - 0.1	-	0.1 - 1.0	1.0
20	0 - 0.1	-	0.1 - 1.1	1.1
21	0 - 0.15	0.15 - 0.45	0.45 - 1.2	1.2
22	0 - 0.1	0.1 - 0.7	0.7 - 2.0	2.0
23	0 - 0.15	0.15 - 0.5	0.5 - 1.5	1.5
24	0 - 0.1	0.1 - 0.3	0.3 - 1.6	1.6
25	0 - 0.1	-	0.1 - 2.0	2.0
26	0 - 0.15		0.15 - 0.6	0.6
27	0 - 0.1		0.1 - 1.3	1.3
28	0 - 0.2		0.2 - 1.2	1.2
29	0 - 0.1		0.1 - 1.0	1.0
30	0 - 0.1		0.1 - 1.1	1.1
31	0 - 0.1	0.1 - 0.35	0.35 - 0.85	0.85
32	0 - 0.1		0.1 - 1.1	1.1
33	0 - 0.15		0.15 - 1.2	1.2

Notes to table:

1 - Soft sandy clay encountered in Pit 4 from 0.15 m to 0.35 m depth

2 - Medium dense to dense clayey sand encountered in Pit 5 from 0.35 m to 1.2 m depth

No free groundwater was observed at test locations while they remained open. Seepage was observed whilst excavating Pit 22 at 0.6 m depth. It should be noted that groundwater levels are affected by factors such as climatic conditions and soil permeability and will therefore vary with time.

5. Laboratory Testing

5.1 Geotechnical

Geotechnical laboratory testing comprised the following on selected materials sampled from the test pits:

- Eight shrink swell index tests; and
- Four standard compaction / 4-day-soaked California bearing ratio (CBR) tests on subgrade materials.

Detailed results of the geotechnical laboratory testing are presented in Appendix C and summarised in Table 3 and Table 4.

Table 3: Results of Laboratory Testing - Shrink Swell

Pit	Depth (m)	Description	FMC (%)	Shrink (%)	Swell (%)	Iss (% per ΔpF)	PP (kPa)	
							(before soaking)	(after soaking)
1	0.7 - 0.98	Sandy Clay	15.7	1.6	-0.4	0.9	>600	220
10	0.5 - 0.69	Sandy Clay	13.4	1.4	0.6	1.0	>600	100
13	0.4 - 0.6	Sandy Clay	14.2	1.6	1.0	1.2	>600	220
15	0.35 - 0.59	Sandy Clay	24.6	5.2	0.0	2.9	260	150
17	0.35 - 0.64	Sandy Clay	16.1	1.7	1.1	1.3	>600	90
25	0.4 - 0.71	Sandy Clay	20.6	4.7	1.7	3.1	270	80
27	0.6 - 0.76	Sandy Clay	14.4	1.7	-0.1	0.9	450	60
31	0.5 - 0.65	Sandy Clay	20.9	4.8	-0.5	2.7	470	280

Notes to table:

FMC - Field Moisture Content

Iss - Shrink-swell index

PP - Pocket Penetrometer reading

Table 4: Results of Laboratory Testing - CBR and Standard Compaction

Pit	Depth (m)	Description	FMC (%)	OMC (%)	SMDD (t/m ³)	CBR (%)	Swell During Soaking Phase (%)
3	0.15 - 0.35	Sandy Clay	19.2	13.0	1.80	8	1.5
6	0.4 - 0.6	Sandy Clay	18.7	14.5	1.80	3.5	0.0
20	0.2 - 0.3	Sandy Clay	21.6	18.0	1.70	2.5	1.0
26	0.2 - 0.4	Sandy Clay	20.2	17.5	1.72	2.5	0.5

Notes to table:

FMC - Field Moisture Content

OMC - Optimum Moisture Content (Standard)

SMDD - Maximum Dry Density (Standard)

CBR - California Bearing Ratio

5.2 Effluent Disposal

To assess the relevant parameters of the natural soils at the site for effluent disposal assessment, representative soil samples were submitted for laboratory testing. Detailed results of the laboratory testing are presented in Appendix C and summarised in Table 5.

Table 5: Summary of Effluent Disposal Testing

Pit	Depth (m)	Description	Soil Category	Textural Class	pH (CaCl ₂)	ECe ¹ (dS/m)	PSC ² (kg/ha)	CEC ³ (cmol+/kg)	Sodicity ⁴ (ESP)	Emerson Stability Class
5	0.1	Topsoil / Silty SAND	2b	Sandy Loam	4.9	0.98	5,568	6.13	8.51	5
5	0.5	Clayey SAND	3	Sandy Loam	-	-	4,352	-	-	1
7	0.1	Topsoil / Silty SAND	2b	Sandy Loam	4.4	0.84	5,648	4.19	6.37	5
9	0.1	Topsoil / Clayey Silty SAND	3	Sandy Loam	4.5	0.98	5,248	6.54	4.43	5
9	0.5	CLAY	6	Medium Clay	-	-	4,840	-	-	2
13	0.1	Topsoil / Silty SAND	2b	Sandy Loam	4.3	0.56	5,616	5.73	5.29	7
21	0.1	Topsoil / Silty SAND	2b	Sandy Loam	4.4	0.56	4,624	3.87	5.39	5
21	0.25	Sandy CLAY	5	Sandy Clay	-	-	3,640	-	-	3b
25	0.1	Topsoil / Clayey SAND	3	Sandy Loam	4.4	0.70	5,232	5.69	4.32	7
25	0.5	Sandy CLAY	5	Sandy Clay	-	-	8,380	-	-	2
31	0.1	Topsoil / Silty Sandy CLAY	4	Sandy Clay Loam	4.3	0.45	7,056	4.57	4.10	5
33	0.1	Topsoil / Silty Sandy CLAY	4	Sandy Clay Loam	4.5	0.36	4,928	4.10	3.68	7
33	0.25	Sandy CLAY	5	Sandy Clay	-	-	8,360	-	-	1

Notes to table:

- 1 ECe is the converted EC (1:5 – soil: water) as presented in Lillicrap, A, & McGhie, S. (2002).
- 2 PSC - Phosphorus Sorption Capacity based on PSC mg/kg over a soil depth of 1 m and a density of 1,600kg/m³ for silt and sand; and 2,000 kg/m³ for clay
- 3 CEC – Cation Exchange Capacity
- 4 Exchangeable Sodium Percentage

6. Proposed Development

The current concept subdivision layout indicates that the proposed residential subdivision would comprise the following:

- 18 residential lots (Lots 501 to 518), ranging in size from 10,000 m² to 15,790 m². The lots are designated R5 Large Lot Residential;
- Internal access road (Road No 1), with a total length of 1,509.22 m, and access from Gresford Road; and
- Stormwater management infrastructure including:
 - o 4 m wide grassed table drains (4H:1V) with a minimum depth of 0.4 m, on each side of Road No. 1 between chainages CH 0 and CH 460, CH 700 and CH 1,040 and CH 1,180 and CH 1,509.22;
 - o 4 m wide grassed table drains (4H:1V) with a minimum depth of 0.4 m, on the upslope side of Road No. 1 between chainages CH 460 and CH 700, and CH 980 and CH 1,180;
 - o 4.8 m wide grassed v-drain (4H:1V), with a minimum depth of 0.6 m on the south-western side of Road No. 1 (from approximate CH360 to CH 785) to divert run-on from the upslope areas south-west of the development;
 - o Culverts at CH 490 and CH 560 connecting the grassed v-drain to the drainage depressions in Proposed Lots 511 and 512 to maintain intermittent flow of downstream watercourses (refer Section 3.4); and
 - o Reinforced concrete box culvert at CH 1,180 under Road No. 1 (from Proposed Lot 517 to 504) to maintain stormwater to flow along the existing watercourse to the existing culvert crossing of Gresford Road.

The proposed layout is shown in IDC “Subdivision Plan”, Drawing No. 24-107-DA-STG5-C110 Rev C dated 25.03.2026 and draft drawing P000385.04B.DP dated December 2025 (refer Appendix D).

Based on IDC drawings “Sediment and Erosion Control Plan” Sheets 1 and 2, “Cut and Fill Plan”, and “Road Longitudinal Sections” Sheets 1 to 3, Drawing No’s. 24-107-DA-STG5-C120, C121, C130, and C160 to C162 Rev C dated 25.03.2026, the following is understood:

- Up to 3.0 m of cut and 3.6 m of fill is required to construct Road No. 1 as follows:
 - o CH 0 to CH 140 – up to 3 m of cut;
 - o CH 140 to CH 380 – cut between 0.8 m and 2.2 m;
 - o CH 380 to CH 450 – cut between 0.6 m and 2.2 m;
 - o CH 450 to CH 625 – up to 3.6 m fill;
 - o CH 625 to CH 800 – up to 2.6 m cut;
 - o CH 800 to CH 985 – up to 1.0 m cut;
 - o CH 985 to CH 1,040 – up to 2.0 m fill;
 - o CH 1,040 to CH 1,210 – up to 2.0 m fill; and
 - o CH 1,210 to CH 1,509.22 – cut between 0.4 m and 2.0 m.

- The existing farm dams within the road reserve and Proposed Lots 502, 506, 507, 510, 513 and 516 will be de-silted and filled;
- An existing farm dam at CH 20 to CH 40 would be utilised as a temporary sediment basin;
- A temporary sediment basin will be constructed within Proposed Lot 505 where the two watercourses meet; and
- No filling is proposed within the two water courses within Proposed Lots 504 to 508 and 517.

Based on discussion with the client, it is also understood that the existing power poles within the development area would be removed, with a new powerline easement within Proposed Lots 505 to 507, as indicated in Drawing 2 (R.002) in Appendix D, and Drawings 1 (R.002) and 3 (R.002) by the shape of the approximate building envelopes.

7. Comments

7.1 Excavation Conditions

Earthworks requirements for the construction of residential dwellings and driveways within each proposed lot are not known, however are anticipated to be limited to the preparation of a level building pad, requiring less than about 0.3 m of cut and fill.

Up to 3.0 m of cut and 3.6 m of fill is required to facilitate the construction of Road No. 1. It is also expected that excavation may be required for the installation of service infrastructure and onsite stormwater and wastewater management and localised footing excavations.

It is anticipated that excavation in the residual clay or extremely weathered rock is expected to be readily achievable with conventional earthmoving equipment. Excavation of the siltstone / sandstone bedrock may require slightly heavier ripping equipment, such as an excavator with a ripping tyne or hydraulic hammer particularly for detailed excavation.

The excavatability of rock is dependent not only on rock strength, but also on the presence, orientation and extent of discontinuities such as jointing and fracturing and other factors. For example, low strength rock with few discontinuities can be more difficult to excavate than highly fractured high strength rock.

The deepest excavation appears to be required at the eastern, western and southern corners of the development (within Road No. 1). Pits 2, 3, 6, 7, 19 and 26 refused at depths between 0.6 m and 1.0 m depth. To further consider the excavatability of rock, targeted investigation with a drill rig (cored bores) would be required to assess rock strength and jointing / fracturing.

7.2 Site Preparation and Earthworks

Where development is proposed at or adjacent to an existing farm dam, elevated soil-moisture may be encountered around or below the dam, which may require some treatment such as drying out, excavate and recompact or replacement with engineered fill.

The following procedure is recommended for site preparation, including engineered fill placement / replacement for the support of pavements, driveways and any slab on ground elements:

- Remove topsoil, any uncontrolled fill and deleterious materials, including any overly wet material;
- Test roll the natural surface to determine any soft zones and assess moisture condition. Moisture contents should be in the range OMC -3% (dry) to OMC +1% where OMC is the optimum content at standard compaction;
- Compact the tyned natural surface to a dry density ratio of at least 100% standard. The compacted clay subgrade should be left exposed for a minimum of time prior to placement of pavement layers and floor slabs, to minimise the occurrence of desiccation cracking;
- Suitable fill material should be placed in horizontal layers not exceeding 300 mm loose thickness and compacted to a dry density ratio in the range 98% to 102% standard. Moisture content should be in the range as stated above;
- Each layer of fill should be cut into the existing residual clay / siltstone / sandstone for a horizontal distance of at least 0.6 m to provide a 'key' into the natural clay / siltstone / sandstone profile; and
- Each lift of fill material should be placed beyond the proposed finished batter surface and trimmed back after adequate compaction has been achieved, to ensure adequate compaction right to the face of the finished batter surface.

Excavated natural soil and weathered rock are generally expected to be suitable for placement as engineered fill, provided that all organics and deleterious materials are removed, and moisture contents are maintained within the range specified above. The reuse of the siltstone / sandstone on site will depend on the particle size distribution of the excavated material (ie need to be less than 100 mm). Additional processing and working, (ie rock crushing), of the siltstone / sandstone may be required to achieve acceptable compaction.

Geotechnical inspections and testing should be performed during construction in accordance with (AS 3798, 2007).

7.3 Indicative Site Classification

Site classification of foundation soil reactivity provides an indication of the propensity of the ground surface to move with seasonal variation in moisture. The site classification is based on procedures presented in (AS 2870, 2011), the typical soil profiles revealed in the test pits and the results of laboratory testing.

The design depth of moisture change (H_s) has been determined based on Fityus et al "Influence of climate on clay soils in the Hunter Valley" to be 2 m. A crack depth factor of 0.5 has been conservatively adopted for the assessment of the site classification.

The layout of the building envelopes has not been finalised and therefore this site classification should be considered as preliminary only and further investigation should be undertaken once the exact locations of the proposed buildings within the allotments have been determined.

Based on the procedures outlined in AS 2870 (2011), the preliminary site classifications for each lot in its current site condition is summarised in Table 6.

Table 6: Indicative Site Classification

Proposed Lot Number	Site Classification (Current Site Conditions)
502 to 513 and 516 to 518	P
501, 514 and 515	M

Proposed Lots 502 to 513 and 516 to 518 are classified as Class P due to the following:

- The possibility of adverse moisture conditions from existing dams and watercourses; and
- Presence of firm or firm to stiff conditions encountered in Pits 4, 12, 21 to 24 and 31.

Further site classification assessment is required on completion of earthworks to comply with AS2870 (2011). Fill on lots should be placed and compacted to the requirements of Level 1 inspection and testing as defined in AS 3798 (2007).

Site classification is based on the information obtained from test pits and on the results of laboratory testing, and has involved some interpolation between data points. If the conditions encountered during construction are different to those presented in this report, it is recommended that advice be obtained from this office.

Where trees are, or will be, present on the lot, the structural engineer should also account for the influence of trees on the seasonal movements, using the procedure presented in Appendix H of AS 2870. This will include estimating a value of y_t (the potential surface movement due to tree-induced suction, in addition to the normal design suction change). Estimating y_t is a function of the height of trees, and the distance of the trees from the building.

Design, construction and maintenance should consider the need to achieve and preserve an equilibrium soil moisture regime beneath and around buildings. Such measures include pavements, or other surface sealing measures around buildings with a fall away from the building, flexible plumbing connections and service trenches to be backfilled with compacted clay. Over watering of garden and lawn areas should be avoided. Trees should be planted away from buildings by a distance of not less than twice their eventual mature height. These and other measures are described in AS 2870 (2011).

7.4 Foundation Strategies

At the time of the geotechnical assessment, there were no details of the proposed development and as such building and / or column loads were not provided.

Pad or strip footings founded on either the stiff or stronger clay or the underlying weathered bedrock may be suitable for support of the structural loads. Footings could also be supported within controlled fill provided the fill has been placed and compacted in accordance with the procedures detailed in AS 3798 (2007).

Preliminary maximum allowable bearing pressures for the design of shallow footings founded at 0.5 m depth into the founding stratum are provided in Table 7.

Table 7: Recommended Preliminary Allowable Bearing Pressures for Shallow Footings

Bearing Stratum	Maximum Allowable Bearing Pressure (kPa)
Stiff or stronger clay	100
Compacted engineered controlled filling	100
Very low to low strength bedrock	600

Settlements will depend on the size, location, and load on the footing and on the bearing stratum, however for footings of less than 2 m by 2 m subject to the loading conditions outlined above, settlements are anticipated to be less than 15 mm. This estimate of settlements does not consider movements associated with reactive clay soils.

Consideration should be given to differential movement where footings are founding on dissimilar materials. It is recommended that footings are supported on similar materials which may require deep footings in some areas of the site.

An alternative option could include bored piles installed into rock. Further details should be determined following subsurface investigation.

7.5 Preliminary Pavement Thickness Design

7.5.1 Design Traffic

Dungog Shire Council's "Roads Management Strategy" (DSC, 2011) lists design traffic loading for new roads within the Dungog Shire area. Table 8, below, lists the suggested design traffic loading for the proposed internal roads.

Table 8: Design Traffic Loading

Road No.	Classification (DSC, 2011)	Approximate Number of Lots Served	Design Traffic Loading (ESA)
1	Rural Local 1	18	1 x 10 ⁵

7.5.2 Subgrade

The results of laboratory testing on samples of clay indicate soaked CBR values in the range 2.5% to 8% with two of the four tests returning a soaked CBR of less than 3%, suggesting the clays at the site have a relatively high potential to reduce strength with increases in soil-moisture. The results of the shrink swell testing indicate a high potential for the clays to change in volume with changes in soil moisture content, the samples also exhibited significant reductions in pocket penetrometer strength after soaking.

Based on the "Cut and Fill Plan", Drawing No. 24-107-DA-STG5-C110 Rev C dated 25.03.2026, subgrade conditions along Road No. 1 may comprise residual clay or bedrock within areas of cut; and site won materials in areas of fill.

Where rock is present for the full width of the road and for sufficient length for practical construction, pavement thickness design for the bedrock subgrade could be adopted.

Based on the results of the laboratory testing, it is recommended that a select subgrade / bridging layer is provided in areas of fill (site won material) and where residual clay is encountered at design subgrade level to provide support for construction vehicles and to the pavement; and to reduce the risk of damage to the pavement due to volume change.

Based on the laboratory testing, the subsurface investigation results, and Douglas' experience with similar soils, the following design CBR values have been adopted:

- Design CBR = 2.5%;
- Where at least 300 mm of select material with a soaked CBR of greater than 15% is provided, effective CBR = 4.5%; and
- Where very low strength or stronger rock is exposed at subgrade level, design CBR = 10%.

7.5.3 Preliminary Pavement Thickness Design

Based on the procedures presented in Austroads (2017), the recommended preliminary pavement thickness designs for the traffic loading above are presented in Table 9 below.

Table 9: Preliminary Pavement Thickness Design

Pavement Layer	Minimum Layer Thickness (mm) (1 x 10 ⁵ ESA)		
	Road No. 1		
Design CBR	2.5	4.5	10
Wearing Course	Spray seal or 30 mm AC10*	Spray seal or 30 mm AC10*	Spray seal or 30 mm AC10*
Basecourse	100	100	100
Subbase	325	210 ¹	95
Select Subgrade / Bridging	-	300 (min)	-
Total	425	610 (min)	195

Notes to table:

* Where asphalt is to be used as a wearing course, a 7 mm to 10 mm prime seal should be placed over the basecourse layer

The pavement thickness above do not account for construction tolerances

1 – If AC is used as a wearing course, the thickness of the subbase may be reduced by the thickness of AC

Where AC layers form part of the selected pavement design, it is recommended that a 10 mm construction tolerance is added to the design layer thickness.

As discussed above, rock will need to be present for the full width of the road, and along sufficient length for practical construction to adopt the rock subgrade pavement thickness option. Any changes in overall pavement thickness between adjoining sections of road should be transitioned and not abruptly stepped. The adoption of the rock subgrade pavement thickness option should be confirmed either by further targeted geotechnical investigation within proposed areas of cut, or by geotechnical inspections during construction.

The pavement thickness design presented above is based on the provision of adequate surface drainage and, subsurface drainage. Where table drains or drainage lines are present adjacent to the road, the invert of the drains should be lower than the level of the top of pavement subgrade.

7.5.4 Material Quality and Compaction Requirements

Recommended pavement material quality and compaction requirements are presented in Table 10 below.

Table 10: Material Quality and Compaction Requirements

Pavement Layer	Material Quality	Compaction
Basecourse	Soaked CBR > 80%, PI ≤ 6%, grading in accordance with (Austroads, 2017)	Compact to at least 98% dry density ratio modified (AS 1289.5.2.1, 2017)
Subbase	Soaked CBR > 30%, PI ≤ 12%, grading in accordance with (Austroads, 2017)	Compact to at least 95% dry density ratio modified (AS 1289.5.2.1, 2017)
Select Subgrade	Soaked CBR ≥ 15%	Compact to at least 100% dry density ratio standard (AS 1289.5.1.1, 2017)
Subgrade	Residual clay or reworked site won material: CBR ≥ 2.5%	Compact to at least 100% dry density ratio standard (AS 1289.5.1.1, 2017)
	Very low strength or stronger: CBR ≥ 10%	Compact to at least 80% density index (AS 1289.6.2.1)

7.5.5 Subgrade Preparation

The following procedure is recommended for preparation of the pavement subgrades:

- Excavate to design subgrade level;
- Remove any additional topsoil or deleterious materials;
- Test roll the surface in order to determine any soft zones and assess moisture condition. Moisture contents for the subgrade should be in the range OMC -4% to -1% (dry) where OMC is the optimum content at standard compaction;
- If the natural subgrade is wet of optimum at the time of construction, consideration could be given to tining and 'airing' the subgrade soils in an attempt to dry the material back closer to OMC;
- If the natural soils are overly wet of optimum and yielding under test roll and are not able to be dried back to an appropriate moisture content for compaction, limited over-excavation and replacement with a select subgrade is recommended. The thickness of the select will depend on conditions at the time of construction, and the material used as the select layer;
- If rock is encountered at subgrade level, it should be ripped to a depth of at least 100 mm and recompact prior to placement of pavement layers;

- Compact the subgrade to the minimum densities specified in Table 10 above. The compacted clay subgrade (residual clay or reworked site won material) should be left exposed for a minimum of time prior to placement of pavement layers, to minimise the occurrence of desiccation cracking and/or softening due to weather exposure; and
- Where raising the subgrade level is required, or including a select layer, all deleterious material should be removed, and approved filling placed in layers not exceeding 300 mm loose thickness. Below subgrade level, general embankment fill may be compacted to a dry density ratio of at least 98% Standard, in the moisture ranges described above.

Where the road alignment passes through existing farm dams that are to be demolished and backfilled or watercourses, there is a risk of encountering uncontrolled fill, wet of optimum subgrade and other deleterious materials.

Geotechnical inspections and testing should be performed during construction in accordance with AS 3798 (2007).

7.6 Preliminary Effluent Disposal Assessment

7.6.1 Site and Soil Assessment

The proposed lots currently comprise predominantly open grassland, with farm dams, localised drainage depressions and two incised drainage channels / gullies (intermittent watercourses) which drain in an approximately north-east direction at slopes between 3° and 6°. The preliminary effluent disposal assessment has been undertaken based on the following assumptions:

- The two incised drainage channels / gullies (intermittent watercourses within Proposed Lots 504 to 508, 517 and 518) would remain, maintaining existing water flow paths;
- Appropriately sized culverts would be installed at approximate chainages CH 490, CH 560 and CH 1,180 where filling is proposed for the construction of Road No. 1;
- All existing farm dams within the development area will be filled in (within Proposed Lots 502, 506, 507, 510, 513 and 516 and Road No. 1);
- Surface water from upslope areas (Mt Johnstone) would predominantly be re-directed around the subdivision via the proposed V-drain and table drains on Road No. 1;
- Some surface water from upslope areas (Mt Johnstone) which would enter as run-on to Proposed Lots 511 and 512 to maintain intermittent flow of downstream watercourses (refer Section 3.4). It has been assumed that the stormwater system has been designed such that the quantity and velocity of stormwater would be similar to current rainfall event; and
- The proposed power line easement cannot be used for effluent disposal purposes. The easement contains its own buffer from powerline infrastructure; therefore, no additional buffer is required.

A cumulative impact assessment would be required where less than 4,000 m² is available for effluent management within each allotment or where buffer distances cannot be maintained.

Site and soil characteristics observed during the field work are assigned either a minor, moderate or major limitation depending on the restrictions to the disposal area in accordance with DLG (1998) and are detailed in in Table 11 and Table 12.

Recommended site improvement measures for moderate and major limitations are also summarised in Table 11 and Table 12 below.

It should be noted that this effluent disposal assessment is a preliminary assessment. Specific assessments should be conducted for each proposed lot to obtain specific information regarding respective site and soil features.

Table 11: Site Assessment Criteria

Site Feature	Site Limitation		Restrictive Feature	Recommended Site Improvements
Flood potential	Minor	Rare, above 1 in 20 year flood contour	Transport of wastewater off-site.	None required
	Minor	Vents, openings, and electrical components above 1 in 100 year flood contour	Transport of wastewater off-site. System failure and electrocution hazard	
Exposure	Minor	High sun and wind exposure	None	None required
Slope% (<6%: Proposed Lots 501, 503, 504, 506 and 514 to 516) (6-10%: Proposed Lots 502, 505, 507-513, 517 and 518)	Minor	Surface Irrigation 0-6	None	None required
	Moderate	Surface Irrigation 6 - 12	Run-off, erosion	Minor terracing of the application area may be required to ensure less than 6% slope for surface irrigation
	Minor	Subsurface Irrigation 0-10	None	None required
	Minor	Absorption 0-10	None	None required
Landform (incised channels within Proposed Lots 505 - 508, 516 and 517)	Moderate	Concave side slopes and footslopes	Groundwater pollution hazard. Resurfacing hazard	Minor terracing of the application area may be required
	Major	Drainage plains and incised channels		
Run-on and upslope seepage (Stormwater pipes discharge into Proposed Lots 510 to 512 and 516)	Minor	None – low	None	None required
	Major	High – diversion not practical	Transport of wastewater off-site	Upslope bund and cut-off drain advisable
Erosion potential	Minor	No signs of erosion potential present	None	None required
Site drainage	Minor	No signs of surface dampness	None	None required
Fill	Minor	No fill	None	None required
Buffer distance (Proposed Lots 505 and 507)	Major	Encroachment on Buffer Distances	None	None required
Land area (Proposed Lots 505 and 507)	Moderate	Area is limited	None	None required
Rocks and rock outcrops (%)	Minor	<10	None	None required
Geology/ Regolith	Minor		None	None required

Table 12: Soil Assessment Criteria

Soil Features		Site Limitation		Restrictive Feature	Recommended Site Improvements
Depth to bedrock/hardpan (depth to rock 0.5m - 1.0m encountered in pits within Proposed Lots 501, 503, 506, 509 and 512 to 516)		Moderate	Irrigation 0.5 - 1.0	Restricts plant growth (trees), excessive runoff and waterlogging	Absorption systems not recommended. Recommend raising application area with 0.3m of good quality topsoil for irrigation systems
		Major	Absorption <1.0	Groundwater pollution hazard. Resurfacing hazard	
Depth to bedrock/hardpan (depth to rock 1.0m - 1.5m encountered in pits within Proposed Lots 502, 504, 505, 507, 508, 510, 511, 517 and 518)		Moderate	Absorption 1.0 - 1.5		
		Minor	Irrigation >1.0	None	None Required
Depth to high episodic or seasonal watertable (m)		Minor	Irrigation >1.0	None	None Required
		Minor	Absorption >1.5	None	
Soil Permeability category	Surface and subsurface irrigation (Proposed Lots 501-503, 505-509, 511, 512, 514,516)	Minor	2b, 3 and 4	None	None Required
	Surface and subsurface irrigation (Proposed Lots 504, 505, 510, 513, 515, 517, 517)	Moderate	2a and 5	Excessive run-off, waterlogging and percolation	For trenches, prepare natural soil by deep ripping, shallow cultivation and applying gypsum. Place soil of good permeability around trenches / beds.
	Absorption system	Major	1, 2, 5 and 6		
Coarse fragments (%)		Minor	0 - 20	None	None Required
Bulk density	Sandy Loam	Minor	<1.8	None	None Required
	Loam and Clay Loam	Major	>1.6		
	Clay	Major	>1.4		
pH CaCl		Major	<4.5	Reduces optimum plant growth	Should be improved with the addition of lime
Electrical Conductivity - ECe (dS/m)		Minor	<4	None	None Required
Sodicity (exchangeable sodium percentage)		Moderate	5-10	Potential for structural degradation	Should be improved with the addition of gypsum
Cation exchange capacity (cmol+/kg)		Major	<5	Unable to hold plant nutrients	Should be improved with the addition of lime and organic matter
Phosphorus sorption (kg P/ha)		Moderate	2000 - 6000	Unable to immobilise any excess Phosphorus	Secondary treatment of effluent recommended
Modified Emerson Aggregate Test (dispersiveness)		Moderate	Class 2	Potential for structural degradation	None Required for Irrigation
		Minor	Class 3 or above	None	None Required for absorption system

7.6.2 Overall Site and Subsurface Conditions

7.6.2.1 Suitable Effluent Disposal Locations

Suitable locations of the effluent application areas within each proposed lot are dependent on several factors, including the site and soil limitations highlighted in Table 11 and Table 12 above. The major limitations are discussed in more detail below and are generally indicated on Drawings 1 (R.002) and 2 (R.002) in Appendix D.

7.6.2.2 Identify Soil and Site Limitations

Possible disposal areas within the proposed lot have a number of limitations, including the following, with mitigation measures discussed in more detail in the following sections:

- Moderate limitation for:
 - o Site slopes within Proposed Lots 502, 505, 507-513, 517 and 518 for surface irrigation;
 - o Landform with the development area located on the footslopes of Mt Johnstone;
 - o Surface and subsurface irrigation and absorption systems for depth to bedrock and soil permeability; and
 - o Sodicity and phosphorus sorption.
- Major limitation for:
 - o Landform, with incised channels (watercourses) within Proposed Lots 505 to 508, 516 and 517;
 - o Potential for run-on and run-off within Proposed Lots 510 to 512 and 516 and upslope run-on due to the site topography;
 - o Absorption systems due to the depth to bedrock within Proposed Lots 501, 503, 506, 509 and 512 to 516 and soil permeability; and
 - o pH CaCl and cation exchange capacity of surface soils.
- Encroachment on buffer distances and available useable land within Proposed Lots 505 and 507.

7.6.2.3 Recommended Mitigation Measures

Site slopes vary between 6% and 10.5% within Proposed Lots 502, 505, 507-513, 517 and 518. An assessment on the risk of effluent run-off should be made for each system, and terracing of the application area may be required. A bund could also be constructed downslope of the disposal areas to prevent run-off effluent.

The majority of the proposed development is located on the footslopes of Mt Johnstone, with incised channels (watercourses) within Proposed Lots 505 to 508, 516 and 517. Minor terracing of the application area is recommended for all effluent disposal systems.

There is potential for run-on across the south-western site boundary and the proposed culverts at approximate chainages CH 490 and CH 560 which connects the grassed v-drain to the localised drainage depressions in Proposed Lots 511 and 512 to maintain intermittent flow of downstream watercourses. Catch drains and diversion bunds are recommended upslope of the application areas to prevent rainfall run-on to the disposal areas.

Refusal on siltstone / sandstone was encountered in all the test pits at depths between 0.6 m and 2.0 m depth, representing moderate and major limitations for absorption systems within all proposed lots, and a moderate limitation for irrigation systems within Proposed Lots 501, 503, 506, 509 and 512 to 516. Absorption systems are not recommended for Proposed Lots 501, 503, 506, 509 and 512 to 516. Raising the application area with 0.3 m of good quality topsoil is recommended for irrigation systems.

The soil permeability of the underlying soils at the test pit locations generally presents a major limitation (Soil Types 1, 2a, 5 and 6 as defined in AS 1547 (2012)) for absorption systems and a moderate limitation for surface and subsurface irrigation systems. Effluent management areas should be designed based on the soil with the lowest permeability within 0.6 m below the proposed application method. Therefore, new application system should be designed based the permeability of the underlying sandy clay or medium clay soil unless the application area is raised. Deep ploughing of soils and tyning in of gypsum should improve the soils ability to accept effluent by breaking down the soil structure and increasing soil porosity, though it should be noted that this may increase the potential for erosion in the short term.

The relatively low pH level and low cation exchange capacity of the upper soils at the locations tested generally presents a major limitation for surface and subsurface irrigation systems as the soils may be unable to hold plant nutrients. These limitations could be addressed by the addition of lime and organic matter to the upper soil profile. Further assessment of suitable liming rates should be undertaken prior to final design of application areas.

The exchangeable sodium percentage (sodicity) of the upper soils at the locations tested generally presents moderate limitation, which could be addressed by the addition of gypsum.

7.6.3 Effluent Treatment System

Based on the assessment of the site (refer Table 11 and Table 12) and the two watercourses within the northern part of the development, the following effluent disposal options are provided for consideration:

- **Option 1** - Treatment of blackwater and greywater from the proposed residential dwellings within each lot be treated using an aerated wastewater treatment system (AWTS) or similar which produces, as a minimum, secondary quality effluent with phosphorus reduction to 10 mg/L and nitrogen reduction to 25 mg/L prior to application to the land. Given the land application area required, it may be prudent to adopt a system with advanced secondary treatment with further phosphorus reduction to 5 mg/L;
- **Option 2** - Discharge of the blackwater to a waterless composting toilet and treatment of the greywater within a separate greywater treatment device (GTD) prior to application via absorption or subsurface irrigation. Whilst waterless composting toilets do not require water for flushing (with the exception of micro-flush systems), wastewater is still generated from the effluent and during cleaning. It is recommended that the system be installed with a heater unit to evaporate off any excess water, alternatively excess moisture could be discharged via a liquid drain. The long-term efficiency and maintenance of the selected GTD should be fit for purpose. It has been assumed that greywater would be treated to achieve Treatment Level 3 (suitable for subsurface irrigation or absorption), or better.

Effluent that has been treated in an AWTS has a lower biochemical oxygen demand (BOD), lower suspended solid level and much lower faecal coliform level than the existing traditional septic tank.

The location of the AWTSs should be confirmed following discussions with a plumber and installer.

The following sections of this report have been written for both options, assuming that proposed lots with less than 4,000 m² of area suitable for disposal of treated effluent would likely opt for Option 2.

7.6.4 Effluent Application

It is typically recommended that secondary treated effluent be discharged to an irrigation area where suitable land area is available.

Available areas outside of the buffer zones suitable for effluent application are indicated on Drawing 2 (R.002) in Appendix D.

Owing to the site and soil limitations present at the site, it is recommended that the secondary or advanced secondary treated effluent could be applied to the land surface via either subsurface irrigation or possibly evapotranspiration. Treated greywater (Option 2) could also be applied to the land surface via absorption.

The system selected for use should be approved by the NSW Health Department.

Irrigation (suitable for Options 1 and 2)

Subsurface drip may be suitable in areas where the slope is $\leq 10\%$, and where a minimum of 0.8 m depth of soil is available below dripper lines.

The above disposal method should be discharging into at least 150 mm of good quality loamy topsoil as required in Table M1 of AS 1547 (2012). This may require importation of suitable material to increase the thickness of topsoil within the application areas. The requirement for additional topsoil should be assessed at the time of construction of each individual application area.

Evapotranspiration Absorption (ETA) (suitable for Option 1)

In areas where the slope is less than 10% and where at least 1.2 m depth of soil is available (allowing at least 0.6 m of soil depth below the trench) ETA areas may be suitable. Based on the results of the investigation, this may require placement of additional soil over the application area within some of the proposed lots, particularly in the higher areas of the site and Proposed Lots 501, 503, 506, 509 and 512 to 516.

Absorption (suitable for Option 2)

The length of an absorption area can vary according to width. Typical dimensions can vary between 0.45 m (trench) to 4 m (bed) in width and 20 m in length, however, where the width exceeds 1 m then it is likely that terracing of the application area may be required.

Given the existing site gradients, it is considered that an absorption area could be constructed as 10 m to 20 m long and 1.0 m wide trenches. The trenches should be located at least 2 m apart. A distribution box or automatic sequencing vales should be used to evenly dose the trenches. Other configurations could be suitable and should be confirmed by the installer depending on ease of construction and site features, ie the presence of trees, boulders and bedrock outcrops.

Should the absorption area be constructed upslope, then to prevent the system from draining back towards the GTD/tank, a non-return valve should be fitted.

As detailed in Table 11, a bund should be constructed upslope of the absorption area to divert surface water way from the application area, especially within Proposed Lots 510 to 512 and 516, where surface water run-on is anticipated.

As detailed in Table 12, gypsum should be tynd into the subgrade; and lime and organic matter should be tynd into the topsoil, placed over the trenches to improve the soil sodicity, pH and CEC within the application area. This may also require the placement of good permeability soils around trenches.

The application area should be constructed in accordance with recommended buffer distances detailed in Section 7.6.8.

7.6.5 Hydraulic Loading for Design

The combined hydraulic loading for each proposed lot has been calculated for a 3, 4 and 5 bedroom residential dwelling, based on values presented in Table H1 (Appendix H) of AS 1547 (2012) and the following assumptions:

- A loading rate of 1.5 persons per bedroom;
- The site has a non-reticulated water supply (tank);
- Combined waste stream volume of 120 L/person/day (Option 1); and
- Greywater waste stream volume of 90 L/person/day (Option 2).

If further information indicates that an alternative wastewater volume is more appropriate, then review of the recommendations made in this report should be undertaken.

For the dry composting toilet, the volume of excess fluid is difficult the estimate, however, for the purpose of this report, it has been assumed to be as much as 1 L per person/day.

7.6.6 Indicative Sizing of Disposal Areas

The areas required for effluent disposal is determined by considering the hydraulic conductivity of the soil receiving the effluent and the ability of the soil to accept the nutrient loading associated with the effluent. These calculations are referred to as the hydraulic balance and nutrient balance respectively.

The areas required have been calculated based on the following design parameters:

- Procedures outlined in DLG (1998) and AS 1547 (2012);
- A hydraulic loading of 180 L/bedroom/day (combined waste stream – Option 1);
- A hydraulic loading of 136.5 L/bedroom/day (greywater waste stream – Option 2);
- Rainfall data from Chichester Dam weather station from 1942 to 2024;
- Evaporation data from Chichester Dam weather station 1974 to 2024;
- Soil depth of at least 0.6 m over the entire disposal area;

- The nutrient loadings provided in Section 7.6.3 of this report;
- Rainfall run-off coefficient of 0.25;
- Design irrigation rate (DIR) of 3 mm / day from Table 5.2 (AS 1547, 2012);
- Design loading rate (DLR) of 5 mm / day and 8 mm / day for Options 1 and 2, respectively from Table 5.2 (AS 1547, 2012);
- Design life of 50 years; and
- Variable crop factor from Table 8-2 (BMT Group, 2015), ranging from 0.4 to 0.7.

The clarity of the greywater is considered to be closer to that of secondary treated effluent as opposed to primary treated effluent, therefore the DLR for Option 2 has been selected based on recommended infiltration rates for secondary treated effluent as provided in Table L1 of AS 1547 (2012).

Minimum disposal areas have been calculated based on non-reticulated (tank) water supply. If the subdivision is to be connected to the reticulated (town) water system, then this advice should be revised.

Using the parameters and assumptions outlined above, the indicative minimum disposal areas required were calculated using an in-house computer program. The areas required for an irrigation or evapotranspiration application area are shown below in Table 13. The areas required for an absorption application area are shown below in Table 14. It should be noted that smaller areas may be applicable should more detailed subsurface investigation be carried out, as well as daily flow balance analysis.

Table 13: Minimum Size Requirements – Option 1 (AWTS)

No. of Bedrooms	Waste Stream (Combined)	Effluent Quality	Nitrogen Balance Area (m ²)	Phosphorus Balance Area (m ²)	Hydraulic Balance Area (m ²)	
					Subsurface Irrigation	Evapo-transpiration
3	540 L/day	Secondary	300	674	215	245
		Advanced secondary	300	337	215	245
4	720 L/day	Secondary	400	898	290	325
		Advanced secondary	400	449	290	325
5	900 L/day	Secondary	500	1,123	360	405
		Advanced secondary	500	561	360	405

Notes to Table 13:

Bold values indicate minimum area required

Table 14: Minimum Size Requirements – Option 2 (Waterless Composting Toilet and GTD)

No. of Bedrooms	Waste Stream (Greywater)	Effluent Quality	Hydraulic Balance Area (m ²)	
			Subsurface Irrigation	(Absorption)
3	409.5 L/day	Greywater	165	51
4	546.0 L/day	Greywater	220	68
5	682.5 L/day	Greywater	275	85

The indicative effluent disposal areas provided in Table 13 assume that the site improvements outlined in Section 7.6.2 are implemented.

The results of the calculations indicate that the areas required for surface / subsurface irrigation and evapo-transpiration are governed by the phosphorus balance for both secondary and advanced secondary effluent quality.

It should be noted that absorption systems (Option 2 only) are designed to satisfy the hydraulic balance only. They do not satisfy the nutrient balance requirements of the NSW Health Guidelines and therefore will be subject to council approval. Construction of the application area to cater for the hydraulic balance may be applicable provided that sufficient measures are in place to prevent nutrients from being exported from the effluent disposal area/s to the local environment, and subject to Council approval.

7.6.7 Reserve Area Requirements

Typically, a reserve effluent disposal area is nominated during the assessment to allow for resting of the effluent disposal area and / or future expansion. AS 1547 (2012) states the requirement for a reserve area is typically associated with effluent generated from septic tanks and the need for a reserve area may be “reduced or even eliminated if an improved wastewater treatment” is utilised (page 63 of AS 1547 (2012)). If secondary quality effluent is produced using a system with sufficient reliability, a reserve area may not be required, subject to Council approval.

Following site assessment, it is considered that a 100% reserve application area would be available within all proposed lots where Option 2 is adopted and all proposed lots except Proposed Lots 505 and 507 where Option 1 is adopted, if required.

7.6.8 Buffer Distances

Effluent disposal areas within the proposed lots should comply with appropriate construction buffer distances based on a site-specific evaluation of the site and soil constraints. The construction buffer distances are designed to separate the application area and any sensitive receptor, thereby allowing for the uptake of any migrating treated effluent before it reached the receptor.

Table 15 below, outlines the range of setback distances recommend in Table 6-8 of DSC (2015), in Table R1 of AS 1547 (2012) and in Tables 4-2 and 4-3 of DPHI (2025). Table 15 also includes the recommended setback distances for the proposed lots following an evaluation of the site and soil constraints (refer Table 16 below), as outlined in Table R2 of AS 1547 (2012).

Table 15: Recommended Buffer Distances for On-Site Systems

Sensitive Receptor	Recommended Buffer Distance (m)			Recommended Minimum Buffer Distances Following Evaluation of Site and Soil Constraints	
	DSC (2015b)	AS 1547 (2012)	DPHI (2025)	Subsurface Irrigation and ETA Systems Option 1 (AWTS)	Subsurface Irrigation and Absorption Systems Option 2 (waterless composting toilet and GTD)
Property boundary	6 (up-gradient) 3 (down-gradient)	1.5 - 50	1.5 – 15	10 m	
Dwelling	15	2 - >6	2 – 6	15 m	5 m
Permanent surface water (rivers, streams, lakes etc)	100	15 - 100	50 – 100	NA	
Intermittent surface water (farm dams, roadside drainage, drainage depressions / channels)	40	15 - 100	15 – 40	Existing farm dams are to be backfilled 20 m to drainage depressions, 40 m to farm dams, 45 m to intermittent watercourses and 65 m to major gully on south-east site boundary	15 m to drainage depressions, 20 m to farm dams, 25 m to intermittent watercourses and 50 m to major gully on south-east site boundary
Domestic groundwater well	250	15 - 50	15 – 100	NA	
Recreational area (children play areas, swimming pools, community garden)	6 (up-gradient) 3 (down-gradient)	3 - 15	3 - 15	15 m	5 m
In-ground water tanks and services (water, electrical, telecommunications and plumbing)	NA	4 - 15	3 - 15	10 m	5 m
				It is recommended that in-ground water tanks be up-gradient of application area.	
Retaining walls, embankments, escarpments and cuttings	15	3 or 45°	3 or 45°	3 m upslope or 45° from toe	
Pipework (vertical distance to hardpan or bedrock)	0.6	NA	NA	0.6 m below pipework.	

Table 16: Constraints Scale for Effluent Application to Local Features

Feature	Site Constraint Item (Table R2, AS 1547 (2012))	Feature	Site / System Feature	Constraint Scale (AS 1547, 2012)
Surface Water	A	Microbial quality	Secondary or advanced secondary treatment	Low
	B	Surface water	Category 2b to 6 soils, no permanent surface water located within 100 m	Medium
	C	Groundwater	Category 5 and 6 soils (below topsoil)	Low
	D	Slope	Slopes between 0 and 10% (subsurface irrigation, ETA and absorption systems suggested)	Low
	E	Positioning of application area	Upslope of proposed lot boundaries and roadways	Medium
			Upslope of intermittent watercourse (Proposed Lots 505 to 508, 510 to 512, 516 and 517)	High
	F	Drainage	Category 2b to 6 soils, gently sloping areas	Medium
	G	Flood potential	Above 1 in 100-year flood contour	Low
	H	Geology and soils	Category 2b to 6 soils, shallow rock (<2 m)	Medium
	I	Landform	Predominantly gently sloping	Low
			Incised channels (intermittent watercourses within Proposed Lots 505 to 508, 516 and 517)	High
	J	Application method	Subsurface Irrigation / Absorption	Low

The recommended buffer distances for irrigation systems are shown on Drawing 2 (R.002) and Drawing 4 (R.002) in Appendix D. This drawing shows the remainder of the site which is anticipated to be suitable for disposal of treated effluent, subject to more detailed investigation once more information in relation to the proposed disposal locations are known.

The application area should be constructed as far upslope as practicable within the proposed lots.

7.6.9 Cumulative Impacts

Based on the proposed lot boundaries on IDC "Subdivision Plan", Drawing No. 24-107-DA-STG5-C110 Rev C dated 25.03.2026, draft drawing P000385.04B.DP dated December 2025, and the buffer distances in Table 15, the proposed development meets the following conditions from the Development Assessment Framework (DSC, 2015b):

- Proposed Lots 502 to 504, 506, 509, 513 to 515 and 518 contain at least 4,000 m² of useable land for effluent management; however, Proposed Lots 505, 507, 508, 510 to 512, 516 and 517 contain less than 4,000 m² of useable land for effluent management when taking into account the appropriate buffers for Options 1 and 2. Proposed Lot 501 contains at least 4,000 m² of useable land for greywater management (Option 2) only; and
- It is noted that preliminary disposal areas sized from Table 13 and Table 14 could be positioned so as to meet or exceed the buffer distances in Table 15 with enough available area for a reserve application area for Proposed Lots 501 to 504, 506 and 508 to 518 for Option 1, and all proposed lots for Option 2. However, it is considered likely that Proposed Lots 505 and 507 may encroach on these buffer distances. Douglas has not undertaken a formal cumulative impact assessment for Proposed Lots 501, 505, 507, 508, 510 to 512, 516 and 517 where less than 4,000 m² is available.

7.6.10 Maintenance

Maintenance of the effluent disposal area is essential and should be conducted regularly, in accordance with the advice and recommendations of the supplier / manufacturer. The brochures titled *Vegetation Suitable for Land Application Areas* and *Your Land Application Area* from NSW Environment and Health Protection Guidelines (1998) provide recommendations on maintenance procedures.

The performance of the effluent disposal system is dependent on proper maintenance which should incorporate the following:

- The removal of sludge from the treatment tanks at three yearly intervals or as specified by local regulations or the manufacturer;
- Regular maintenance of surface vegetation to encourage water and nutrient uptake;
- Regular inspection to ensure that the disposal area is functioning as intended;
- Regular cleaning of the filtration system (if present) to prevent clogging of lines; and
- Regular maintenance of the AWTs and disinfection system or the GTD/tank as appropriate.

7.6.11 Additional Investigation

The following additional investigation is recommended once the type of system is selected and the location of the application area/s is finalised:

- Additional bores within the lots where there is less than 4,000 m² of useable land for effluent management (ie Proposed Lots 501, 505, 507, 508, 510 to 512, 516 and 517). The bores would be positioned within the recommended application area/s to better determine the chemical properties of the soils and variability across the application area/s;

- Liaison with Council in relation to the acceptability of the proposed effluent disposal system and the need to formulate the protocols and management plans for the on-going maintenance and operation of the effluent disposal systems at the site; and
- More detailed assessment if beneficial re-use of the treated effluent is to be considered.

7.6.12 Conclusion

In accordance with (DSC, 2015b), (DLG, 1998), (DPHI, 2025) and (AS 1547, 2012), the site soils within the following are considered suitable for the disposal of effluent as follows:

- Proposed Lots 501 to 504 and 506 to 518 - secondary-advanced treated domestic effluent to a subsurface irrigation or evapotranspiration area (Option 1) located within the available areas of each proposed lot as nominated on Drawing 2 (R.002);
- Proposed Lots 501 to 518 - absorption or subsurface irrigation area (Option 2) located within the available areas of each proposed lot as nominated on Drawing 4 (R.002).

The assessment is conditional on addressing the limitations raised in this report, as follows:

- Regular maintenance of the treatment tank and application area;
- Construction of a bund upslope of the application areas (where required) to divert overland stormwater flow;
- Deep ploughing of soils and tyning in gypsum within the application areas;
- Addition of lime and organic matter to the upper soil profile within the application areas; and
- Location of the application are within the recommended setback distances in Table 15.

Drawings 3 (R.002) and 5 (R.002) in Appendix D indicate a recommended effluent application area within each proposed lot for the following assumptions:

- Drawing 3 (R.002):
 - o Five-bedroom residence (up to 900 L/day of combined waste stream); and
 - o Aerated wastewater treatment system (AWTS) producing advanced secondary quality effluent (with phosphorus reduction to 5 mg/L and nitrogen reduction to 25 mg/L prior to application to the land).
- Drawing 5 (R.002):
 - o Five-bedroom residence (up to 682.5 L/day of greywater); and
 - o Waterless composting toilet and treatment of the greywater within a separate greywater treatment device (GTD) prior to application via absorption or subsurface irrigation.

7.7 Geotechnical Considerations

The site clays are susceptible to strength loss with exposure to moisture, as indicated by the pocket penetrometer test results before and after soaking in Table 3. Adverse moisture conditions and therefore soft or firm clays could be encountered surrounding the existing farm dams, hydrolines and incised drainage channels / gullies to variable depths. If soft and / or wet areas are encountered during construction, either drying or excavation and replacement with select material may be required to be suitable for the support of pavements and / or building loads.

Testing of sandy clays indicated a soaked CBR in the range of 2.5% to 8%. The poor strength of the sandy clay may result in construction problems associated with compaction of the overlying pavement material and poor trafficability over the site.

For the reasons provided above, a select subgrade may be required to provide a working platform on which to construct the pavement where residual clays or site won material is used as fill. The thickness of the select layer will depend on moisture conditions at the time of construction, the properties of the select material and on the equipment and techniques to be used for construction. A minimum thickness of 300 mm is anticipated for the select subgrade layer, although a greater thickness may be required in wet or soft areas.

Lime stabilisation of the underlying clay subgrade could also be considered but might not be practicable if moisture conditions are high at the time of construction.

Other alternatives such as a geogrid reinforced bridging layer could be considered but would require specific analysis.

Significant excavation is proposed within several sections of the proposed internal road alignment. Test pits refused within very low strength sandstone and siltstone prior to the proposed depth of excavation. Consideration should be given to additional geotechnical investigation to inform construction methodology and material quantities of the internal roads as follows:

- Boreholes drilled to the proposed depth of excavation using a truck or crawler mounted soil sampling and drilling rig with coring capabilities to assess rock strength and jointing / fracturing to inform excavatability of the bedrock;
- Trial excavation with similar plant to the earthworks contractors (if known), to provide an indication of the depth of excavation that can be achieved. The limitation of this option would be that in the event that the excavator refuses above the proposed bulk excavation level, no further information regarding the intact rock strength or defect spacing to inform an assessment of rip-ability with suitably sized dozers or the potential need for blasting would be obtained;
- Test pits along the internal road alignment to confirm where bedrock is anticipated at design subgrade level for flexible pavement design.

The above investigation methods could be undertaken concurrently with additional bores / pits for more detailed effluent disposal assessment (as discussed in Section 7.6.11).

The soil limitations for proposed effluent management areas could be addressed by the following:

- Deep ploughing of soils and tyning in of gypsum; and
- Addition of lime and organic matter to the upper soil profile.

Where footing excavations are exposed to surface water it is likely that the foundation material will soften. Any softened material would need to be over-excavated to the underlying clay material that has not been moisture affected. It is recommended that all footing excavations are inspected by a suitably qualified engineer prior to pouring concrete to confirm founding conditions. Where possible, a blinding layer is recommended to protect the clay foundation shortly after being exposed and inspected.

Depth to rock may vary across building footprints. Consideration should be given to differential movement where footings are founding on dissimilar materials. It is recommended that footings are supported on similar materials which may require deep footings in some areas of the site.

8. References

AS 1289.5.1.1. (2017). *Methods of testing soils for engineering purposes - Soil compaction and density tests - Determination of the density/moisture content relation of a soil using standard compactive effort*. Standards Australia.

AS 1289.5.2.1. (2017). *Methods of testing soils for engineering purposes - Soil compaction and density tests - Determination of the density/moisture content relation of a soil using modified compactive effort*. Standards Australia.

AS 1547. (2012). *On-site domestic wastewater management*. Standards Australia.

AS 2870. (2011). *Residential Slabs and Footings*. Standards Australia.

AS 3798. (2007). *Guidelines on Earthworks for Commercial and Residential Developments*. Standards Australia.

Austrroads. (2017). *Guide to Pavement Technology Part 2: Pavement Structural Design*. Publication No. AGPT02-17: Austrroads Ltd.

BMT Group. (2015). *Dungog Shire Council On-Site Sewage Management Technical Manual*. Final Report R.N20168.002.02_Technical_Manual_DSC_Final.docx: BMT WBM Pty Ltd.

DLG. (1998). *On-Site Sewage Management for Single Households*. NSW Environment & Health Protection Guidelines. NSW Department of Local Government.

Douglas. (2025). *Report on Preliminary Site Investigation (Contamination), Vacy Village South Residential Subdivision, 598 Gresford Road, Vacy*. Document No. 91432.06.R.001.Rev2 dated 21 October 2025: Douglas Partners Pty Ltd.

DPHI. (2025). *Onsite Wastewater Management Guidelines*. NSW Office of Local Government, Department of Planning, Housing and Infrastructure.

DSC. (2011). *Roads Management Strategy*. dated April 2011: Dungog Shire Council.

DSC. (2015a). *On-site Sewage Management Policy*. Dungog Shire Council.

DSC. (2015b). *On-site Sewage Development Assessment Framework*. Dungog Shire Council.

IDC. (2026). *Vacy Village South - Stage 5, Flood Evacuation Response*. Doc Ref: 24-107 260311 Vacy Village South Stage 5 - Flood Evacuation Response Rev A dated 11.03.2026: infrastructure & development consulting.

LE. (2025). *Vacy Village - Stage 5, 598 Gresford Road, Vacy NSW - Flora and Fauna Assessment*. Doc Ref: LE2230 Vacy Village - Stage 5, 598 Gresford Road, Vacy FFA_v1 dated 8 October 2025: Lodge Environmental Pty Ltd.

Lillicrap, A., & McGhie, S. (2002). *Site investigations for urban salinity*. Sydney: Dept. of Land and Water Conservation.

9. Limitations

Douglas Partners Pty Ltd (Douglas) has prepared this report for this project at 598 Gresford Road, Vacy NSW in line with Douglas' proposal 91432.06.P.001.Rev0 dated 15 April 2024 and acceptance received from David Bobyreff of Cornish Group No. Six Pty Ltd dated 5 July 2024. The work was carried out under Douglas' Engagement Terms. This report is provided for the exclusive use of Cornish Group No. Six Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of Douglas, does so entirely at its own risk and without recourse to Douglas for any loss or damage. In preparing this report Douglas has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the subsurface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Subsurface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after Douglas' field testing has been completed.

Douglas' advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by Douglas in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. Douglas cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by Douglas. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope of work for this investigation/report did not include the assessment of surface or subsurface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of fill of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such fill may contain contaminants and hazardous building materials.

Appendix A

About this Report

Terminology, Symbols and Abbreviations

Soil Descriptions

Sampling, Testing and Excavation Methodology

Introduction

These notes have been provided to amplify Douglas' report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

Douglas' reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Engagement Terms for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather

changes. They may not be the same at the time of construction as are indicated in the report; and

- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, Douglas will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, Douglas cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, Douglas will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, Douglas requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. Douglas would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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Introduction to Terminology, Symbols and Abbreviations

Douglas Partners' reports, investigation logs, and other correspondence may use terminology which has quantitative or qualitative connotations. To remove ambiguity or uncertainty surrounding the use of such terms, the following sets of notes pages may be attached Douglas Partners' reports, depending on the work performed and conditions encountered:

- Soil Descriptions;
- Rock Descriptions; and
- Sampling, insitu testing, and drilling methodologies

In addition to these pages, the following notes generally apply to most documents.

Abbreviation Codes

Site conditions may also be presented in a number of different formats, such as investigation logs, field mapping, or as a written summary. In some of these formats textual or symbolic terminology may be presented using textual abbreviation codes or graphic symbols, and, where commonly used, these are listed alongside the terminology definition. For ease of identification in these note pages, textual codes are presented in these notes in the following style **XW**. Code usage conforms with the following guidelines:

- Textual codes are case insensitive, although herein they are generally presented in upper case; and
- Textual codes are contextual (i.e. the same or similar combinations of characters may be used in different contexts with different meanings (for example `PL` is used for plastic limit in the context of soil moisture condition, as well as in `PL(A)` for point load test result in the testing results column)).

Data Integrity Codes

Subsurface investigation data recorded by Douglas Partners is generally managed in a highly structured database environment, where records "span" between a top and bottom depth interval. Depth interval "gaps" between records are considered to introduce ambiguity, and, where appropriate, our practice guidelines may require contiguous data sets. Recording meaningful data is not always appropriate (for example assigning a "strength" to a concrete pavement) and the following codes may be used to maintain contiguity in such circumstances.

Term	Description	Abbreviation Code
Core loss	No core recovery	KL
Unknown	Information was not available to allow classification of the property. For example, when augering in loose, saturated sand auger cuttings may not be returned.	UK
No data	Information required to allow classification of the property was not available. For example if drilling is commenced from the base of a hole predrilled by others	ND
Not Applicable	Derivation of the properties not appropriate or beyond the scope of the investigation. For example providing a description of the strength of a concrete pavement	NA

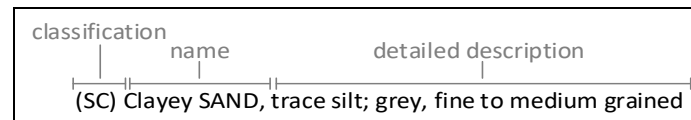
Graphic Symbols

Douglas Partners' logs contain a "graphic" column which provides a pictorial representation of the basic composition of the material. The symbols used are directly representing the material name stated in the adjacent "Description of Strata" column, and as such no specific graphic symbology legend has been provided in these notes.

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Introduction

All materials which are not considered to be “in-situ rock” are described in general accordance with the soil description model of AS 1726-2017 Part 6.1.3, and can be broken down into the following description structure:



The “classification” comprises a two character “group symbol” providing a general summary of dominant soil characteristics. The “name” summarises the particle sizes within the soil which most influence its behaviour. The detailed description presents more information about composition, condition, structure, and origin of the soil.

Classification, naming and description of soils require the relative proportion of particles of different sizes within the whole soil mixture to be considered.

Particle size designation and Behaviour Model

Solid particles within a soil are differentiated on the basis of size.

The engineering behaviour properties of a soil can subsequently be modelled to be either “fine grained” (also known as “cohesive” behaviour) or “coarse grained” (“non cohesive” behaviour), depending on the relative proportion of fine or coarse fractions in the soil mixture.

Particle Size Designation	Particle Size (mm)	Behaviour Model	
		Behaviour	Approximate Dry Mass
Boulder	>200	Excluded from particle behaviour model as “oversize”	
Cobble	63 - 200		
Gravel ¹	2.36 - 63	Coarse	>65%
Sand ¹	0.075 - 2.36		
Silt	0.002 - 0.075	Fine	>35%
Clay	<0.002		

¹ – refer grain size subdivision descriptions below

The behaviour model boundaries defined above are not precise, and the material behaviour should be assumed from the name given to the material (which considers the particle fraction which dominates the behaviour, refer “component proportions” below), rather than strict observance of the proportions of particle sizes. For example, if a material is named a “Sandy CLAY”, this is indicative that the material exhibits fine grained behaviour, even if the dry mass of coarse grained material may exceed 65%.

Component proportions

The relative proportion of the dry mass of each particle size fraction is assessed to be a “primary”, “secondary”, or “minor” component of the soil mixture, depending on its influence over the soil behaviour.

Component Proportion Designation	Definition ¹	Relative Proportion	
		In Fine Grained Soil	In Coarse Grained Soil
Primary	The component (particle size designation, refer above) which dominates the engineering behaviour of the soil	The clay/silt component with the greater proportion	The sand/gravel component with the greater proportion
Secondary	Any component which is not the primary, but is significant to the engineering properties of the soil	Any component with greater than 30% proportion	Any granular component with greater than 30%; or Any fine component with greater than 12%
Minor ²	Present in the soil, but not significant to its engineering properties	All other components	All other components

¹ As defined in AS1726-2017 6.1.4.4

² In the detailed material description, minor components are split into two further sub-categories. Refer “identification of minor components” below.

Composite Materials

In certain situations, a lithology description may describe more than one material, for example, collectively describing a layer of interbedded sand and clay. In such a scenario, the two materials would be described independently, with the names preceded or followed by a statement describing the arrangement by which the materials co-exist. For example, “INTERBEDDED Silty CLAY AND SAND”.

Classification

The soil classification comprises a two character group symbol. The first character identifies the primary component. The second character identifies either the grading or presence of fines in a coarse grained soil, or the plasticity in a fine grained soil. Refer AS1726-2017 6.1.6 for further clarification.

Soil Name

For most soils, the name is derived with the primary component included as the noun (in upper case), preceded by any secondary components stated in an adjective form. In this way, the soil name also describes the general composition and indicates the dominant behaviour of the material.

Component ¹	Prominence in Soil Name
Primary	Noun (eg "CLAY")
Secondary	Adjective modifier (eg "Sandy")
Minor	No influence

¹ – for determination of component proportions, refer component proportions on previous page

For materials which cannot be disaggregated, or which are not comprised of rock or mineral fragments, the names "ORGANIC MATTER" or "ARTIFICIAL MATERIAL" may be used, in accordance with AS1726-2017 Table 14.

Commercial or colloquial names are not used for the soil name where a component derived name is possible (for example "Gravelly SAND" rather than "CRACKER DUST").

Materials of "fill" or "topsoil" origin are generally assigned a name derived from the primary/secondary component (where appropriate). In log descriptions this is preceded by uppercase "FILL" or "TOPSOIL". Origin uncertainty is indicated in the description by the characters (?), with the degree of uncertainty described (using the terms "probably" or "possibly" in the origin column, or at the end of the description).

Identification of minor components

Minor components are identified in the soil description immediately following the soil name. The minor component fraction is usually preceded with a term indicating the relative proportion of the component.

Minor Component Proportion Term	Relative Proportion	
	In Fine Grained Soil	In Coarse Grained Soil
With	All fractions: 15-30%	Clay/silt: 5-12% sand/gravel: 15-30%
Trace	All fractions: 0-15%	Clay/silt: 0-5% sand/gravel: 0-15%

The terms "with" and "trace" generally apply only to gravel or fine particle fractions. Where cobbles/boulders are encountered in minor proportions (generally less than about 12%) the term "occasional" may be used. This term describes the sporadic distribution of the material within the confines of the investigation excavation only, and there may be considerable variation in proportion over a wider area which is difficult to factually characterise due to the relative size of the particles and the investigation methods.

Soil Composition

Plasticity

Descriptive Term	Laboratory liquid limit range	
	Silt	Clay
Non-plastic materials	Not applicable	Not applicable
Low plasticity	≤50	≤35
Medium plasticity	Not applicable	>35 and ≤50
High plasticity	>50	>50

Note, Plasticity descriptions generally describe the plasticity behaviour of the whole of the fine grained soil, not individual fine grained fractions.

Grain Size

Type	Particle size (mm)	
	Coarse	Fine
Gravel	19 - 63	6.7 - 19
	6.7 - 19	2.36 - 6.7
	2.36 - 6.7	0.6 - 2.36
Sand	0.6 - 2.36	0.21 - 0.6
	0.21 - 0.6	0.075 - 0.21
	0.075 - 0.21	

Grading

Grading Term	Particle size (mm)
Well	A good representation of all particle sizes
Poorly	An excess or deficiency of particular sizes within the specified range
Uniformly	Essentially of one size
Gap	A deficiency of a particular size or size range within the total range

Note, AS1726-2017 provides terminology for additional attributes not listed here.

Soil Condition

Moisture

The moisture condition of soils is assessed relative to the plastic limit for fine grained soils, while for coarse grained soils it is assessed based on the appearance and feel of the material. The moisture condition of a material is considered to be independent of stratigraphy (although commonly these are related), and this data is presented in its own column on logs.

Applicability	Term	Tactile Assessment	Abbreviation code
Fine	Dry of plastic limit	Hard and friable or powdery	w<PL
	Near plastic limit	Can be moulded	w=PL
	Wet of plastic limit	Water residue remains on hands when handling	w>PL
	Near liquid limit	"oozes" when agitated	w=LL
	Wet of liquid limit	"oozes"	w>LL
Coarse	Dry	Non-cohesive and free running	D
	Moist	Feels cool, darkened in colour, particles may stick together	M
	Wet	Feels cool, darkened in colour, particles may stick together, free water forms when handling	W

The abbreviation code **NDF**, meaning "not-assessable due to drilling fluid use" may also be used.

Note, observations relating to free ground water or drilling fluids are provided independent of soil moisture condition.

Consistency/Density/Compaction/Cementation/Extremely Weathered Material

These concepts give an indication of how the material may respond to applied forces (when considered in conjunction with other attributes of the soil). This behaviour can vary independent of the composition of the material, and on logs these are described in an independent column and are generally mutually exclusive (i.e it is inappropriate to describe both consistency and compaction at the same time). The method by which the behaviour is described depends on the behaviour model and other characteristics of the soil as follows:

- In fine grained soils, the "consistency" describes the ease with which the soil can be remoulded, and is generally correlated against the materials undrained shear strength;
- In granular materials, the relative density describes how tightly packed the particles are, and is generally correlated against the density index;
- In anthropogenically modified materials, the compaction of the material is described qualitatively;
- In cemented soils (both natural and anthropogenic), the cemented "strength" is described qualitatively, relative to the difficulty with which the material is disaggregated; and
- In soils of extremely weathered material origin, the engineering behaviour may be governed by relic rock features, and expected behaviour needs to be assessed based the overall material description.

Quantitative engineering performance of these materials may be determined by laboratory testing or estimated by correlated field tests (for example penetration or shear vane testing). In some cases, performance may be assessed by tactile or other subjective methods, in which case investigation logs will show the estimated value enclosed in round brackets, for example **(VS)**.

Consistency (fine grained soils)

Consistency Term	Tactile Assessment	Undrained Shear Strength (kPa)	Abbreviation Code
Very soft	Extrudes between fingers when squeezed	<12	VS
Soft	Mouldable with light finger pressure	>12 - ≤25	S
Firm	Mouldable with strong finger pressure	>25 - ≤50	F
Stiff	Cannot be moulded by fingers	>50 - ≤100	St
Very stiff	Indented by thumbnail	>100 - ≤200	VSt
Hard	Indented by thumbnail with difficulty	>200	H
Friable	Easily crumbled or broken into small pieces by hand	-	Fr

Relative Density (coarse grained soils)

Relative Density Term	Density Index	Abbreviation Code
Very loose	<15	VL
Loose	>15 - ≤35	L
Medium dense	>35 - ≤65	MD
Dense	>65 - ≤85	D
Very dense	>85	VD

Note, tactile assessment of relative density is difficult, and generally requires penetration testing, hence a tactile assessment guide is not provided.

Compaction (anthropogenically modified soil)

Compaction Term	Abbreviation Code
Well compacted	WC
Poorly compacted	PC
Moderately compacted	MC
Variably compacted	VC

Cementation (natural and anthropogenic)

Cementation Term	Abbreviation Code
Moderately cemented	MOD
Weakly cemented	WEK

Extremely Weathered Material

AS1726-2017 considers weathered material to be soil if the unconfined compressive strength is less than 0.6 MPa (i.e. less than very low strength rock). These materials may be identified as “extremely weathered material” in reports and by the abbreviation code **XWM** on log sheets. This identification is not correlated to any specific qualitative or quantitative behaviour, and the engineering properties of this material must therefore be assessed according to engineering principles with reference to any relic rock structure, fabric, or texture described in the description.

Soil Origin

Term	Description	Abbreviation Code
Residual	Derived from in-situ weathering of the underlying rock	RS
Extremely weathered material	Formed from in-situ weathering of geological formations. Has strength of less than ‘very low’ as per as1726 but retains the structure or fabric of the parent rock.	XWM
Alluvial	Deposited by streams and rivers	ALV
Fluvial	Deposited by channel fill and overbank (natural levee, crevasse splay or flood basin)	FLV
Estuarine	Deposited in coastal estuaries	EST
Marine	Deposited in a marine environment	MAR
Lacustrine	Deposited in freshwater lakes	LAC
Aeolian	Carried and deposited by wind	AEO
Colluvial	Soil and rock debris transported down slopes by gravity	COL
Slopewash	Thin layers of soil and rock debris gradually and slowly deposited by gravity and possibly water	SW
Topsoil	Mantle of surface soil, often with high levels of organic material	TOP
Fill	Any material which has been moved by man	FILL
Littoral	Deposited on the lake or seashore	LIT
Unidentifiable	Not able to be identified	UID

Cobbles and Boulders

The presence of particles considered to be “oversize” may be described using one of the following strategies:

- Oversize encountered in a minor proportion (when considered relative to the wider area) are noted in the soil description; or
- Where a significant proportion of oversize is encountered, the cobbles/boulders are described independent of the soil description, in a similar manner to composite soils (described above) but qualified with “MIXTURE OF”.

intentionally blank



Sampling and Testing

A record of samples retained, and field testing performed is usually shown on a Douglas Partners' log with samples appearing to the left of a depth scale, and selected field and laboratory testing (including results, where relevant) appearing to the right of the scale, as illustrated below:

SAMPLE			DEPTH (m)	TESTING	
SAMPLE REMARKS	TYPE	INTERVAL		TEST TYPE	RESULTS AND REMARKS
	SPT		1.0 1.45	SPT	4,9,11 N=20

Sampling

The type or intended purpose for which a sample was taken is indicated by the following abbreviation codes.

Sample Type	Code
Auger sample	A
Acid Sulfate sample	ASS
Bulk sample	B
Core sample	C
Disturbed sample	D
Environmental sample	ES
Driven Tube sample	DT
Gas sample	G
Piston sample	P
Sample from SPT test	SPT
Undisturbed tube sample	U ¹
Water sample	W
Material Sample	MT
Core sample for unconfined compressive strength testing	UCS

¹ – numeric suffixes indicate tube diameter/width in mm

The above codes only indicate that a sample was retained, and not that testing was scheduled or performed.

Field and Laboratory Testing

A record that field and laboratory testing was performed is indicated by the following abbreviation codes.

Test Type	Code
Pocket penetrometer (kPa)	PP
Photo ionisation detector (ppm)	PID
Standard Penetration Test x/y = x blows for y mm penetration HB = hammer bouncing HW = fell under weight of hammer	SPT
Shear vane (kPa)	V
Unconfined compressive strength, (MPa)	UCS
Point load test, (MPa), axial (A), diametric (D), irregular (I)	PLT(-)
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP9/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150
Dynamic probe super heavy, followed by blow count penetration increment in mm	DPSH/100

Groundwater Observations

	water seepage/inflow
	water seepage/outflow
	standing or observed water level
NFGWO	no free groundwater observed
OBS	observations obscured by drilling fluids

Drilling or Excavation Methods/Tools

The drilling/excavation methods used to perform the investigation may be shown either in a dedicated column down the left-hand edge of the log, or stated in the log footer. In some circumstances abbreviation codes may be used.

Method	Abbreviation Code
Direct Push	DP
Solid flight auger. Suffixes: /T = tungsten carbide tip, /V = v-shaped tip	AD ¹
Air Track	AT
Diatube	DT ¹
Hand auger	HA ¹
Hand tools (unspecified)	HAND
Existing exposure	X
Hollow flight auger	HSA ¹
HQ coring	HQ3
HMLC series coring	HMLC
NMLC series coring	NMLC
NQ coring	NQ3
PQ coring	PQ3
Predrilled	PD
Push tube	PT ¹
Ripping tyne/ripper	R
Rock roller	RR ¹
Rock breaker/hydraulic hammer	EH
Sonic drilling	SON ¹
Mud/blade bucket	MB ¹
Toothed bucket	TB ¹
Vibrocore	VC ¹
Vacuum excavation	VE
Wash bore (unspecified bit type)	WB ¹

¹ – numeric suffixes indicate tool diameter/width in mm

Appendix B

Test Pit Logs (Pits 1 to 33)

Site Photographs (Photos 1 to 18)

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd	SURFACE LEVEL: 27.5 AHD	LOCATION ID: 1
PROJECT: Vacy Village South Residential Subdivision	COORDINATE: E:367518.7, N:6397020.4	PROJECT No: 91432.06
LOCATION: 598 Gresford Road, Vacy, NSW	DATUM/GRID: MGA2020 Zone 56	DATE: 25/07/24
	DIP/AZIMUTH: 90°/---°	SHEET: 1 of 1

CONDITIONS ENCOUNTERED															SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS								
25/07/24 No free groundwater observed	27	0.10	TOPSOIL / Silty SAND (SM): dark brown; fine to medium; with organics, rootlets.		TOP	NA		M					PID	<1ppm								
			Sandy CLAY (CH): brown; high plasticity; fine to medium sand.		RS	St		w<PL			D/ES		0.10	PP	100-150kPa							
		0.40	Sandy CLAY (CI): orange brown; medium plasticity; trace sandstone/conglomerate rock cobbles.											0.30	PID	<1ppm						
														0.50	PID	<1ppm						
					RS	VSt		w<PL			U50		0.70	PP	200-250kPa							
		1											0.98	PID	<1ppm							
Test Pit discontinued at 1.10m depth. Refusal on rock.																						
	26																					
		2																				
	25																					

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(C)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator	OPERATOR: Lawcon (Tim)	LOGGED: Krebs/Date
METHOD: 450mm blade bucket		
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m		

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 44.3 AHD
COORDINATE: E:367297.5, N:6396797.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 2
PROJECT No: 91432.06
DATE: 25/07/24
SHEET: 1 of 1

[illegible]

NOTES: ^(a)Soil origin is "probable" unless otherwise stated. ^(b)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator **OPERATOR:** L
METHOD: 450mm blade bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

TEST PIT LOG

CLIENT:	Cornish Group No. Six Pty Ltd	SURFACE LEVEL:	42.7 AHD	LOCATION ID:	3
PROJECT:	Vacy Village South Residential Subdivision	COORDINATE:	E:367384.2, N:6396783.0	PROJECT No:	91432.06
LOCATION:	598 Gresford Road, Vacy, NSW	DATUM/GRID:	MGA2020 Zone 56	DATE:	25/07/24
		DIP/AZIMUTH:	90°/---°	SHEET:	1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS							
25/07/24 No free groundwater observed	42	0.15	TOPSOIL / Silty CLAY (CL), trace sand: brown; low plasticity; with rootlets.		TOP	NA		w>PL		D/ES		0.10	PID								
			Sandy CLAY (Cl): brown; medium plasticity; fine to medium sand.		RS	St		w<PL		B		0.15	PP								
												0.25	PID								
												0.35	PP								
												0.50	PP								
			Test Pit discontinued at 0.70m depth. Refusal on rock.																		

PLANT:	5T Excavator	OPERATOR:	Lawcon (Tim)	LOGGED:	Krebs/Date
METHOD:	450mm blade bucket				
REMARKS:	Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m				

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT:	Cornish Group No. Six Pty Ltd	SURFACE LEVEL:	44.9 AHD	LOCATION ID:	4
PROJECT:	Vacy Village South Residential Subdivision	COORDINATE:	E:367423.6, N:6396775.5	PROJECT No:	91432.06
LOCATION:	598 Gresford Road, Vacy, NSW	DATUM/GRID:	MGA2020 Zone 56	DATE:	25/07/24
		DIP/AZIMUTH:	90°/---°	SHEET:	1 of 1

CONDITIONS ENCOUNTERED														SAMPLE			TESTING AND REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ⁽¹⁾ DENSITY. ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
25/07/24 No free groundwater observed	44	0.15	TOPSOIL / Silty CLAY (CI), with sand: brown; medium plasticity; with organics, rootlets.		TOP	NA	w<PL		D/ES		0.10	PID	<1ppm 50-75kPa																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			Sandy CLAY (CI): brown; medium plasticity; fine to medium sand.		RS	S	w<PL		D/ES		0.25	PID	<1ppm 20-40kPa																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
		0.35	Sandy Gravelly CLAY (CL): orange brown; low plasticity; fine to medium sand; fine to coarse, sub-angular to sub-rounded gravel; conglomerate rock cobbles.		RS to XWM	F to St	w<PL		D/ES		0.50	PID	<1ppm 60-90kPa																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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NOTES: ^(a)Soil origin is "probable" unless otherwise stated. ^(b)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT:	5T Excavator	OPERATOR:	Lawcon (Tim)	LOGGED:	Krebs/Date
METHOD:	450mm blade bucket				
REMARKS:	Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m				

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 40.9 AHD
COORDINATE: E:367449.4, N:6396862.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 5
PROJECT No: 91432.06
DATE: 25/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED												SAMPLE		TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. (%) DENSITY. (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS				
25/07/24 No free groundwater lbserved		0.15	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics , rootlets.		TOP	NA	M		D/ES		0.10	PID					
		0.35	Sandy CLAY (CI): brown; medium plasticity; fine to medium sand.		RS	St	w<PL		D/ES		0.25	PID					
			Clayey SAND (SC), trace gravel: brown; fine to medium; fine to medium gravel; rock like structure.		RS to XWM	MD to D	M	50	U		0.35	PPC					
	1							B		0.80							
								D/ES		1.00	PID	<1ppm					
			Test Pit discontinued at 1.20m depth. Refusal on rock.														
	39	2															



NOTES: ^(M)Soil origin is "probable" unless otherwise stated. ^(N)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied

PLANT: 5T Excavator **OPERATOR:** L
METHOD: 450mm blade bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

TEST PIT LOG

CLIENT:	Cornish Group No. Six Pty Ltd	SURFACE LEVEL:	34.5 AHD	LOCATION ID:	6
PROJECT:	Vacy Village South Residential Subdivision	COORDINATE:	E:367521.6, N:6396867.6	PROJECT No:	91432.06
LOCATION:	598 Gresford Road, Vacy, NSW	DATUM/GRID:	MGA2020 Zone 56	DATE:	25/07/24
		DIP/AZIMUTH:	90°/---°	SHEET:	1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(%)	DENSITY. ^(%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS							
25/07/24 No free groundwater observed	34	0.10	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA		M													
			Sandy CLAY (CH): brown; high plasticity; fine to medium sand.		RS	St	w<PL	D/ES			0.10	PID									
				D/ES						0.25	PID										
										0.40	PP										
				B						0.50	PID										
						0.60															
				D/ES		0.70	PID														
				D/ES			PP														



NOTES: [®]Soil origin is "probable" unless otherwise stated. [©]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT:	5T Excavator	OPERATOR:	Lawcon (Tim)	LOGGED:	Krebs/Date
METHOD:	450mm blade bucket				
REMARKS:	Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m				

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd

PROJECT: Vacy Village South Residential Subdivision

LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 30.8 AHD

COORDINATE: E:367596.3, N:6396906.6

DATUM/GRID: MGA2020 Zone 56

DIP/AZIMUTH: 90°/---°

LOCATION ID: 7

PROJECT No: 91432.06

DATE: 25/07/24

SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. (%)	DENSITY (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
25/07/24 No free groundwater observed	0.15	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA		M		D/ES	0.10		PID	<1ppm
		Sandy CLAY (Cl): brown; medium plasticity; fine to medium sand.		RS	St		w<PL		D/ES	0.25		PID	<1ppm
	0.50	Sandy CLAY (CH): dark brown; high plasticity; fine to medium sand.		RS	VSt to H		w<PL		B	0.40		PP	100-140kPa
									D/ES	0.50		PID	<1ppm
									D/ES	0.60			
									D/ES	0.70			
	0.30	Test Pit discontinued at 0.75m depth. Refusal on rock.											
	1												

Generated with CORE-GS by Geroc - Soil Log with Photo



NOTES: [®]Soil origin is "probable" unless otherwise stated. [©]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator

METHOD: 450mm blade bucket

REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 37.6 AHD
COORDINATE: E:367526.9, N:6396910.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 8
PROJECT No: 91432.06
DATE: 25/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED													TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS			
25/07/24 No free groundwater observed	37	0.15	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA	M		D/ES		0.10	PID	<1ppm	5	10	15
			Sandy CLAY (CI); medium plasticity; fine to medium sand.		RS	St	w<PL		D/ES		0.25	PID	<1ppm	PP	140-170kPa	
	36										0.50	PID	<1ppm			
												PP	150-180kPa			
		1	Test Pit discontinued at 0.85m depth. Refusal on rock.													
		2														

A photograph of a test pit excavation. A vertical measuring tape is placed in the center of the pit, showing depths from 0 to 2 meters. The soil profile consists of a top layer of dark brown, silty sand (SM) with some organic matter and rootlets, followed by a layer of sandy clay (CI) with medium plasticity. The pit is discontinued at 0.85m depth due to refusal on rock. The bottom of the pit shows a dark, possibly water-saturated or organic layer.

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

METHOD: 450mm blade bucket

REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 31.3 AHD
COORDINATE: E:367438.6, N:6396994.2
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 9
PROJECT No: 91432.06
DATE: 25/07/24
SHEET: 1 of 1

[illegible]

NOTES: ^(a)Soil origin is "probable" unless otherwise stated. ^(b)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator **OPERATOR:** L
METHOD: 450mm blade bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 35.2 AHD
COORDINATE: E:367348.2, N:6396898.2
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 10
PROJECT No: 91432.06
DATE: 25/07/24
SHEET: 1 of 1

[illegible]

NOTES: ^(a)Soil origin is "probable" unless otherwise stated. ^(b)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator **OPERATOR:** L
METHOD: 450mm blade bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 28.0 AHD
COORDINATE: E:367460.6, N:6397055.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 11
PROJECT No: 91432.06
DATE: 25/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS						
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS. ^(*)	DENSITY, ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS			
25/07/24 No free groundwater observed	0.15	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA		M		D/ES		0.10	PID	<1ppm	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990		
	0.25	Sandy CLAY (CI), with silt: brown; medium plasticity.		RS	St		w<PL		D/ES		0.25	PID PP	<1ppm 150-170kPa		5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990	
	0.50	Sandy CLAY (CL): orange brown; low plasticity.		RS	St to VSt		w<PL		D/ES		0.50	PID PP	<1ppm 180-210kPa			5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990
	1.00								D/ES		1.00	PID	<1ppm			
Test Pit discontinued at 1.15m depth. Refusal on rock.																



NOTES: °Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

METHOD: 450mm blade bucket

REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 26.0 AHD
COORDINATE: E:367450.4, N:6397100.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 12
PROJECT No: 91432.06
DATE: 25/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE				TESTING AND REMARKS				
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS				
25/07/24 No free groundwater observed		0.10	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA		M	D2/SBK	D/ES		0.10	PID					
			Sandy CLAY (CI): brown; medium plasticity; fine to medium sand.		RS	F to St		w>PL w=PL		D/ES		0.25	PID					
		0.35	Sandy CLAY (CL): orange brown; low plasticity.		RS	St		w<PL						PP				
				D/ES							0.50	PID						
			Test Pit discontinued at 0.80m depth. Refusal on rock.															
	25	1																
	24	2																

NOTES: ^(S)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator
METHOD: 450mm blade bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Tim)
LOGGED: Krebs/Date

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 25.2 AHD
COORDINATE: E:367387.5, N:6397123.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 13
PROJECT No: 91432.06
DATE: 26/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. (%)	DENSITY (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
26/07/24 No free groundwater observed	0.10	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA	M						PID	<1ppm
	0.25	Silty Sandy CLAY (CL): grey; low plasticity; fine to medium sand.		RS	St	w<PL w=PL			D/ES			PID	<1ppm
	0.40	Sandy CLAY (CL): orange brown; low plasticity; fine to medium sand; with sandstone rock cobbles.										PP	120-160kPa
				XWM	H	w<PL			U50			PID	<1ppm
									D/ES			PP	>400kPa
	1	Test Pit discontinued at 0.90m depth. Refusal on rock.											
	2												
	23												
NOTES: ^(*) Soil origin is "probable" unless otherwise stated. ^(%) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.													

PLANT: 5T Excavator

OPERATOR: Lawcon (Phil)

LOGGED: Krebs/Date

METHOD: 300mm toothed bucket

REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 28.3 AHD
COORDINATE: E:367368.6, N:6397050.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 14
PROJECT No: 91432.06
DATE: 26/07/24
SHEET: 1 of 1

[illegible]

NOTES: (a) Soil origin is "probable" unless otherwise stated. (c) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator **OPERATOR:** L
METHOD: 300mm toothed bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Phil)

LOGGED: Krebs/Date

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 31.7 AHD
COORDINATE: E:367343.5, N:6396975.5
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 15
PROJECT No: 91432.06
DATE: 26/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	SAMPLE			TEST TYPE	RESULTS AND REMARKS	
								REMARKS	TYPE	INTERVAL			
26/07/24 No free groundwater observed	31	0.15	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA	M	D3/SBK	D/ES		0.10	PID	<1ppm
			Sandy CLAY (CH): brown; high plasticity.		RS	St	w>PL		D/ES		0.25	PID	<1ppm
		0.45	Sandy CLAY (CL): orange brown; low plasticity.		XWM	VSt to H	w<PL		U50		0.50	PID	<1ppm
									D/ES		0.59	PP	250-270kPa
1	30	2	Test Pit discontinued at 0.95m depth. Refusal on rock.								PP	>400kPa	



NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(C)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator
METHOD: 300mm toothed bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Phil)
LOGGED: Krebs/Date

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT:	Cornish Group No. Six Pty Ltd	SURFACE LEVEL:	25.3 AHD	LOCATION ID:	16
PROJECT:	Vacy Village South Residential Subdivision	COORDINATE:	E:367339.0, N:6397086.4	PROJECT No:	91432.06
LOCATION:	598 Gresford Road, Vacy, NSW	DATUM/GRID:	MGA2020 Zone 56	DATE:	26/07/24
		DIP/AZIMUTH:	90°/---°	SHEET:	1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS				
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. (%)	DENSITY (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
26/07/24 No free groundwater observed	0.10	TOPSOIL / Silty CLAY (CI), trace sand: brown; medium plasticity; with organics, rootlets.		TOP	NA	w<PL	w=PL		D/ES		0.05	PID	<1ppm
	0.25	Sandy CLAY (CI-CH): pale brown; medium to high plasticity.		RS	St	w<PL			D/ES		0.25	PID	<1ppm
	0.40	Sandy CLAY (CI), trace silt: pale brown; medium plasticity.		RS	St				D/ES		0.50	PID	<1ppm
	1.05			RS	VSt		w<PL					PP	110-130kPa
	1.05	Sandy CLAY (CL): orange brown; low plasticity.		XWM	VSt		w<PL		D/ES		1.00	PID	<1ppm
									D/ES		1.10	PID	<1ppm
												PP	260-280kPa
Test Pit discontinued at 1.25m depth. Refusal on rock.													



NOTES: [®]Soil origin is "probable" unless otherwise stated. [©]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT:	5T Excavator	OPERATOR:	Lawcon (Phil)	LOGGED:	Krebs/Date
METHOD:	300mm toothed bucket				
REMARKS:	Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m				

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 22.9 AHD
COORDINATE: E:367367.6, N:6397177.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 17
PROJECT No: 91432.06
DATE: 26/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS									
GROUNDWATER	FL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(%) DENSITY. ^(%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS						
26/07/24 No free groundwater observed	22	0.15	TOPSOIL / Silty CLAY (CH), with sand: brown; high plasticity; with organics, rootlets.		TOP	NA	w>PL		D/ES		0.10	PID	<1ppm						
										PP	<50kPa								
		0.45	Sandy CLAY (CI), trace silt: pale brown; medium plasticity.		RS	St	w<PL w=PL		D/ES		0.25	PID	<1ppm						
										PP	110-130kPa								
		1	Sandy CLAY (CL): orange brown; low plasticity.		RS	H	w<PL						0.35	DCP9/150					
																0.50	U50	PID	<1ppm
																	0.64	D/ES	PP
		</																	



NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(C)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator

OPERATOR: Lawcon (Phil)

LOGGED: Krebs/Date

METHOD: 300mm toothed bucket

REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd	SURFACE LEVEL: 31.0 AHD	LOCATION ID: 18
PROJECT: Vacy Village South Residential Subdivision	COORDINATE: E:367251.2, N:6397026.3	PROJECT No: 91432.06
LOCATION: 598 Gresford Road, Vacy, NSW	DATUM/GRID: MGA2020 Zone 56	DATE: 30/07/24
	DIP/AZIMUTH: 90°/---°	SHEET: 1 of 1

CONDITIONS ENCOUNTERED															SAMPLE			TESTING AND REMARKS						
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(%)	DENSITY. ^(%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS										
30/07/24 No free groundwater observed	30	0.15	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA		M	no recovery	D/ES		0.10	PID	<1ppm		5	10	15						
			Sandy CLAY (CI), with gravel: brown; medium plasticity; fine to medium sand; fine to medium, sub-angular to sub-rounded gravel.		RS	St	w<PL	D/ES			0.25	PID	<1ppm											
													PP	120-150kPa										
		0.40	Sandy CLAY (CI), with gravel: orange brown; medium plasticity; fine to medium, sub-angular to sub-rounded gravel; and cobbles.		RS	VSt	w<PL	D/ES			0.40													
Test Pit discontinued at 1.20m depth. Refusal on rock.																								



NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(%)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator	OPERATOR: Lawcon (Phil)	LOGGED: Krebs/Date
METHOD: 300mm toothed bucket		
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m		

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 42.5 AHD
COORDINATE: E:367149.0, N:6396935.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 19
PROJECT No: 91432.06
DATE: 26/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING AND REMARKS				
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(®)	CONSIS. (°) DENSITY. (°)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS				
26/07/24 No free groundwater observed	42	0.10	TOPSOIL / Silty CLAY (Cl), trace sand, trace gravel: brown; medium plasticity; fine to medium sand; fine to medium, sub-angular to sub-rounded gravel.		TOP	NA	w<PL		D/ES		0.05	PP	<50kPa	5	10	15	
			Sandy CLAY (Cl), trace gravel: brown; medium plasticity; fine to coarse, sub-angular to sub-rounded gravel.		RS	St	w<PL w=PL					PP	110-130kPa				
		0.55	CLAY (CL): orange brown; low plasticity.		RS to XWM	VSt	w<PL		D/ES		0.50	PID	<1ppm				
									D/ES		0.90	PP	220-240kPa			25/140	
		1	Test Pit discontinued at 1.00m depth. Refusal on rock.														
	41																
		2															
	0																

A photograph of a test pit excavation. A white measuring tape is placed vertically in the center of the pit. The soil is dark brown and appears moist. The pit is approximately 1 meter deep, as indicated by the tape. The soil texture is silty clay with some gravel. The pit is surrounded by grass and soil.

NOTES: ®Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: °Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator

OPERATOR: Lawcon (Phil)

LOGGED: Krebs/Date

METHOD: 300mm toothed bucket

REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 38.5 AHD
COORDINATE: E:367219.2, N:6396876.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 20
PROJECT No: 91432.06
DATE: 26/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ⁽¹⁾ DENSITY. ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS			
26/07/24 No free groundwater observed	38	0.10	TOPSOIL / Clayey Silty SAND (SC): brown; fine to medium; with organics, rootlets.		TOP	NA	M					PID	<1ppm			
			Sandy CLAY (Cl), with silt, trace gravel: brown; medium plasticity; fine to medium sand; fine to medium, sub-angular to sub-rounded gravel; trace organics, tree roots.		RS	St	w<PL		D/ES		0.10					
								B		0.20		PID	<1ppm			
								D/ES		0.25		PP	110-120kPa			
			0.40	Sandy CLAY (CL): orange brown; low plasticity.		RS	VSt	w<PL		D/ES		0.30				

TEST PIT LOG

CLIENT:	Cornish Group No. Six Pty Ltd	SURFACE LEVEL:	34.1 AHD	LOCATION ID:	21
PROJECT:	Vacy Village South Residential Subdivision	COORDINATE:	E:367248.3, N:6396922.1	PROJECT No:	91432.06
LOCATION:	598 Gresford Road, Vacy, NSW	DATUM/GRID:	MGA2020 Zone 56	DATE:	26/07/24
		DIP/AZIMUTH:	90°/---°	SHEET:	1 of 1

CONDITIONS ENCOUNTERED													SAMPLE			TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS					
26/07/24 No free groundwater observed	34		TOPSOIL / Silty SAND (SM): brown; fine to medium.		TOP	NA		M					PID		5	10	15		
		0.15	Sandy CLAY (CI): pale brown; medium plasticity; fine to medium sand.		RS	F		w<PL		D/ES			0.10	PID					
										D/ES			0.25	PP					
		0.45	Sandy CLAY (CL): orange brown; low plasticity; fine to medium sand.		RS	VSt to H		w<PL		D/ES			0.50	PID					
														PP					
		1								D/ES			1.00	PID				25/100	
														PP					
Test Pit discontinued at 1.20m depth. Refusal on rock.																			
		2																	

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.



NOTES: "Soil origin is "probable" unless otherwise stated. "Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT:	5T Excavator	OPERATOR:	Lawcon (Phil)	LOGGED:	Krebs/Date
METHOD:	300mm toothed bucket				
REMARKS:	Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m				

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT:	Cornish Group No. Six Pty Ltd	SURFACE LEVEL:	21.2 AHD	LOCATION ID:	22
PROJECT:	Vacy Village South Residential Subdivision	COORDINATE:	E:367317.3, N:6397175.5	PROJECT No:	91432.06
LOCATION:	598 Gresford Road, Vacy, NSW	DATUM/GRID:	MGA2020 Zone 56	DATE:	26/07/24
		DIP/AZIMUTH:	90°/---°	SHEET:	1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS				
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(%) DENSITY. ^(%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
26/07/24 No free groundwater observed 26/07/24	21	0.10	TOPSOIL / Silty CLAY (CH), with sand: brown; high plasticity; with organics, rootlets.	X X	TOP	NA	w<PL	D4/SBK	D/ES		0.10	PID PP	<1ppm 40-60kPa	
			Sandy CLAY (CI): brown; medium plasticity; fine to medium sand.		RS	F to St								
	0.70	Sandy CLAY (CI): pale brown; medium plasticity; fine to medium sand.		RS	St	w>PL w=PL				0.50	PID PP	<1ppm 90-100kPa		
	1							B		0.80				
								D/ES		1.00	PID PP	<1ppm 110-130kPa		
	20													
	1.80	Sandy CLAY (CL): orange brown; low plasticity; fine to medium sand.		RS	H	w<PL		D/ES		1.90	PID PP	<1ppm >400kPa		
	2	Test Pit discontinued at 2.00m depth. Refusal on rock.												
	19													



NOTES: "Soil origin is "probable" unless otherwise stated. "Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT:	5T Excavator	OPERATOR:	Lawcon (Phil)	LOGGED:	Krebs/Date
METHOD:	300mm toothed bucket				
REMARKS:	Seepage at 0.6m. Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m				

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 25.7 AHD
COORDINATE: E:367277.0, N:6397132.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 23
PROJECT No: 91432.06
DATE: 26/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS					
GROUNDWATER	FL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS.(%) DENSITY.(%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
26/07/24 No free groundwater observed	25	0.15	TOPSOIL / Silty CLAY (CI), with sand: brown; medium plasticity; with organics, rootlets.		TOP	NA	w<PL w=PL		D/ES		0.10	PID	<1ppm	
			Sandy CLAY (CI): pale brown; medium plasticity; fine to medium sand.		RS	F	w<PL					PP	60-80kPa	
						St to VSt	w<PL					D/ES	0.50	PID
														PP
		1							D/ES		1.00	PID	<1ppm	
		1.30	Sandy CLAY (CL): orange brown; low plasticity; fine to medium sand.		RS to XWM	VSt	w<PL		D/ES		1.40	PID PP	<1ppm 200-220kPa	
	24		Test Pit discontinued at 1.50m depth. Refusal on rock.											
		2												



NOTES: [®]Soil origin is "probable" unless otherwise stated. [©]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator

OPERATOR: Lawcon (Phil)

LOGGED: Krebs/Date

METHOD: 300mm toothed bucket

REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 34.3 AHD
COORDINATE: E:367176.0, N:6397042.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 24
PROJECT No: 91432.06
DATE: 26/07/24
SHEET: 1 of 1

[illegible]

NOTES: (a) Soil origin is "probable" unless otherwise stated. (c) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator **OPERATOR:** L
METHOD: 300mm toothed bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Phil)

LOGGED: Krebs/Date

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 33.7 AHD
COORDINATE: E:367182.6, N:6397114.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 25
PROJECT No: 91432.06
DATE: 26/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS							
GROUNDWATER	FL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(%) DENSITY. ^(%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS				
26/07/24 No free groundwater observed	33	0.10	TOPSOIL / Clayey SAND, with silt: brown; fine to medium; with organics, rootlets. Sandy CLAY (Cl): grey brown; medium plasticity.		TOP	NA	M		D/ES		0.10	PID	<1ppm	5	10	15	
		RS	St		w<PL				0.40	PP	110-140kPa						
									0.50	PID	<1ppm						
									0.71	PP	250-270kPa						
		1	Sandy CLAY (Cl): orange brown; medium plasticity.		VSt		w<PL				1.00	PID	<1ppm			25/120	
		32				RS			H			1.50	PP	>400kPa			
	2		Test Pit discontinued at 2.00m depth. Refusal on rock.														



NOTES: ⁽¹⁾Soil origin is "probable" unless otherwise stated. ⁽²⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator
METHOD: 300mm toothed bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Phil)

LOGGED: Krebs/Date

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT:

PROJECT:

LOCATION:

Cornish Group No. Six Pty Ltd
Vacy Village South Residential Subdivision
598 Gresford Road, Vacy, NSW

SURFACE LEVEL:

COORDINATE:

DATUM/GRID:

DIP/AZIMUTH:

38.9 AHD
E:367063.4, N:6397037.8
MGA2020 Zone 56
90°/---°

LOCATION ID:

PROJECT No:

DATE:

SHEET:

26
91432.06
29/07/24
1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS				
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. (%)	DENSITY (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
29/07/24 No free groundwater observed	0.15	TOPSOIL / Clayey SAND (SC), with silt: brown; fine to medium; with organics, rootlets.		TOP	NA		M		D/ES	0.10		PID	<1ppm	5
		Sandy CLAY (Cl): brown; medium plasticity; fine to medium sand.		RS	St		w<PL		B	0.20		PID	<1ppm	10
	0.45	Sandy CLAY (Cl): orange brown; medium plasticity; fine to medium sand.		RS	VSt		w<PL		D/ES	0.40		PP	120-140kPa	15
29/07/24 No free groundwater observed									D/ES	0.50		PID	<1ppm	25/130
									D/ES			PP	240-280kPa	
		Test Pit discontinued at 0.60m depth. Refusal on rock.												



NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(%)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT:

METHOD:

REMARKS:

5T Excavator
300mm toothed bucket
Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR:

LOGGED:

Lawcon (Tim)
Krebs/Date



Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 30.3 AHD
COORDINATE: E:367070.8, N:6397147.5
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 27
PROJECT No: 91432.06
DATE: 29/07/24
SHEET: 1 of 1

[illegible]

NOTES: ^(M)Soil origin is "probable" unless otherwise stated. ^(N)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied

PLANT: 5T Excavator **OPERATOR:** L
METHOD: 300mm toothed bucket
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

TEST PIT LOG

CLIENT:	Cornish Group No. Six Pty Ltd	SURFACE LEVEL:	27.3 AHD	LOCATION ID:	28
PROJECT:	Vacy Village South Residential Subdivision	COORDINATE:	E:367145.0, N:6397174.6	PROJECT No:	91432.06
LOCATION:	598 Gresford Road, Vacy, NSW	DATUM/GRID:	MGA2020 Zone 56	DATE:	29/07/24
		DIP/AZIMUTH:	90°/---°	SHEET:	1 of 1

CONDITIONS ENCOUNTERED							SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS. ^(%) DENSITY. ^(%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
29/07/24 No free groundwater observed	27	0.20	TOPSOIL / Silty SAND (SM), trace gravel: brown; fine to medium; fine to medium, sub-angular to sub-rounded gravel; with organics, rootlets.		TOP	NA	M		D/ES		0.10	PID	<1ppm	
		0.70	Sandy CLAY (CI), trace gravel: grey pale brown; medium plasticity; fine to medium sand; fine to medium, sub-angular to rounded gravel.		RS	St	w<PL		D/ES		0.50	PP	110-140kPa	
		1	Sandy CLAY (CH), trace gravel: grey pale brown; high plasticity; fine to medium sand; fine to medium, sub-angular to sub-rounded gravel; extremely weathered sandstone cobbles.		RS	St to VSt	w<PL		D/ES		1.00	PID	<1ppm	
Test Pit discontinued at 1.20m depth. Refusal on rock.														
	26													
				</										



NOTES: ^(a)Soil origin is "probable" unless otherwise stated. ^(b)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT:	5T Excavator	OPERATOR:	Lawcon (Tim)	LOGGED:	Krebs/Date
METHOD:	300mm toothed bucket				
REMARKS:	Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m				

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT:

PROJECT:

LOCATION:

Cornish Group No. Six Pty Ltd
Vacy Village South Residential Subdivision
598 Gresford Road, Vacy, NSW

SURFACE LEVEL:

COORDINATE:

DATUM/GRID:

DIP/AZIMUTH:

22.7 AHD
E:367227.4, N:6397210.1
MGA2020 Zone 56
90°/---°

LOCATION ID:

PROJECT No:

DATE:

SHEET:

29
91432.06
29/07/24
1 of 1

CONDITIONS ENCOUNTERED						SAMPLE				TESTING AND REMARKS																			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(%) DENSITY. ^(%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS																
29/07/24 No free groundwater observed	22	0.10	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA	M						PID	<1ppm	5	10	15												
			Sandy CLAY (Cl): pale brown; medium plasticity.		RS	St	w<PL w=PL			D/ES		0.10																	
		0.40	Sandy CLAY (Cl): orange brown; medium plasticity; fine to medium sand.		RS	VSt	w<PL			D/ES			0.25	PID	<1ppm														
	1		Test Pit discontinued at 1.00m depth. Refusal on rock.						B		0.90	PID	<1ppm																
										</																			



NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(%)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT:

METHOD:

REMARKS:

5T Excavator
300mm toothed bucket
Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

OPERATOR:

LOGGED:

Lawcon (Tim)
Krebs/Date

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT:	Cornish Group No. Six Pty Ltd	SURFACE LEVEL:	22.2 AHD	LOCATION ID:	30
PROJECT:	Vacy Village South Residential Subdivision	COORDINATE:	E:367296.6, N:6397235.3	PROJECT No:	91432.06
LOCATION:	598 Gresford Road, Vacy, NSW	DATUM/GRID:	MGA2020 Zone 56	DATE:	29/07/24
		DIP/AZIMUTH:	90°/---°	SHEET:	1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ⁽¹⁾ DENSITY. ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
29/07/24 No free groundwater observed	22	0.10	TOPSOIL / Silty SAND (SM): brown; fine to medium; with organics, rootlets.		TOP	NA	M					PID	<1ppm
			Sandy CLAY (CL-CI): pale brown; low to medium plasticity.		RS	St	w<PL					PID	<1ppm
												PP	140-170kPa
		0.50	Sandy CLAY (CI): orange brown; medium plasticity.		RS	VSt	w<PL						
							</						



NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(%)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT:	5T Excavator	OPERATOR:	Lawcon (Tim)	LOGGED:	Krebs/Date
METHOD:	300mm toothed bucket				
REMARKS:	Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m				

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 26.6 AHD
COORDINATE: E:367239.5, N:6397342.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 31
PROJECT No: 91432.06
DATE: 29/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS			
GROUNDWATER	FL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. DENSITY, (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS								
29/07/24 No free groundwater observed	26	0.10	TOPSOIL / Silty Sandy CLAY (CL): brown; low plasticity; fine to medium sand; with organics, rootlets.		TOP	NA	w<PL w=PL		D/ES		0.10	PID	<1ppm	5	10	15					
			Sandy CLAY (Cl): pale brown; medium plasticity; fine to medium sand.		RS	F to St	w<PL		D/ES		0.25	PID PP	<1ppm 90-120kPa								
		0.35	Sandy CLAY (Cl): brown; medium plasticity; fine to medium sand.		RS	VSt to H	w<PL		D/ES	U50	0.50	PID	<1ppm								
									PP		>400kPa										
		0.65	Sandy CLAY (CL): orange dark grey; low plasticity; fine to medium sand; sandstone fragments.		XWM	VSt to H	w<PL				0.65	PP									
			Test Pit discontinued at 0.85m depth. Refusal on rock.																		
		1																			
		25																			
		2														25/90					



NOTES: [®]Soil origin is "probable" unless otherwise stated. [©]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

METHOD: 300mm toothed bucket

REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 28.7 AHD
COORDINATE: E:367179.4, N:6397289.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 32
PROJECT No: 91432.06
DATE: 29/07/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED													SAMPLE			TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. DENSITY, (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS						
29/07/24 No free groundwater observed	28	0.10	TOPSOIL / Silty Sandy CLAY (CL): brown; low plasticity; fine to medium sand; with organics, rootlets.		TOP	NA	w<PL	D6/SBK	D/ES		0.10	PID	<1ppm 5 10 15						
			Sandy CLAY (Cl): pale brown grey; medium plasticity; fine to medium sand.		RS	St	w<PL w=PL						PP	170-200kPa					
		0.40	Sandy CLAY (Cl), trace gravel: brown mottled orange; medium plasticity; fine to medium sand; fine to medium, sub-angular to sub-rounded gravel.		RS	St to VSt	w<PL			D/ES		0.50	PID	<1ppm					
						VSt to H	w<PL					1	PP	300-400kPa					
			Test Pit discontinued at 1.10m depth. Refusal on rock.						D/ES		1.10	PID	<1ppm 25/145						
	27																		
		2																	



NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(C)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date

METHOD: 300mm toothed bucket

REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: Cornish Group No. Six Pty Ltd
PROJECT: Vacy Village South Residential Subdivision
LOCATION: 598 Gresford Road, Vacy, NSW

SURFACE LEVEL: 33.2 AHD
COORDINATE: E:367092.0, N:6397259.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 33
PROJECT No: 91432.06
DATE: 29/07/24
SHEET: 1 of 1

[illegible]

NOTES: ^(a)Soil origin is "probable" unless otherwise stated. ^(b)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5T Excavator	OPERATOR: L
METHOD: 300mm toothed bucket	
REMARKS: Coordinates and elevations measured by dGPS with typical accuracy of +/- 0.1 m	

OPERATOR: Lawcon (Tim)

LOGGED: Krebs/Date



Photo 1: Looking north-west along the eastern boundary of the site from Proposed Lot 513.



Photo 2: Looking south-west across the site from the eastern corner of Proposed Lot 502.

 GROUND ED EXPERTISE	Site Photographs – 19 July 2024	PROJECT:	91432.06
		Proposed Residential Subdivision	PLATE No: 1
		598 Gresford Road, Vacy	REV: 2
	CLIENT	Cornish Group No. Six Pty Ltd	DATE 30/04/2026



Photo 3: Looking west across the central portion of the site from the eastern corner of Proposed Lot 502.



Photo 4: Looking south-west across the site from the eastern corner of Proposed Lot 502.

 DOUGLAS PARTNERS GROUND ED EXPERTISE		Site Photographs – 19 July 2024		PROJECT:	91432.06
		Proposed Residential Subdivision		PLATE No:	2
		598 Gresford Road, Vacy		REV:	2
		CLIENT	Cornish Group No. Six Pty Ltd	DATE	30/04/2026



Photo 5: Looking north-west across the site from the southern corner of Proposed Lot 513. Remnant fence posts observed



Photo 6: Looking across Dam 3 along the south-western boundary of the site from Proposed Lots 512 and 513.

 GROUND ED EXPERTISE		Site Photographs – 19 July 2024		PROJECT:	91432.06
		Proposed Residential Subdivision		PLATE No:	3
		598 Gresford Road, Vacy		REV:	2
		CLIENT	Cornish Group No. Six Pty Ltd	DATE	30/04/2026



Photo 7: Looking north-west across Dam 5 from the western corner of Proposed Lot 515.



Photo 8: Looking north-east along a localised drainage depression within Proposed Lot 511.



GROUND
ED
EXPERTISE

Site Photographs – 19 July 2024

Proposed Residential Subdivision

598 Gresford Road, Vacy

CLIENT

Cornish Group No. Six Pty Ltd

PROJECT:

91432.06

PLATE No:

4

REV:

2

DATE

30/04/2026



Photo 9: Sandstone boulders observed at the surface along proposed Road No. 1 (adjacent Proposed Lot 510)



Photo 10: Looking approximately north-east along an intermittent watercourse in the central, northern part of the site (Proposed Lot 516). Pooled surface water observed.

 GROUND ED EXPERTISE		Site Photographs – 19 July 2024		PROJECT:	91432.06
		Proposed Residential Subdivision		PLATE No:	5
		598 Gresford Road, Vacy		REV:	2
		CLIENT	Cornish Group No. Six Pty Ltd	DATE	30/04/2026



Photo 11: Pooled surface water observed within the intermittent watercourse in the central portion of the site (Proposed Lot 517).



Photo 12: Looking west across the site from the north-eastern portion of the site (Proposed Lot 505). Intermittent watercourse in the background

 GROUND ED EXPERTISE		Site Photographs – 19 July 2024		PROJECT:	91432.06
		Proposed Residential Subdivision		PLATE No:	6
		598 Gresford Road, Vacy		REV:	2
		CLIENT	Cornish Group No. Six Pty Ltd	DATE	30/04/2026



Photo 13: Stockpiled materials located directly adjacent Dam 9 (right of photo) within Proposed Lot 507. Intermittent watercourse in background.



Photo 14: Dam 9 located in the north-western corner of the site,

 GROUND ED EXPERTISE		Site Photographs – 19 July 2024		PROJECT:	91432.06
		Proposed Residential Subdivision		PLATE No:	7
		598 Gresford Road, Vacy		REV:	2
		CLIENT	Cornish Group No. Six Pty Ltd	DATE	30/04/2026



Photo 15: Possible residential effluent disposal area on adjacent property north of the site.



Photo 16: Bright green grass located adjacent the northern boundary within a residential property (possible effluent disposal area).

 DOUGLAS PARTNERS 		Site Photographs – 19 July 2024		PROJECT:	91432.06
		Proposed Residential Subdivision		PLATE No:	8
		598 Gresford Road, Vacy		REV:	2
		CLIENT	Cornish Group No. Six Pty Ltd	DATE	30/04/2026



Photo 17: Looking east across the site from the western boundary.



Photo 18: Looking east from the south-western site boundary across the central portion of the site.

 GROUNDED EXPERTISE	Site Photographs – 19 July 2024		PROJECT:	91432.06
	Proposed Residential Subdivision		PLATE No:	9
	598 Gresford Road, Vacy		REV:	2
	CLIENT	Cornish Group No. Six Pty Ltd	DATE	30/04/2026

Appendix C

Laboratory Test Results

Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyn NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978A
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 16/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP1, Depth: 0.7 - 0.98m
Material: Sandy Clay



Douglas Partners Pty Ltd
Newcastle Laboratory
15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
Email: Peter.Gorseski@douglaspartners.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index (AS 1289 7.1.1 & 2.1.1)

Iss (%)	0.9
Visual Description	Sandy Clay
* Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.	

Core Shrinkage Test

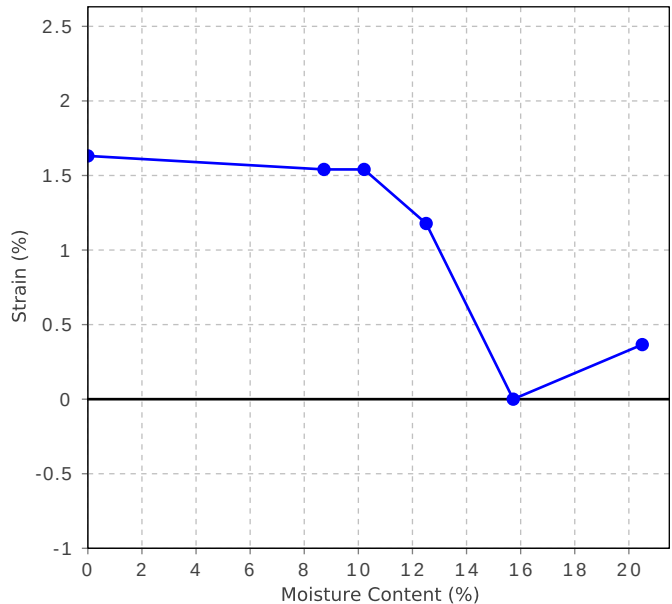
Shrinkage Strain - Oven Dried (%)	1.6
Estimated % by volume of significant inert inclusions	0
Cracking	Slightly Cracked
Crumbling	No
Moisture Content (%)	15.7

Swell Test

Initial Pocket Penetrometer (kPa)	>600
Final Pocket Penetrometer (kPa)	220
Initial Moisture Content (%)	14.7
Final Moisture Content (%)	20.5
Swell (%)	-0.4

* NATA Accreditation does not cover the performance of pocket penetrometer readings.

Shrink Swell



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyn NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978B
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 19/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP10, Depth: 0.5 - 0.69m
Material: Sandy Clay



Douglas Partners Pty Ltd
Newcastle Laboratory
15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
Email: Peter.Gorseski@douglaspartners.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index (AS 1289 7.1.1 & 2.1.1)

Iss (%)	1.0
Visual Description	Sandy Clay
* Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.	

Core Shrinkage Test

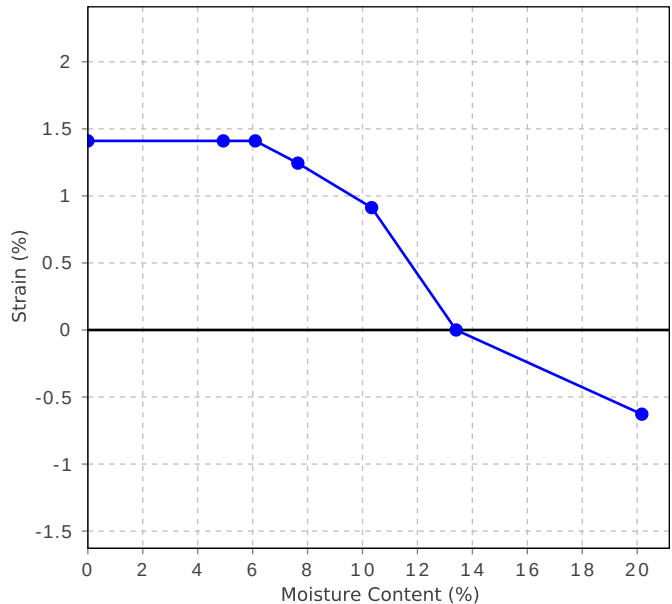
Shrinkage Strain - Oven Dried (%)	1.4
Estimated % by volume of significant inert inclusions	10
Cracking	Moderately Cracked
Crumbling	No
Moisture Content (%)	13.4

Swell Test

Initial Pocket Penetrometer (kPa)	>600
Final Pocket Penetrometer (kPa)	100
Initial Moisture Content (%)	14.4
Final Moisture Content (%)	20.2
Swell (%)	0.6

* NATA Accreditation does not cover the performance of pocket penetrometer readings.

Shrink Swell



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyn NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978C
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 16/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP13, Depth: 0.4 - 0.6m
Material: Sandy Clay



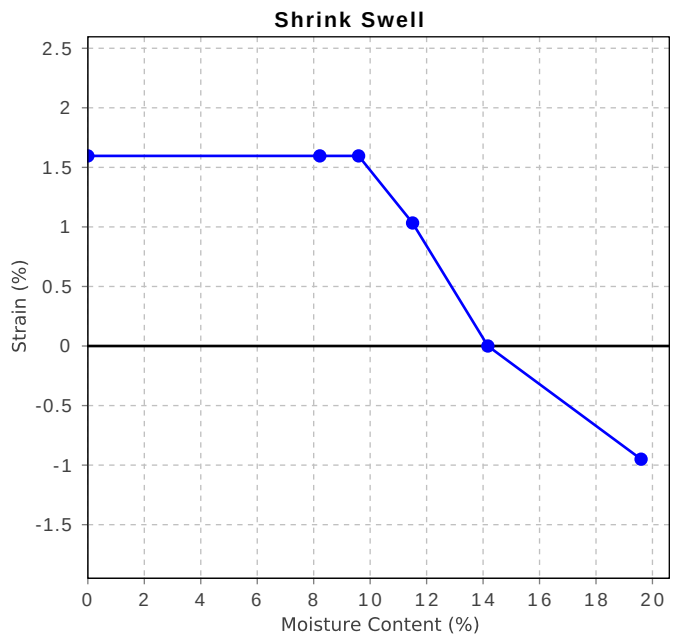
Douglas Partners Pty Ltd
Newcastle Laboratory
15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
Email: Peter.Gorseski@douglaspartners.com.au



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Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index (AS 1289 7.1.1 & 2.1.1)	
Iss (%)	1.2
Visual Description	Sandy Clay
* Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.	
Core Shrinkage Test	
Shrinkage Strain - Oven Dried (%)	1.6
Estimated % by volume of significant inert inclusions	0
Cracking	Slightly Cracked
Crumbling	No
Moisture Content (%)	14.2
Swell Test	
Initial Pocket Penetrometer (kPa)	>600
Final Pocket Penetrometer (kPa)	220
Initial Moisture Content (%)	13.0
Final Moisture Content (%)	19.6
Swell (%)	1.0
* NATA Accreditation does not cover the performance of pocket penetrometer readings.	



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyn NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978D
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 21/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP15, Depth: 0.35 - 0.59m
Material: Sandy Clay



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Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index (AS 1289 7.1.1 & 2.1.1)

Iss (%)	2.9
Visual Description	Sandy Clay
* Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.	

Core Shrinkage Test

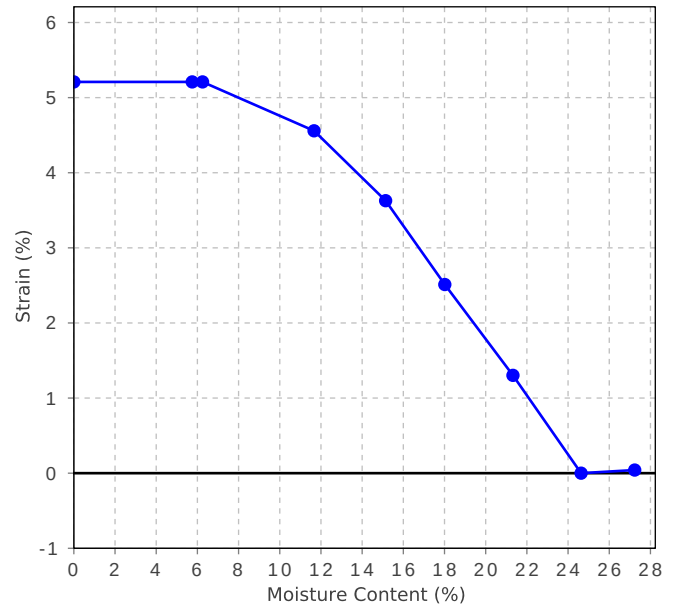
Shrinkage Strain - Oven Dried (%)	5.2
Estimated % by volume of significant inert inclusions	5
Cracking	Slightly Cracked
Crumbling	No
Moisture Content (%)	24.6

Swell Test

Initial Pocket Penetrometer (kPa)	260
Final Pocket Penetrometer (kPa)	150
Initial Moisture Content (%)	27.1
Final Moisture Content (%)	27.2
Swell (%)	-0.0

* NATA Accreditation does not cover the performance of pocket penetrometer readings.

Shrink Swell



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyn NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978E
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 20/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP17, Depth: 0.35 - 0.64m
Material: Sandy Clay



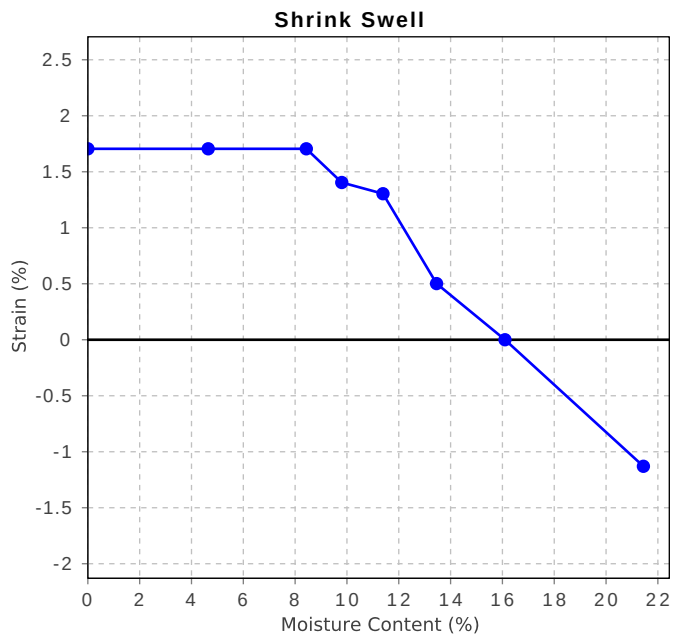
Douglas Partners Pty Ltd
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Phone: (02) 4960 9600
Email: Peter.Gorseski@douglaspartners.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index (AS 1289 7.1.1 & 2.1.1)	
Iss (%)	1.3
Visual Description	Sandy Clay
* Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.	
Core Shrinkage Test	
Shrinkage Strain - Oven Dried (%)	1.7
Estimated % by volume of significant inert inclusions	0
Cracking	Slightly Cracked
Crumbling	No
Moisture Content (%)	16.1
Swell Test	
Initial Pocket Penetrometer (kPa)	>600
Final Pocket Penetrometer (kPa)	90
Initial Moisture Content (%)	12.8
Final Moisture Content (%)	21.4
Swell (%)	1.1
* NATA Accreditation does not cover the performance of pocket penetrometer readings.	



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyne NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978F
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 21/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP25, Depth: 0.4 - 0.71m
Material: Sandy Clay



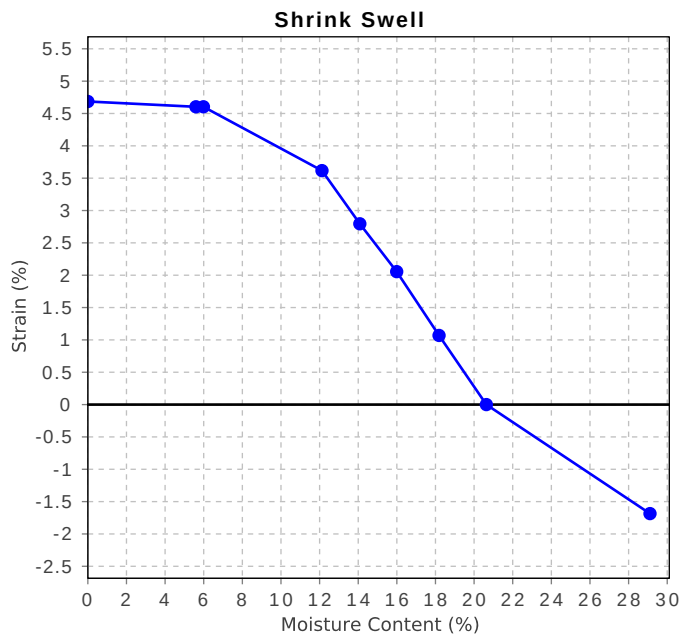
Douglas Partners Pty Ltd
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Phone: (02) 4960 9600
Email: Peter.Gorseski@douglaspartners.com.au



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Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index (AS 1289 7.1.1 & 2.1.1)	
Iss (%)	3.1
Visual Description	Sandy Clay
* Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.	
Core Shrinkage Test	
Shrinkage Strain - Oven Dried (%)	4.7
Estimated % by volume of significant inert inclusions	5
Cracking	Slightly Cracked
Crumbling	No
Moisture Content (%)	20.6
Swell Test	
Initial Pocket Penetrometer (kPa)	270
Final Pocket Penetrometer (kPa)	80
Initial Moisture Content (%)	21.3
Final Moisture Content (%)	29.1
Swell (%)	1.7
* NATA Accreditation does not cover the performance of pocket penetrometer readings.	



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyne NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978G
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 16/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP27, Depth: 0.6 - 0.76m
Material: Sandy Clay



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15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
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Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index (AS 1289 7.1.1 & 2.1.1)

Iss (%)	0.9
Visual Description	Sandy Clay
* Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.	

Core Shrinkage Test

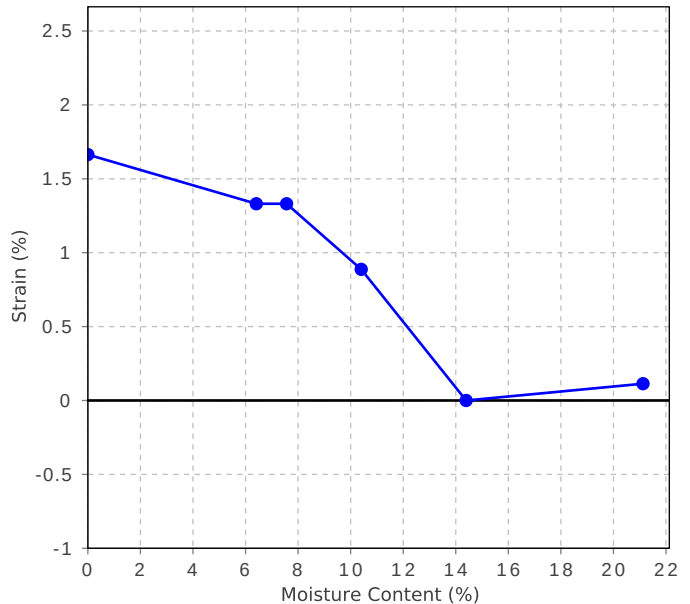
Shrinkage Strain - Oven Dried (%)	1.7
Estimated % by volume of significant inert inclusions	0
Cracking	Slightly Cracked
Crumbling	No
Moisture Content (%)	14.4

Swell Test

Initial Pocket Penetrometer (kPa)	450
Final Pocket Penetrometer (kPa)	60
Initial Moisture Content (%)	16.0
Final Moisture Content (%)	21.1
Swell (%)	-0.1

* NATA Accreditation does not cover the performance of pocket penetrometer readings.

Shrink Swell



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyn NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978H
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 21/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP31, Depth: 0.5 - 0.65m
Material: Sandy Clay



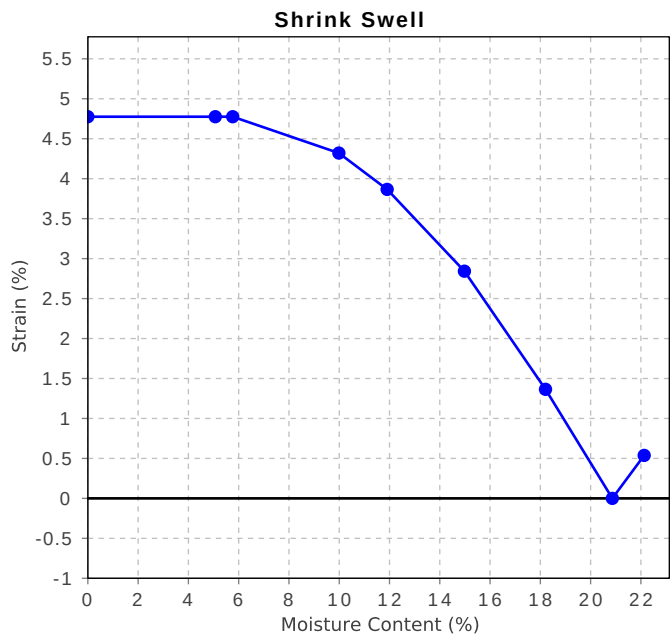
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Newcastle Laboratory
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Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index (AS 1289 7.1.1 & 2.1.1)	
Iss (%)	2.7
Visual Description	Sandy Clay
* Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.	
Core Shrinkage Test	
Shrinkage Strain - Oven Dried (%)	4.8
Estimated % by volume of significant inert inclusions	5
Cracking	Slightly Cracked
Crumbling	No
Moisture Content (%)	20.9
Swell Test	
Initial Pocket Penetrometer (kPa)	470
Final Pocket Penetrometer (kPa)	280
Initial Moisture Content (%)	17.7
Final Moisture Content (%)	22.1
Swell (%)	-0.5
* NATA Accreditation does not cover the performance of pocket penetrometer readings.	



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyne NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978I
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 20/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP3, Depth: 0.15 - 0.35m
Material: Sandy Clay



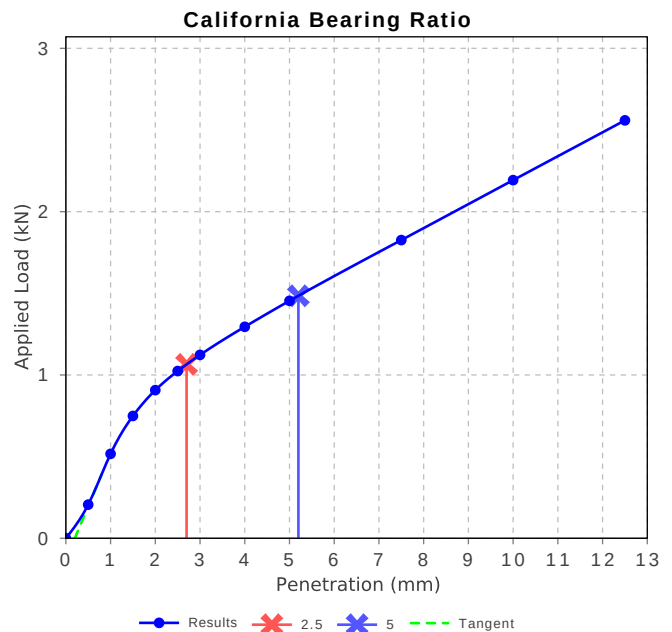
Douglas Partners Pty Ltd
Newcastle Laboratory
15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
Email: Peter.Gorseski@douglaspartners.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	8		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m ³)	1.80		
Optimum Moisture Content (%)	13.0		
Laboratory Density Ratio (%)	100.5		
Laboratory Moisture Ratio (%)	105.5		
Dry Density after Soaking (t/m ³)	1.78		
Field Moisture Content (%)	19.2		
Moisture Content at Placement (%)	13.6		
Moisture Content Top 30mm (%)	16.4		
Moisture Content Rest of Sample (%)	15.0		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours (h)	49.4		
Swell (%)	1.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			
Target and Moisture Content should be within 0.5%. The current difference is 0.7%. Results not affected.			



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyne NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978J
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 20/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP6, Depth: 0.4 - 0.6m
Material: Sandy Clay



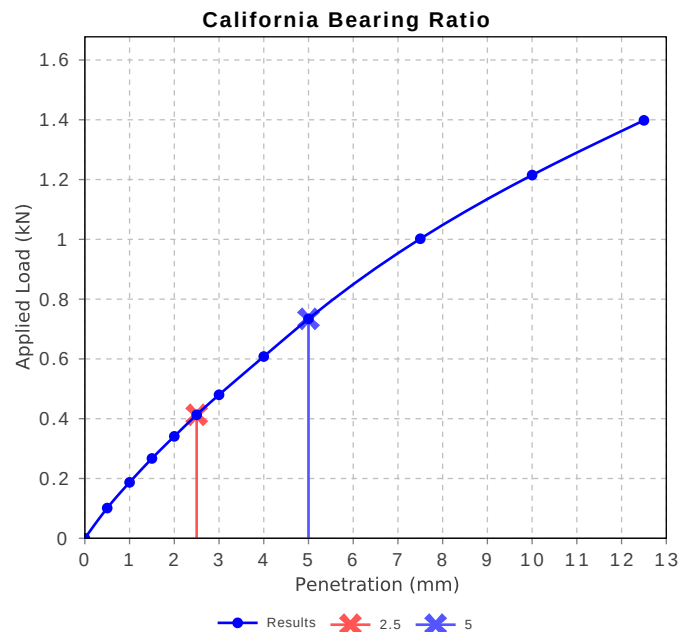
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Newcastle Laboratory
15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
Email: Peter.Gorseski@douglaspartners.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	3.5		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m ³)	1.80		
Optimum Moisture Content (%)	14.5		
Laboratory Density Ratio (%)	99.5		
Laboratory Moisture Ratio (%)	103.5		
Dry Density after Soaking (t/m ³)	1.79		
Field Moisture Content (%)	18.7		
Moisture Content at Placement (%)	15.1		
Moisture Content Top 30mm (%)	16.1		
Moisture Content Rest of Sample (%)	14.8		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours (h)	49.7		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyne NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978K
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 23/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP20, Depth: 0.2 - 0.3m
Material: Sandy Clay



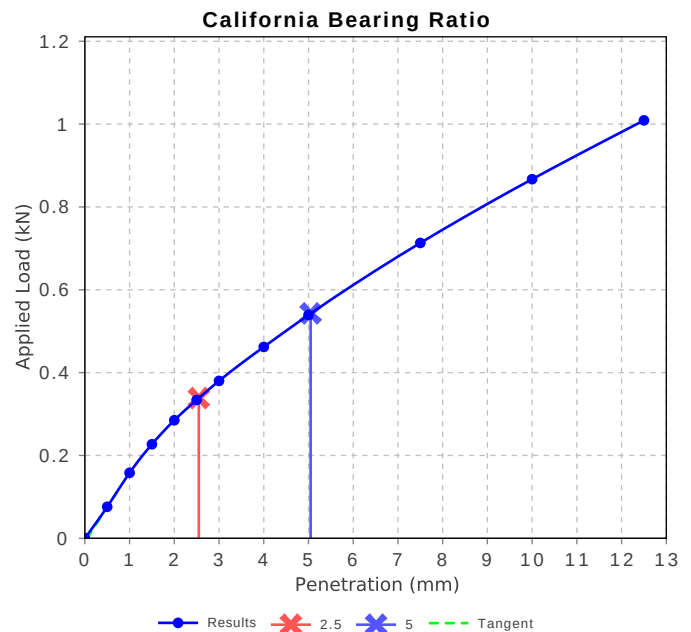
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Newcastle Laboratory
15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
Email: Peter.Gorseski@douglaspartners.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	2.5		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m^3)	1.70		
Optimum Moisture Content (%)	18.0		
Laboratory Density Ratio (%)	99.5		
Laboratory Moisture Ratio (%)	98.0		
Dry Density after Soaking (t/m^3)	1.68		
Field Moisture Content (%)	21.6		
Moisture Content at Placement (%)	17.5		
Moisture Content Top 30mm (%)	21.7		
Moisture Content Rest of Sample (%)	18.3		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours (h)	94.7		
Swell (%)	1.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			



Material Test Report

Report Number: 91432.06-1
Issue Number: 1
Date Issued: 18/09/2024
Client: Cornish Group No. Six Pty Ltd
132 Victoria Road, Drummoyne NSW
Project Number: 91432.06
Project Name: Vacy Village South Residential Subdivision
Project Location: 598 Gresford Road, Vacy NSW
Work Request: 11978
Sample Number: NC-11978L
Date Sampled: 25/07/2024
Dates Tested: 08/08/2024 - 23/08/2024
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: TP26, Depth: 0.2 - 0.4m
Material: Sandy Clay



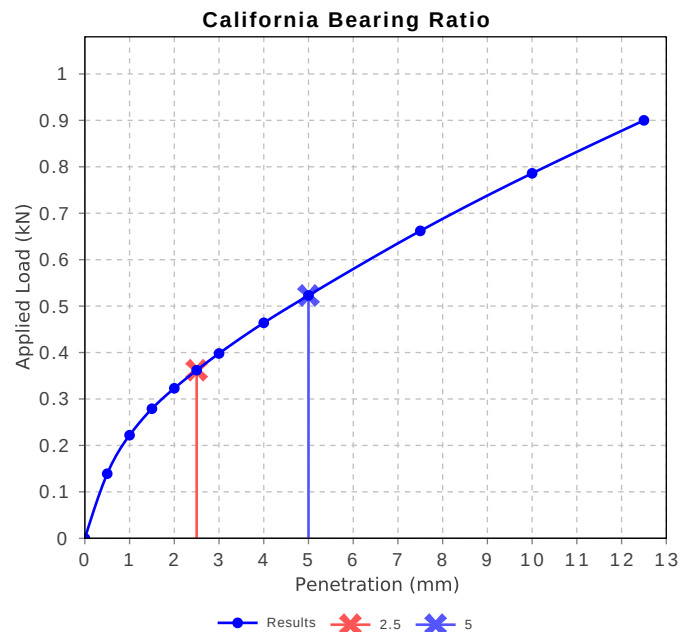
Douglas Partners Pty Ltd
Newcastle Laboratory
15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
Email: Peter.Gorseski@douglaspartners.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Peter Gorseski
Laboratory Manager
Laboratory Accreditation Number: 828

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	2.5		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m ³)	1.72		
Optimum Moisture Content (%)	17.5		
Laboratory Density Ratio (%)	99.5		
Laboratory Moisture Ratio (%)	100.5		
Dry Density after Soaking (t/m ³)	1.69		
Field Moisture Content (%)	20.2		
Moisture Content at Placement (%)	17.6		
Moisture Content Top 30mm (%)	21.0		
Moisture Content Rest of Sample (%)	18.3		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours (h)	95.2		
Swell (%)	0.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			





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f 02 6765 9109
abn 82 125 442 382

eastwestonline.com.au 

ANALYSIS REPORT SOIL

PROJECT NO: EW241537

Date of Issue: 23/08/2024

Customer: DOUGLAS PARTNERS PTY LTD

Report No: 1

Address: Box 324 HUNTER REGION MAIL
CENTRE NSW 2310

Date Received: 16/08/2024

Matrix: Soil

Attention: Joshua Kramer

Location: 91432.06 Vacy

Phone: 02 4960 9600

Sampler ID: Client

Fax: 02 4960 9601

Date of Sampling: 25/07/2024

Email: joshua.kramer@douglaspartners.com.

Sample Condition: Acceptable

Comments:

3b = moderate to slight dispersion of the remould.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

Signed:

Stephanie Cameron
Laboratory Operations Manager



NATA Accredited Laboratory 15708 and 12360
Accredited for compliance with ISO/IEC 17025 - Testing

*This analysis relates to the sample submitted
and it is the client's responsibility to make
certain the sample is representative of the
matrix to be tested.*

*Samples will be discarded one month after the date of
this report. Please advise if you wish to have your
sample/s returned.*

results you can rely on



ANALYSIS REPORT

PROJECT NO: EW241537

Location: 91432.06 Vacy

CLIENT SAMPLE ID					5	5	7	9
					0.1	0.5	0.1	0.1
DEPTH								
Test Parameter	Method Description	Method Reference	Units	LOR	241537-1	241537-2	241537-3	241537-4
pH (1:5 in CaCl ₂)	Electrode	R&L 4B2	pH units	na	4.86	NA	4.40	4.50
Electrical Conductivity	Electrode	R&L 3A1	dS/m	0.01	0.07	NA	0.06	0.07
Phosphorus Buffer Index	UV-Vis	PMS-12	mg/kg	10	61.5	46.4	63.2	56.4
Phosphorus (Colwell)	Bicarb/UV-Vis	R&L 9B1	mg/kg	5	32.7	20.8	18.1	59.5
Phosphorus Sorption Capacity	Calc	PMS-12	mg/kg	na	348	272	353	328
Phosphorus Sorption Capacity	Calc	na	kg/ha	na	4870	3810	4940	4590
Exchangeable Potassium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	140	NA	122	226
Exchangeable Calcium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	20	601	NA	381	626
Exchangeable Magnesium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	250	NA	134	278
Exchangeable Sodium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	120	NA	61.3	66.6
Exchangeable Aluminium	KCl/ICP	R&L 15G1	mg/kg	2	14.3	NA	52.6	20.4
Exchangeable Potassium	R&L 15A1	R&L 15A1	cmol/kg	na	0.36	NA	0.31	0.58
Exchangeable Calcium	R&L 15A1	R&L 15A1	cmol/kg	na	3.01	NA	1.91	3.13
Exchangeable Magnesium	R&L 15A1	R&L 15A1	cmol/kg	na	2.08	NA	1.12	2.32
Exchangeable Sodium	R&L 15A1	R&L 15A1	cmol/kg	na	0.52	NA	0.27	0.29
Exchangeable Aluminium	Calculation	R&L 15J1	cmol/kg	na	0.16	NA	0.58	0.23
ECEC	Calculation	PMS-15A1	cmol/kg	na	6.13	NA	4.19	6.54
Ca/Mg Ratio	Calculation	PMS-15A1	cmol/kg	na	1.44	NA	1.71	1.35
K/Mg Ratio	Calculation	PMS-15A1	cmol/kg	na	0.17	NA	0.28	0.25
Exchangeable Potassium %	Calculation	PMS-15A1	%	na	5.86	NA	7.47	8.86
Exchangeable Calcium %	Calculation	PMS-15A1	%	na	49.0	NA	45.5	47.8





ANALYSIS REPORT

PROJECT NO: EW241537

Location: 91432.06 Vacy

CLIENT SAMPLE ID					5	5	7	9
					0.1	0.5	0.1	0.1
DEPTH								
Test Parameter	Method Description	Method Reference	Units	LOR	241537-1	241537-2	241537-3	241537-4
Exchangeable Magnesium %	Calculation	PMS-15A1	%	na	34.0	NA	26.7	35.4
Exchangeable Sodium %	Calculation	PMS-15A1	%	na	8.51	NA	6.37	4.43
Exchangeable Aluminium %	Calculation	PMS-15A1	%	na	2.59	NA	14.0	3.46
Emerson Aggregate Test	Class	PMS-21	Number	na	5	1	5	5



ANALYSIS REPORT

PROJECT NO: EW241537

Location: 91432.06 Vacy

CLIENT SAMPLE ID					9	13	21	21
					0.5	0.1	0.1	0.25
DEPTH								
Test Parameter	Method Description	Method Reference	Units	LOR	241537-5	241537-6	241537-7	241537-8
pH (1:5 in CaCl ₂)	Electrode	R&L 4B2	pH units	na	NA	4.29	4.39	NA
Electrical Conductivity	Electrode	R&L 3A1	dS/m	0.01	NA	0.04	0.04	NA
Phosphorus Buffer Index	UV-Vis	PMS-12	mg/kg	10	40.9	61.7	50.1	29.9
Phosphorus (Colwell)	Bicarb/UV-Vis	R&L 9B1	mg/kg	5	<5.00	46.0	10.1	<5.00
Phosphorus Sorption Capacity	Calc	PMS-12	mg/kg	na	242	351	289	182
Phosphorus Sorption Capacity	Calc	na	kg/ha	na	3390	4910	4050	2560
Exchangeable Potassium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	NA	76.6	105	NA
Exchangeable Calcium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	20	NA	589	331	NA
Exchangeable Magnesium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	NA	205	150	NA
Exchangeable Sodium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	NA	69.7	48.0	NA
Exchangeable Aluminium	KCl/ICP	R&L 15G1	mg/kg	2	NA	52.2	44.0	NA
Exchangeable Potassium	R&L 15A1	R&L 15A1	cmol/kg	na	NA	0.20	0.27	NA
Exchangeable Calcium	R&L 15A1	R&L 15A1	cmol/kg	na	NA	2.95	1.66	NA
Exchangeable Magnesium	R&L 15A1	R&L 15A1	cmol/kg	na	NA	1.71	1.25	NA
Exchangeable Sodium	R&L 15A1	R&L 15A1	cmol/kg	na	NA	0.30	0.21	NA
Exchangeable Aluminium	Calculation	R&L 15J1	cmol/kg	na	NA	0.58	0.49	NA
ECEC	Calculation	PMS-15A1	cmol/kg	na	NA	5.73	3.87	NA
Ca/Mg Ratio	Calculation	PMS-15A1	cmol/kg	na	NA	1.72	1.32	NA
K/Mg Ratio	Calculation	PMS-15A1	cmol/kg	na	NA	0.11	0.22	NA
Exchangeable Potassium %	Calculation	PMS-15A1	%	na	NA	3.43	6.95	NA
Exchangeable Calcium %	Calculation	PMS-15A1	%	na	NA	51.4	42.7	NA





ANALYSIS REPORT

PROJECT NO: EW241537

Location: 91432.06 Vacy

CLIENT SAMPLE ID					9	13	21	21
					0.5	0.1	0.1	0.25
DEPTH								
Test Parameter	Method Description	Method Reference	Units	LOR	241537-5	241537-6	241537-7	241537-8
Exchangeable Magnesium %	Calculation	PMS-15A1	%	na	NA	29.8	32.3	NA
Exchangeable Sodium %	Calculation	PMS-15A1	%	na	NA	5.29	5.39	NA
Exchangeable Aluminium %	Calculation	PMS-15A1	%	na	NA	10.1	12.6	NA
Emerson Aggregate Test	Class	PMS-21	Number	na	2	7	5	3b



ANALYSIS REPORT

PROJECT NO: EW241537

Location: 91432.06 Vacy

CLIENT SAMPLE ID					25	25	31	33
					0.1	0.5	0.1	0.1
DEPTH								
Test Parameter	Method Description	Method Reference	Units	LOR	241537-9	241537-10	241537-11	241537-12
pH (1:5 in CaCl ₂)	Electrode	R&L 4B2	pH units	na	4.35	NA	4.33	4.48
Electrical Conductivity	Electrode	R&L 3A1	dS/m	0.01	0.05	NA	0.05	0.04
Phosphorus Buffer Index	UV-Vis	PMS-12	mg/kg	10	57.8	78.1	80.1	53.8
Phosphorus (Colwell)	Bicarb/UV-Vis	R&L 9B1	mg/kg	5	8.43	19.6	71.1	14.3
Phosphorus Sorption Capacity	Calc	PMS-12	mg/kg	na	327	419	441	308
Phosphorus Sorption Capacity	Calc	na	kg/ha	na	4580	5870	6170	4310
Exchangeable Potassium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	174	NA	149	175
Exchangeable Calcium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	20	582	NA	482	406
Exchangeable Magnesium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	201	NA	155	149
Exchangeable Sodium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	56.6	NA	43.1	34.7
Exchangeable Aluminium	KCl/ICP	R&L 15G1	mg/kg	2	37.4	NA	27.0	21.0
Exchangeable Potassium	R&L 15A1	R&L 15A1	cmol/kg	na	0.45	NA	0.38	0.45
Exchangeable Calcium	R&L 15A1	R&L 15A1	cmol/kg	na	2.91	NA	2.41	2.03
Exchangeable Magnesium	R&L 15A1	R&L 15A1	cmol/kg	na	1.68	NA	1.29	1.24
Exchangeable Sodium	R&L 15A1	R&L 15A1	cmol/kg	na	0.25	NA	0.19	0.15
Exchangeable Aluminium	Calculation	R&L 15J1	cmol/kg	na	0.42	NA	0.30	0.23
ECEC	Calculation	PMS-15A1	cmol/kg	na	5.69	NA	4.57	4.10
Ca/Mg Ratio	Calculation	PMS-15A1	cmol/kg	na	1.74	NA	1.87	1.63
K/Mg Ratio	Calculation	PMS-15A1	cmol/kg	na	0.27	NA	0.30	0.36
Exchangeable Potassium %	Calculation	PMS-15A1	%	na	7.84	NA	8.36	10.9
Exchangeable Calcium %	Calculation	PMS-15A1	%	na	51.1	NA	52.7	49.5



ANALYSIS REPORT

PROJECT NO: EW241537

Location: 91432.06 Vacy

CLIENT SAMPLE ID					25	25	31	33
					0.1	0.5	0.1	0.1
DEPTH								
Test Parameter	Method Description	Method Reference	Units	LOR	241537-9	241537-10	241537-11	241537-12
Exchangeable Magnesium %	Calculation	PMS-15A1	%	na	29.4	NA	28.3	30.3
Exchangeable Sodium %	Calculation	PMS-15A1	%	na	4.32	NA	4.10	3.68
Exchangeable Aluminium %	Calculation	PMS-15A1	%	na	7.30	NA	6.56	5.68
Emerson Aggregate Test	Class	PMS-21	Number	na	7	2	5	7





ANALYSIS REPORT

PROJECT NO: EW241537

Location: 91432.06 Vacy

CLIENT SAMPLE ID					33			
DEPTH					0.25			
Test Parameter	Method Description	Method Reference	Units	LOR	241537-13			
pH (1:5 in CaCl ₂)	Electrode	R&L 4B2	pH units	na	NA			
Electrical Conductivity	Electrode	R&L 3A1	dS/m	0.01	NA			
Phosphorus Buffer Index	UV-Vis	PMS-12	mg/kg	10	79.2			
Phosphorus (Colwell)	Bicarb/UV-Vis	R&L 9B1	mg/kg	5	<5.00			
Phosphorus Sorption Capacity	Calc	PMS-12	mg/kg	na	418			
Phosphorus Sorption Capacity	Calc	na	kg/ha	na	5850			
Exchangeable Potassium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	NA			
Exchangeable Calcium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	20	NA			
Exchangeable Magnesium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	NA			
Exchangeable Sodium	NH ₄ Cl/ICP	R&L 15A1	mg/kg	10	NA			
Exchangeable Aluminium	KCl/ICP	R&L 15G1	mg/kg	2	NA			
Exchangeable Potassium	R&L 15A1	R&L 15A1	cmol/kg	na	NA			
Exchangeable Calcium	R&L 15A1	R&L 15A1	cmol/kg	na	NA			
Exchangeable Magnesium	R&L 15A1	R&L 15A1	cmol/kg	na	NA			
Exchangeable Sodium	R&L 15A1	R&L 15A1	cmol/kg	na	NA			
Exchangeable Aluminium	Calculation	R&L 15J1	cmol/kg	na	NA			
ECEC	Calculation	PMS-15A1	cmol/kg	na	NA			
Ca/Mg Ratio	Calculation	PMS-15A1	cmol/kg	na	NA			
K/Mg Ratio	Calculation	PMS-15A1	cmol/kg	na	NA			
Exchangeable Potassium %	Calculation	PMS-15A1	%	na	NA			
Exchangeable Calcium %	Calculation	PMS-15A1	%	na	NA			



ANALYSIS REPORT

PROJECT NO: EW241537

Location: 91432.06 Vacy

CLIENT SAMPLE ID					33			
					0.25			
DEPTH								
Test Parameter	Method Description	Method Reference	Units	LOR	241537-13			
Exchangeable Magnesium %	Calculation	PMS-15A1	%	na	NA			
Exchangeable Sodium %	Calculation	PMS-15A1	%	na	NA			
Exchangeable Aluminium %	Calculation	PMS-15A1	%	na	NA			
Emerson Aggregate Test	Class	PMS-21	Number	na	1			

This Analysis Report shall not be reproduced except in full without the written approval of the laboratory.

Soils are air dried at 40°C and ground <2mm.

NB: LOR is the Lowest Obtainable Reading.

DOCUMENT END



Appendix D

Drawing 1 (R.002) – Site and Test Location Plan

Drawing 2 (R.002) – Site Constraints and Useable Land for Effluent Management – Combined Waste Streams

Drawing 3 (R.002) - Recommended Effluent Application Areas – Combined Waste Streams

Drawing 4 (R.002) – Site Constraints and Useable Land for Effluent Management – Greywater

Drawing 5 (R.002) - Recommended Effluent Application Areas – Greywater

Infrastructure & Development Consulting Pty Ltd
DA Civil Drawings dated 10.03.2026

Draft drawing P000385.04B.DP dated December 2025

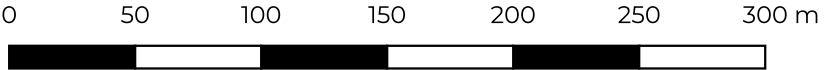


SITE LOCATION

LEGEND

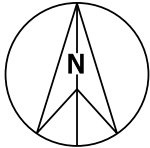
- Approximate Test Pit Location and Number
- Approximate Photo Location and Orientation (Refer Appendix B)
- Stage 5 Development Extent
- Approximate Lot Boundary
- Proposed Lot Boundary (Lots 501 to 518)
Approximate Lot Area (m²)
- Approximate Building Envelope (Proposed)
- Powerline Easement (Proposed)
- Existing Building
- Existing Farm Dam (Intermittent)
- Drainage Depression (Intermittent)
- Watercourse (intermittent)
- Major Gully (intermittent watercourse)
- 2m Elevation Contour (ELVIS DEM)

NOTES:
1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from NSW Six Map, infrastructure & development consulting drawing "Subdivision Plan", Drawing No. 24-107-DA-STG5-C110 Rev C dated 25.03.2026 and draft drawing P000385.04B.DP dated XX.12.25
2. Test locations are approximate only and were located using differential GPS typically accurate to ± 0.1 m depending on satellite coverage

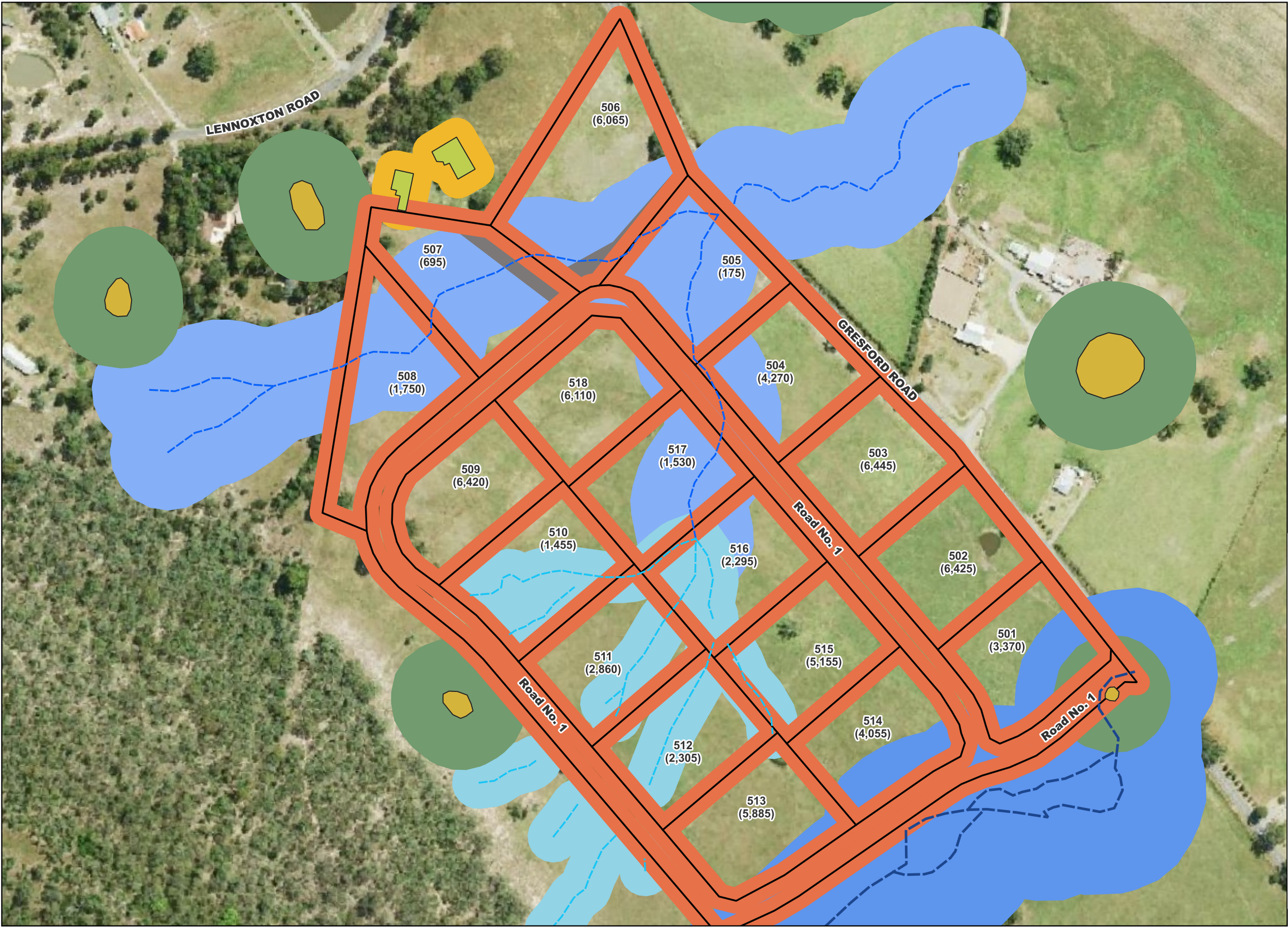


CLIENT: Cornish Group No. Six Pty Ltd
OFFICE: Newcastle DRAWN BY: KMF
SCALE: 1:3000 @A3 DATE: 30.April.2026

TITLE: **Site and Test Location Plan**
Vacy Village South Stage 5 Residential Subdivision
598 Gresford Road, Vacy NSW



PROJECT: 91432.06
DRAWING No: 1 (R.002)
REVISION: 3



SITE LOCATION

- LEGEND
- Proposed Lot Boundary (Lots 501 to 518)
(Approximate Usable Area (m²) for Effluent Management)
 - Major Gully (intermittent watercourse)
 - Watercourse (intermittent)
 - Drainage Depression (intermittent)
 - Existing Farm Dams (intermittent)
 - Existing Dwellings
 - Powerline Easement
 - 15m Buffer to Dwellings
 - 40m Buffer - Farm Dams
 - 20m Buffer to Drainage Depression
 - 45m Buffer to Watercourse (intermittent)
 - 65m Buffer to Major Gully (intermittent)

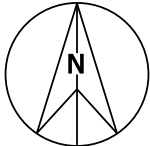
NOTE:
1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from NSW Six Map, infrastructure & development consulting drawing "Subdivision Plan", Drawing No. 24-107-DA-STG5-C110 Rev C dated 25.03.2026 and draft drawing P000385.04B.DP dated XX.12.25

0 50 100 150 200 250 300 m

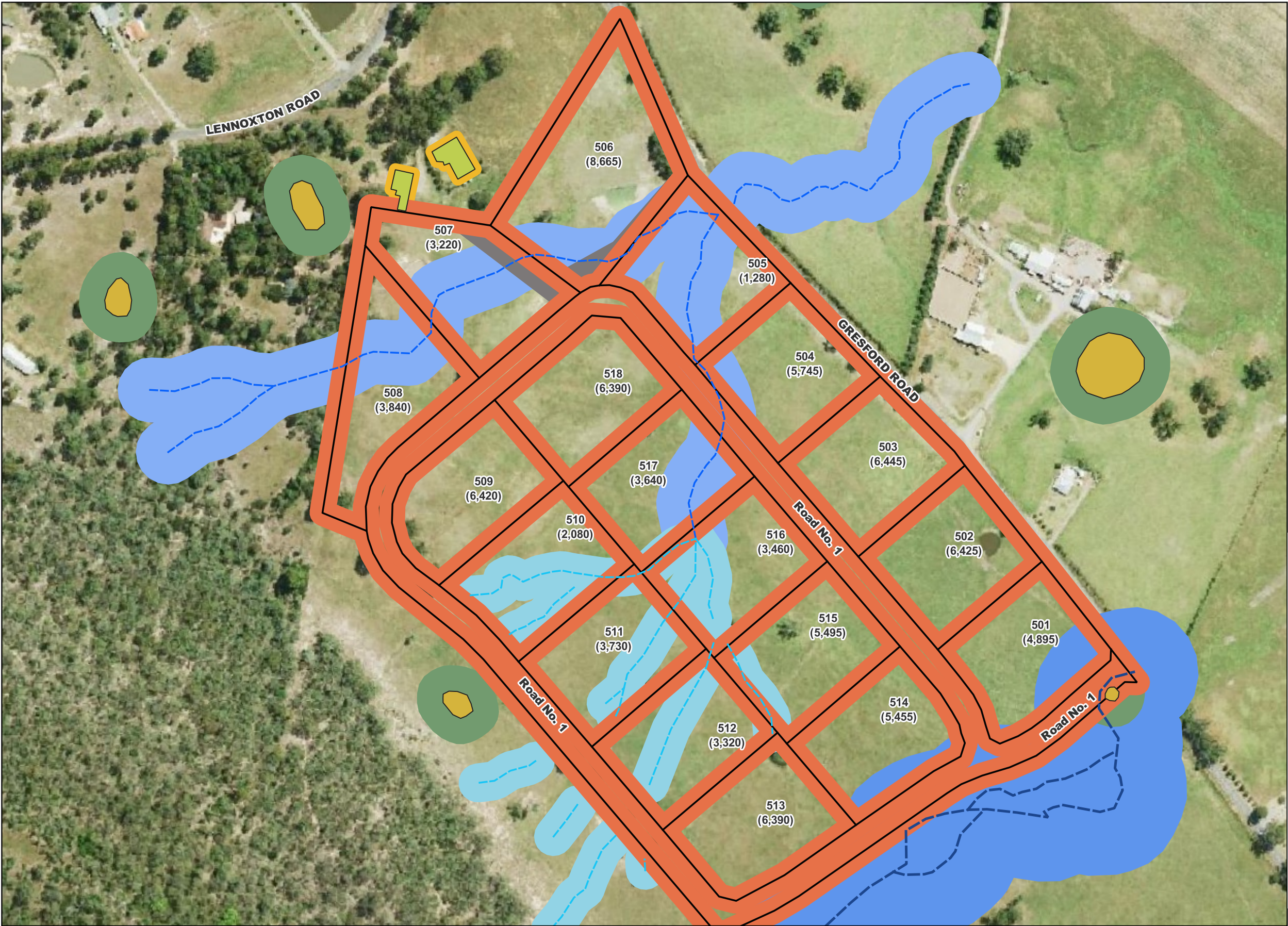


CLIENT: Cornish Group No. Six Pty Ltd
OFFICE: Newcastle DRAWN BY: KMF
SCALE: 1:3000 @A3 DATE: 30.April.2026

TITLE: **Site Constraints and Useable Land for Effluent Management - Combined Waste Streams**
Vacy Village South Stgae 5 Residential Subdivision
598 Gresford Road, Vacy NSW



PROJECT: 91432.06
DRAWING No:2 (R.002)
REVISION: 3



SITE LOCATION

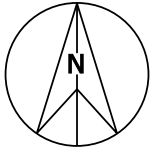
- LEGEND
- Proposed Lot Boundary (Lots 501 to 518)
(Approximate Usable Area (m²) for Effluent Management)
 - Major Gully (intermittent watercourse)
 - Watercourse (intermittent)
 - Drainage Depression (intermittent)
 - Existing Farm Dams (intermittent)
 - Existing Dwellings
 - Powerline Easement
 - 5m Buffer to Dwellings
 - 20m Buffer - Farm Dams
 - 15m Buffer to Drainage Depression
 - 25m Buffer to Watercourse (intermittent)
 - 50m Buffer to Major Gully (intermittent)

NOTE:
1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from NSW Six Map, infrastructure & development consulting drawing "Subdivision Plan", Drawing No. 24-107-DA-STG5-C110 Rev C dated 25.03.2026 and draft drawing P000385.04B.DP dated XX.12.25



CLIENT: Cornish Group No. Six Pty Ltd
OFFICE: Newcastle DRAWN BY: KMF
SCALE: 1:3000 @A3 DATE: 30.April.2026

TITLE: **Site Constraints and Useable Land for Effluent Management - Greywater**
Vacy Village South Stgae 5 Residential Subdivision
598 Gresford Road, Vacy NSW



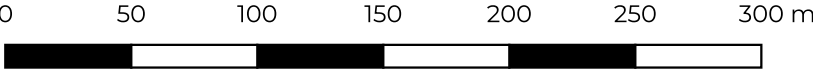
PROJECT: 91432.06
DRAWING No:4 (R.002)
REVISION: 0



SITE LOCATION

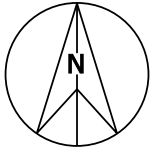
- LEGEND
- Recommended Effluent Disposal Area (m²)
 - Proposed Lot Boundary (Lots 501 to 518)
 - Approximate Building Envelope (15m buffer to recommended effluent disposal area. Does not account for intermittent watercourses)
 - Major Gully (intermittent watercourse)
 - Watercourse (intermittent)
 - Drainage Depression (intermittent, following earthworks)
 - Powerline Easement (approximate)
 - Farm Dams (intermittent, following earthworks)

NOTE:
1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from NSW Six Map & Premise drawing "Plan of Proposed Subdivision of Lot 123 DP 1063557, Vacy" (Sheet Number TP01 Rev D dated 16.10.2025) and draft "Plan of Subdivision of Lot 412 & 414 in DP 1323439" Ref P000385.04B.DP



CLIENT: Cornish Group No. Six Pty Ltd
OFFICE: Newcastle DRAWN BY: KMF
SCALE: 1:3000 @A3 DATE: 30.April.2026

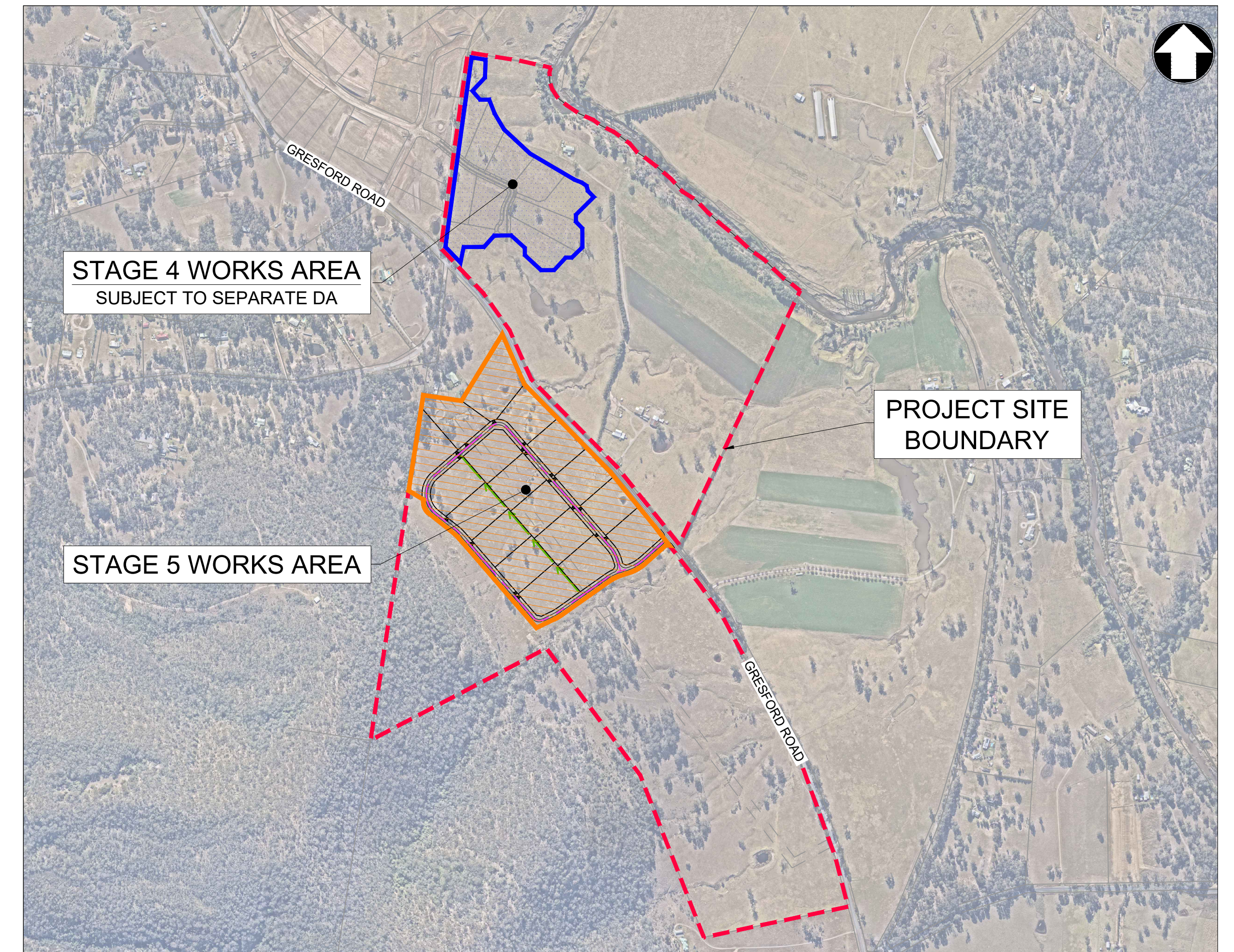
TITLE: **Recommended Effluent Application Areas - Greywater**
Vacy Village South Stage 5 Residential Subdivision
598 Gresford Road, Vacy NSW



PROJECT: 91432.06
DRAWING No: 5 (R.002)
REVISION: 0



PREPARED FOR:

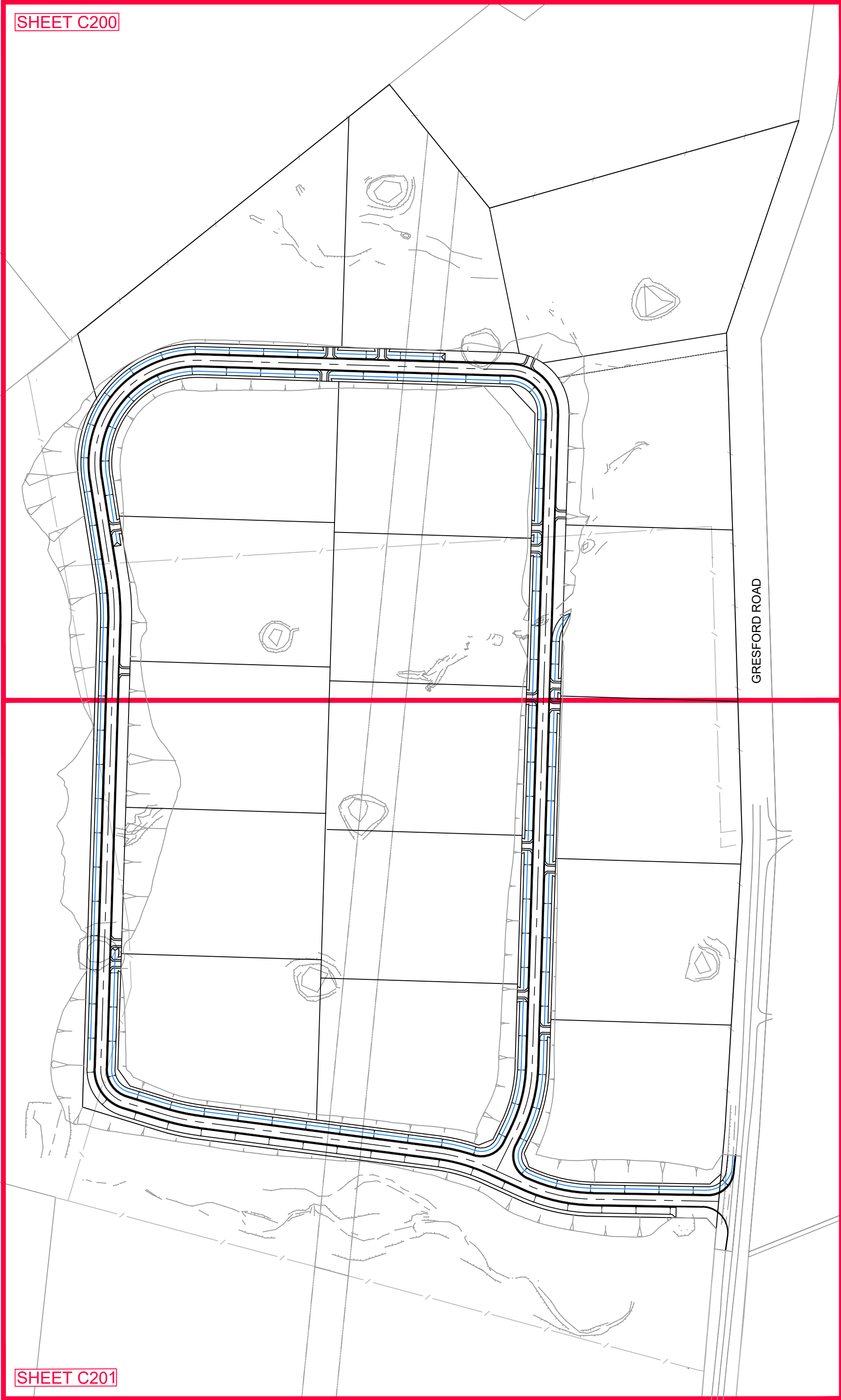


LOCALITY SKETCH
N.T.S

LOT 123 DP 1063557
VACY VILLAGE SOUTH - STAGE 5
598 GRESFORD ROAD
VACY
DA CIVIL DRAWINGS

ISSUED FOR DEVELOPMENT APPLICATION
FOR APPROVAL
24-107-DA-STG5-C010
25.03.2026

DRAWING LIST TABLE	
DRAWING NUMBER	DRAWING TITLE
C010	COVER SHEET
C100	GENERAL ARRANGEMENT PLAN
C105	NOTES AND LEGENDS SHEET
C110	SUBDIVISION PLAN
C120	SEDIMENT AND EROSION CONTROL PLAN SHEET 1
C121	SEDIMENT AND EROSION CONTROL PLAN SHEET 2
C125	SEDIMENT AND EROSION CONTROL DETAILS
C130	CUT AND FILL PLAN
C135	SITE SECTIONS
C150	ROAD ALIGNMENT CONTROL PLAN SHEET 1
C151	ROAD ALIGNMENT CONTROL PLAN SHEET 2
C160	ROAD LONGITUDINAL SECTIONS SHEET 1
C161	ROAD LONGITUDINAL SECTIONS SHEET 2
C162	ROAD LONGITUDINAL SECTIONS SHEET 3
C170	ROAD CROSS SECTIONS SHEET 1
C171	ROAD CROSS SECTIONS SHEET 2
C172	ROAD CROSS SECTIONS SHEET 3
C173	ROAD CROSS SECTIONS SHEET 4
C174	ROAD CROSS SECTIONS SHEET 5
C200	SITEWORKS AND STORMWATER MANAGEMENT PLAN SHEET 1
C201	SITEWORKS AND STORMWATER MANAGEMENT PLAN SHEET 2
C220	KERB RETURN PLANS AND SECTIONS SHEET 1
C221	KERB RETURN PLANS AND SECTIONS SHEET 2
C250	TABLE DRAIN PLANS AND SECTIONS SHEET 1
C251	TABLE DRAIN PLANS AND SECTIONS SHEET 2
C252	TABLE DRAIN PLANS AND SECTIONS SHEET 3
C253	TABLE DRAIN PLANS AND SECTIONS SHEET 4
C254	TABLE DRAIN PLANS AND SECTIONS SHEET 5
C255	TABLE DRAIN PLANS AND SECTIONS SHEET 6
C350	DRAINAGE CALCULATIONS SHEET 1
C351	DRAINAGE CALCULATIONS SHEET 2
C400	SITEWORKS AND STORMWATER DETAILS SHEET 1
C401	SITEWORKS AND STORMWATER DETAILS SHEET 2
C510	STORMWATER CATCHMENT PLAN
C530	MUSIC CATCHMENT PLAN
C600	SIGNAGE AND LINEMARKING PLAN
C700	VEHICLE SIMULATION PLAN SHEET 1



1:2000 0 100m 200m

C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



infrastructure & development consulting
Suite 8.01, 56 Clarence Street
Sydney, NSW 2000

e admin@idcaus.com
w www.idcaus.com

PROJECT
CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE
GENERAL ARRANGEMENT PLAN

SCALE	1:2000	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C100	REV	C		

GENERAL NOTES	
1.	ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL REQUIREMENTS AND / OR AS DIRECTED BY THEIR REPRESENTATIVE;
2.	THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT COUNCIL SPECIFICATIONS AND OTHER CONSULTANT DRAWINGS. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK;
3.	THE CONTRACTOR SHALL NOT ENTER UPON NOR DO ANY WORK WITHIN ADJOINING PROPERTIES WITHOUT THE WRITTEN PERMISSION OF THE OWNERS OR THE RELEVANT AUTHORITY;
4.	NO TREES ARE TO BE REMOVED OTHER THAN THOSE NOTED ON PLAN WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM COUNCIL;
5.	TREES TO BE RETAINED ON SITE SHALL BE PROTECTED BY SUITABLE BARRIER FENCING OR APPROVED EQUIVALENT PRIOR TO THE COMMENCEMENT OF WORKS;
6.	INFRASTRUCTURE & DEVELOPMENT CONSULTING ACCEPTS NO RESPONSIBILITY FOR ANY SURVEY INFORMATION PROVIDED. ALL SURVEY INFORMATION SHOULD BE CONFIRMED BY A REGISTERED SURVEYOR PRIOR TO CONSTRUCTION. ANY DISCREPANCIES, OMISSIONS OR ERRORS SHALL BE REPORTED TO THE SUPERINTENDENT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK;
7.	SURVEY MARKS SHALL BE RETAINED AT ALL TIMES WHERE POSSIBLE. IF A SURVEY MARK IS TO BE REMOVED THE SUPERINTENDENT IS TO BE NOTIFIED AND THE CONTRACTOR IS TO FIRST OBTAIN CONSENT FROM THE DEPARTMENT OF LAND AND PROPERTY INFORMATION NSW PRIOR TO REMOVAL;
8.	THE CONTRACTOR IS TO ARRANGE FOR ALL SITE SET OUT AND CONTROL POINTS BY A REGISTERED SURVEYOR;
9.	IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE THE LINE AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION WORKS AND MAKE ARRANGEMENTS TO RELOCATE OR ADJUST IF NECESSARY. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT;
10.	THE CONTRACTOR SHALL OBTAIN ALL REGULATORY AUTHORITY APPROVALS AT THEIR OWN EXPENSE;
11.	THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS TO ADJOINING PROPERTIES AT ALL TIMES. IF REQUIRED THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES TO MAINTAIN SUPPLY TO EXISTING BUILDINGS REMAINING IN OPERATION DURING THE WORKS. ONCE DIVERSION IS COMPLETE THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD. ALL WORKS TO BE TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT SERVICE AUTHORITY;
12.	CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES;
13.	ALL NEW WORKS TO MAKE SMOOTH TRANSITION WITH EXISTING CONDITIONS;
14.	THE CONTRACTOR SHALL UNDERTAKE ANY TEMPORARY TRAFFIC CONTROL MEASURES AS REQUIRED BY COUNCIL. ALL WORKS TO BE IN ACCORDANCE WITH COUNCIL'S TRAFFIC MANAGEMENT POLICY. ALL APPROPRIATE WARNING SIGNAGE TO BE DISPLAYED FOR THE DURATION OF THE WORKS;
15.	ALL WORKMANSHIP AND MATERIALS TO COMPLY WITH THE RELEVANT CURRENT AUSTRALIAN STANDARDS AND LOCAL STATUTORY AUTHORITY CODES;
16.	MEASUREMENTS ARE NOT TO BE SCALED FROM THE DRAWINGS;

EARTHWORKS NOTES	
1.	ALL EARTHWORKS TO BE CARRIED OUT IN ACCORDANCE WITH AS3798 (2007) - GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS;
2.	ALL WORK IS TO COMPLY WITH THE REQUIREMENTS OF THE PROJECT GEOTECHNICAL REPORT;
3.	ALL UNSUITABLE, SOFT OR WET MATERIALS ARE TO BE REMOVED AND REPLACED PRIOR TO FILLING;
4.	ALL FILL MATERIAL IS TO BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND IS TO BE OF SOUND CLEAN MATERIAL, OF REASONABLE STANDARD AND FREE FROM LARGE ROCKS, STUMPS, ORGANIC MATTER AND OTHER DEBRIS. MAXIMUM PARTICLE SIZE 75mm. PLASTICITY INDEX BETWEEN 2% AND 15%;
5.	ALL FILL MATERIAL IS TO BE PLACED IN MAXIMUM 200mm LAYERS. COMPACTION OF EARTHWORKS AT OPTIMUM MOISTURE CONTENT (-1 TO +3%) SHALL CONTINUE UNTIL A DRY DENSITY RATIO OF 95% FOR LOT, LANDSCAPE AND NON-VEHICULAR PAVED AREAS, 100% FOR VEHICULAR AND ROAD PAVEMENT SUBGRADES, AND 96% BENEATH BUILDING SLABS ARE ACHIEVED IN ACCORDANCE WITH TEST METHOD AS1289 5.1.1;
6.	ALL EARTHWORKS TO TAKE PLACE UNDER LEVEL 1 GEOTECHNICAL SUPERVISION UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT OR THE CONDITIONS OF CONSENT. TESTING OF THE FILL MATERIAL SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY;
7.	EARTHWORKS TO BE STAGED SO THAT THE WORKING SURFACE IS ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION;
8.	IN AREAS OF FILL WHERE THE NATURAL SURFACE EXCEEDS 1(V):4(H) BENCHES ARE TO BE CUT TO PREVENT SLIPPING OF THE PLACED FILL MATERIAL AS REQUIRED BY THE SUPERINTENDENT;
9.	ALL BATTERS TO BE SCARIFIED TO ASSIST WITH ADHESION OF TOPSOIL TO BATTER FACE;
10.	THE CONTRACTOR IS TO CONTROL SEDIMENTATION, EROSION AND POLLUTION DURING EARTHWORKS IN ACCORDANCE WITH THE REQUIREMENTS OF "MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION";

CONCRETE NOTES

1.

ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH AS 3600 (UNO);

2.

CONCRETE MIX PARAMETERS

- MAXIMUM AGGREGATE SIZE = 20mm

- SLUMP = 80mm

- ALL CONCRETE MUST BE CONSOLIDATED WITH MECHANICAL VIBRATORS

- CONCRETE STRENGTH AS PER BELOW

CONCRETE STRENGTHS (CIVIL WORKS ONLY)

USE	STRENGTH GRADE (28 DAYS)	CEMENT TYPE TO AS 3972
PITS	F'c = 32MPa	SL
PAVEMENTS	F'c = 32MPa	SL
KERBS	F'c = 25MPa	SL
MASS CONCRETE	F'c = 25MPa	GP

3.

ALL REINFORCEMENT TO BE SUPPORTED IN ITS CORRECT POSITION DURING CONCRETING BY PLASTIC BAR CHAIRS. WIRE CHAIRS NOT PERMITTED. COVER MUST BE MAINTAINED AT ALL TIMES INCLUDING DRIP GROOVES. ENSURE TIE WIRES DO NOT PROTRUDE INTO THE COVER ZONE;

4.

MINIMUM 40mm COVER TO REINFORCEMENT (UNO);

5.

REINFORCEMENT AS SHOWN ON THESE PLANS IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY SHOWN IN THE TRUE PROJECTION OR SCALE;

6.

ALL CONCRETE TO BE CURED AS FOLLOWS:

- KEEP SURFACE CONTINUOUSLY WET FOR 3 DAYS;

- PREVENT MOISTURE LOSS FOR THE NEXT 4 DAYS USING POLYTHENE SHEETING OR WET HESSIAN PROTECTED FROM WIND AND TRAFFIC, AND THEN ALLOW DRYING OUT;

- CURING COMPOUNDS MAY BE USED PROVIDED THAT THEY APPLY WITH AS3799 AND DO NOT AFFECT FINISHES;

- PVA BASED CURING COMPOUNDS MAY NOT BE USED.

7.

REINFORCEMENT SYMBOLS AS FOLLOWS AS PER AS4671:

N	HOT ROLLED DEFORMED BAR, GRADE 500
R	PLAIN ROUND BAR, GRADE 250
SL / RL	HARD DRAWN WIRE FABRIC (SQUARE OR RECTANGULAR)

8.

MINIMUM ALLOWABLE BEARING CAPACITY UNDER ALL CONCRETE FOUNDATIONS TO BE 150 KPa (UNO). BEARING CAPACITY TO BE CONFIRMED ON SITE BY A GEOTECHNICAL ENGINEER PRIOR TO COMMENCEMENT OF WORKS

STORMWATER NOTES	
1.	STORMWATER DRAINAGE DESIGN CRITERIA: - MINOR SYSTEM = 10yr ARI - MAJOR SYSTEM = 100yr ARI
2.	ALL STORMWATER PIPES Ø375 TO Ø600 SHALL BE CLASS 2 APPROVED SIGPOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINT (UNO);
3.	ALL STORMWATER PIPES Ø675 OR LARGER SHALL BE CLASS 3 APPROVED SIGPOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINT (UNO);
4.	ALL UPVC STORMWATER PIPES TO BE DWW CLASS GRADE SN8 IN ACCORDANCE WITH AS 1260 (UNO)
5.	IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THAT THE STORMWATER PIPE CLASSES SUIT THEIR CONSTRUCTION EQUIPMENT AND METHODOLOGY AND TO CHECK ALL CONSTRUCTION LOADINGS ON THE PIPES. THE CONTRACTOR MUST ENSURE THAT THE MINIMUM COVER ABOVE EACH PIPE IS MAINTAINED AT ALL TIMES;
6.	ALL STORMWATER PIPES TO BE LAID AT A MINIMUM GRADE OF 1% (UNO);
7.	PIPE BEDDING TO BE TYPE H2 (UNO) FOR PIPES NOT UNDER PAVEMENTS AND TYPE HS2 FOR PIPES UNDER PAVEMENTS AS PER AS 3725. IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE (UNO). WHERE PIPE IS UNDER PAVEMENT BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL. COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1;
8.	ALL CONNECTIONS TO EXISTING DRAINAGE PITS TO BE MADE IN A TRADESMAN LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY TO BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH WITH NO PROTRUSIONS;
9.	ALL CAST-IN-SITU CONCRETE STOMRWATER PITS TO BE MINIMUM 32MPa AT 28 DAYS (UNO);
10.	PRECAST CONCRETE PITS MAY BE USED IN LIEU OF CAST-IN-SITU PITS SUBJECT TO REVIEW AND APPROVAL BY THE SUPERINTENDENT;
11.	STORMWATER PITS DEEPER THAN 1m TO HAVE STEP IRONS INSTALLED IN ACCORDANCE WITH THE LOCAL OR STATUTORY AUTHORITY REQUIREMENTS;
12.	3m LENGTH OF SUBSOIL DRAIN WRAPPED IN APPROVED FILTER SOCK TO BE PROVIDED AT THE INVERT OF EACH INCOMING UPSTREAM PIPE ON EACH PIT;
13.	DRAINAGE LINES ON PLAN ARE DIAGRAMMATIC ONLY AND PIPE CENTRELINES ARE TO ENTER AND EXIT PITS AT THE CENTRE OF THE RESPECTIVE PIT WALLS (UNO);
14.	THE BASE OF ALL STORMWATER PITS TO BE BENCHED TO FACILITATE THE SMOOTH FLOW OF WATER;
15.	IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE ADEQUATE SAFETY MEASURES SHALL BE PUT IN PLACE AT ALL TIMES DURING CONSTRUCTION TO MITIGATE THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS;

ASPHALTIC CONCRETE NOTES
1. ASPHALTIC CONCRETE MIX DESIGN, MANUFACTURE, PLACING AND COMPACTION TO BE IN ACCORDANCE WITH: - THE REQUIREMENTS OF THE PROJECT GEOTECHNICAL REPORT; AND - COUNCIL'S RELEVANT CONSTRUCTION SPECIFICATION

SIGNAGE AND LINEMARKING
1. ALL SIGNPOSTING AND LINEMARKING TO BE PLACED IN ACCORDANCE WITH THE FOLLOWING GUIDELINES: - AS 1742.2 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES; - COUNCIL'S RELEVANT STANDARDS.
2. LOCATIONS OF SIGNS SHOWN ON THESE PLANS ARE INDICATIVE ONLY. SIGNS TO BE SETOUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE GUIDELINES;
3. ALL STREET SIGNS TO BE CHARCOAL POWDER COATED (UNO)

PAVEMENT LEGEND	
	ASPHALTIC CONCRETE PAVEMENT REFER TO DRAWING C150-C151. DETAILS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER DURING DETAILED DESIGN PHASE
	PROPOSED LANDSCAPING IN ACCORDANCE WITH LANDSCAPE ARCHITECTS REQUIREMENTS
	LOT DRIVEWAY PAVEMENT IN ACCORDANCE WITH COUNCIL STANDARD DRAWING No. SD0015
ALL PAVEMENTS ARE INDICATIVE ONLY AND ARE SUBJECT TO CONFIRMATION VIA ADDITIONAL GEOTECHNICAL INVESTIGATION, TESTING AND DESIGN DURING SUBSEQUENT DETAILED DESIGN PHASE	

CIVIL WORKS LEGEND	
	CONSTRUCT TABLE DRAIN
	CONSTRUCT BATTER
	MAJOR CONTOUR
	MINOR CONTOUR
	STORMWATER DRAINAGE STRUCTURE / PIT NUMBER. REFER SCHEDULE
	SURFACE INLET PIT IN ACCORDANCE WITH DETAIL ON DRAWING C400
	PROPOSED STORMWATER DRAINAGE LINE WITH PIPE SIZE
	PROPOSED HEADWALL OUTLET
	PROVIDE OUTLET SCOUR PROTECTION. REFER DETAILS
	EXISTING 20m WIDE TRANSMISSION EASEMENT
	OVERLAND FLOW PATH
	GRASS LINED V-DRAIN. REFER DETAIL ON DRAWING C400
	PROPOSED STACKED ROCK HEADWALL AND SCOUR PROTECTION OUTLET

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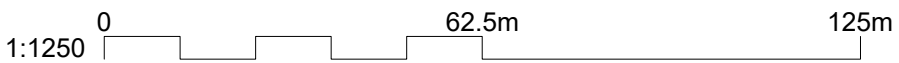
PROJECT
CORNISH GROUP VACY VILLAGE SOUTH STAGE 5 589 GRESFROD ROAD LOT123 DP1063557

DRAWING TITLE		
NOTES AND LEGENDS SHEET		
SCALE	STATUS	SIZE
	DA	A1
DRAWING NO.	REV	
24-107-DA-STG5-C105	C	



LEGEND

EXISTING 20m WIDE
TRANSMISSION EASEMENT



REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
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PROJECT
CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE
SUBDIVISION PLAN

SCALE 1:1250	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C110	REV C	

LEGEND

	TEMPORARY SEDIMENT FENCE. REFER TO DRAWING C125 FOR DETAILS
	STRAW BALE SEDIMENT TRAP. REFER TO DRAWING C125 FOR DETAILS
	DROP INLET SEDIMENT TRAP. REFER TO DRAWING C125 FOR DETAILS
	STABILISED CONSTRUCTION ENTRANCE. REFER TO DRAWING C125 FOR DETAILS
	EXISTING TREE TO BE REMOVED
	TEMPORARY SEDIMENT BASIN
	TEMPORARY CATCH DRAIN
	EXISTING 20m WIDE TRANSMISSION EASEMENT

EXISTING 20m WIDE
TRANSMISSION EASEMENT

EXISTING DAM TO BE DESILTED,
DEWATERED AND DECOMMISSIONED
IN ACCORDANCE WITH GEOTECHNICAL
ENGINEERS REQUIREMENTS.

EXISTING DAM TO BE DESILTED,
DEWATERED AND DECOMMISSIONED
IN ACCORDANCE WITH GEOTECHNICAL
ENGINEERS REQUIREMENTS.

PROVIDE TEMPORARY DROP
INLET SEDIMENT TRAP IN
ACCORDANCE WITH DETAIL
ON DRAWING C125 (TYP.)

EXISTING DAM TO BE DESILTED,
DEWATERED AND DECOMMISSIONED IN
ACCORDANCE WITH GEOTECHNICAL
ENGINEERS REQUIREMENTS.

CONTRACTOR TO LOCATE LINE AND LEVEL OF ALL EXISTING SERVICES ON SITE PRIOR TO COMMENCEMENT OF WORKS. EXISTING SERVICES TO BE ADJUSTED AS REQUIRED TO SUIT PROPOSED WORKS. ALL WORKS TO BE IN ACCORDANCE WITH SERVICE PROVIDERS REQUIREMENTS (TYP.)

PROVIDE STRAW BALE
SEDIMENT TRAP AT
REGULAR INTERVALS WITHIN
TABLE DRAIN. REFER DETAIL
ON DRAWING C125 (TYP.)

CONSTRUCT TEMPORARY SEDIMENT
BASIN. BASIN TO BE CONSTRUCTED
IN ACCORDANCE WITH THE
REQUIREMENTS OF THE "BLUE
BOOK"

EXISTING REDUNDANT RURAL
FENCING TO BE DEMOLISHED AND
REMOVED.

EXISTING DAM TO BE DESILTED,
DEWATERED AND DECOMMISSIONED
IN ACCORDANCE WITH GEOTECHNICAL
ENGINEERS REQUIREMENTS.

— PROVIDE TEMPORARY
SEDIMENT FENCE IN
ACCORDANCE WITH DETAIL
ON DRAWING C125 (TYP.)

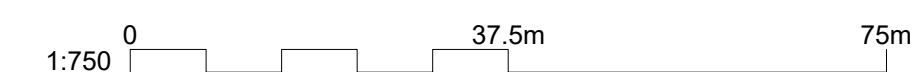
EXISTING REDUNDANT RURAL
FENCING TO BE DEMOLISHED AND
REMOVED.

PROVIDE TEMPORARY
CATCH DRAIN DURING
CONSTRUCTION. DIVERT
FLOWS TO SEDIMENT
BASIN. (TYP.)

FOR CONTINUATION REFER TO DWG NO. 121



1. THIS PLAN PRESENTS AN INDICATIVE SOIL AND EROSION MANAGEMENT STRATEGY AND IS OF A CONCEPTUAL NATURE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT AND MANAGEMENT OF THE SITE AND PREPARING A DETAILED PLAN AND OBTAINING APPROVAL FROM THE RELEVANT AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORKS;
2. THIS PLAN IS TO BE READ IN CONJUNCTION WITH BOTH THE RELEVANT ENGINEERING PLANS AND THE GUIDELINES SET OUT IN 'MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION' (ALSO KNOWN AS THE "BLUE BOOK");
3. ALL BUILDERS AND SUB-CONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS;
4. VEHICULAR TRAFFIC SHALL BE CONTROLLED DURING CONSTRUCTION WORKS WITH ACCESS CONFINED TO THE NOMINATED SITE ENTRANCE AS SHOWN ON THIS PLAN OR A LOCATION DETERMINED BY THE SUPERINTENDENT. AREAS TO BE LEFT UNDISTURBED SHALL BE MARKED OFF;
5. PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS THE SITE IS TO BE INSPECTED TO IDENTIFY AND APPROPRIATELY MARK:
 - a) THE TREES TO BE REMOVED;
 - b) THE TREES TO BE RETAINED AND APPROPRIATELY PROTECTED
6. ALL DISTURBED AREAS SHALL BE REVEGETATED WITHIN 14 WORKING DAYS OF COMPLETION OF FORMATION;
7. NO TREES ARE TO BE REMOVED WITHOUT WRITTEN PERMISSION FROM COUNCIL;
8. MANAGEMENT DEVICES TO BE MAINTAINED ON A REGULAR BASIS, WHERE CLEANING IS REQUIRED THE SEDIMENT SHALL BE REMOVED TO AN APPROPRIATE LOCATION AS NOMINATED BY THE SUPERINTENDENT;
9. DUST TO BE MINIMISED BY SPRINKLING LARGE DISTURBED AREAS WITH WATER WHEN REQUIRED
10. MANAGEMENT DEVICES TO REMAIN IN PLACE UNTIL THE COMPLETION OF THE MAINTENANCE PERIOD.



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REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



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PROJECT

CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE

SEDIMENT AND EROSION CONTROL PLAN SHEET 1

SCALE 1:750	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C120		REV C

CONTRACTOR TO LOCATE LINE AND LEVEL OF ALL EXISTING SERVICES ON SITE PRIOR TO COMMENCEMENT OF WORKS. EXISTING SERVICES TO BE ADJUSTED AS REQUIRED TO SUIT PROPOSED WORKS. ALL WORKS TO BE IN ACCORDANCE WITH SERVICE PROVIDERS REQUIREMENTS (TYP.)

EXISTING DAM TO BE DESILTED, DEWATERED AND DECOMMISSIONED IN ACCORDANCE WITH GEOTECHNICAL ENGINEERS REQUIREMENTS.

EXISTING DAM TO BE DESILTED, DEWATERED AND DECOMMISSIONED IN ACCORDANCE WITH GEOTECHNICAL ENGINEERS REQUIREMENTS.

EXISTING DAM TO BE DESILTED, DEWATERED AND DECOMMISSIONED IN ACCORDANCE WITH GEOTECHNICAL ENGINEERS REQUIREMENTS.

EXISTING REDUNDANT RURAL FENCING TO BE DEMOLISHED AND REMOVED.

PROVIDE TEMPORARY SEDIMENT FENCE IN ACCORDANCE WITH DETAIL ON DRAWING C125 (TYP.)

EXISTING DAM TO BE DESILTED, DEWATERED AND DECOMMISSIONED IN ACCORDANCE WITH GEOTECHNICAL ENGINEERS REQUIREMENTS.

EXISTING REDUNDANT RURAL FENCING TO BE DEMOLISHED AND REMOVED.

INDICATIVE LOCATION OF TEMPORARY STOCKPILE DURING EARTHWORKS PHASE. FINAL LOCATION TO BE CONFIRMED BY SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS

PROVIDE TEMPORARY DROP INLET SEDIMENT TRAP IN ACCORDANCE WITH DETAIL ON DRAWING C125 (TYP.)

CONSTRUCT TEMPORARY SITE ACCESS WITH SHAKER GRID. REFER DETAIL ON DRAWING C125

PROVIDE STRAW BALE SEDIMENT TRAP AT REGULAR INTERVALS WITHIN TABLE DRAIN. REFER DETAIL ON DRAWING C125 (TYP.)

UTILISE EXISTING DAM TO CONSTRUCT TEMPORARY SEDIMENT BASIN. BASIN TO BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE "BLUE BOOK"

PROVIDE TEMPORARY CATCH DRAIN DURING CONSTRUCTION. DIVERT FLOWS TO SEDIMENT BASIN. (TYP.)

LEGEND

- TEMPORARY SEDIMENT FENCE. REFER TO DRAWING C125 FOR DETAILS
- STRAW BALE SEDIMENT TRAP. REFER TO DRAWING C125 FOR DETAILS
- DROP INLET SEDIMENT TRAP. REFER TO DRAWING C125 FOR DETAILS
- STABILISED CONSTRUCTION ENTRANCE. REFER TO DRAWING C125 FOR DETAILS
- EXISTING TREE TO BE REMOVED
- TEMPORARY SEDIMENT BASIN
- TEMPORARY STOCKPILE
- TEMPORARY CATCH DRAIN
- EXISTING 20m WIDE TRANSMISSION EASEMENT

SEDIMENT CONTROL NOTES

- THIS PLAN PRESENTS AN INDICATIVE SOIL AND EROSION MANAGEMENT STRATEGY AND IS OF A CONCEPTUAL NATURE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT AND MANAGEMENT OF THE SITE AND PREPARING A DETAILED PLAN AND OBTAINING APPROVAL FROM THE RELEVANT AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORKS;
- THIS PLAN IS TO BE READ IN CONJUNCTION WITH BOTH THE RELEVANT ENGINEERING PLANS AND THE GUIDELINES SET OUT IN "MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION" (ALSO KNOWN AS THE "BLUE BOOK");
- ALL BUILDERS AND SUB-CONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS;
- VEHICULAR TRAFFIC SHALL BE CONTROLLED DURING CONSTRUCTION WORKS WITH ACCESS CONFINED TO THE NOMINATED SITE ENTRANCE AS SHOWN ON THIS PLAN OR A LOCATION DETERMINED BY THE SUPERINTENDENT. AREAS TO BE LEFT UNDISTURBED SHALL BE MARKED OFF;
- PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS THE SITE IS TO BE INSPECTED TO IDENTIFY AND APPROPRIATELY MARK:
 - THE TREES TO BE REMOVED;
 - THE TREES TO BE RETAINED AND APPROPRIATELY PROTECTED
- ALL DISTURBED AREAS SHALL BE REVEGETATED WITHIN 14 WORKING DAYS OF COMPLETION OF FORMATION;
- NO TREES ARE TO BE REMOVED WITHOUT WRITTEN PERMISSION FROM COUNCIL;
- MANAGEMENT DEVICES TO BE MAINTAINED ON A REGULAR BASIS. WHERE CLEANING IS REQUIRED THE SEDIMENT SHALL BE REMOVED TO AN APPROPRIATE LOCATION AS NOMINATED BY THE SUPERINTENDENT;
- DUST TO BE MINIMISED BY SPRINKLING LARGE DISTURBED AREAS WITH WATER WHEN REQUIRED
- MANAGEMENT DEVICES TO REMAIN IN PLACE UNTIL THE COMPLETION OF THE MAINTENANCE PERIOD.

1:750 0 37.5m 75m

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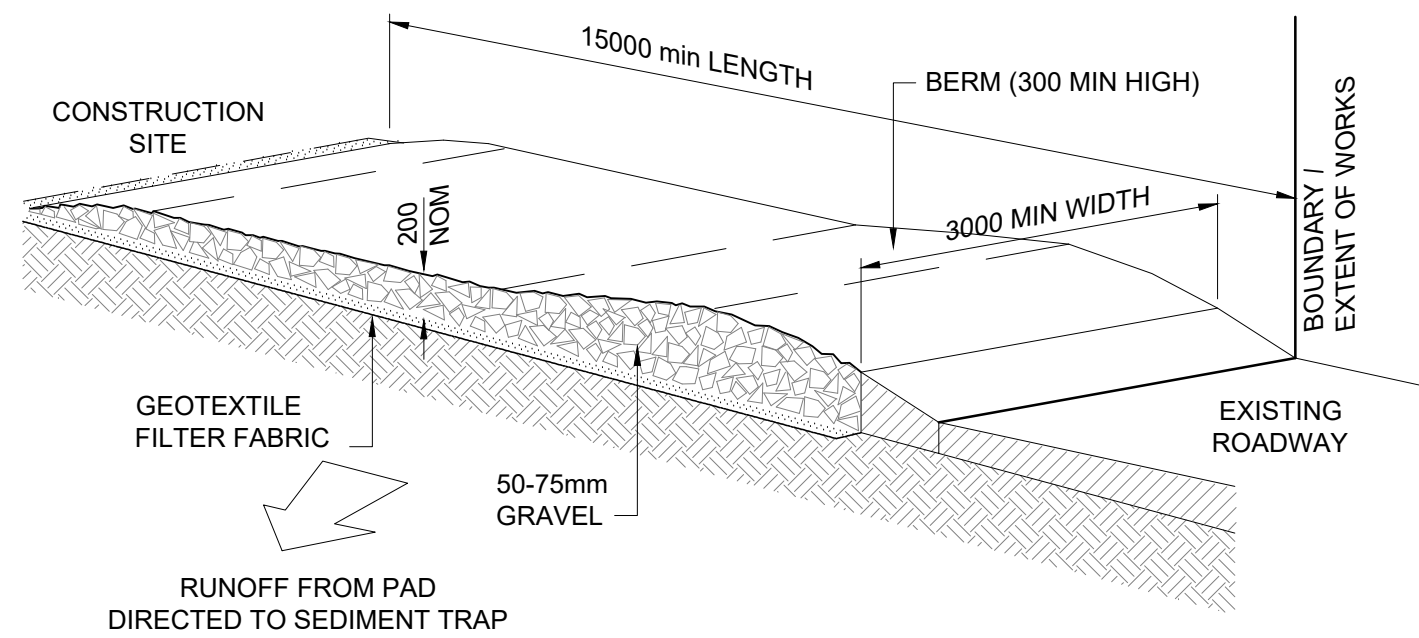
PROJECT

CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFORD ROAD
LOT123 DP1063557

DRAWING TITLE

SEDIMENT AND EROSION
CONTROL PLAN SHEET 2

SCALE	STATUS	SIZE
1:750	DA	A1
DRAWING NO.	REV	
24-107-DA-STG5-C121	C	

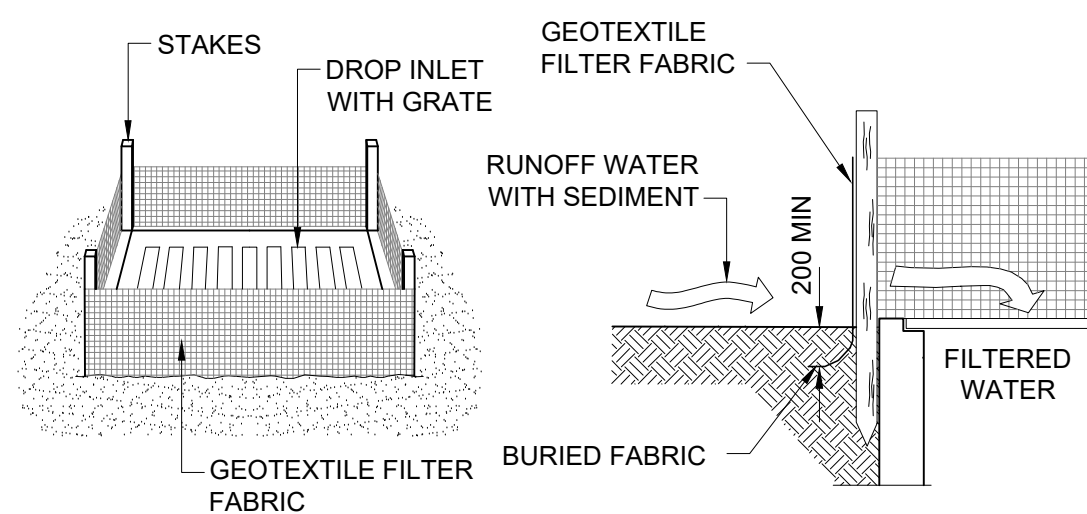


TEMPORARY SITE ENTRANCE

NTS

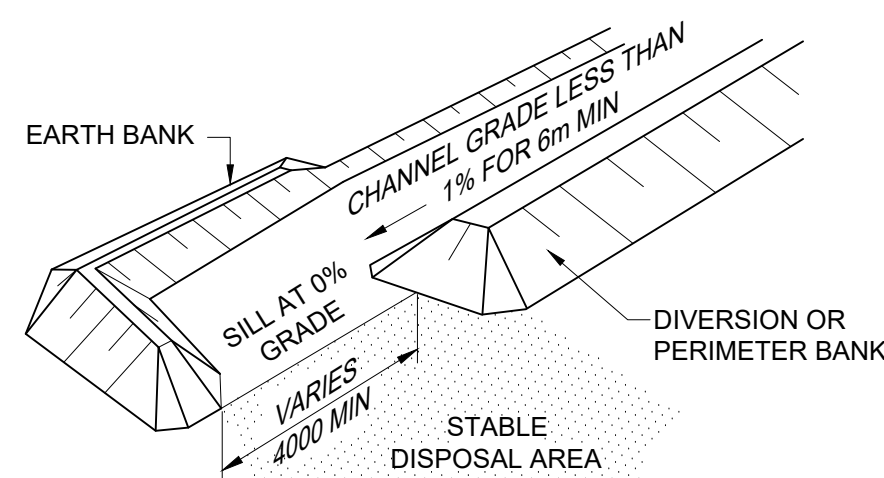
MAINTENANCE

- THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY.
- THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.



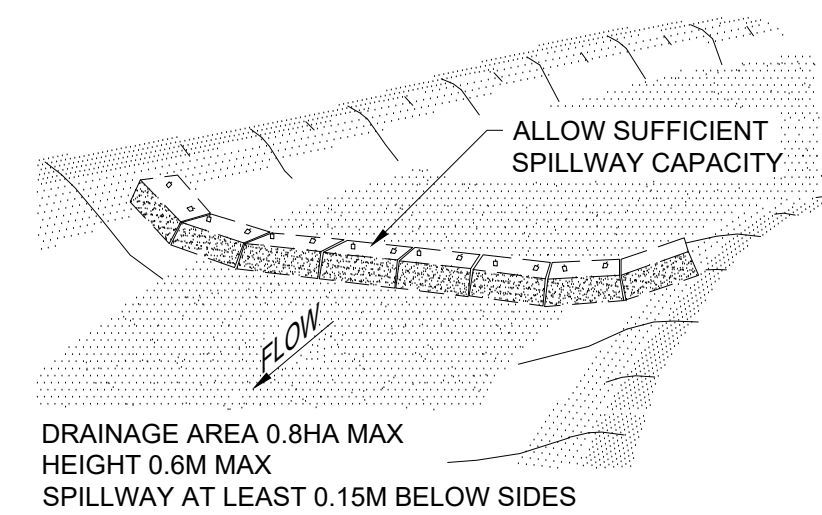
SEDIMENT TRAP FOR DROP INLET
(GEOTEXTILE FILTER FABRIC)

NTS



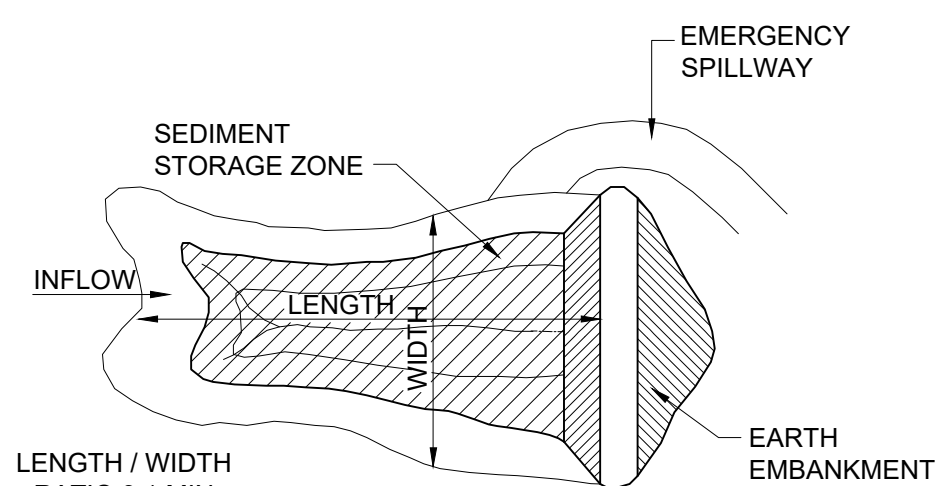
LEVEL SPREADER (OR SILL)

NTS



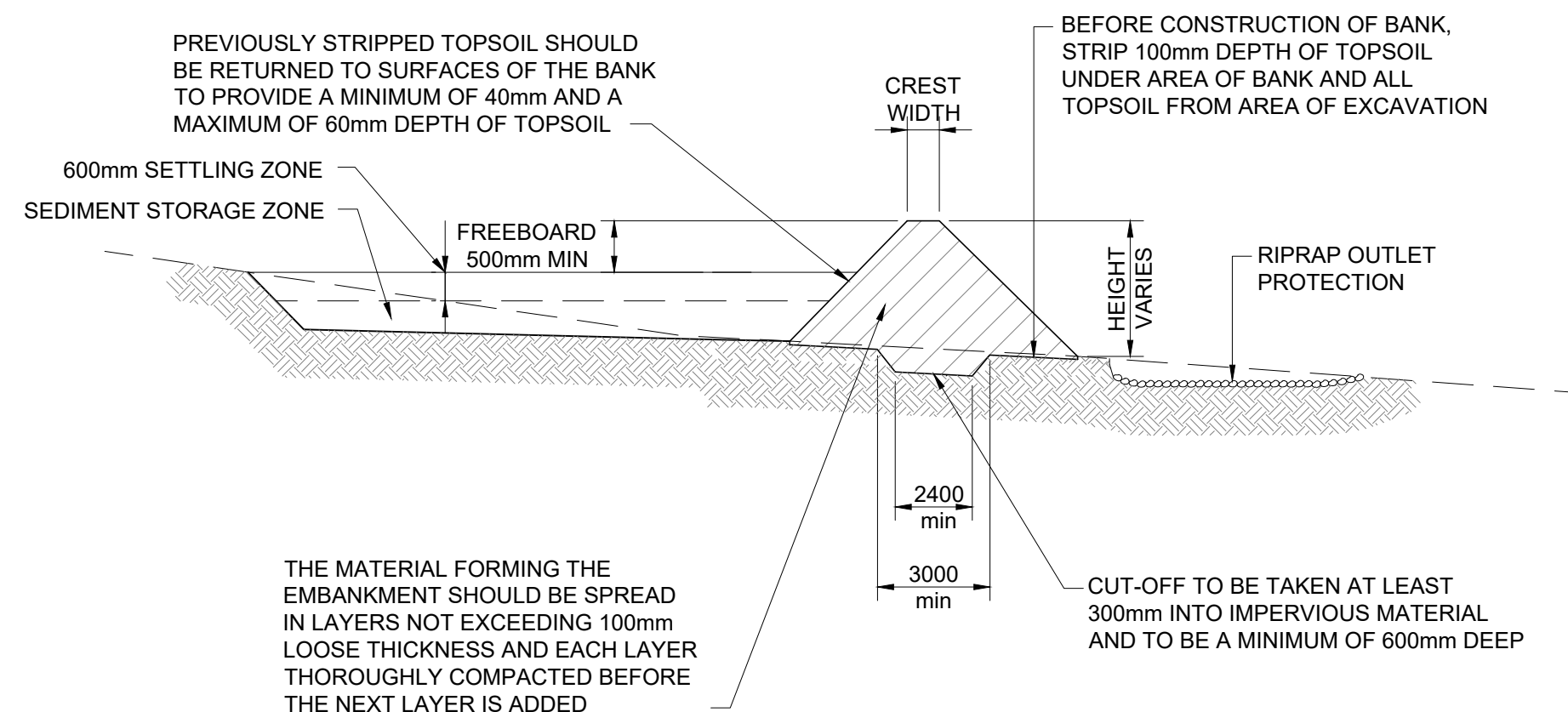
CHECK DAM - STRAW BALE

NTS



SEDIMENT BASIN (TYPICAL) PLAN - TYPE D AND F SOILS

NTS



SEDIMENT BASIN (TYPICAL) CROSS SECTION - TYPE D AND F SOILS

NTS

NOT TO SCALE

REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
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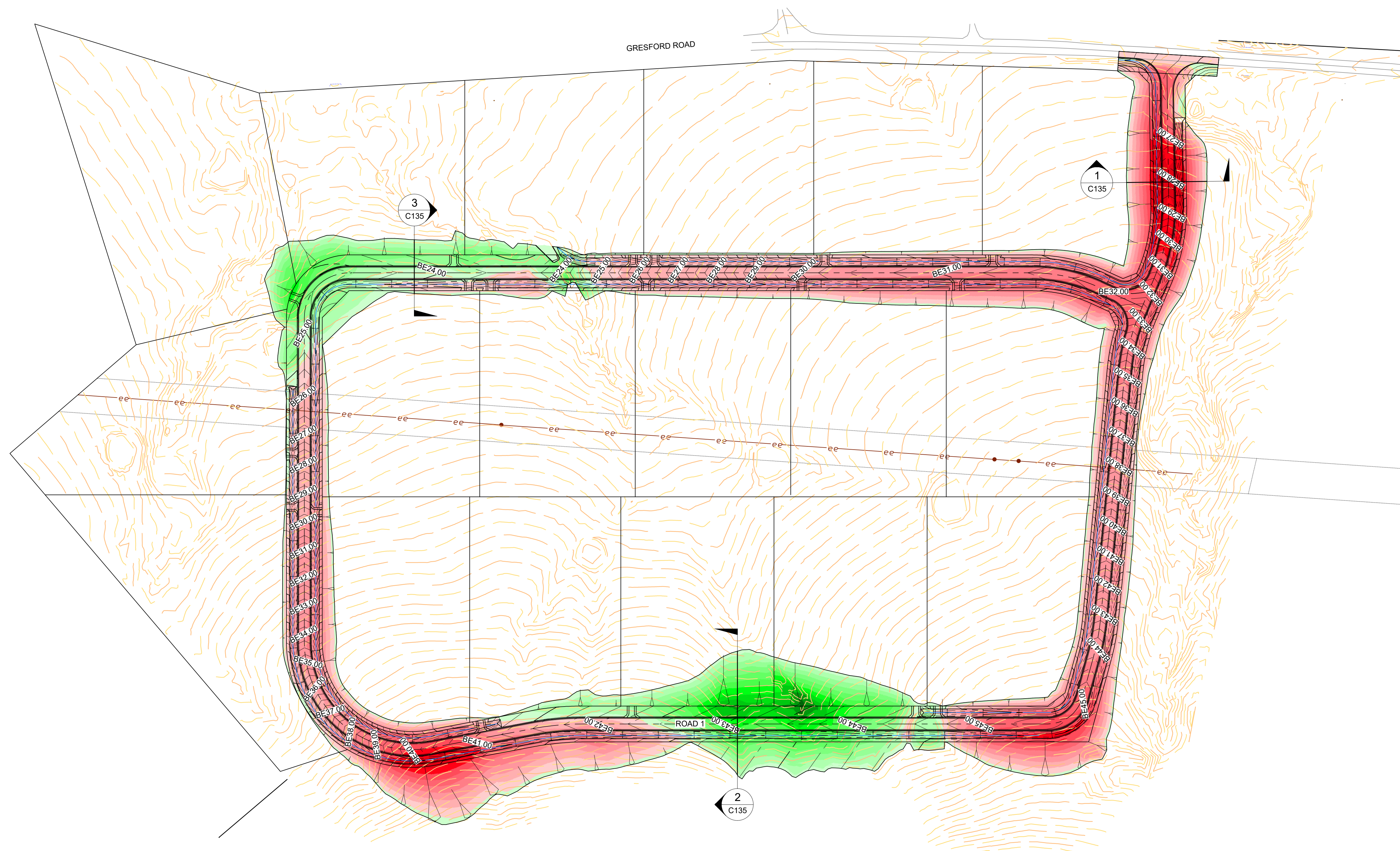
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PROJECT
**CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557**

DRAWING TITLE
**SEDIMENT AND EROSION
CONTROL DETAILS**

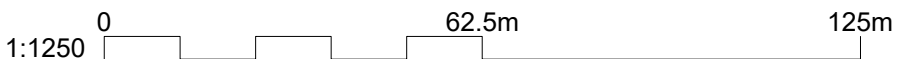
SCALE NTS	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C125	REV C	



DEPTH RANGE LEGEND			
	-4.00m to -3.50m		0.00m to 0.50m
	-3.50m to -3.00m		0.50m to 1.00m
	-3.00m to -2.50m		1.00m to 1.50m
	-2.50m to -2.00m		1.50m to 2.00m
	-2.00m to -1.50m		2.00m to 2.50m
	-1.50m to -1.00m		2.50m to 3.00m
	-1.00m to -0.50m		3.00m to 3.50m
	-0.50m to 0.00m		3.50m to 4.00m
			4.00m to 4.50m
			4.50m to 5.00m
			5.00m to 5.50m
			5.50m to 6.00m

CUT AND FILL VOLUMES	
APPROXIMATE VOLUMES	
TOTAL CUT = - 44,385 m ³	
TOTAL FILL = + 21,856 m ³	
BALANCE = - 22,529 m ³	

CUT AND FILL NOTES	
ESTIMATED VOLUMES BETWEEN EXISTING SURVEY AND DESIGN SURFACE LEVELS. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL VOLUMES PRIOR TO CONSTRUCTION.	
THE CUT / FILL CALCULATIONS HAVE BEEN BASED ON THE FOLLOWING ASSUMPTIONS:	
• ASSUMED 200mm TOPSOIL STRIP FROM EXISTING; • ASSUMED ROAD PAVEMENT DEPTH OF 600mm; • ASSUMED 200mm DEPTH FOR FOOTPATHS AND VERGE; • NO ALLOWANCE FOR REMOVAL OF EXISTING BUILDING AND ROAD PAVEMENTS • VOLUMES WITHIN STORMWATER / SERVICE TRENCHES HAS NOT BEEN CALCULATED • NO BULKING FACTORS HAVE BEEN APPLIED	



C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR

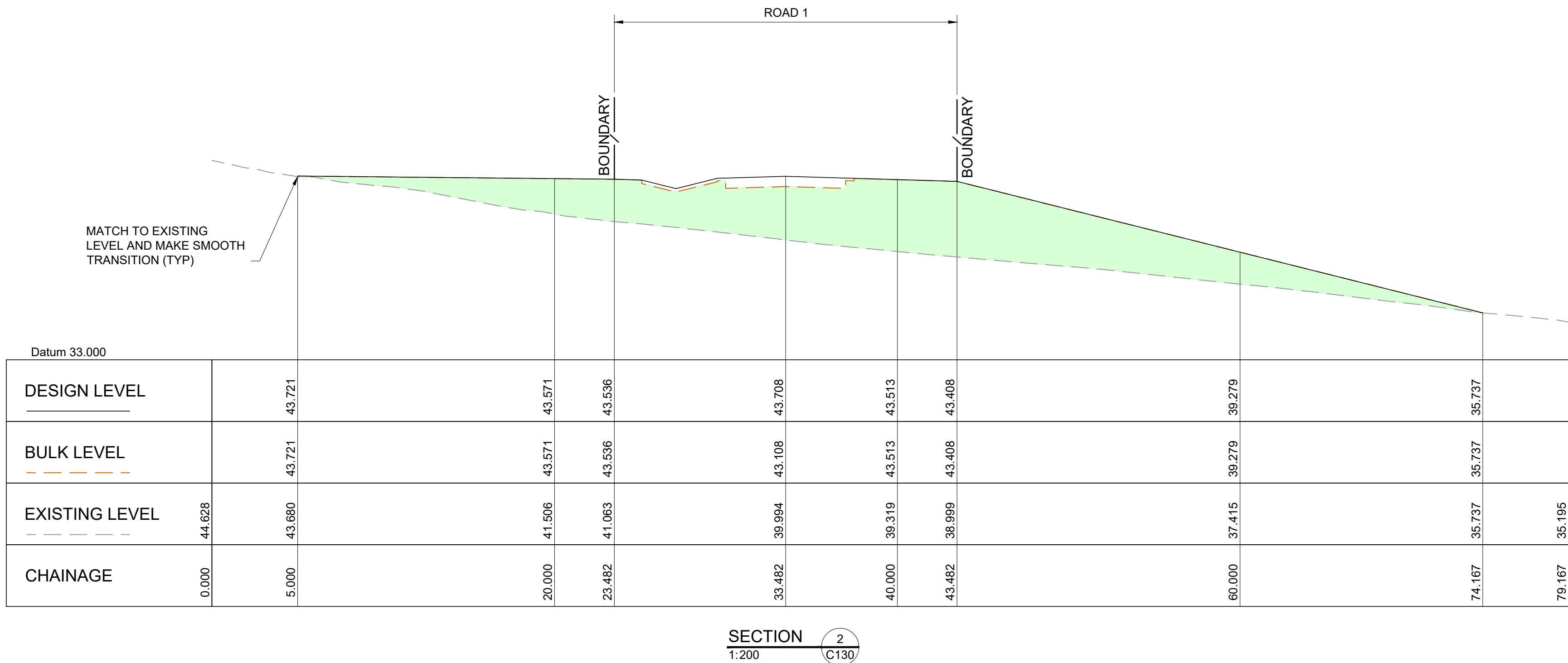
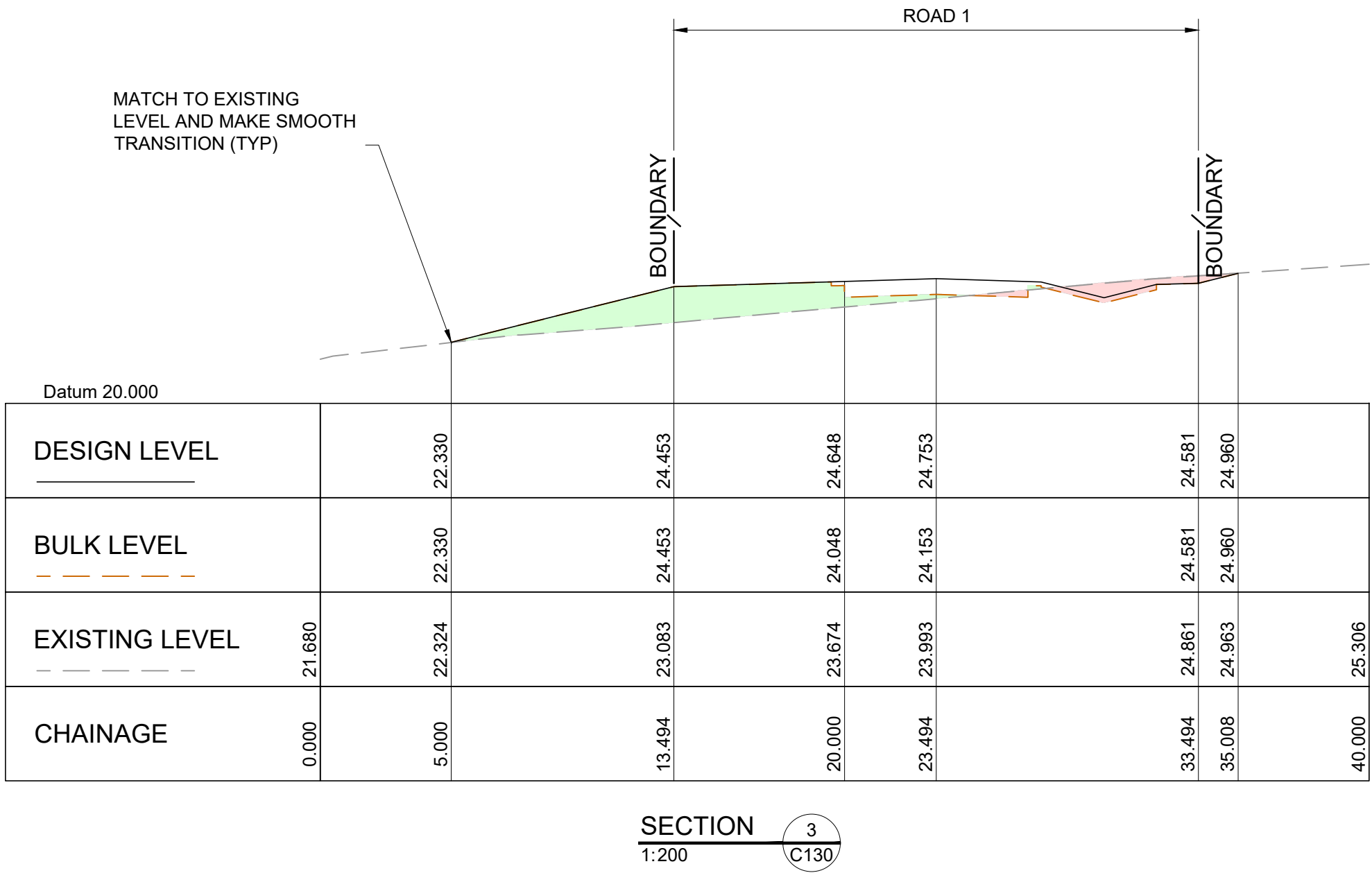
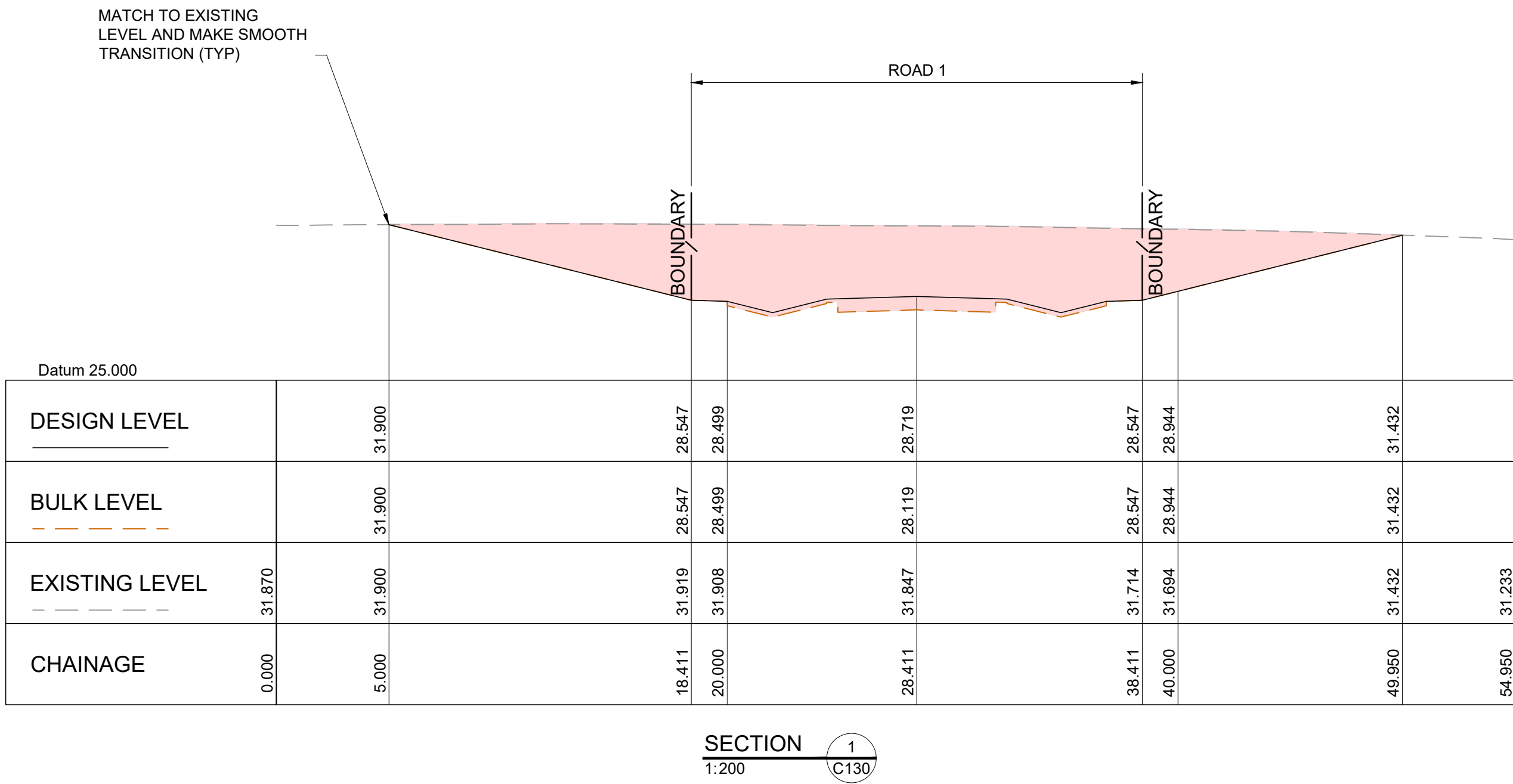


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PROJECT
**CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFORD ROAD
LOT123 DP1063557**

DRAWING TITLE
CUT AND FILL PLAN

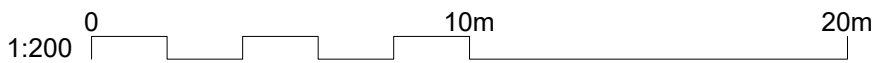
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DRAWING NO.	24-107-DA-STG5-C130	REV	C		



LEGEND

PROPOSED CUT AREAS

PROPOSED FILL AREAS



B	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



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PROJECT

CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

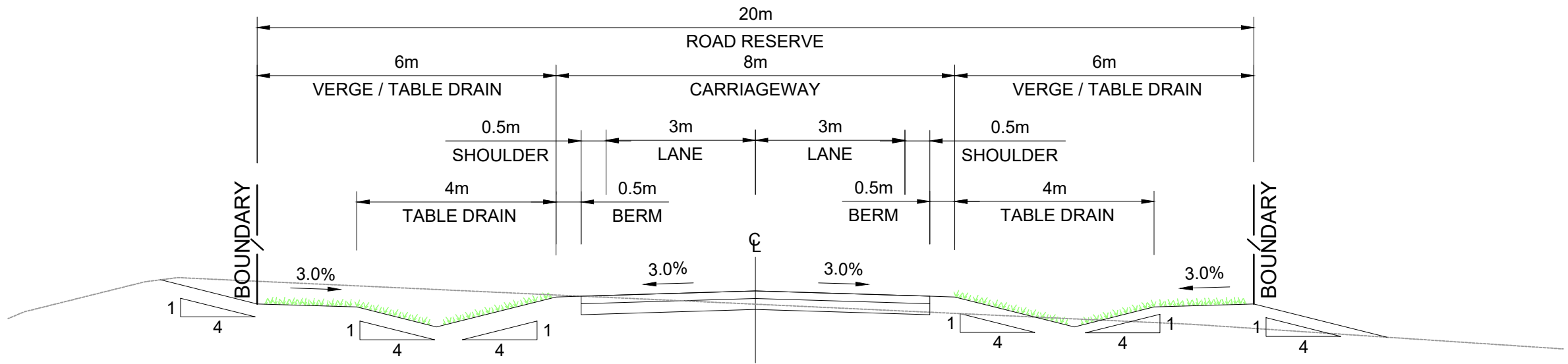
DRAWING TITLE

SITE SECTIONS

SCALE	AS SHOWN	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C135	REV	B		



PLAN
1:1500



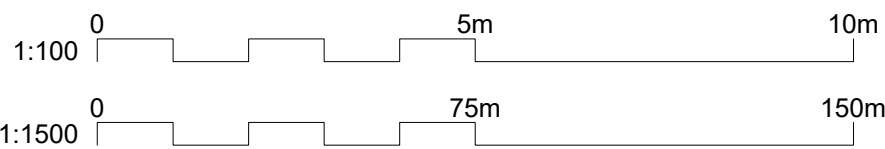
20m LOCAL ROAD
ROAD 1
1:100

PAVEMENT PROFILE*
WEARING COURSE = 30mm AC10 OR SPRAY SEAL
BASE COURSE = 150mm DGB20 COMPACTED TO 98% MDD
SUB BASE COURSE = 220mm CRUSHED SANDSTONE TO 95% MDD
SUBGRADE = 200mm SELECT FILL (CRUSHED SANDSTONE) TO 100% SDD
TRAFFIC ESA = 1 x 10⁶

***NOTE:**
ASSUMED PAVEMENT DETAILS AS SHOWN ON THIS DRAWING ARE ADOPTED FROM THE RECENTLY CONSTRUCTED VACY VILLAGE SOUTH STAGE 1-3 IN ACCORDANCE WITH PAVEMENT DESIGN REPORT 91432.00.R.001.REV0 BY DOUGLAS PARTNERS PTY LTD. ALL WORKS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE REPORT AND DUNOG SHIRE COUNCIL GUIDELINES

LEGEND

EXISTING 20m WIDE
TRANSMISSION EASEMENT



REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH



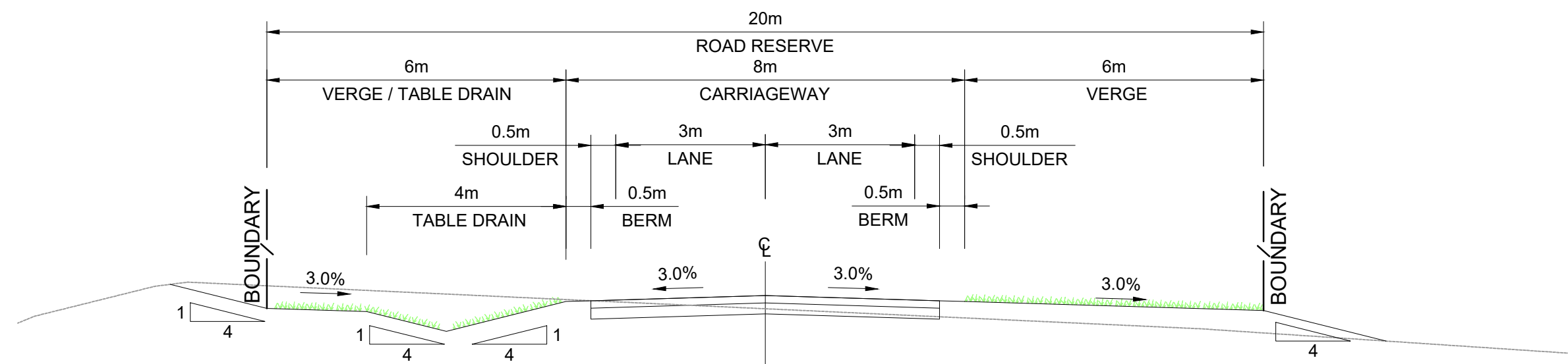
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PROJECT
**CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557**

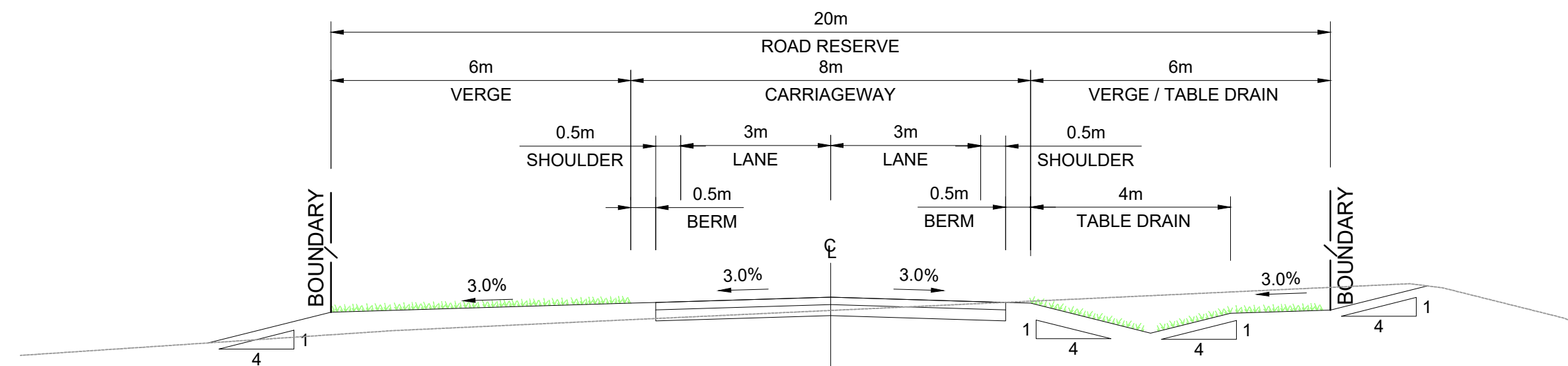
DRAWING TITLE
**ROAD ALIGNMENT CONTROL PLAN
AND TYPICAL SECTIONS
SHEET 1**

SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C150	REV C	



20m LOCAL ROAD
ROAD 1
(SWALE UPSTREAM ONLY)
1:100

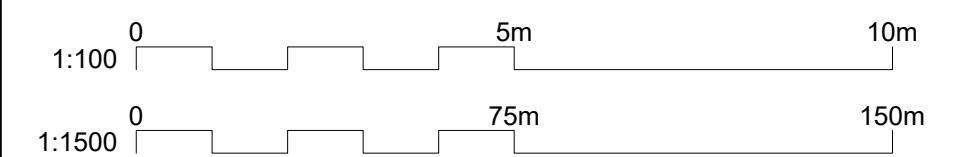
PAVEMENT PROFILE*
WEARING COURSE = 30mm AC10 OR SPRAY SEAL
BASE COURSE = 150mm DGB20 COMPACTED TO 98% MDD
SUB BASE COURSE = 220mm CRUSHED SANDSTONE TO 95% MDD
SUBGRADE = 200mm SELECT FILL (CRUSHED SANDSTONE) TO 100% SDD
TRAFFIC ESA = 1 x 10⁶



20m LOCAL ROAD
ROAD 1
(SWALE DOWNSTREAM ONLY)
1:100

PAVEMENT PROFILE*
WEARING COURSE = 30mm AC10 OR SPRAY SEAL
BASE COURSE = 150mm DGB20 COMPACTED TO 98% MDD
SUB BASE COURSE = 220mm CRUSHED SANDSTONE TO 95% MDD
SUBGRADE = 200mm SELECT FILL (CRUSHED SANDSTONE) TO 100% SDD
TRAFFIC ESA = 1 x 10⁶

***NOTE:**
ASSUMED PAVEMENT DETAILS AS SHOWN ON THIS DRAWING ARE ADOPTED FROM THE RECENTLY CONSTRUCTED VACY VILLAGE SOUTH STAGE 1-3 IN ACCORDANCE WITH PAVEMENT DESIGN REPORT 91432.00.R.001.REV0 BY DOUGLAS PARTNERS PTY LTD. ALL WORKS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE REPORT AND DUNGOG SHIRE COUNCIL GUIDELINES



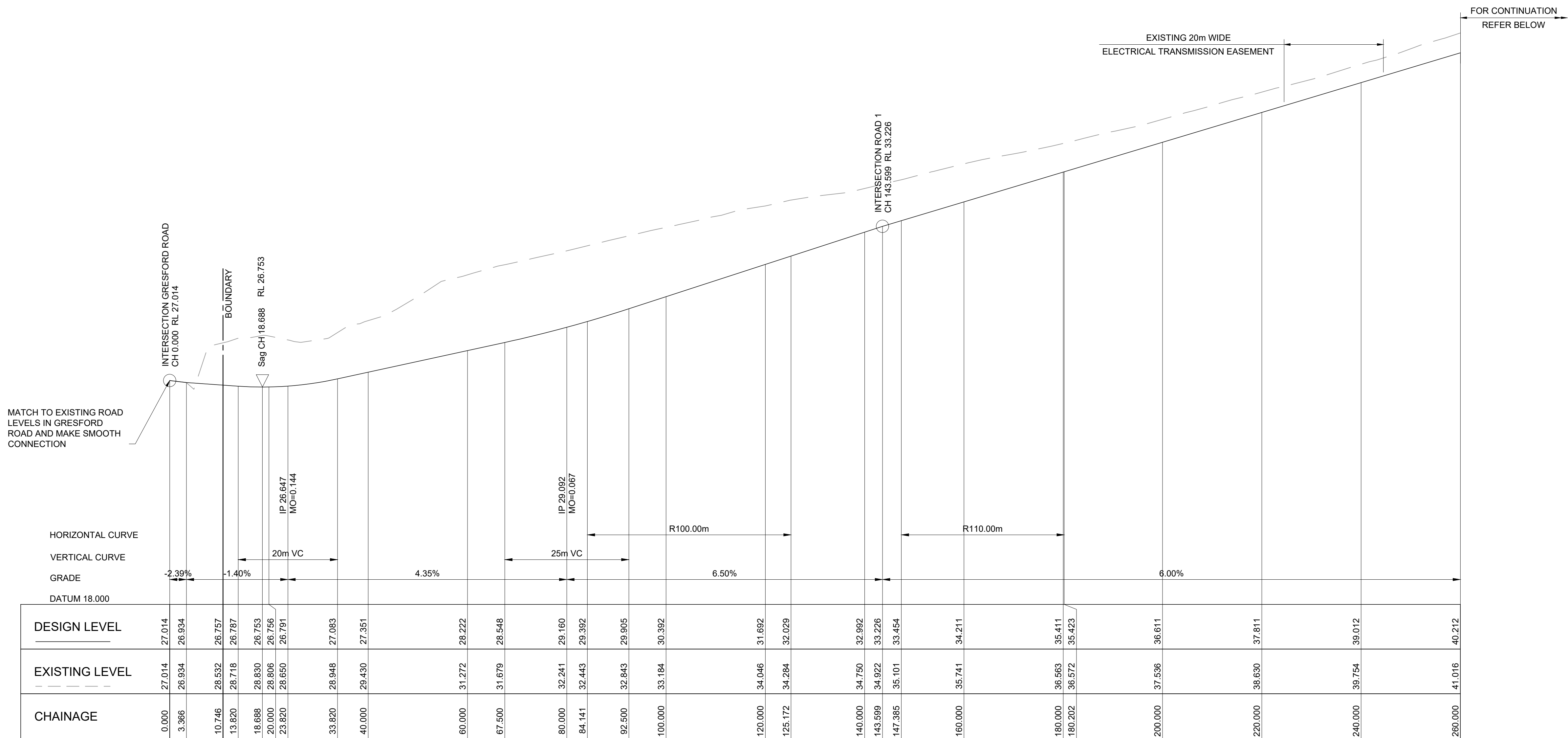
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B	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH



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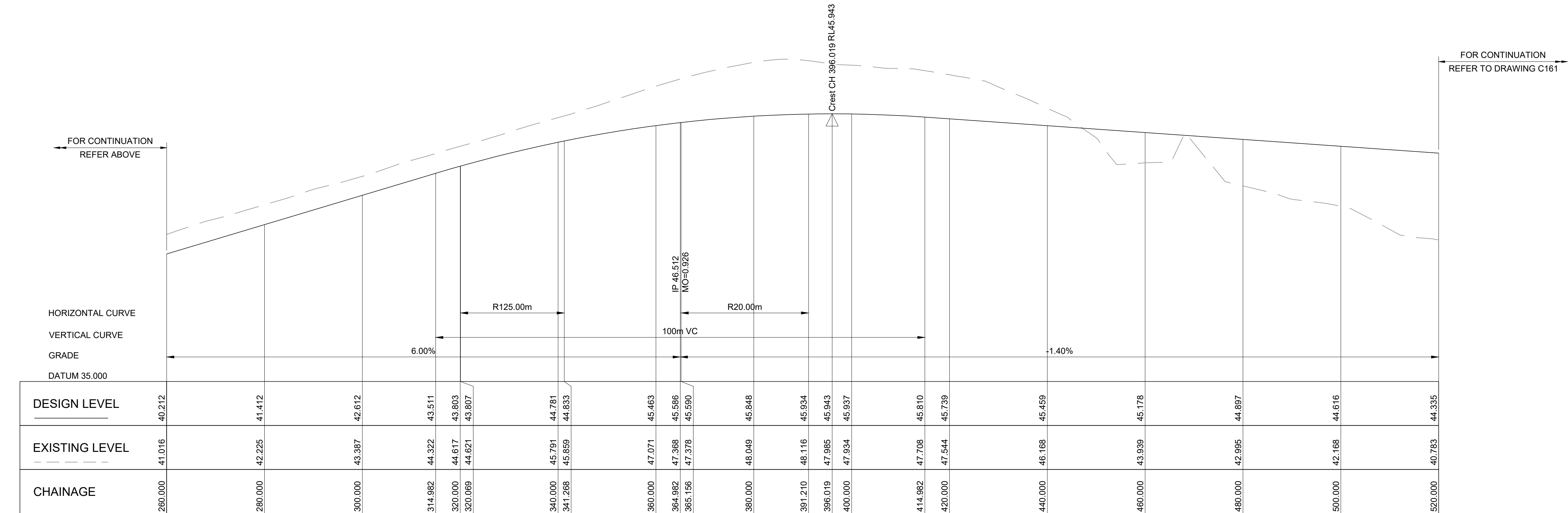
e admin@idcaus.com
w www.idcaus.com

PROJECT CORNISH GROUP VACY VILLAGE SOUTH STAGE 5 589 GRESFROD ROAD LOT123 DP1063557		
DRAWING TITLE ROAD ALIGNMENT CONTROL PLAN AND TYPICAL SECTIONS SHEET 2		
SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C151	REV B	



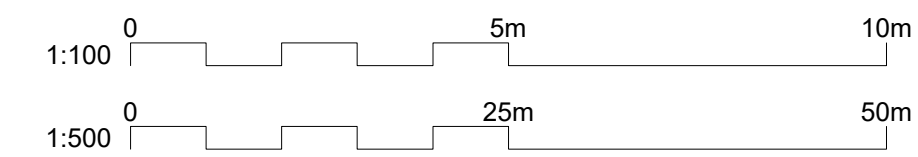
1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG ROAD 01



1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG ROAD 01



C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



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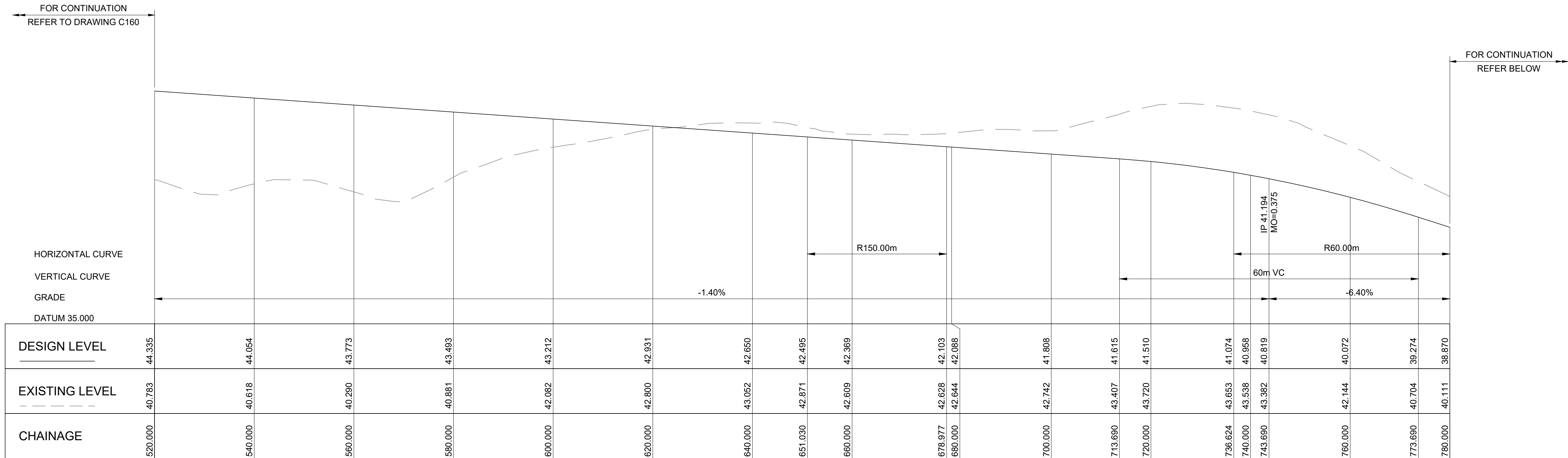
PROJECT

CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

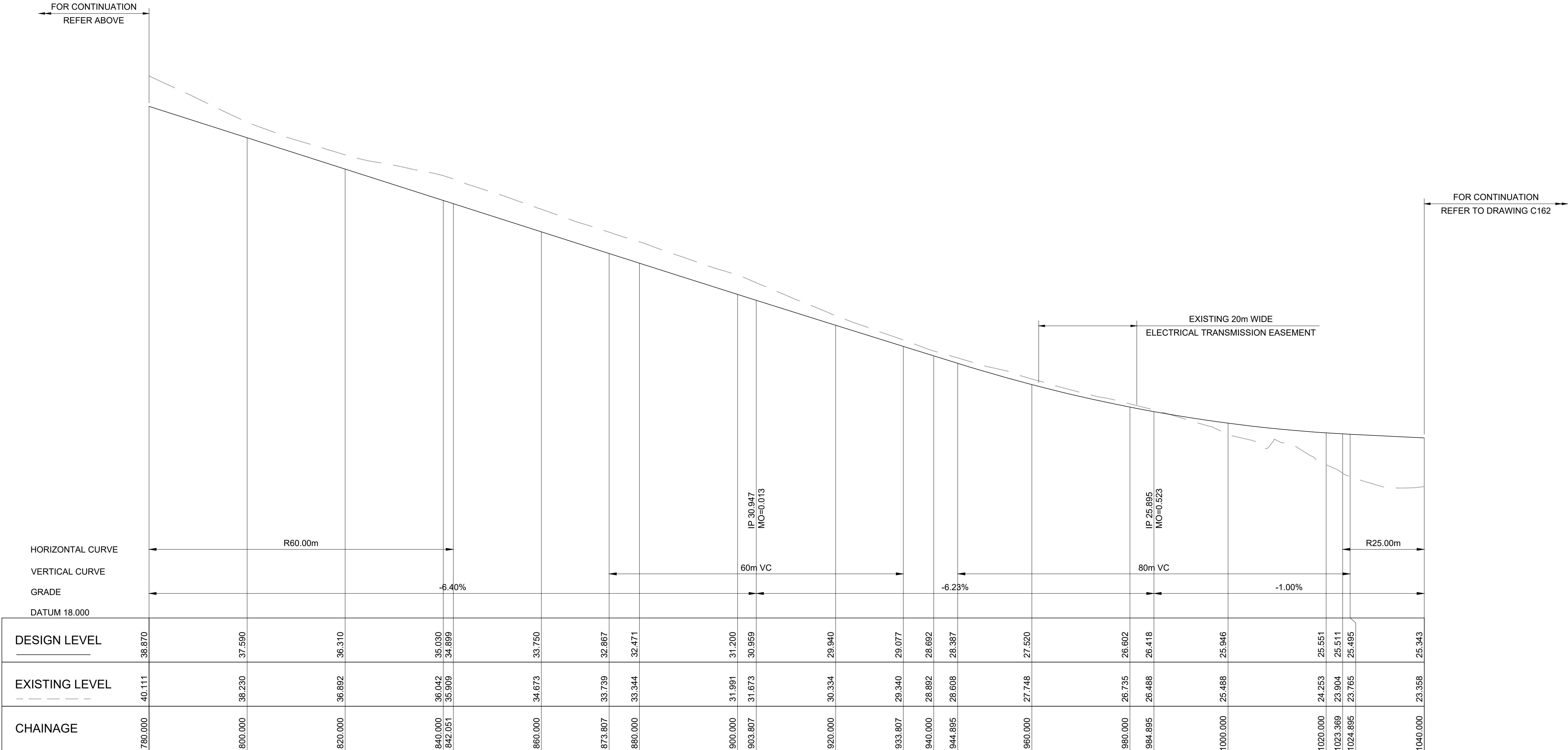
DRAWING TITLE

ROAD LONGITUDINAL SECTIONS
SHEET 1

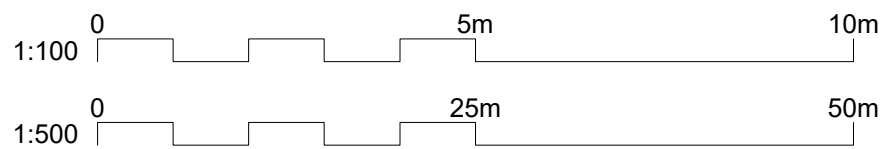
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DRAWING NO.	24-107-DA-STG5-C160	REV	C		



1:500 Hor - 1:100 Ver
LONGITUDINAL SECTION ALONG ROAD 01



1:500 Hor - 1:100 Ver
LONGITUDINAL SECTION ALONG ROAD 01



REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH



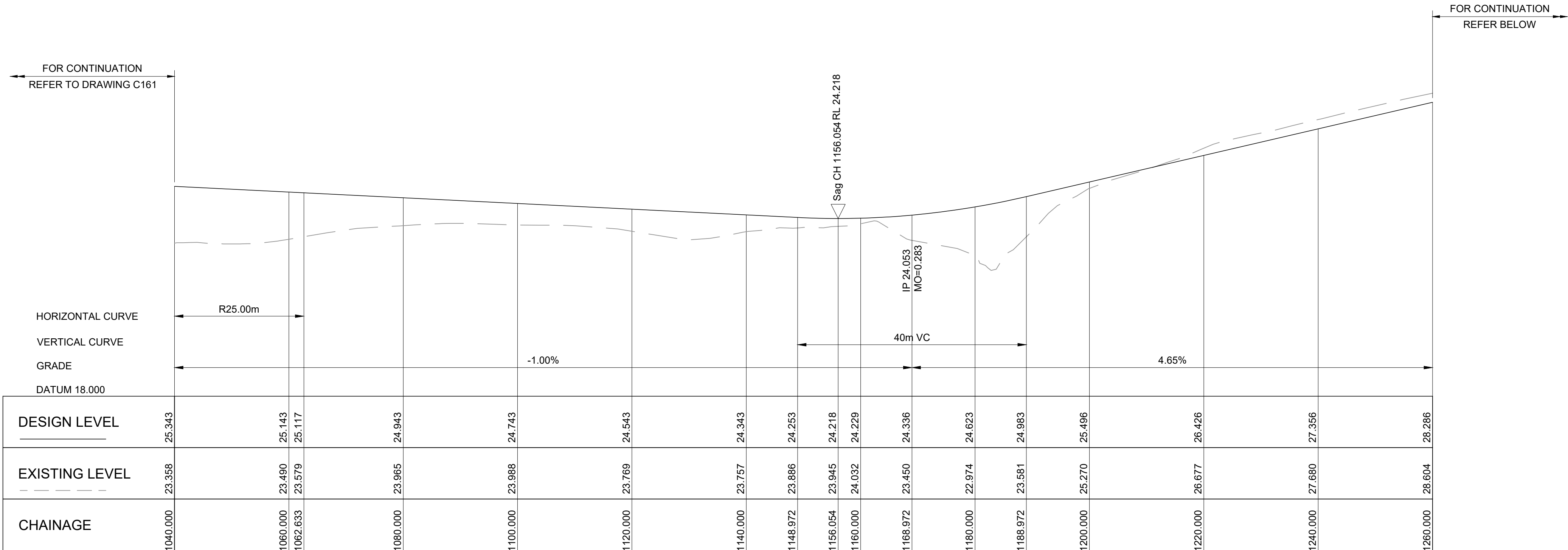
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CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

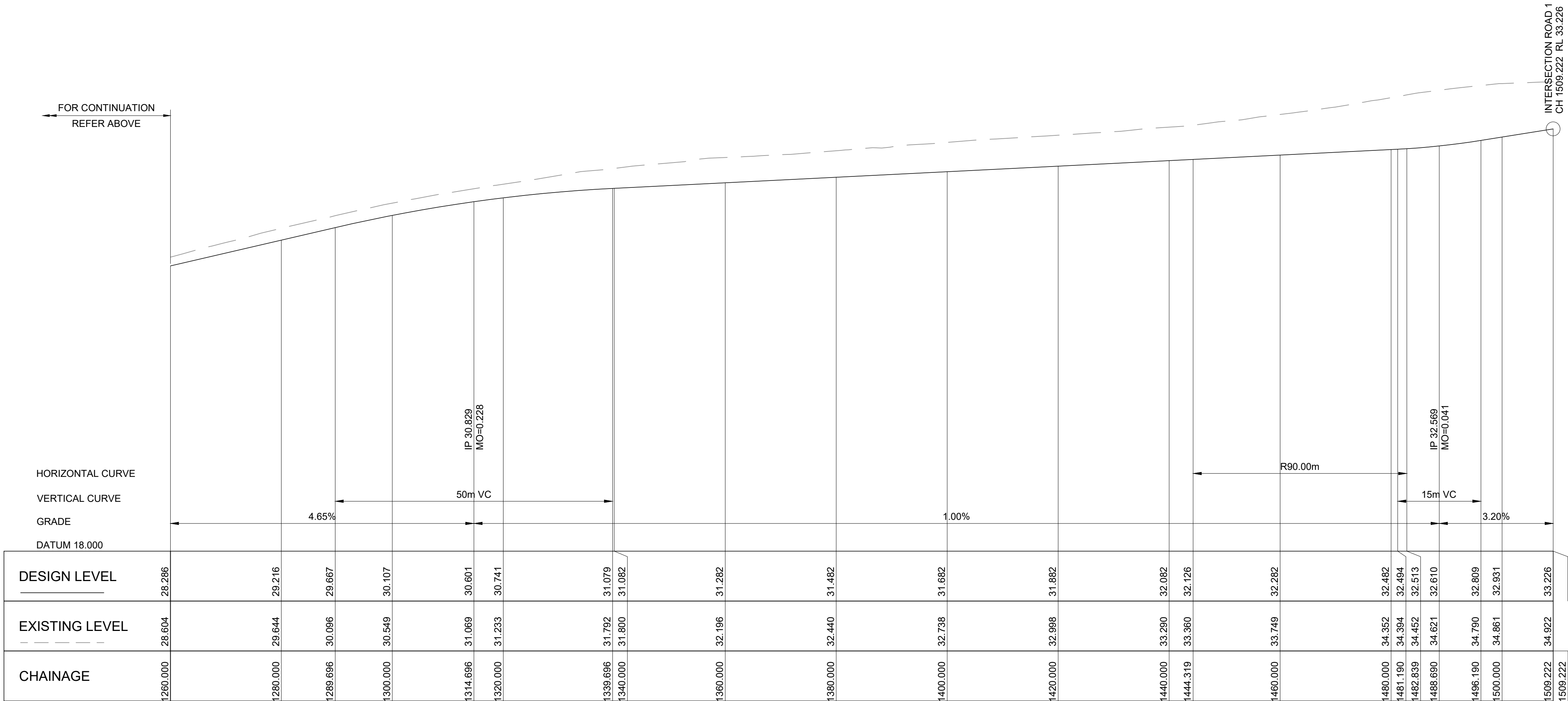
DRAWING TITLE
ROAD LONGITUDINAL SECTIONS
SHEET 2

SCALE 1:500, 1:100	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C161	REV C	



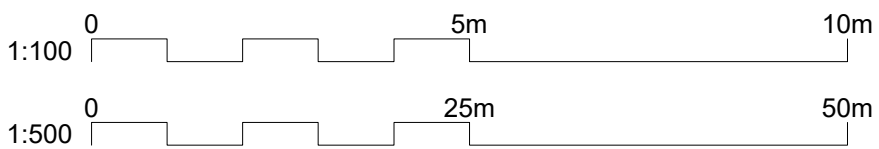
1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG ROAD 01



1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG ROAD 01



C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



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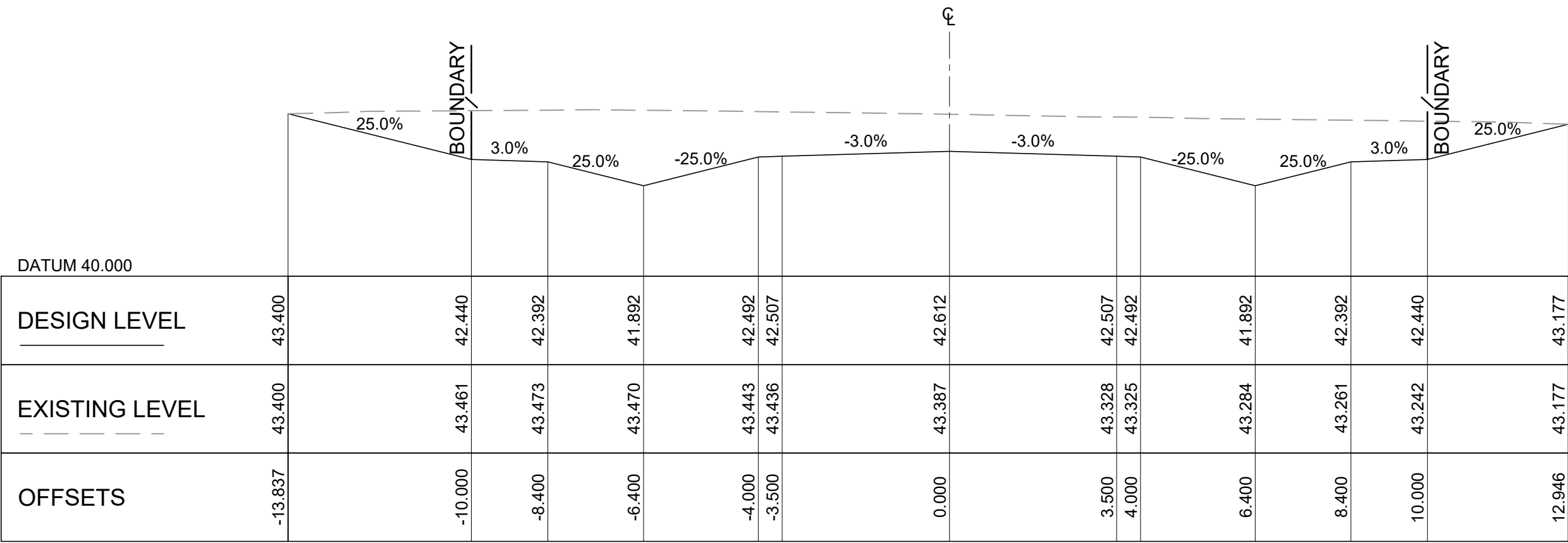
PROJECT

CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

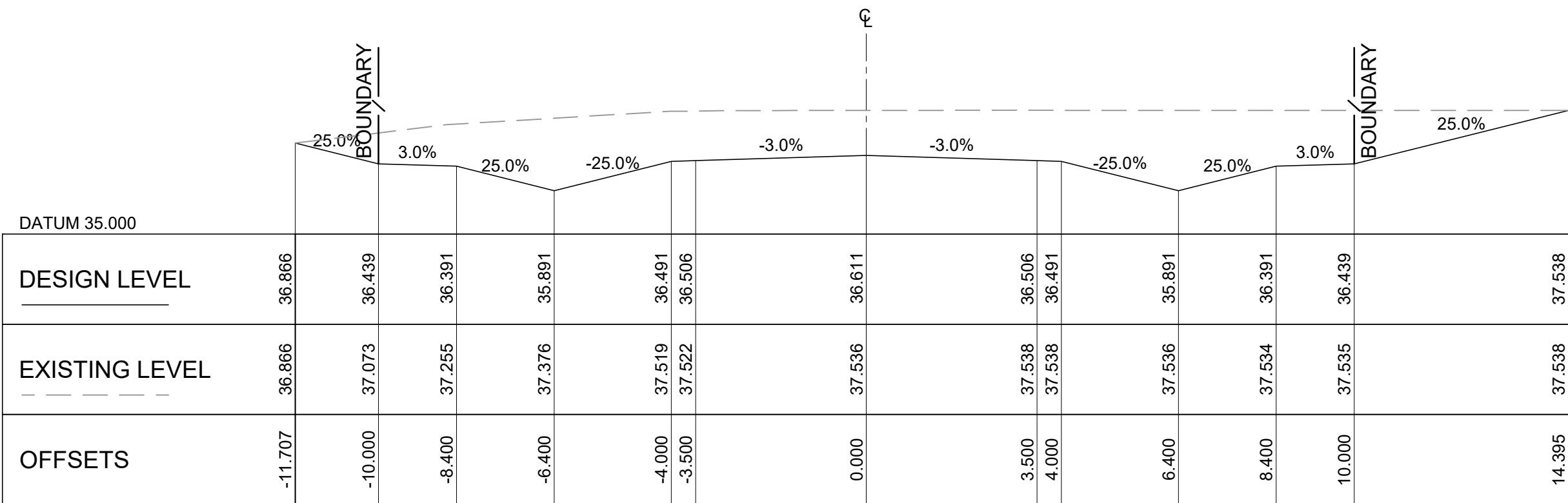
DRAWING TITLE

ROAD LONGITUDINAL SECTIONS
SHEET 3

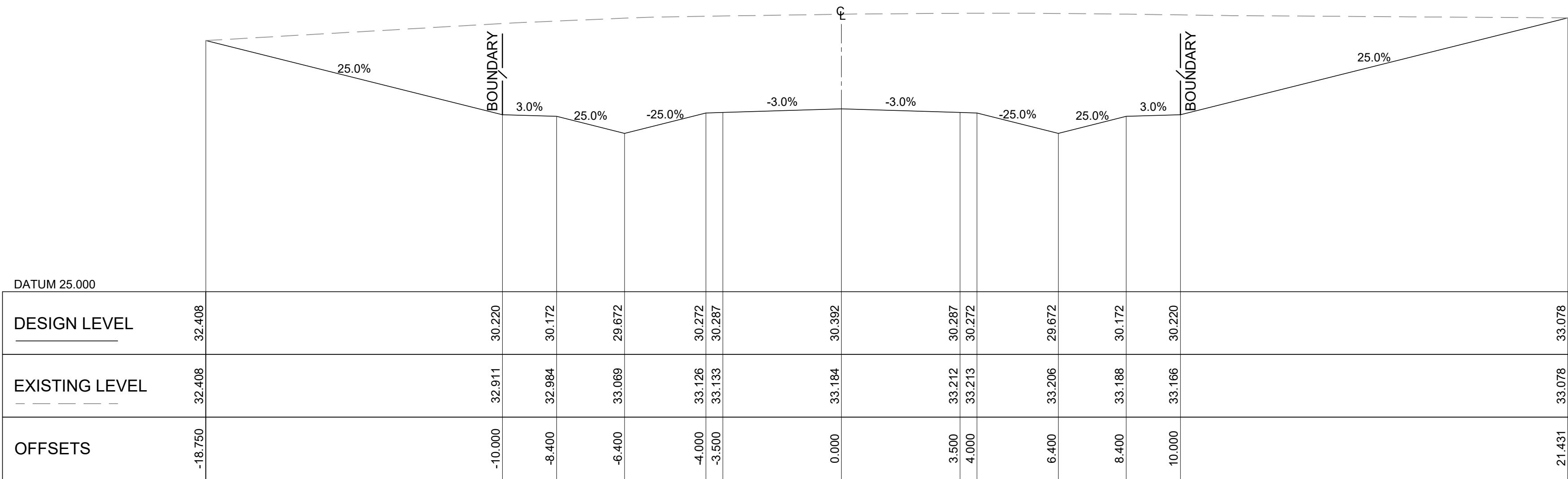
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DRAWING NO.	24-107-DA-STG5-C162	REV			C



CH 300.000

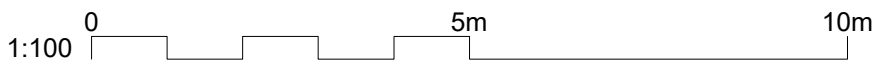


CH 200.000



CH 100.000

ROAD 1



C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR

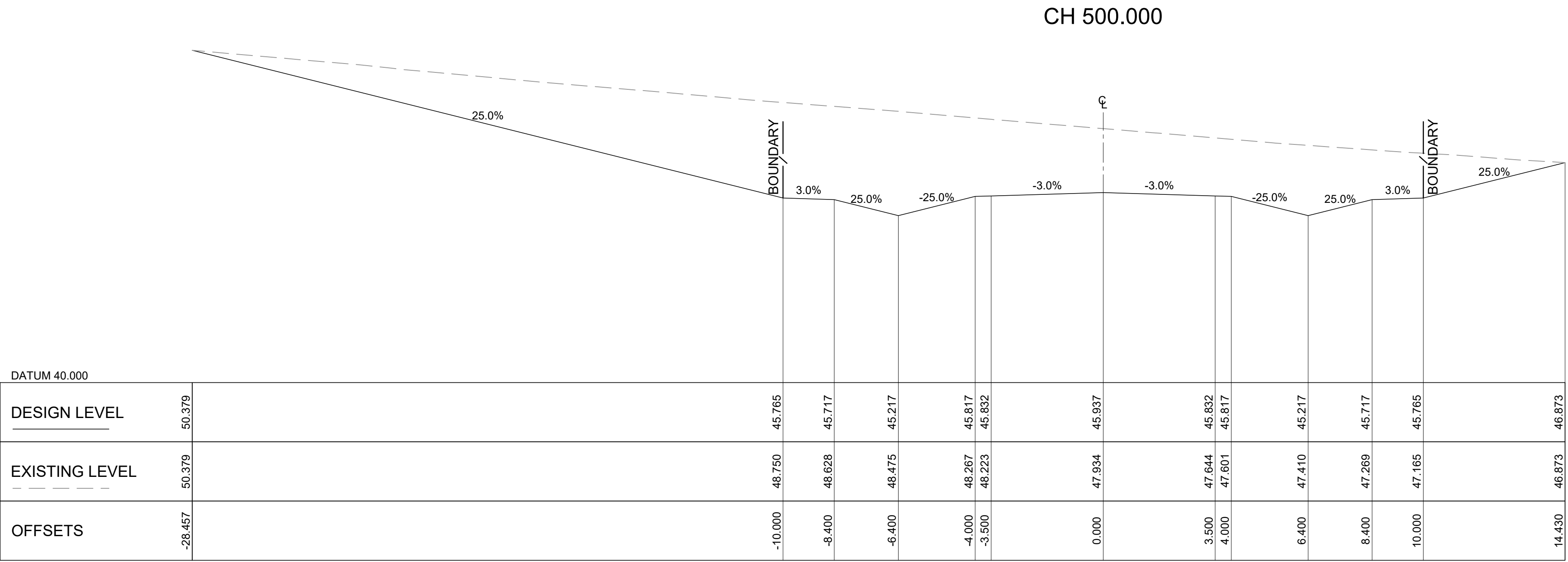
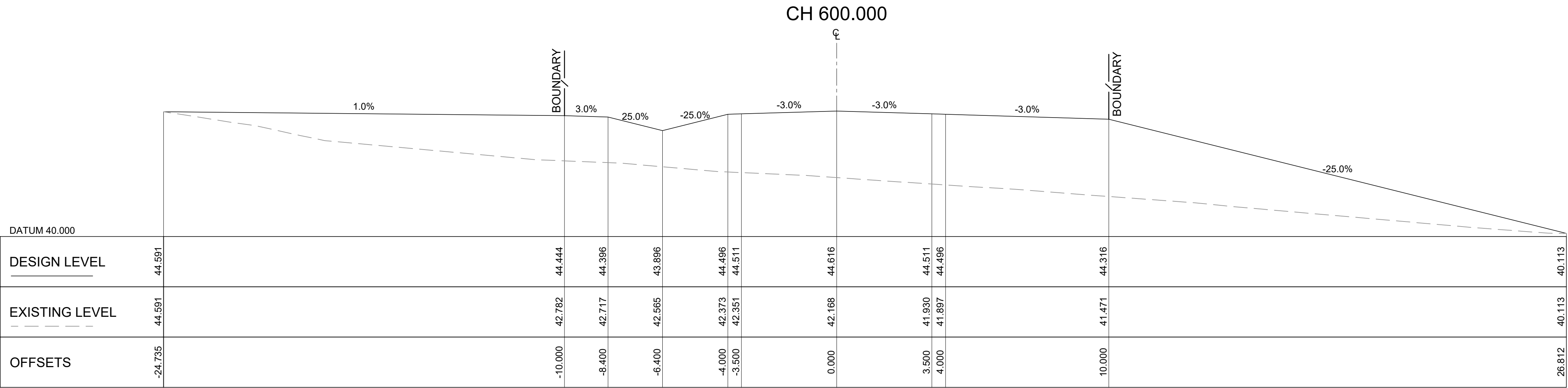
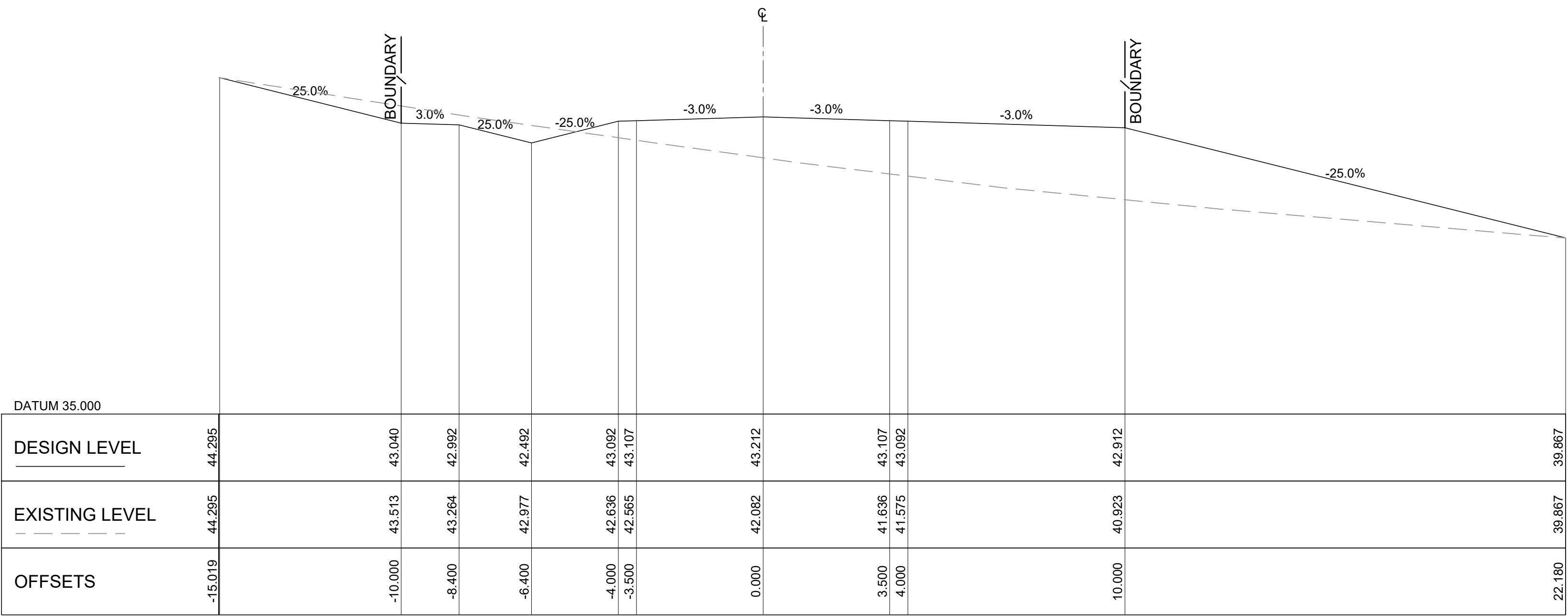


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PROJECT
CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

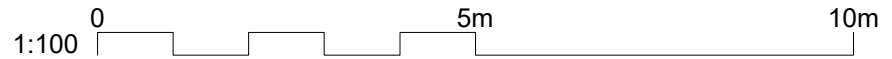
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ROAD CROSS SECTIONS
SHEET 1

SCALE	1:100	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C170	REV	C		



CH 400.000

ROAD 1 (CONTINUED)



C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



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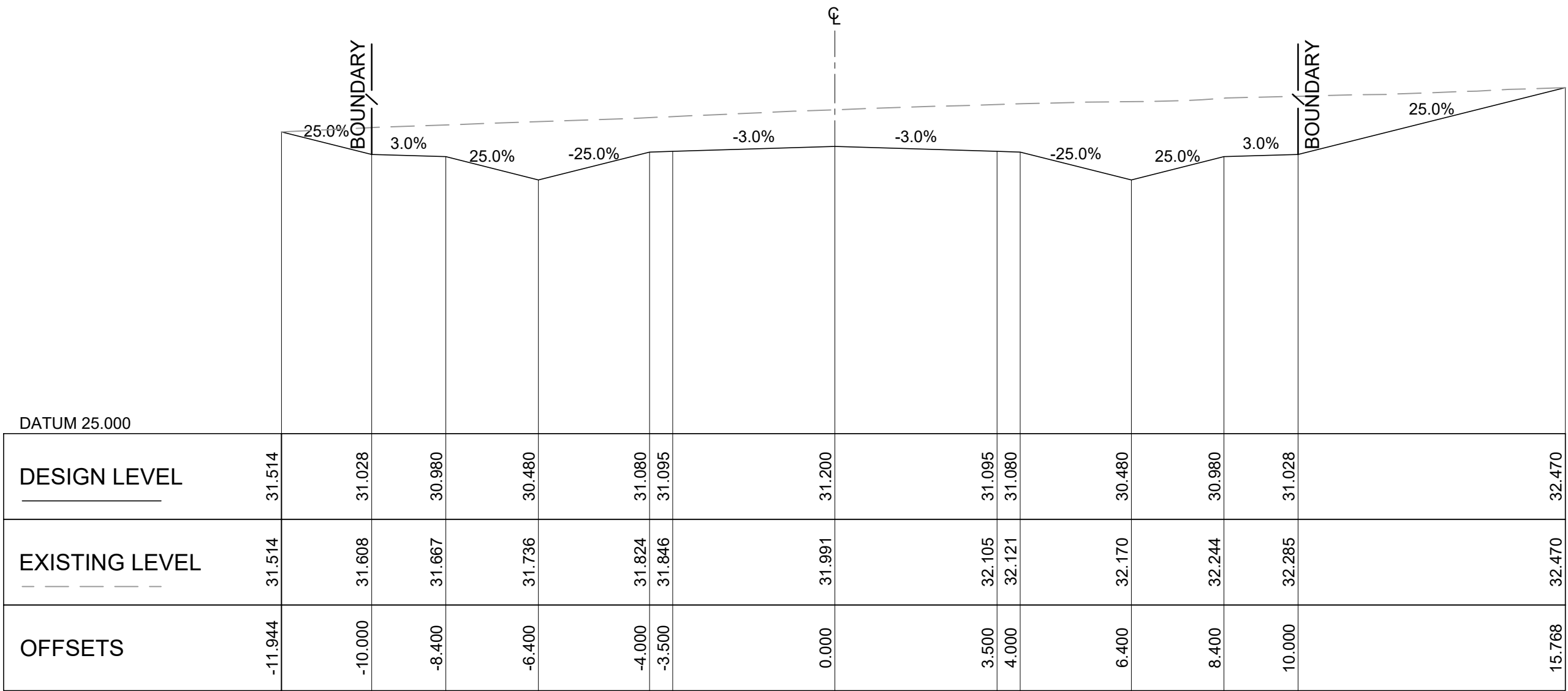
PROJECT

CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

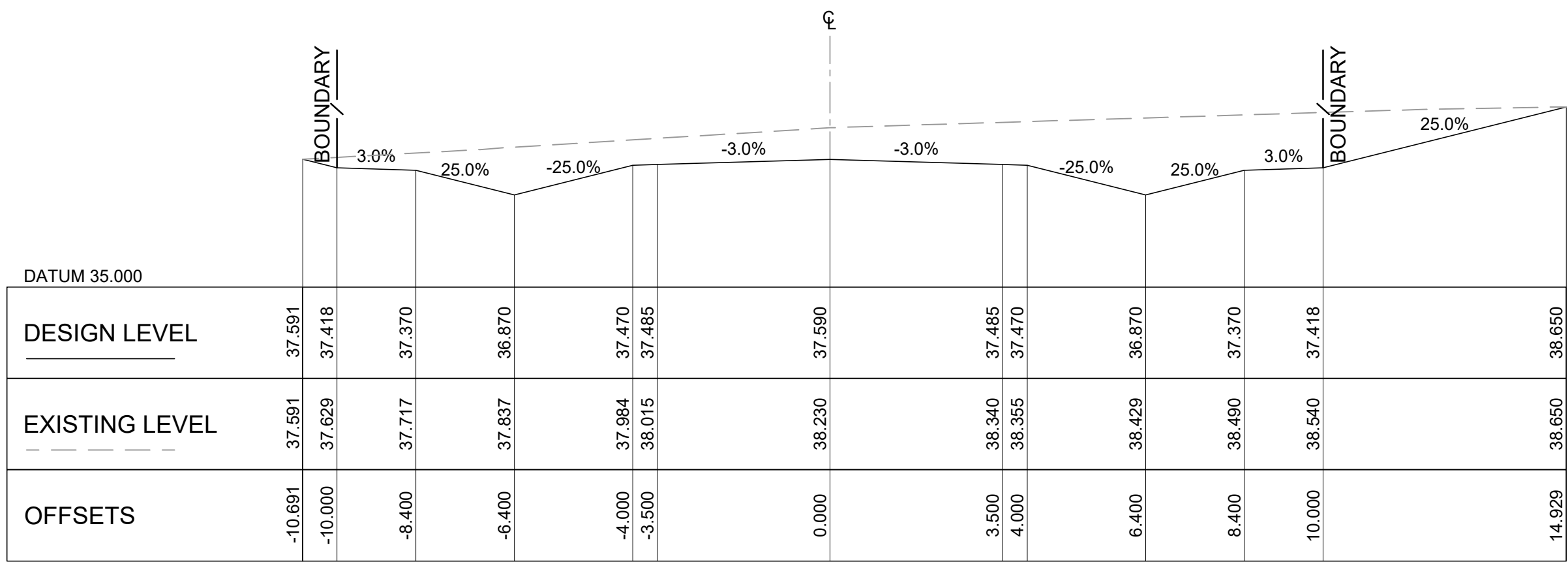
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ROAD CROSS SECTIONS
SHEET 2

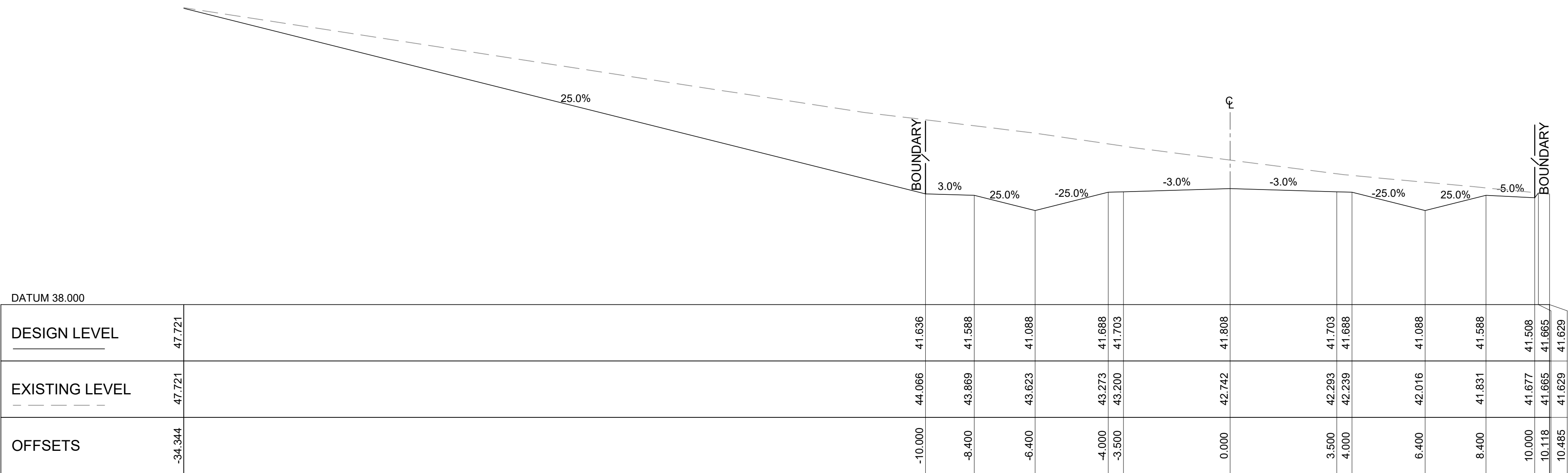
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CH 900.000

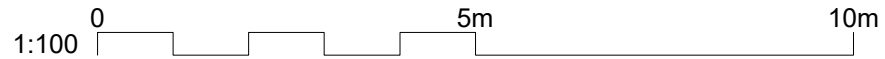


CH 800.000



CH 700.000

ROAD 1 (CONTINUED)



C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



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PROJECT
**CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557**

DRAWING TITLE
**ROAD CROSS SECTIONS
SHEET 3**

SCALE	1:100	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C172	REV	C		



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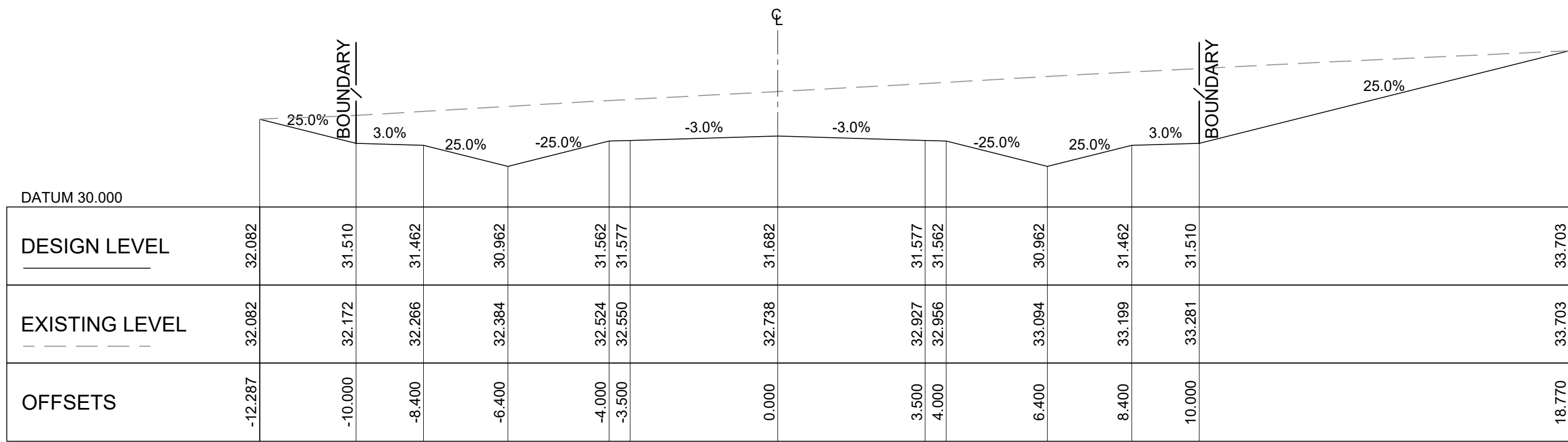
e admin@idcaus.com
w www.idcaus.com

DRAWING TITLE

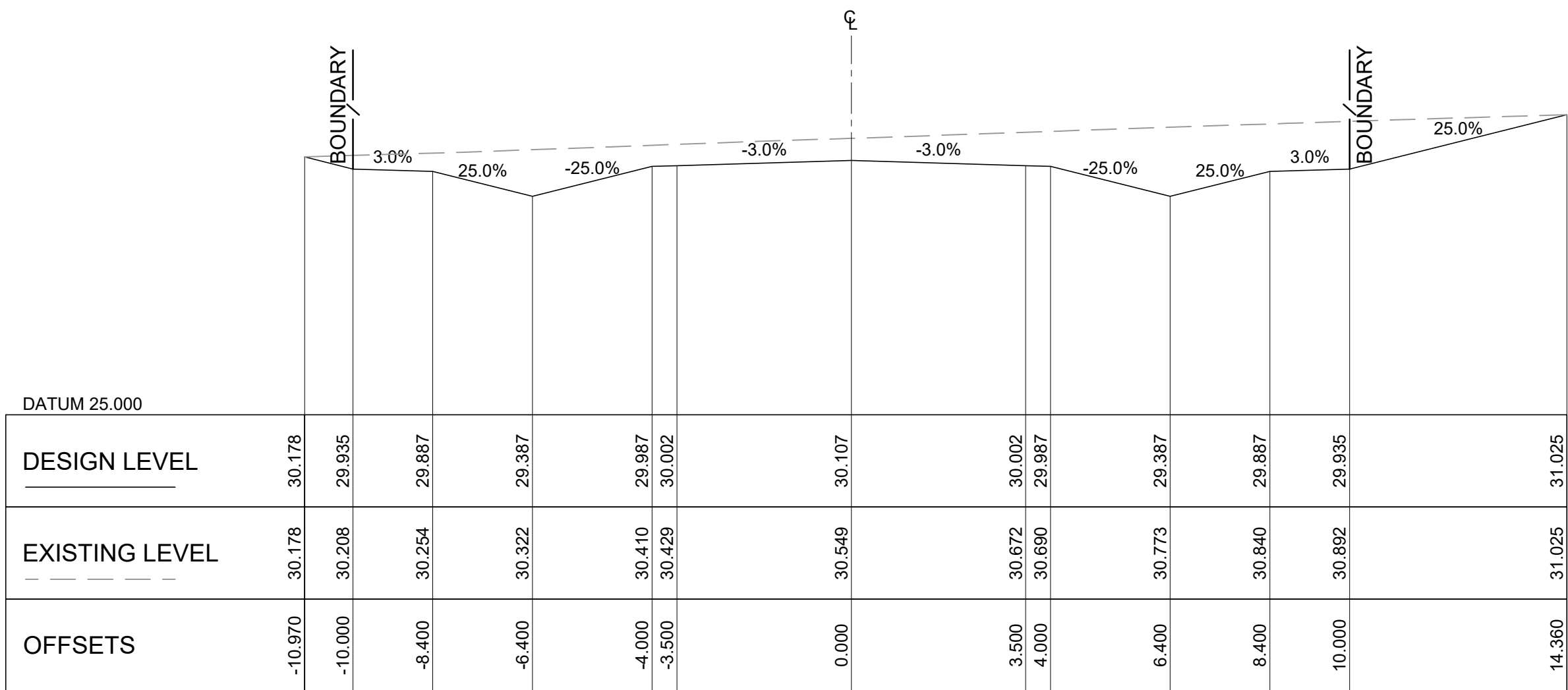
ROAD CROSS SECTIONS

SHEET 4

SCALE 1:100	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C173		REV C

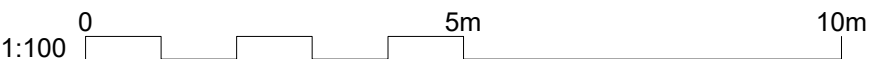


CH 1400.000



CH 1300.000

ROAD 1 (CONTINUED)



C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



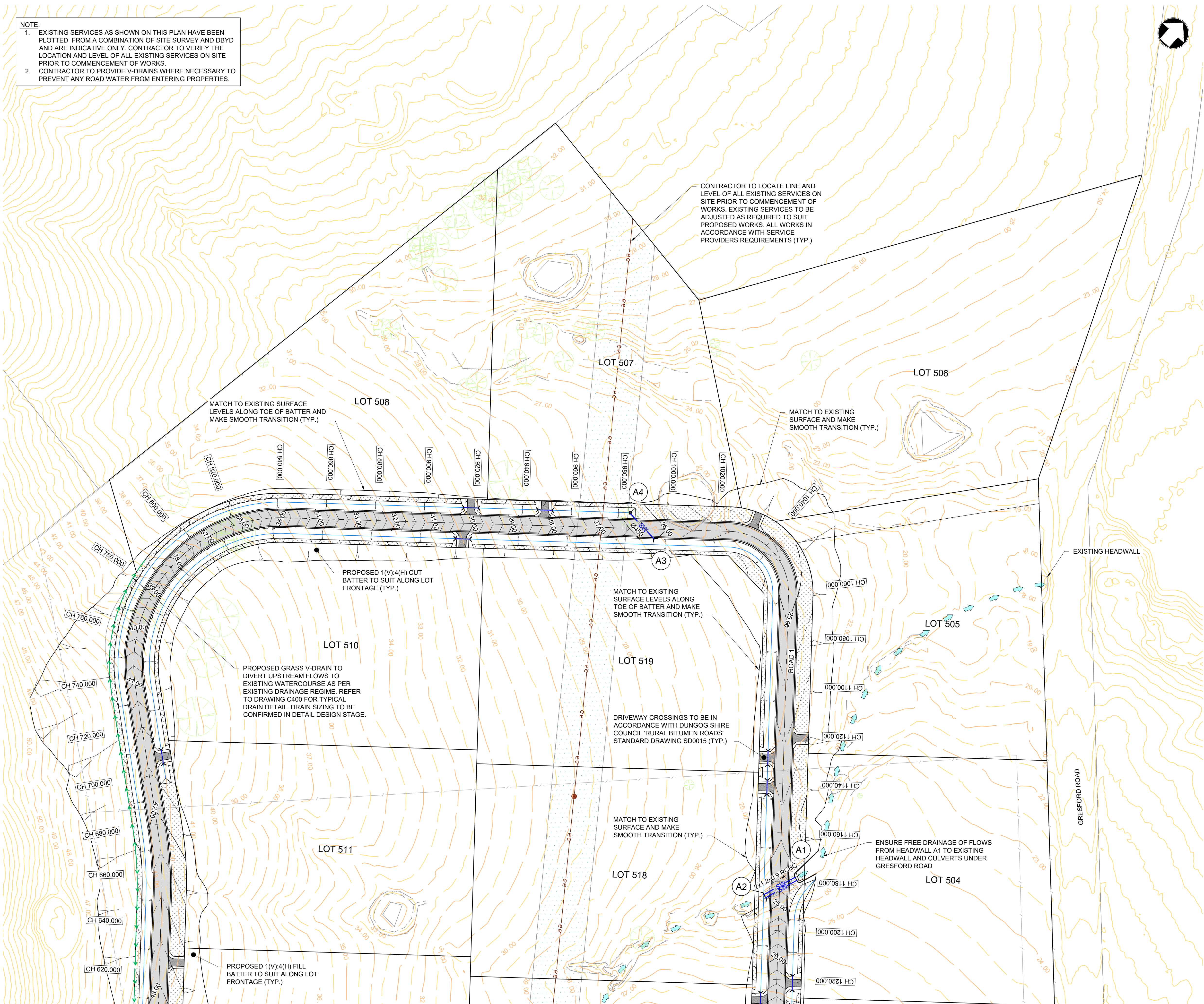
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PROJECT
CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE
ROAD CROSS SECTIONS
SHEET 5

SCALE	1:100	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C174	REV	C		

- NOTE:
1. EXISTING SERVICES AS SHOWN ON THIS PLAN HAVE BEEN PLOTTED FROM A COMBINATION OF SITE SURVEY AND DBYD AND ARE INDICATIVE ONLY. CONTRACTOR TO VERIFY THE LOCATION AND LEVEL OF ALL EXISTING SERVICES ON SITE PRIOR TO COMMENCEMENT OF WORKS.
 2. CONTRACTOR TO PROVIDE V-DRAINS WHERE NECESSARY TO PREVENT ANY ROAD WATER FROM ENTERING PROPERTIES.



LEGEND

EXISTING 20m WIDE
TRANSMISSION EASEMENT

1:750 0 37.5m 75m

REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH

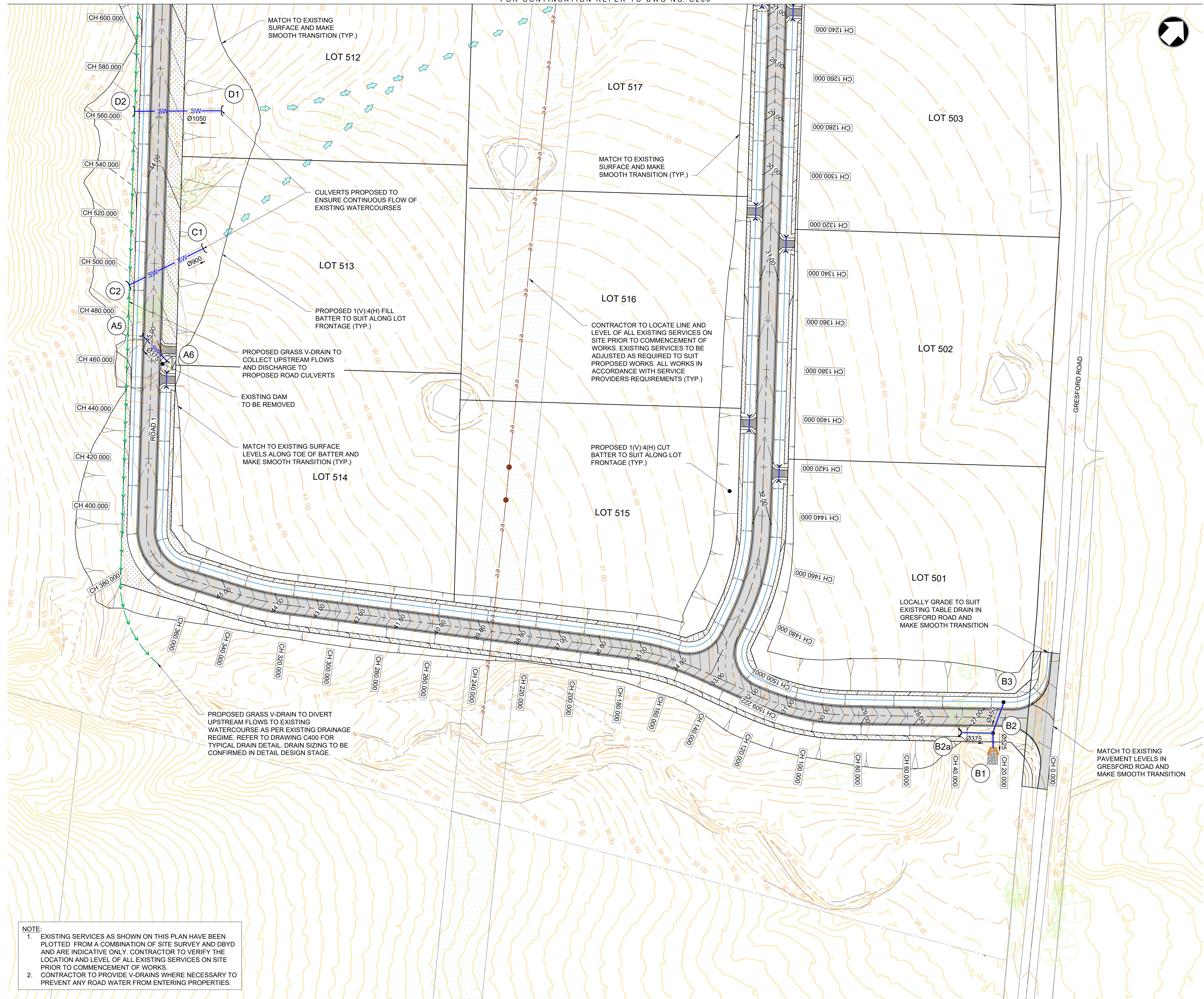
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PROJECT
**CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFORD ROAD
LOT 123 DP1063557**

DRAWING TITLE
**SITWORKS AND STORMWATER
PLAN - SHEET 1**

SCALE	1:750	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C200	REV			C

FOR CONTINUATION REFER TO DWG NO. C200



LEGEND

EXISTING 20m WIDE TRANSMISSION EASEMENT

1:750 0 37.5m 75m

REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH



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PROJECT
**CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFORD ROAD
LOT 123 DP1063557**

DRAWING TITLE
**SITWORKS AND STORMWATER
PLAN - SHEET 2**

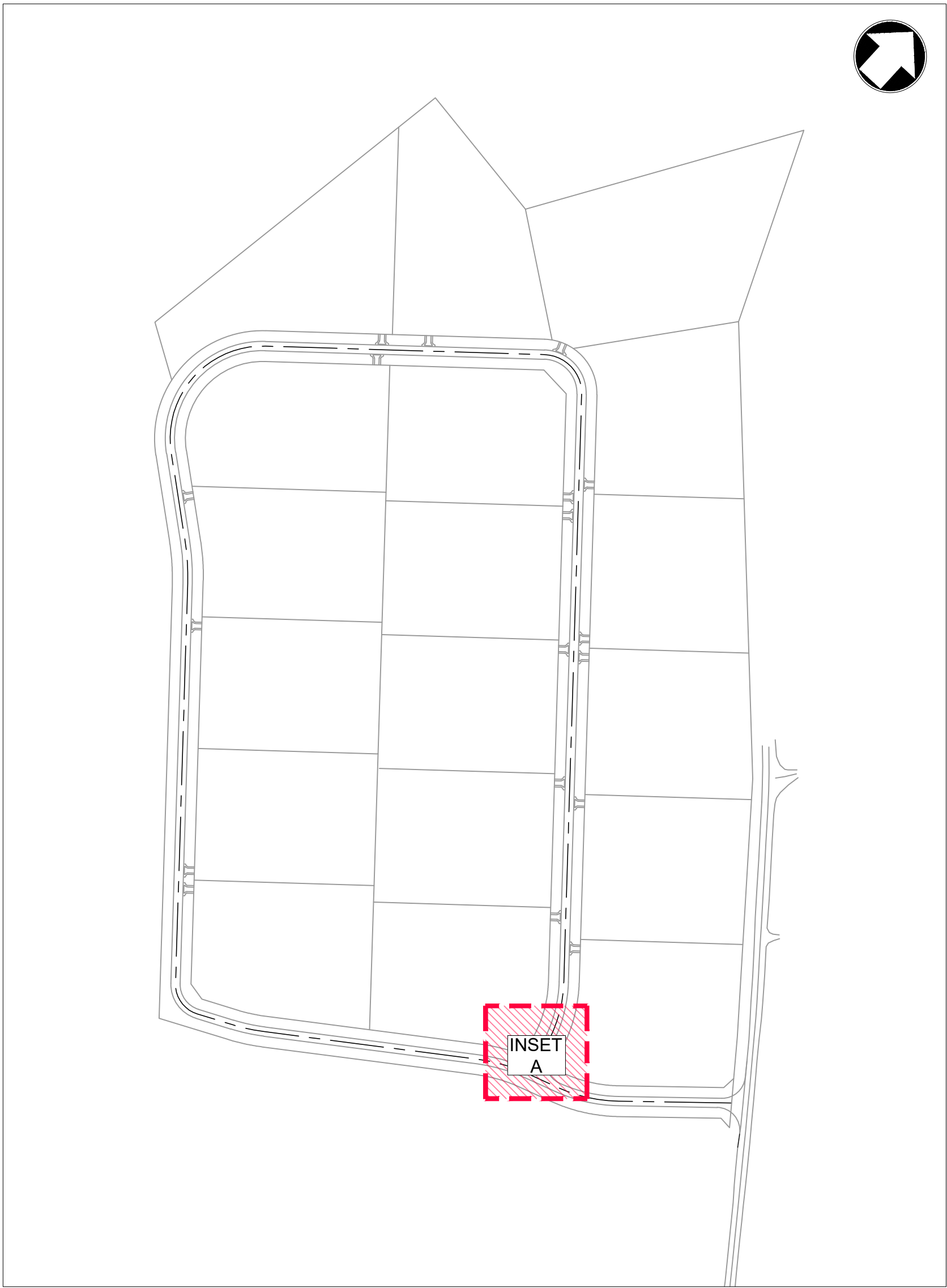
SCALE
1:750

STATUS
DA

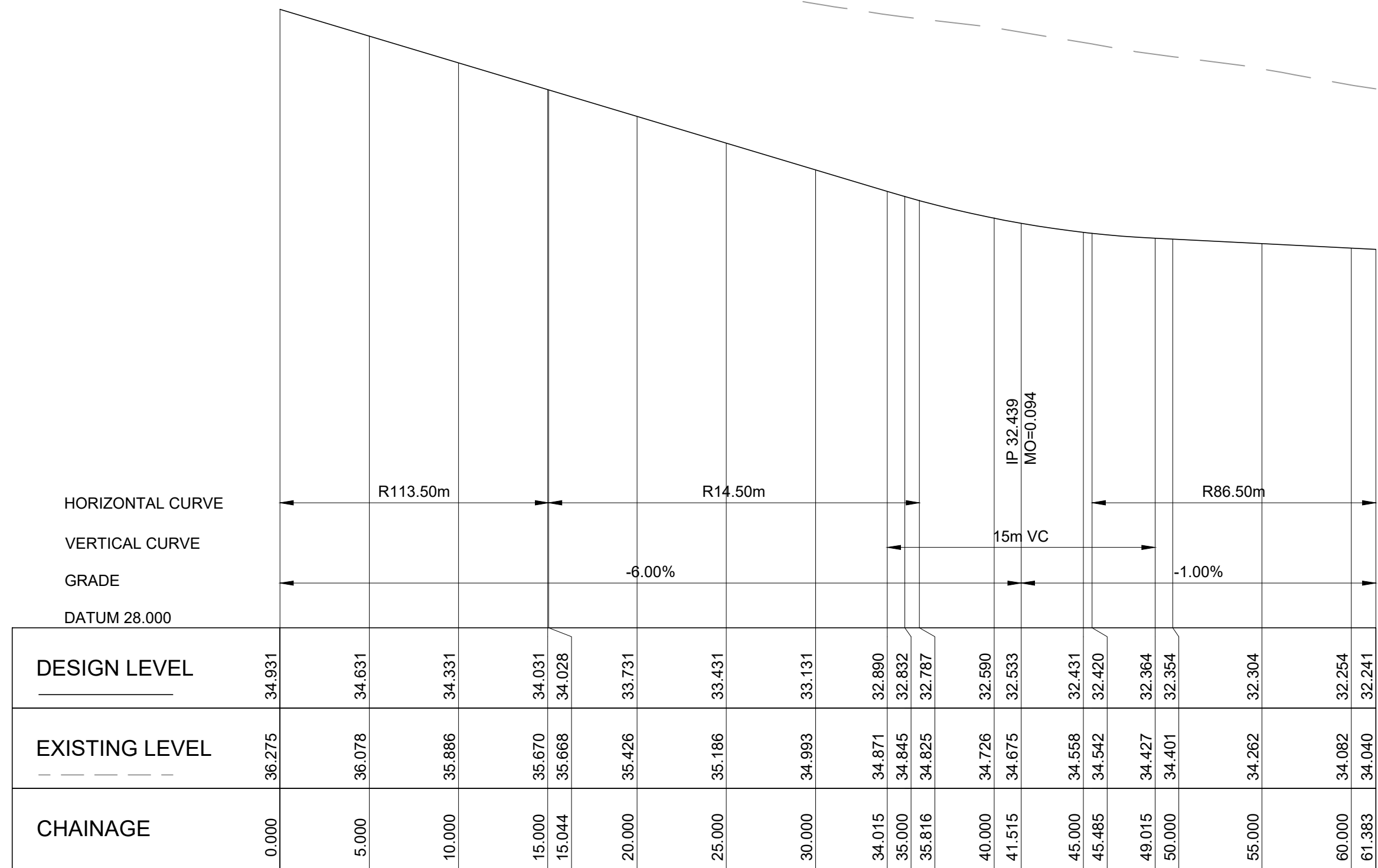
SIZE
A1

DRAWING NO.
24-107-DA-STG5-C201

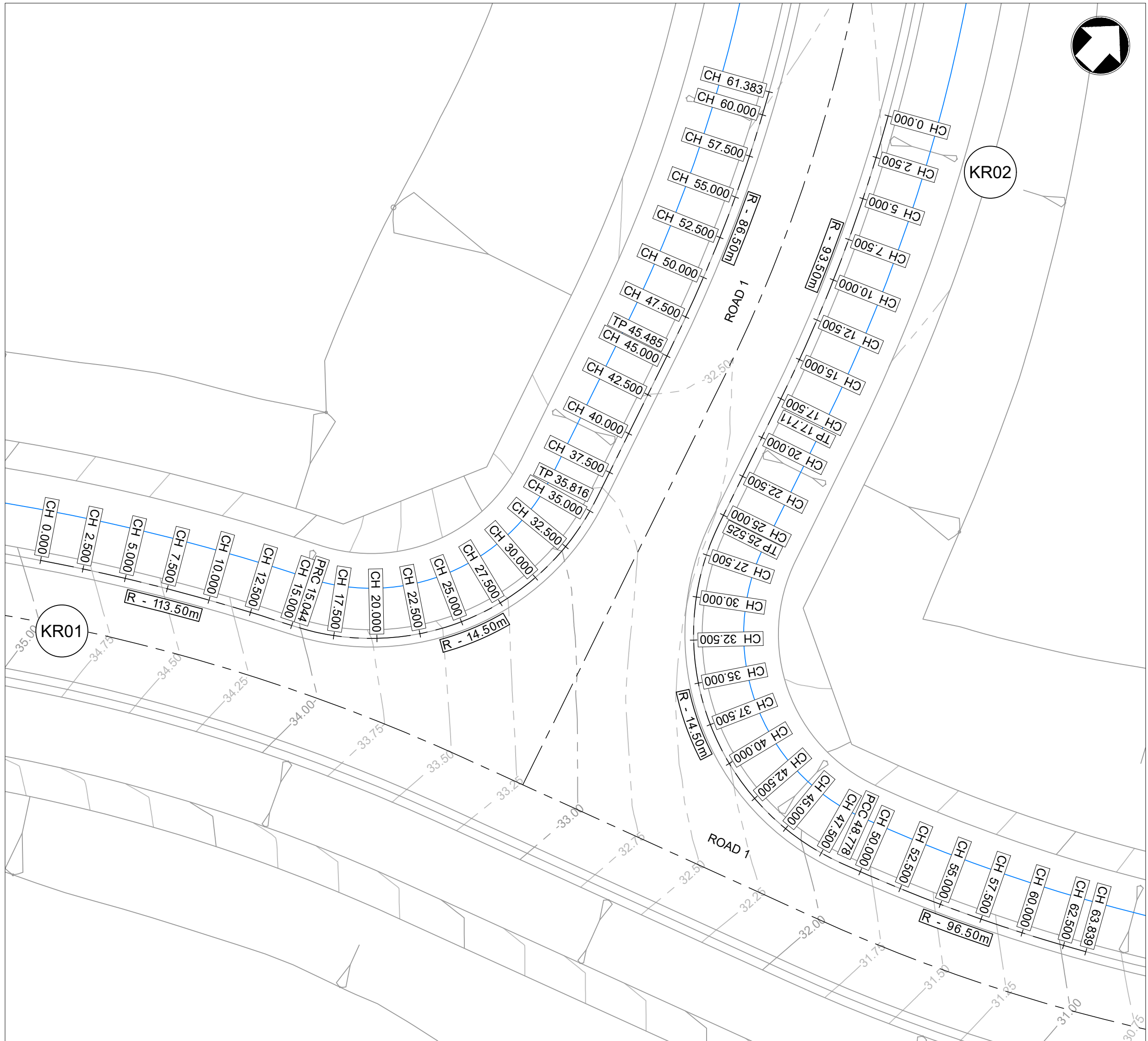
REV
C



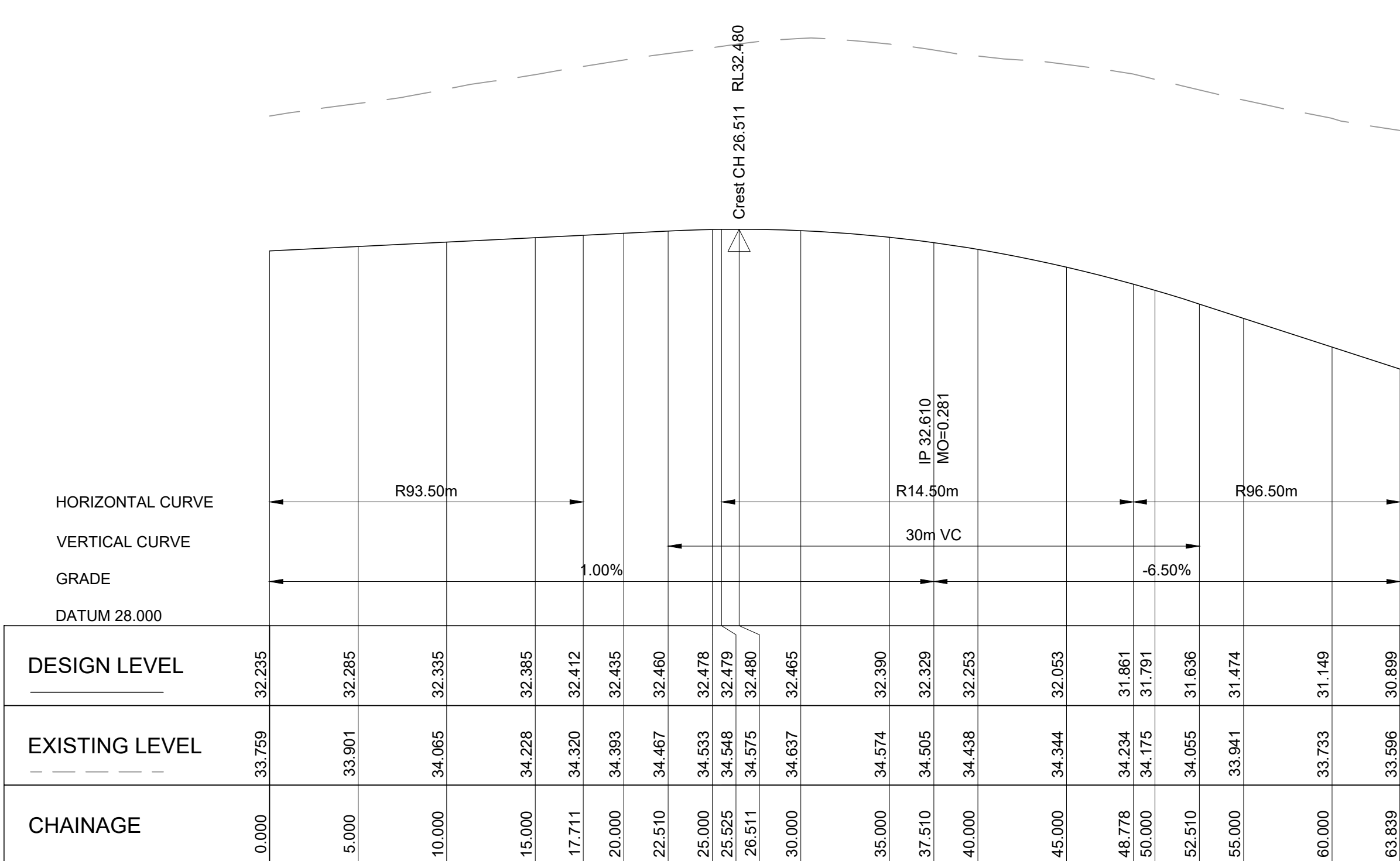
KEY PLAN
NTS



1:250 Hor - 1:50 Ver
LONGITUDINAL SECTION ALONG KR 01

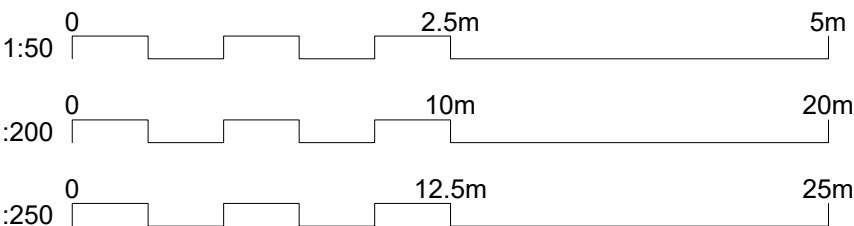


INSET A
1:200



1:250 Hor - 1:50 Ver
LONGITUDINAL SECTION ALONG KR 02

LEGEND	
	KERB RETURN NUMBER



REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH

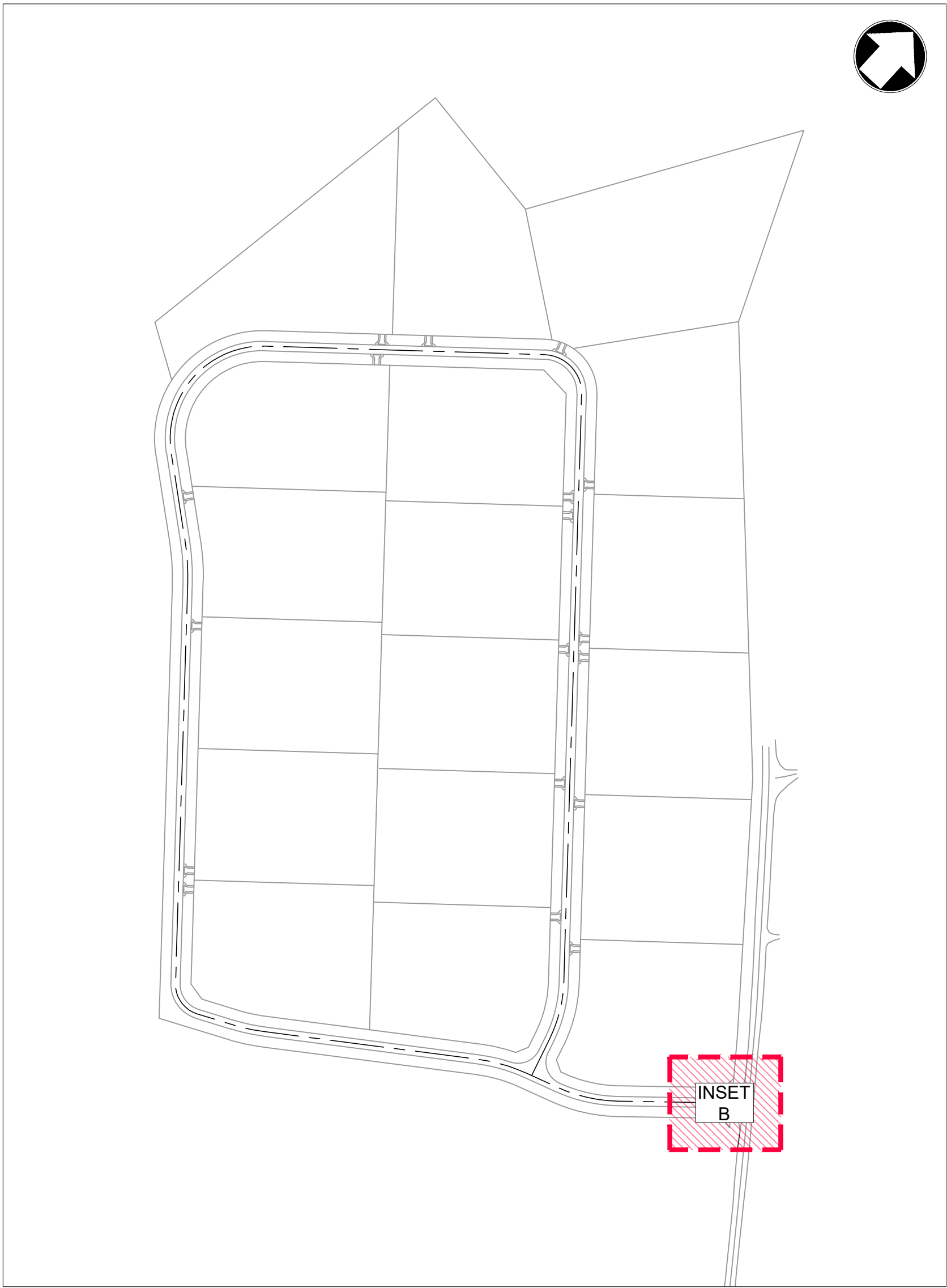


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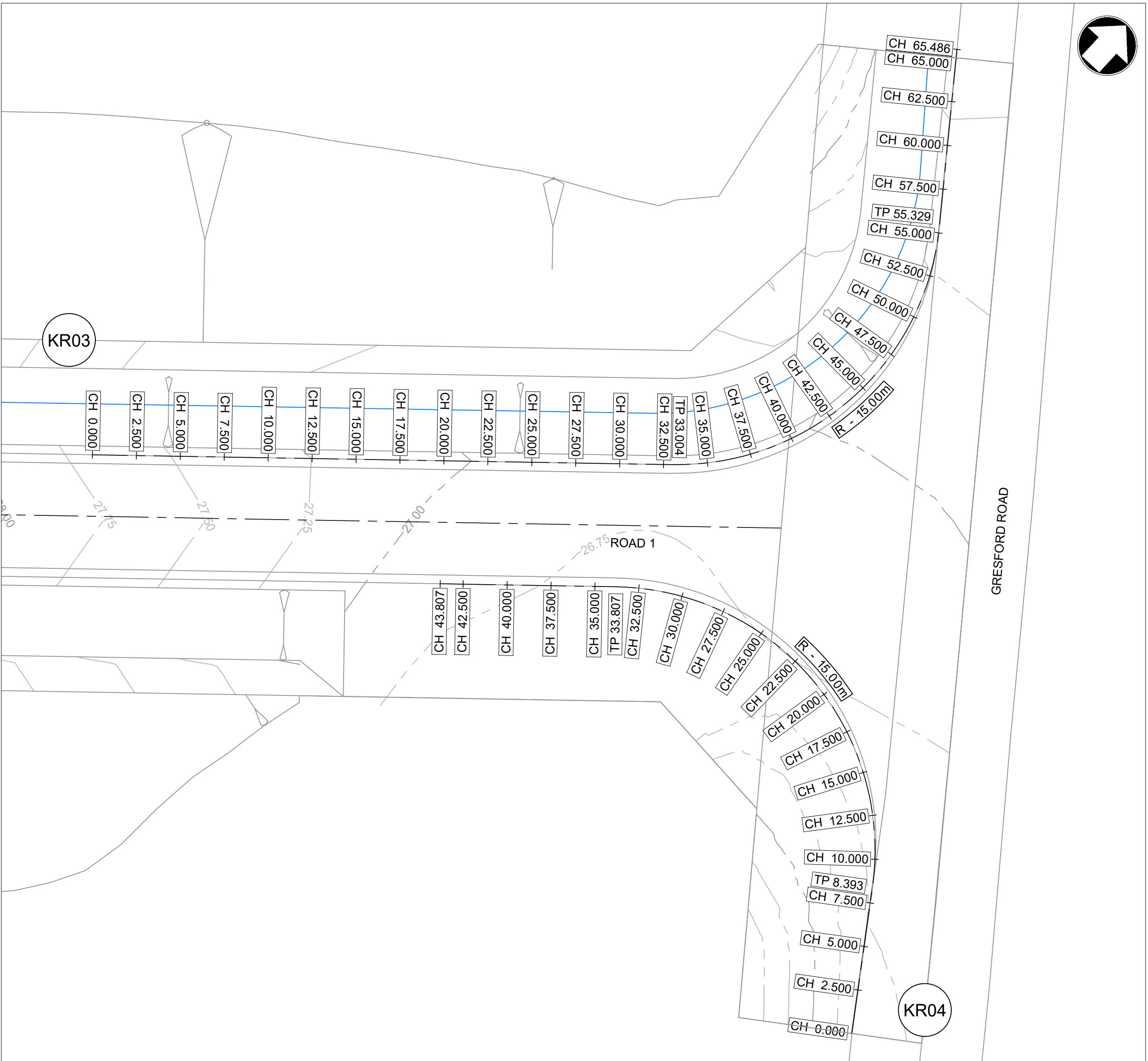
PROJECT
**CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557**

DRAWING TITLE
**KERB RETURN PLANS AND
SECTIONS - SHEET 1**

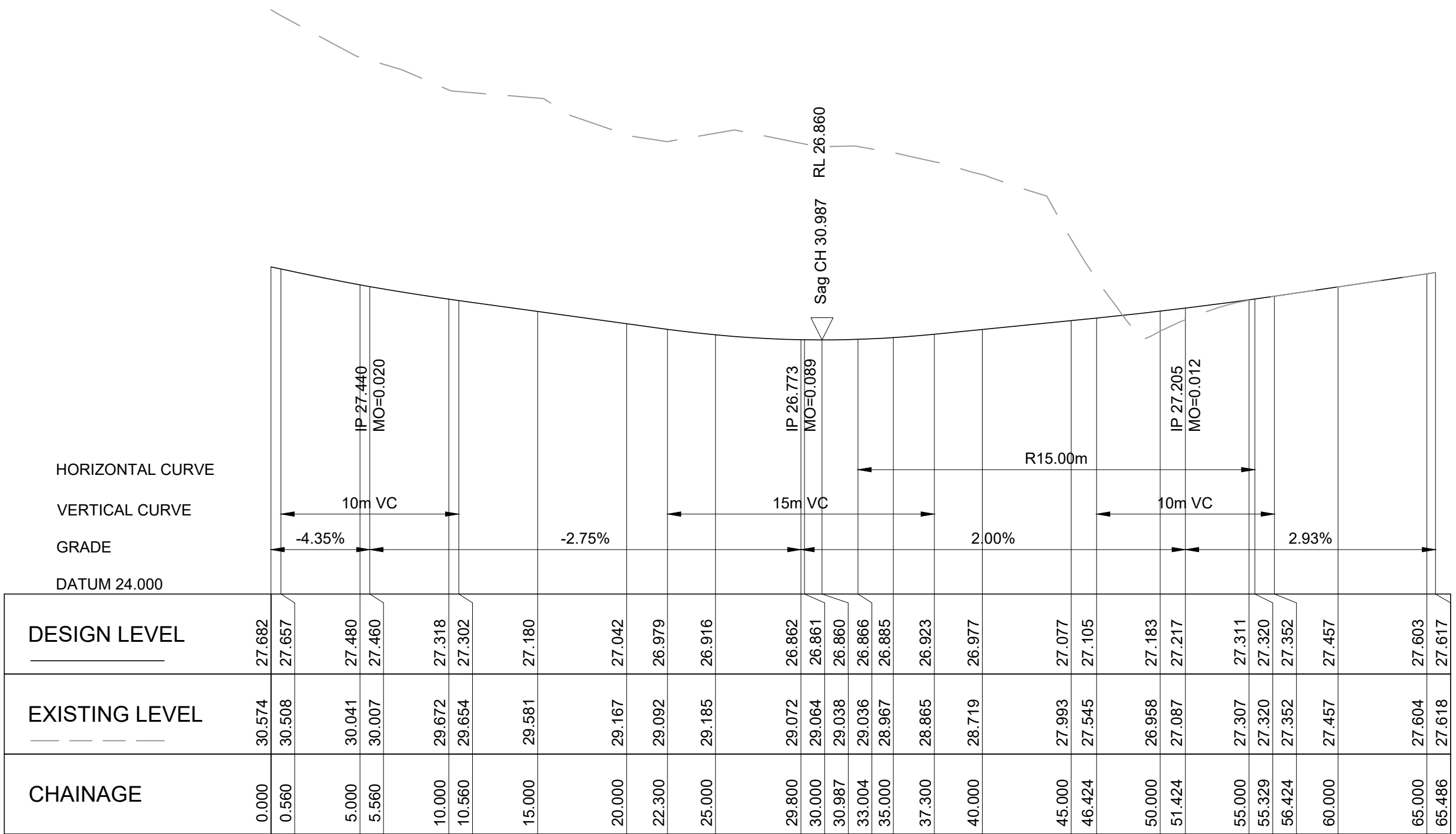
SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C220	REV C	



KEY PLAN
NTS

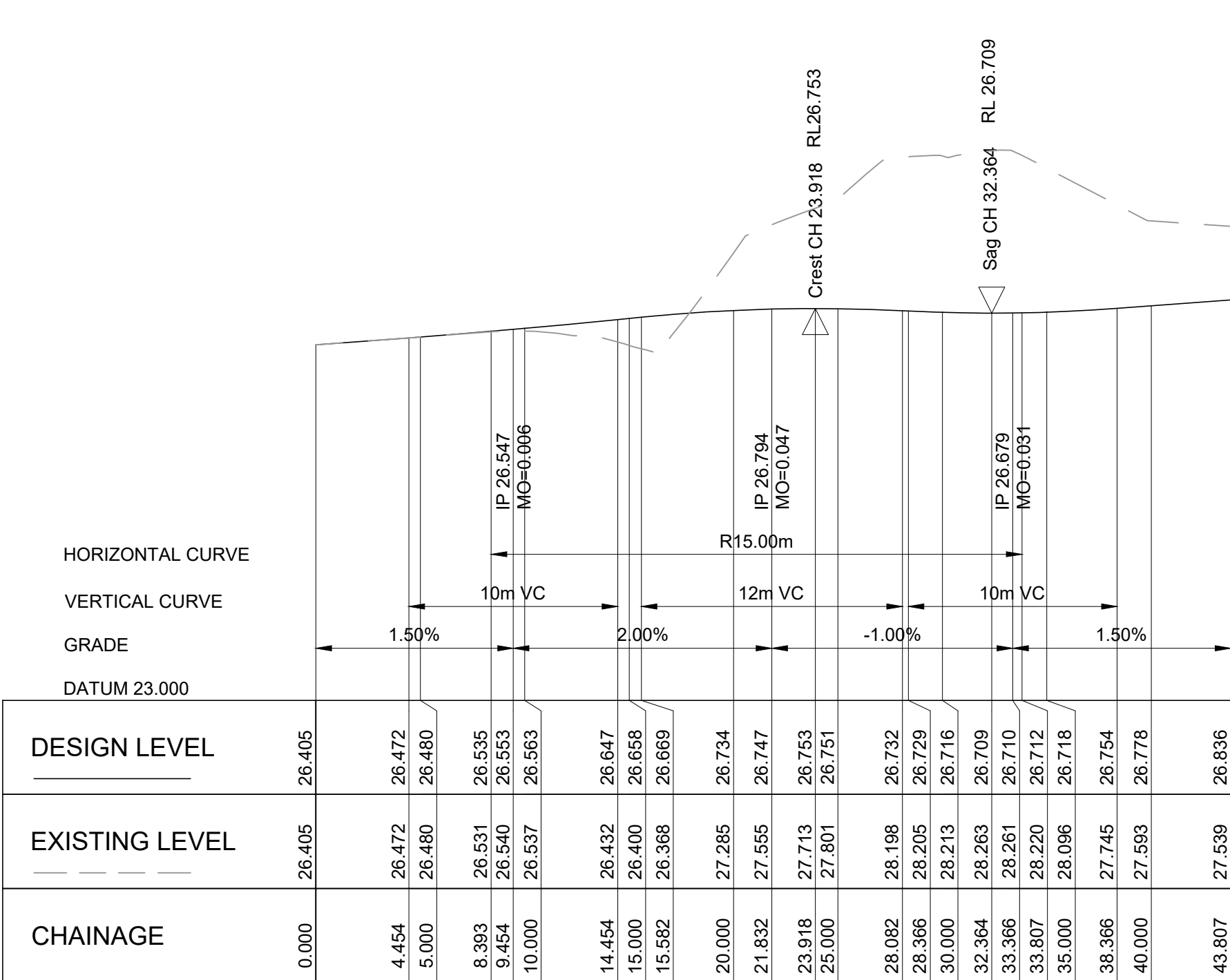


INSET B
1:200



1:250 Hor - 1:50 Ver

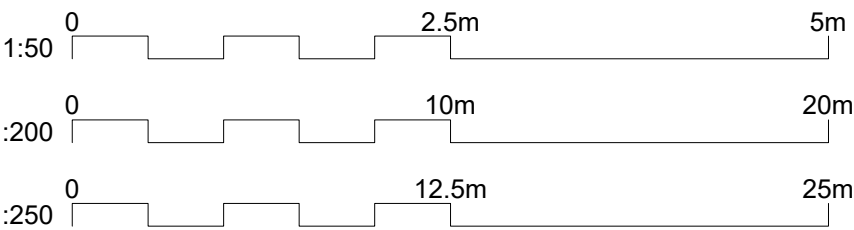
LONGITUDINAL SECTION ALONG KR 03



1:250 Hor - 1:50 Ver

LONGITUDINAL SECTION ALONG KR 04

LEGEND	
KR01	KERB RETURN NUMBER



REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH

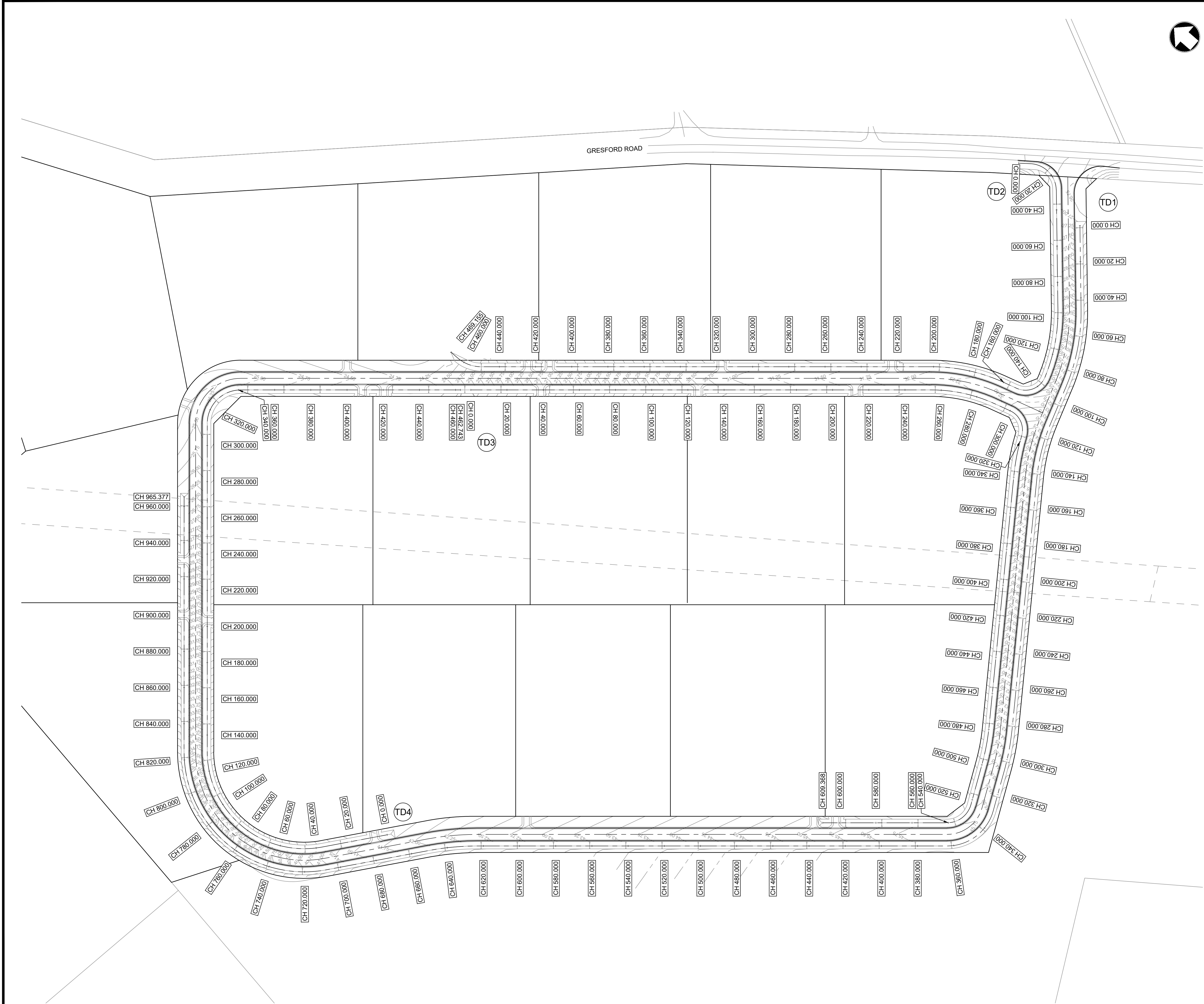


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LOT123 DP1063557**

DRAWING TITLE
**KERB RETURN PLANS AND
SECTIONS - SHEET 2**

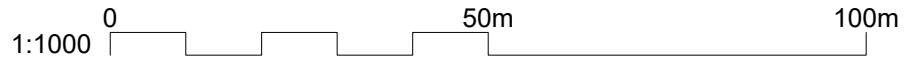
SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C221	REV C	



LEGEND

TD1

TABLE DRAIN NUMBER



B	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR

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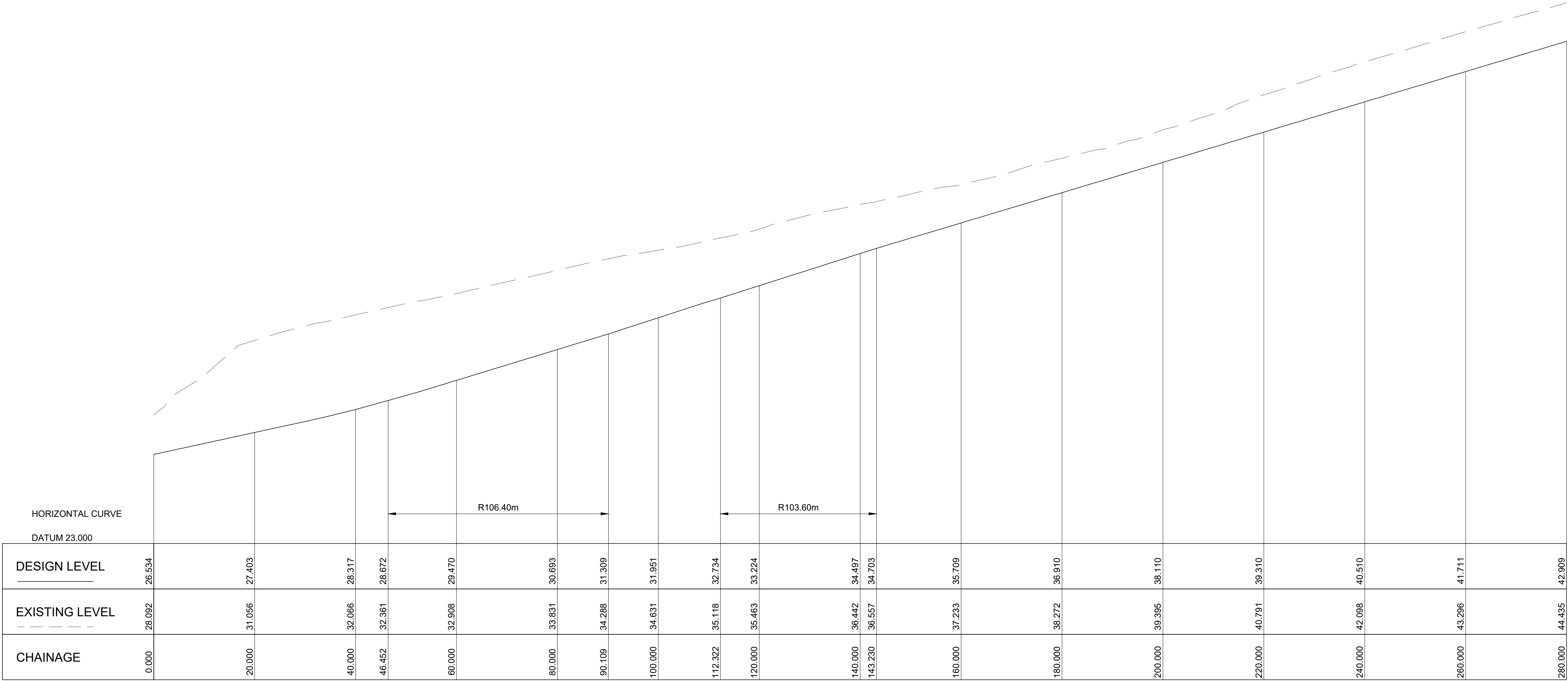
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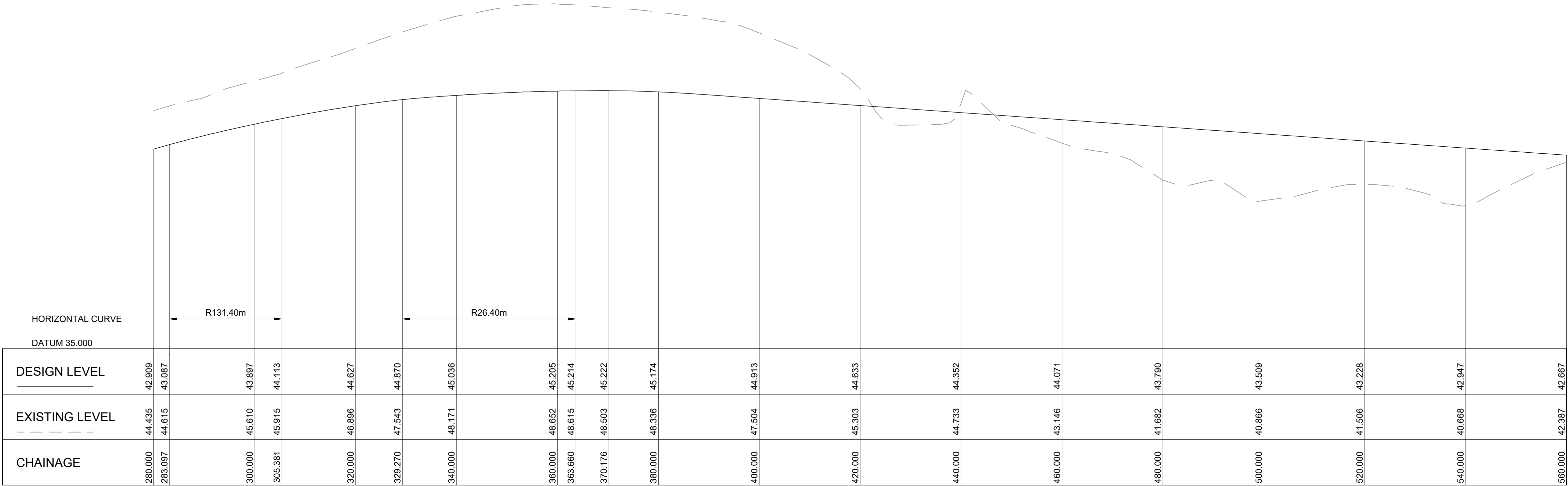
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589 GRESFROD ROAD
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DRAWING TITLE
TABLE DRAIN PLANS AND
SECTIONS - SHEET 1

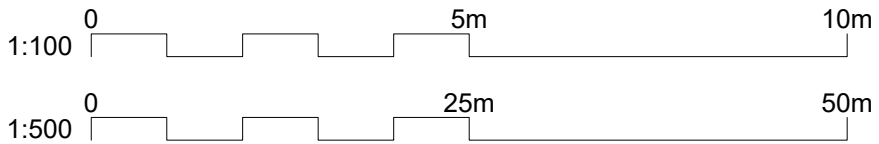
SCALE	1:1000	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C250	REV	B		



1:500 Hor - 1:100 Ver
LONGITUDINAL SECTION ALONG TD1



1:500 Hor - 1:100 Ver
LONGITUDINAL SECTION ALONG TD1 (CONTINUATION)



B	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR

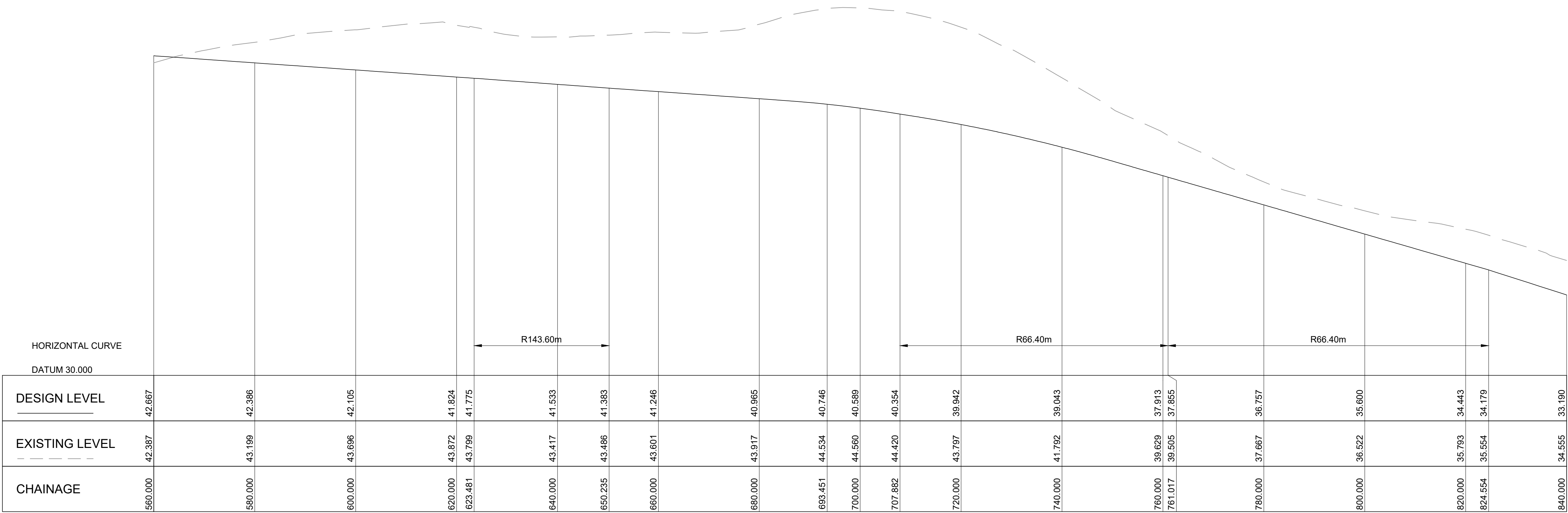


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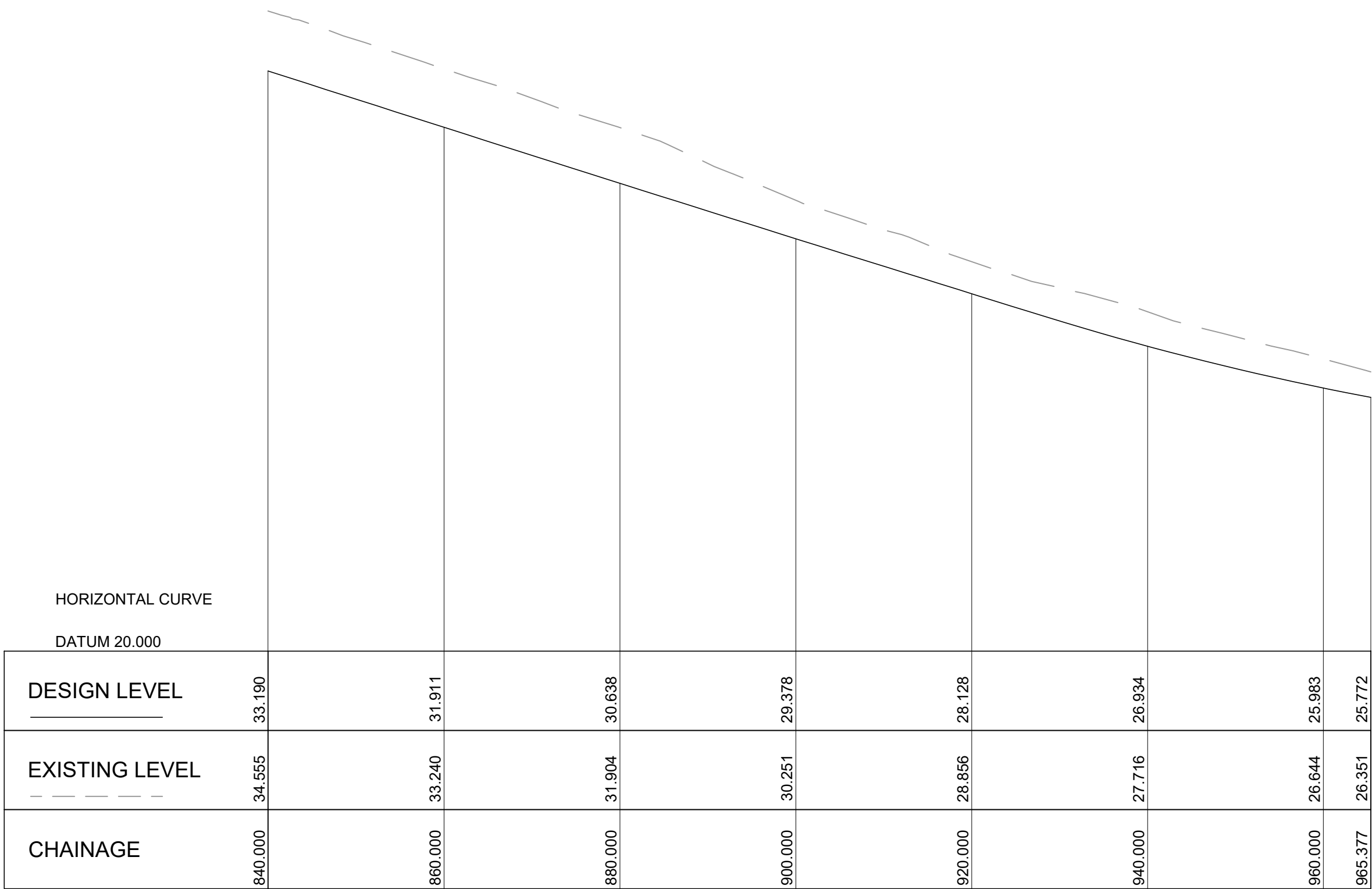
DRAWING TITLE
TABLE DRAIN PLANS AND
SECTIONS - SHEET 2

SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C251	REV B	



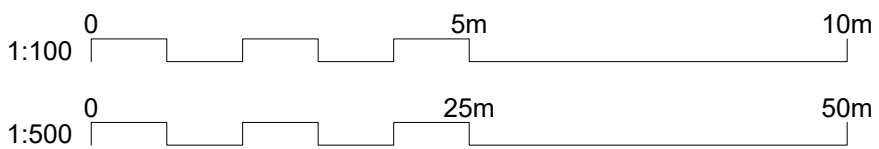
1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG TD1 (CONTINUATION)



1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG TD1 (CONTINUATION)



REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
B	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH

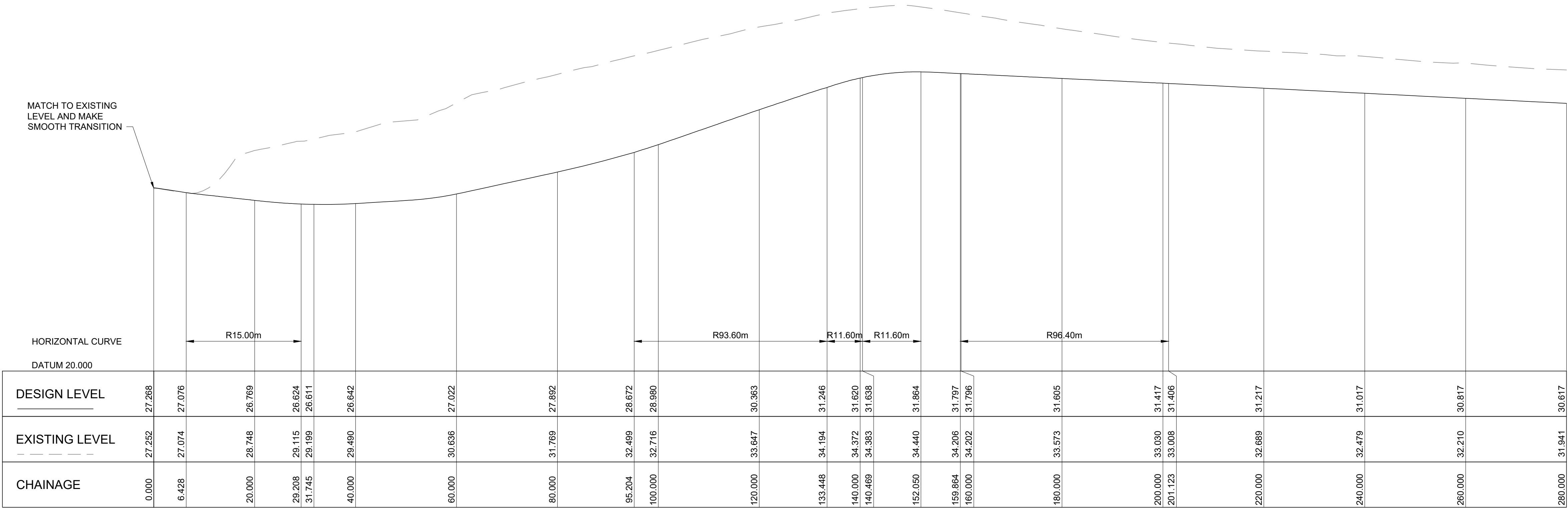


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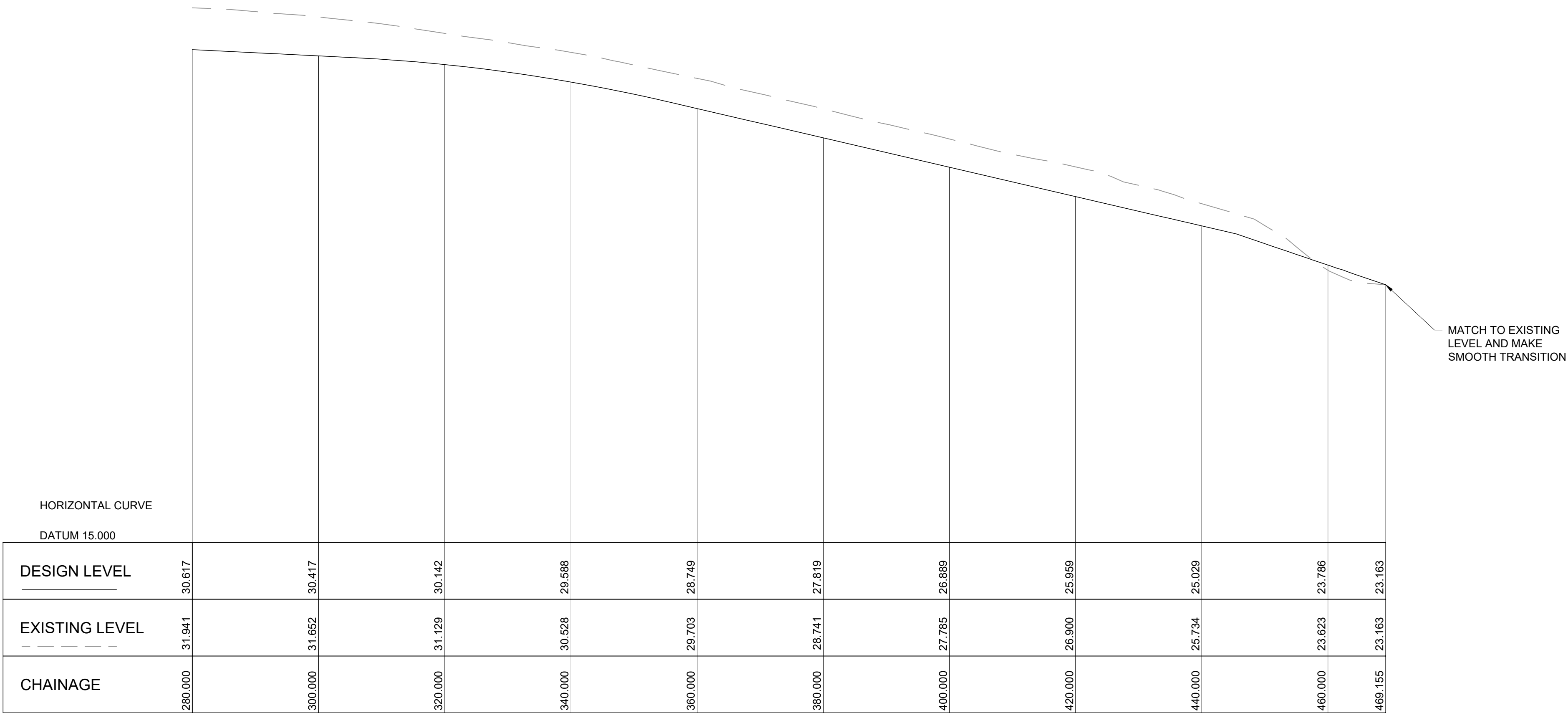
DRAWING TITLE
TABLE DRAIN PLANS AND
SECTIONS - SHEET 3

SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C252	REV B	



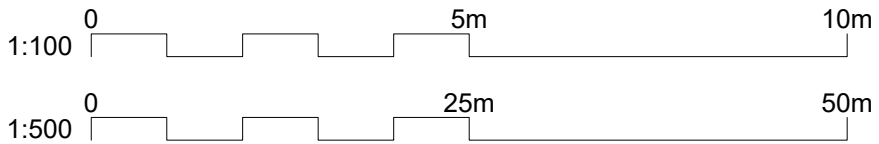
1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG TD2



1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG TD2 (CONTINUATION)



B	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



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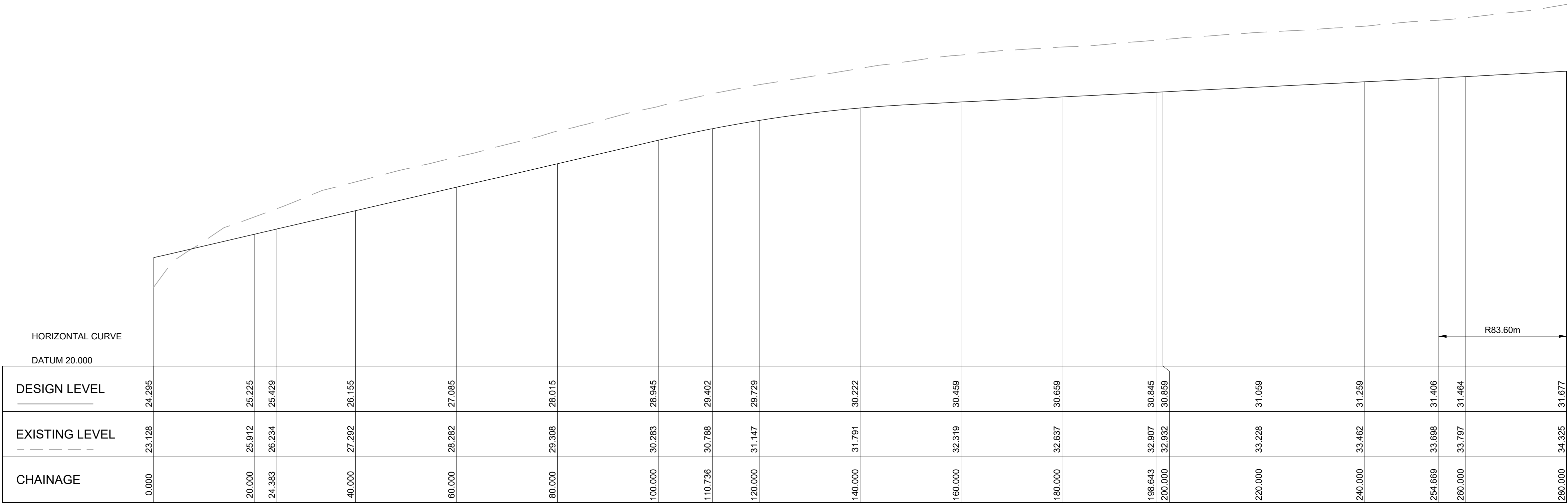
PROJECT

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DRAWING TITLE

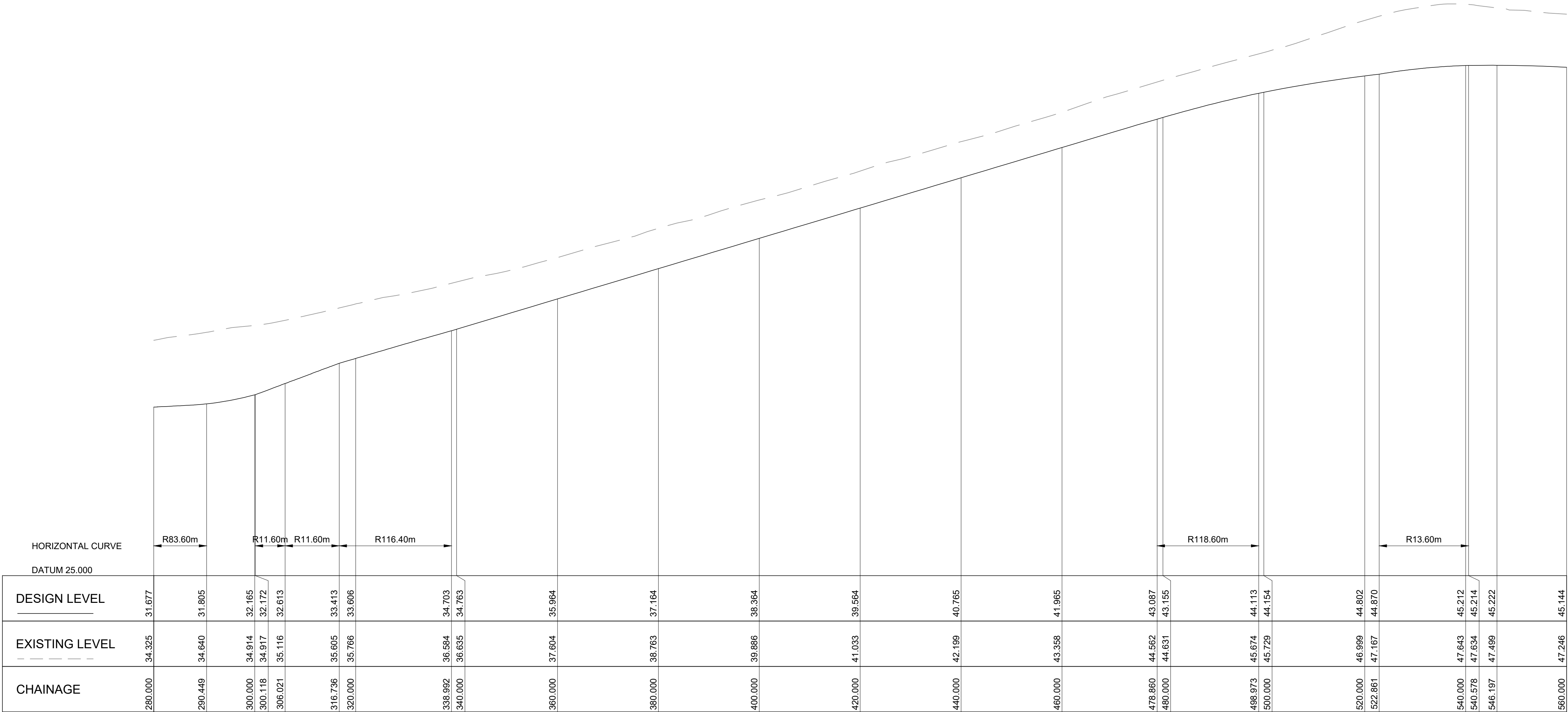
TABLE DRAIN PLANS AND
SECTIONS - SHEET 4

SCALE	AS SHOWN	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C253	REV	B		



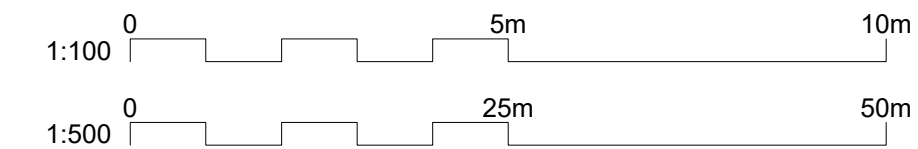
1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG TD3



1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG TD3 (CONTINUATION)



B	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR

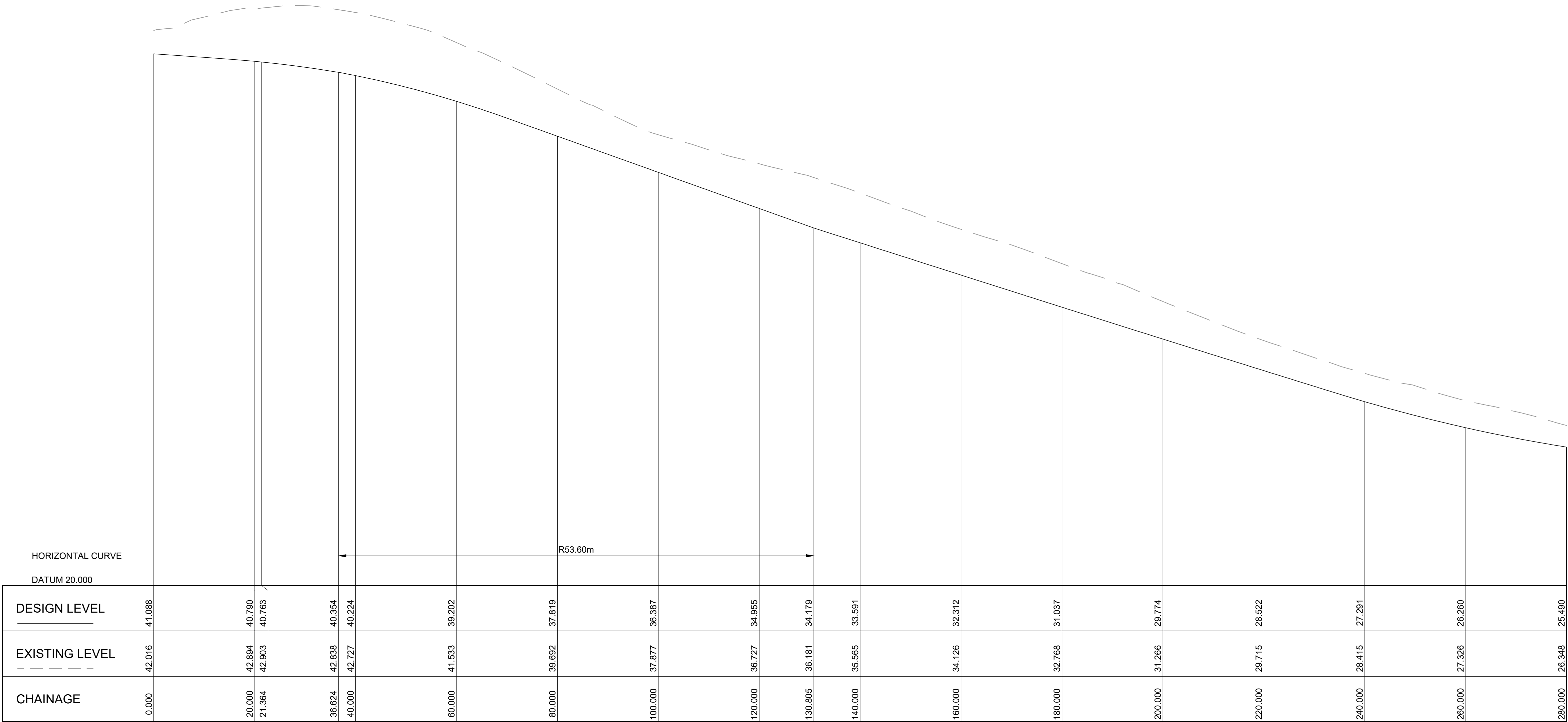


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DRAWING TITLE		
TABLE DRAIN PLANS AND SECTIONS - SHEET 5		
SCALE	STATUS	SIZE
AS SHOWN	DA	A1
DRAWING NO.	REV	
24-107-DA-STG5-C254	B	

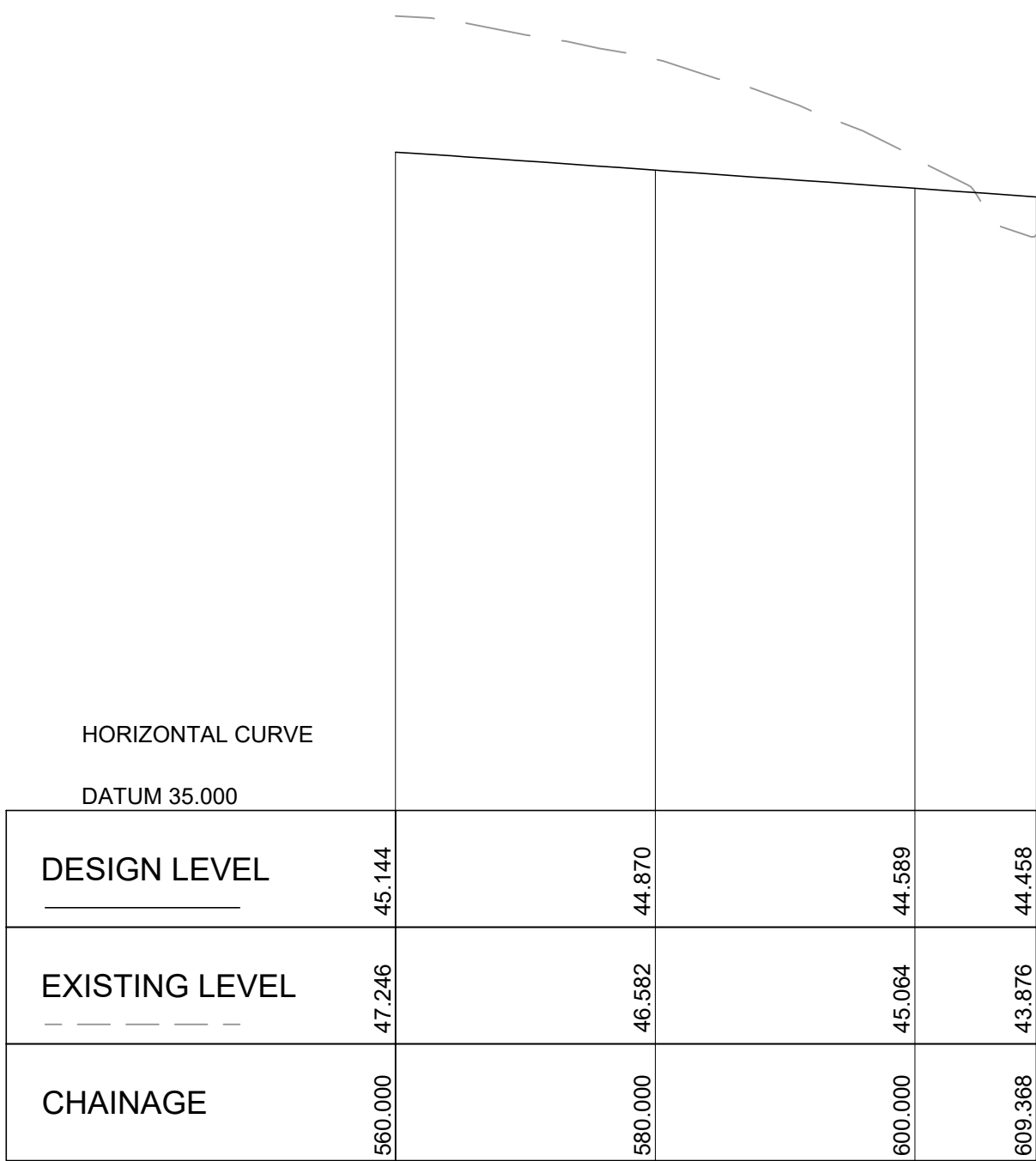


HORIZONTAL CURVE

DATUM 20.000

1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG TD4

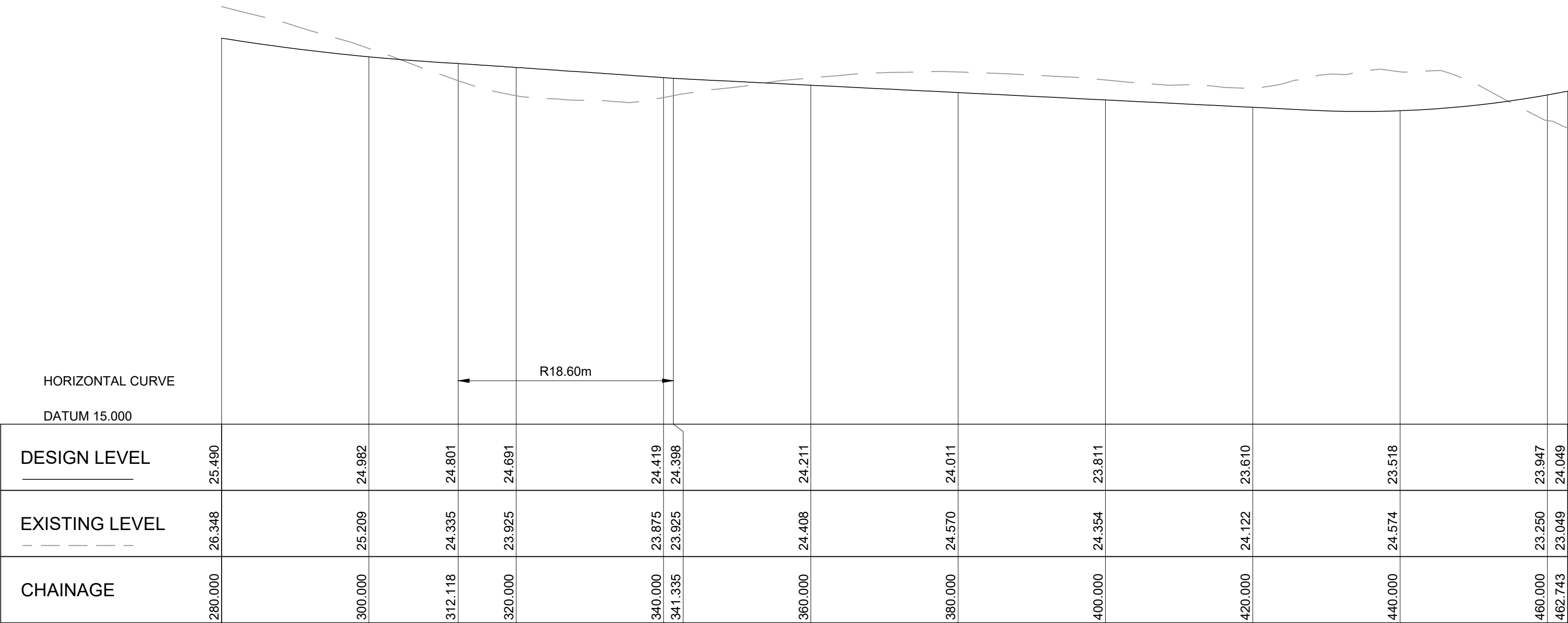


HORIZONTAL CURVE

DATUM 35.000

1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG TD3 (CONTINUATION)

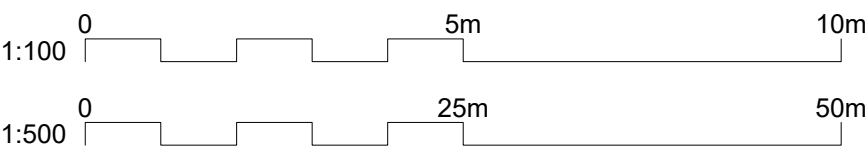


HORIZONTAL CURVE

DATUM 15.000

1:500 Hor - 1:100 Ver

LONGITUDINAL SECTION ALONG TD4 (CONTINUATION)



B	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



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DRAWING TITLE
TABLE DRAIN PLANS AND
SECTIONS - SHEET 6

SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C255	REV B	

PIT DATA											
NAME	TYPE	SIZE	PRESSURE CHANGE COEFF. KU	SURFACE ELEVATION (m)	BLOCKING FACTOR	10yr ARI RESULTS			100yr ARI RESULTS		
						MAX HGL	MAX SURFACE FLOW ARRIVING (cu.m/s)	MIN FREEBOARD (m)	MAX HGL	MAX SURFACE FLOW ARRIVING (cu.m/s)	MIN FREEBOARD (m)
A1	Node	0.000	0.000	23.007	0.000	23.910	0.000	0.000	23.910	1.541	0.000
A2	Headwall	0.000	0.500	24.713	0.000	24.130	3.848	0.580	25.160	8.326	-0.440
A3	Node	0.000	0.000	26.033	0.000	25.120	0.000	0.000	25.180	0.000	0.000
A4	Sag	900 x 900 SI	4.000	25.774	0.500	25.540	0.212	0.240	26.060	0.355	0.000
A5	Node	0.000	0.000	44.914	0.000	44.060	0.000	0.000	44.090	0.000	0.000
A6	Headwall	0.000	0.500	45.089	0.000	44.290	0.024	0.800	44.350	0.041	0.740
A6-1	Node	0.000	0.000	0.000	0.000	16.950	0.000	0.000	33.080	0.000	0.000
B1	Node	0.000	0.000	25.753	0.000	26.030	0.052	0.000	26.030	0.154	0.000
B1-1	Node	0.000	0.000	0.000	0.000	5.510	0.000	0.000	11.530	0.000	0.000
B2	OnGrade	900 x 900 SI	1.500	26.669	0.200	26.180	0.065	0.490	26.380	0.186	0.290
B2a	Headwall	0.000	0.500	26.964	0.000	26.980	0.165	-0.020	27.000	0.285	-0.040
B3	Sag	900 x 900 SI	4.000	26.612	0.500	26.370	0.139	0.240	26.930	0.251	0.000
C1	Node	0.000	0.000	44.295	0.000	43.190	0.000	0.000	43.380	0.000	0.000
C2	Headwall	0.000	0.500	44.669	0.000	43.890	0.686	0.770	44.240	1.344	0.430
D1	Node	0.000	0.000	43.433	0.000	42.230	0.000	0.000	42.410	0.000	0.000
D2	Headwall	0.000	0.500	43.739	0.000	43.150	1.046	0.590	43.540	2.049	0.200
E1	Node	0.000	0.000	0.000	0.000	78.380	0.000	0.000	153.010	0.000	0.000
F1	Node	0.000	0.000	0.000	0.000	46.350	0.000	0.000	93.870	0.000	0.000

PIPE DATA															
NAME	FROM	TO	Type	DIA (mm)	No. PIPES	10yr ARI RESULTS					100yr ARI RESULTS				
						MAX Q (cu.m/s)	MAX V (m/s)	MAX U/S HGL (m)	MAX D/S HGL (m)	DUE TO STORM	MAX Q (cu.m/s)	MAX V (m/s)	MAX U/S HGL (m)	MAX D/S HGL (m)	DUE TO STORM
P A2	A2	A1	Box culverts (samples)	1.2W x 0.9H	2.000	3.869	1.790	23.981	23.907	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	6.914	3.200	23.981	23.907	AR&R 100 year, 20 minutes storm, average 143 mm/h, Zone 1
P A4	A4	A3	Concrete, under roads, 0.5% minimum slope	450.000	1.000	0.205	1.700	25.323	25.121	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.299	2.080	25.340	25.182	AR&R 100 year, 15 minutes storm, average 166 mm/h, Zone 1
P A6	A6	A5	Concrete, under roads, 0.5% minimum slope	375.000	1.000	0.024	1.110	44.208	44.062	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.041	1.290	44.237	44.091	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
P B2	B2	B1	Concrete, under roads, 1% minimum slope	525.000	1.000	0.280	1.290	26.083	26.030	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.425	1.960	26.085	26.030	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
P B2a	B2a	B2	Concrete, under roads, 1% minimum slope	375.000	1.000	0.120	1.090	26.952	26.183	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.142	1.290	26.965	26.381	AR&R 100 year, 15 minutes storm, average 166 mm/h, Zone 1
P B3	B3	B2	Concrete, under roads, 0.5% minimum slope	450.000	1.000	0.139	0.880	26.218	26.183	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.240	1.510	26.471	26.381	AR&R 100 year, 20 minutes storm, average 143 mm/h, Zone 1
P C2	C2	C1	Concrete, under roads, 1% minimum slope	900.000	1.000	0.684	2.640	43.503	43.192	AR&R 10 year, 20 minutes storm, average 86.8 mm/h, Zone 1	1.337	3.110	43.694	43.383	AR&R 100 year, 15 minutes storm, average 166 mm/h, Zone 1
P D2	D2	D1	Concrete, under roads, 1% minimum slope	1050.000	1.000	1.044	3.360	42.636	42.232	AR&R 10 year, 20 minutes storm, average 86.8 mm/h, Zone 1	2.040	4.050	42.817	42.413	AR&R 100 year, 15 minutes storm, average 166 mm/h, Zone 1



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PROJECT

CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE

DRAINAGE CALCULATIONS
SHEET 1

SCALE	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C350	REV B	

CATCHMENT DATA												
NAME	PIT OR NODE	TOTAL AREA (ha)	PAVED AREA %	GRASS AREA %	10yr ARI RESULTS				100yr ARI RESULTS			
					MAX FLOW Q (cu.m/s)	PAVED TC (min)	GRASSED TC (min)	DUE TO STORM	MAX FLOW Q (cu.m/s)	PAVED TC (min)	GRASSED TC (min)	DUE TO STORM
C A2-A13	A2	10.990	4.000	96.000	1.989	8.950	14.880	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	4.897	6.980	11.600	AR&R 100 year, 20 minutes storm, average 143 mm/h, Zone 1
C A4-A4b	A4	0.610	39.000	61.000	0.191	5.000	10.000	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.317	5.000	10.000	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
C A6	A6-1	0.080	34.000	66.000	0.024	5.000	10.000	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.041	5.000	10.000	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
C B1	B1-1	0.030	15.000	85.000	0.008	5.000	10.000	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.015	5.000	10.000	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
C B2	B2	0.060	54.000	46.000	0.020	5.000	10.000	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.033	5.000	10.000	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
C B2a	B2a	0.570	25.000	75.000	0.165	5.000	10.000	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.285	5.000	10.000	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
C B3	B3	0.520	12.000	88.000	0.139	5.000	10.000	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.251	5.000	10.000	AR&R 100 year, 20 minutes storm, average 143 mm/h, Zone 1
C C2	C2	2.590	5.000	95.000	0.686	5.560	9.250	AR&R 10 year, 20 minutes storm, average 86.8 mm/h, Zone 1	1.344	4.290	7.130	AR&R 100 year, 15 minutes storm, average 166 mm/h, Zone 1
C D2	D2	3.950	5.000	95.000	1.046	5.560	9.250	AR&R 10 year, 20 minutes storm, average 86.8 mm/h, Zone 1	2.049	4.290	7.130	AR&R 100 year, 15 minutes storm, average 166 mm/h, Zone 1
C E1-E4	E1	0.370	34.000	66.000	0.113	5.000	10.000	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.190	5.000	10.000	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
C F1	F1	0.210	40.000	60.000	0.066	5.000	10.000	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.110	5.000	10.000	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1

OVERLAND FLOW DATA														
NAME	FROM	TO	10yr ARI RESULTS						100yr ARI RESULTS					
			MAX Q U/S	MAX Q D/S	MAX D	MAX DxV	MAX V	DUE TO STORM	MAX Q U/S	MAX Q D/S	MAX D	MAX DxV	MAX V	DUE TO STORM
F A1	A1	N136581	3.869	3.869	0.165	0.270	1.620	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	8.452	8.452	0.236	0.490	2.070	AR&R 100 year, 20 minutes storm, average 143 mm/h, Zone 1
F A2	A2	A1	0.000	0.000	0.000	0.000	0.000	0.000	1.541	1.541	0.062	0.180	2.890	AR&R 100 year, 20 minutes storm, average 143 mm/h, Zone 1
F A3	A3	N144767	0.205	0.205	0.308	0.170	0.540	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.299	0.299	0.356	0.210	0.590	AR&R 100 year, 15 minutes storm, average 166 mm/h, Zone 1
F A4	A4	F1	0.000	0.066	0.026	0.010	0.470	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.046	0.154	0.038	0.020	0.610	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
F A5	A5	A4	0.024	0.205	0.130	0.390	3.020	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.041	0.345	0.158	0.550	3.470	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
F A6	A6	A5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
F A6-1	A6-1	A6	0.024	0.024	0.124	0.050	0.390	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.041	0.041	0.151	0.070	0.450	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
F B1	B1	N136609	0.331	0.331	0.053	0.040	0.780	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.578	0.578	0.069	0.060	0.920	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
F B1-1	B1-1	B1	0.008	0.008	0.011	0.000	0.240	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.015	0.015	0.014	0.000	0.280	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
F B2	B2	B1	0.044	0.044	0.012	0.010	1.070	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.140	0.140	0.020	0.030	1.550	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
F B2a	B2a	B2	0.045	0.055	0.152	0.090	0.590	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.142	0.158	0.226	0.170	0.770	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
F B3	B3	B2	0.000	0.010	0.010	0.000	0.370	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.012	0.028	0.014	0.010	0.540	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
F C1	C1	N146015	0.684	0.684	0.046	0.090	1.990	AR&R 10 year, 20 minutes storm, average 86.8 mm/h, Zone 1	1.337	1.337	0.062	0.150	2.470	AR&R 100 year, 15 minutes storm, average 166 mm/h, Zone 1
F C2	C2	C1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
F D1	D1	N146015	1.044	1.044	0.055	0.130	2.340	AR&R 10 year, 20 minutes storm, average 86.8 mm/h, Zone 1	2.040	2.040	0.074	0.220	2.920	AR&R 100 year, 15 minutes storm, average 166 mm/h, Zone 1
F D2	D2	D1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
F E1	E1	N136581	0.113	0.113	0.033	0.020	0.550	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.190	0.190	0.041	0.030	0.650	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
F F1	F1	N136581	0.066	0.066	0.026	0.010	0.470	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	0.153	0.153	0.038	0.020	0.600	AR&R 100 year, 25 minutes storm, average 126 mm/h, Zone 1
OF62424	N146015	A2	1.727	3.680	0.110	0.320	2.910	AR&R 10 year, 25 minutes storm, average 76.7 mm/h, Zone 1	3.377	8.156	0.157	0.580	3.700	AR&R 100 year, 20 minutes storm, average 143 mm/h, Zone 1

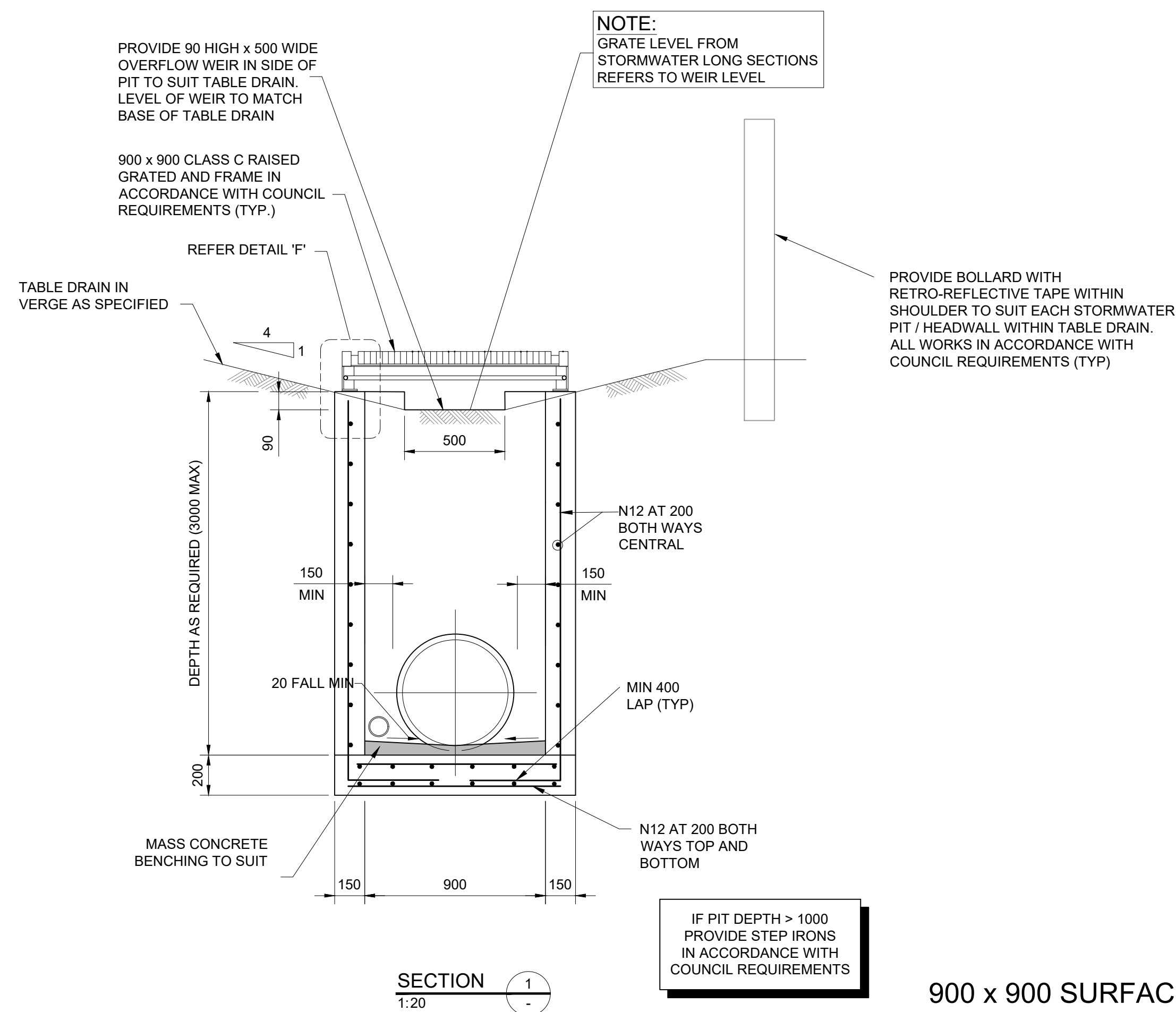
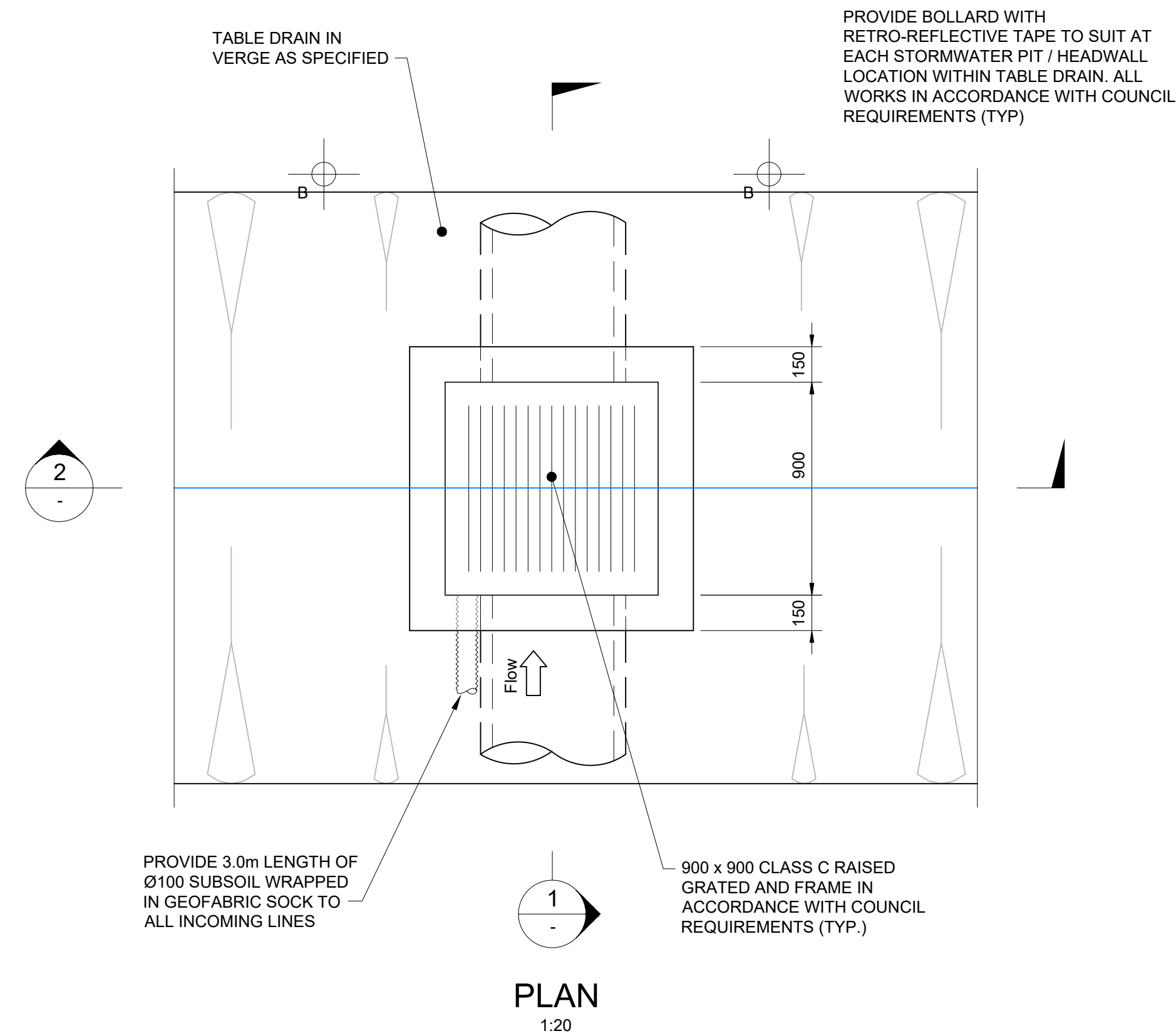
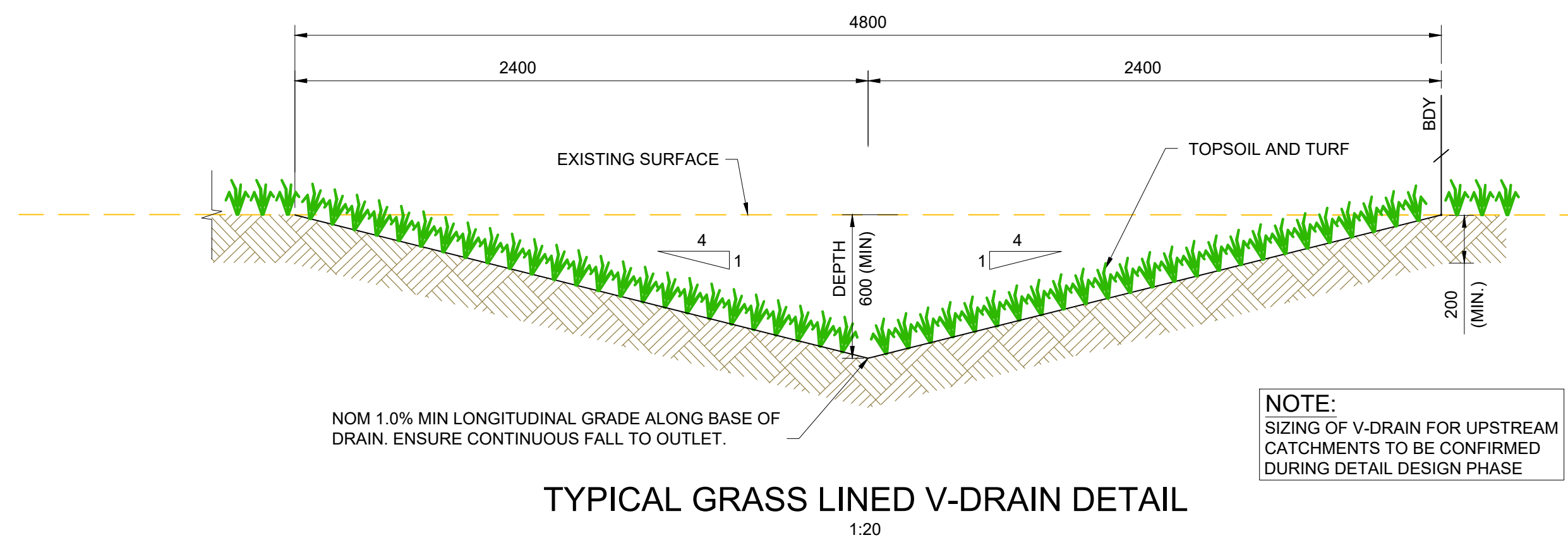
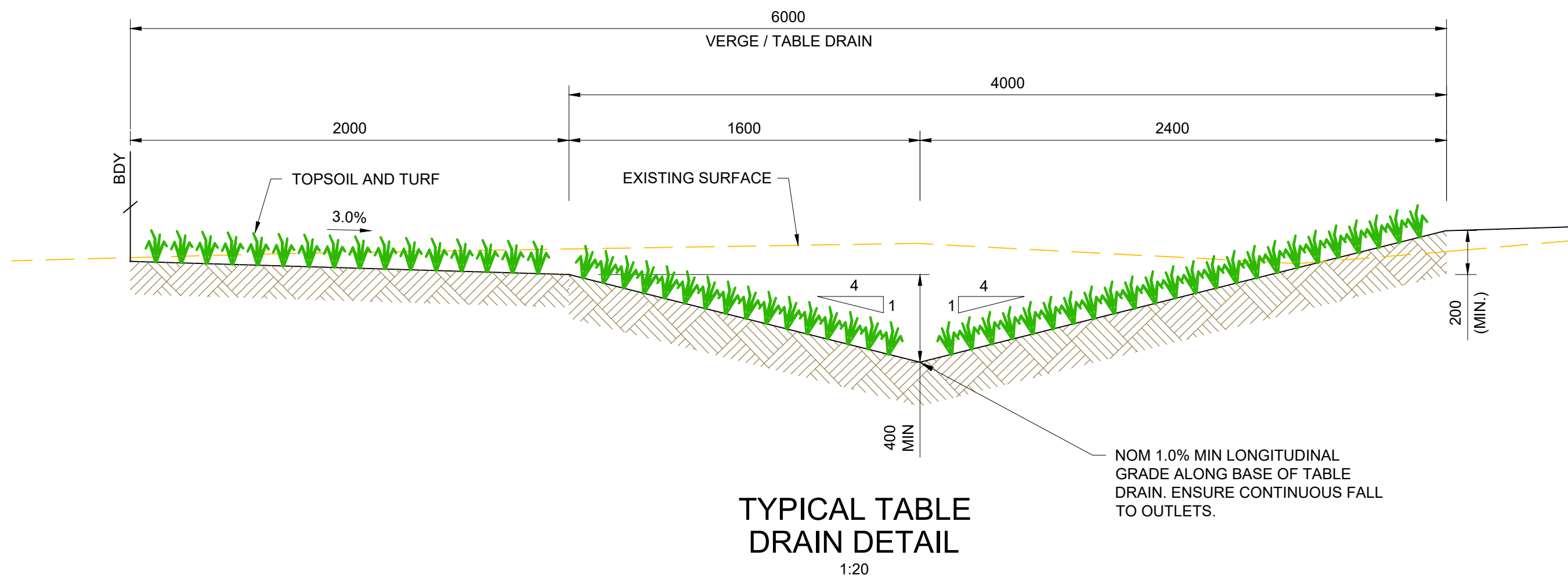
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A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR



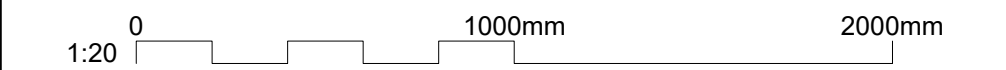
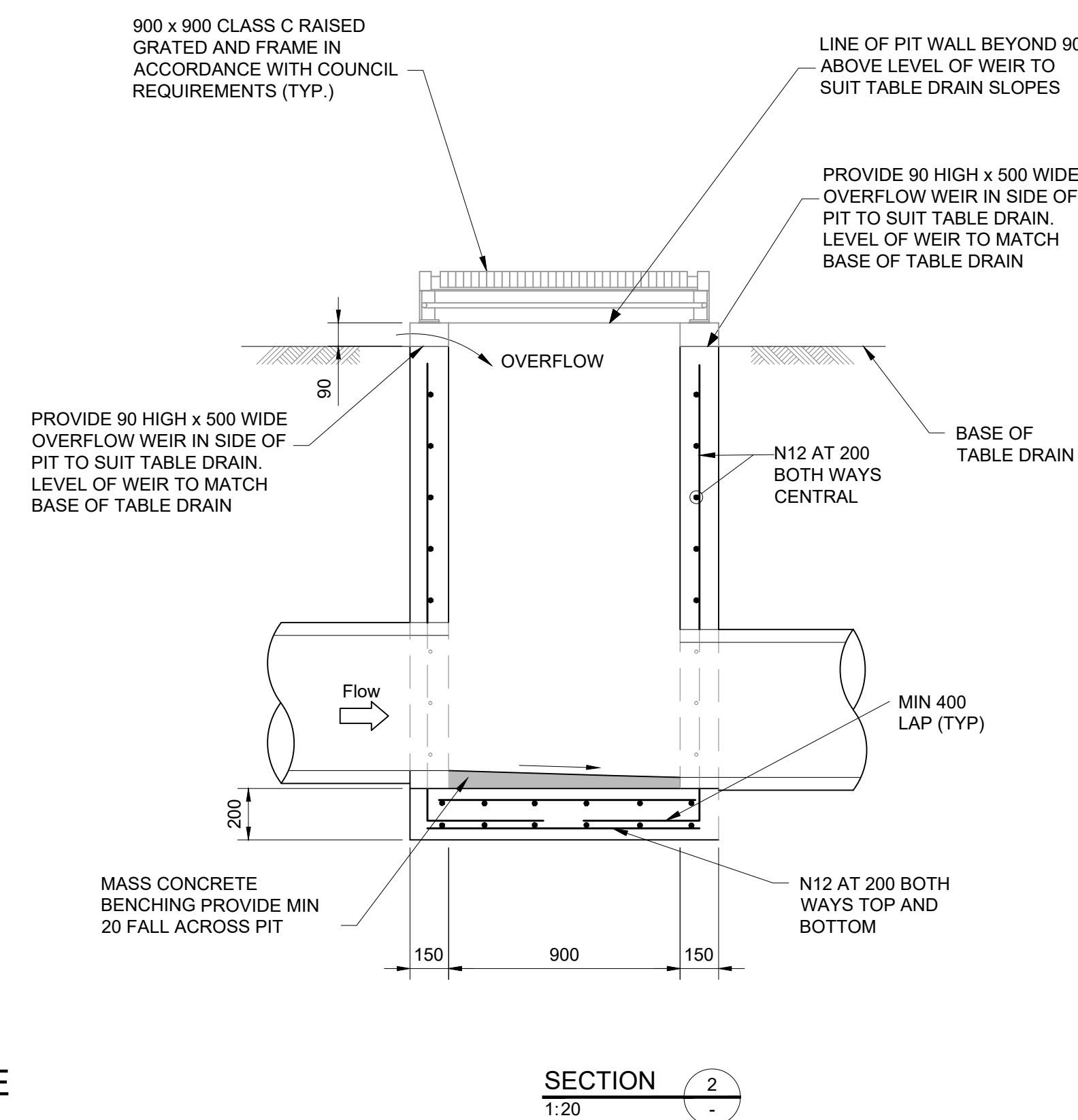
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PROJECT CORNISH GROUP VACY VILLAGE SOUTH STAGE 5 589 GRESFROD ROAD LOT123 DP1063557		
DRAWING TITLE DRAINAGE CALCULATIONS SHEET 2		
SCALE	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C351	REV B	



900 x 900 SURFACE INLET PIT WITH RAISED GRATE



REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
B	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH

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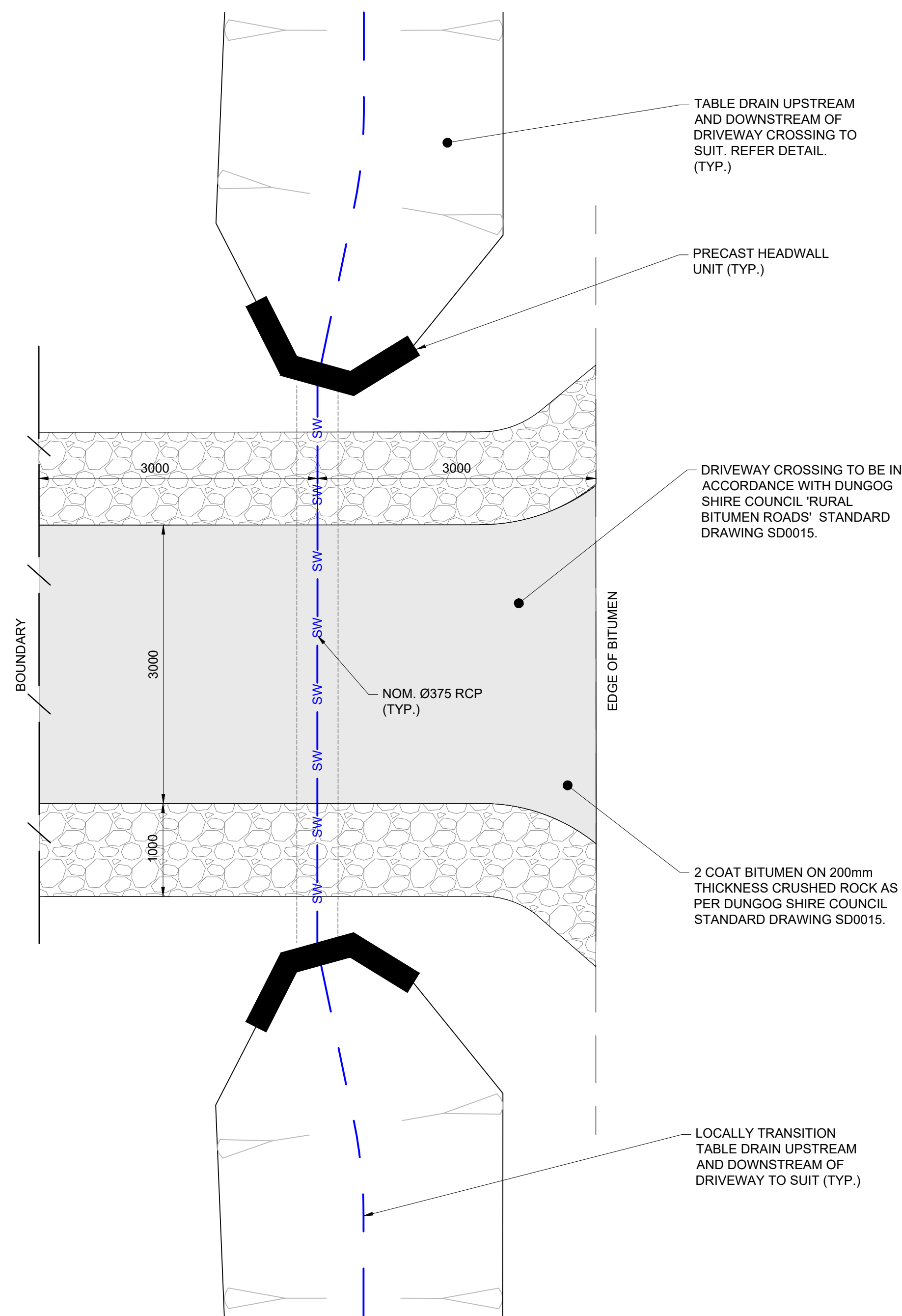
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PROJECT
CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE
SITEWORKS AND STORMWATER
DETAILS - SHEET 1

SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C400	REV C	



VEHICLE CROSSING DETAIL
1:40

0 1000mm 2000mm
1:20

REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
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A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH

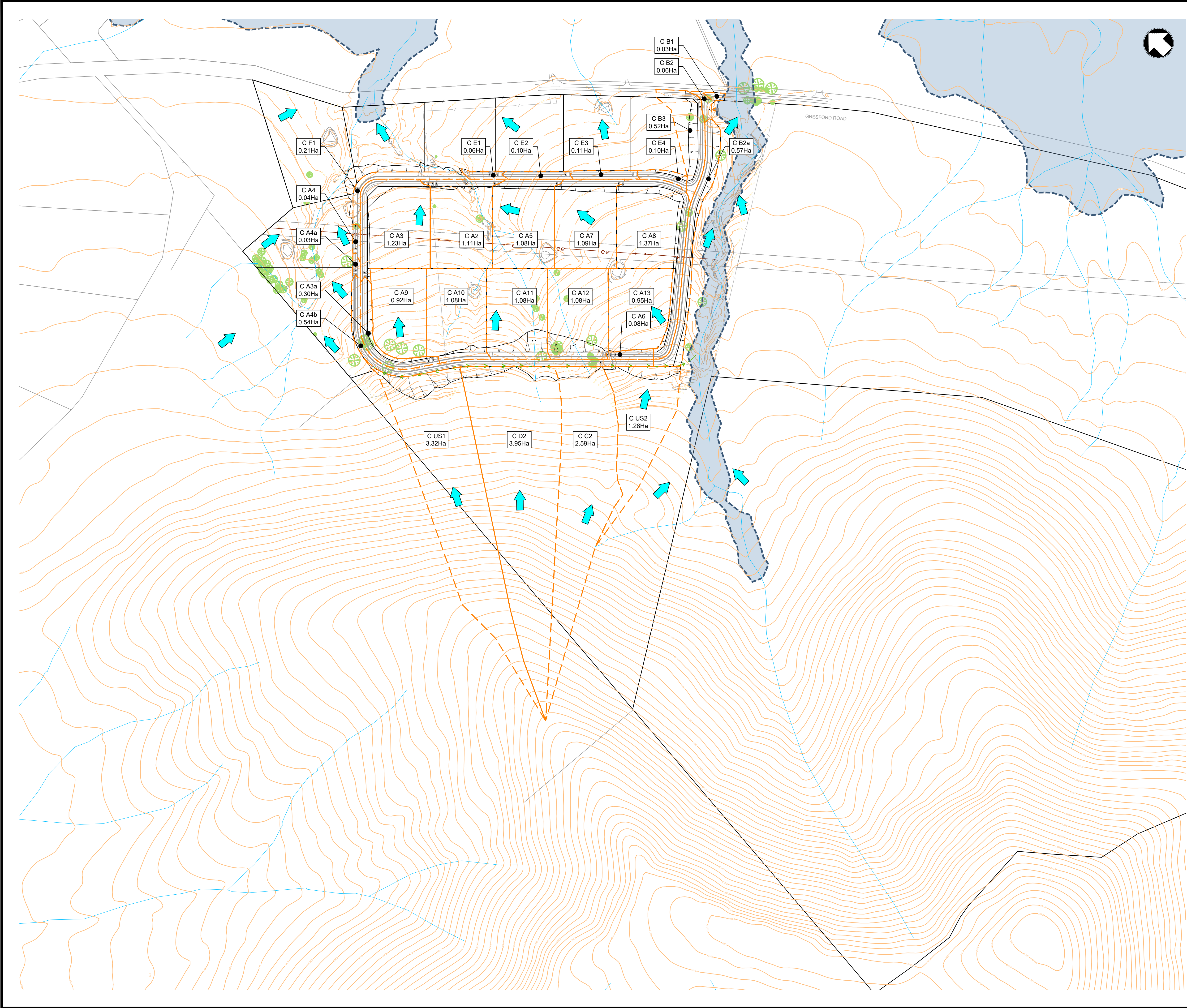


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PROJECT
CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE
SITWORKS AND STORMWATER
DETAILS - SHEET 2

SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C401	REV B	



LEGEND

EXISTING WATERCOURSE

DRAINS CATCHMENT BOUNDARY

C A2
0.0257ha

DRAINS CATCHMENT LABEL
CATCHMENT AREA

CATCHMENT FLOW

100 YEAR FLOOD EXTENT

REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
C	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
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A	15.12.25	ISSUED FOR APPROVAL	VT	X	AH



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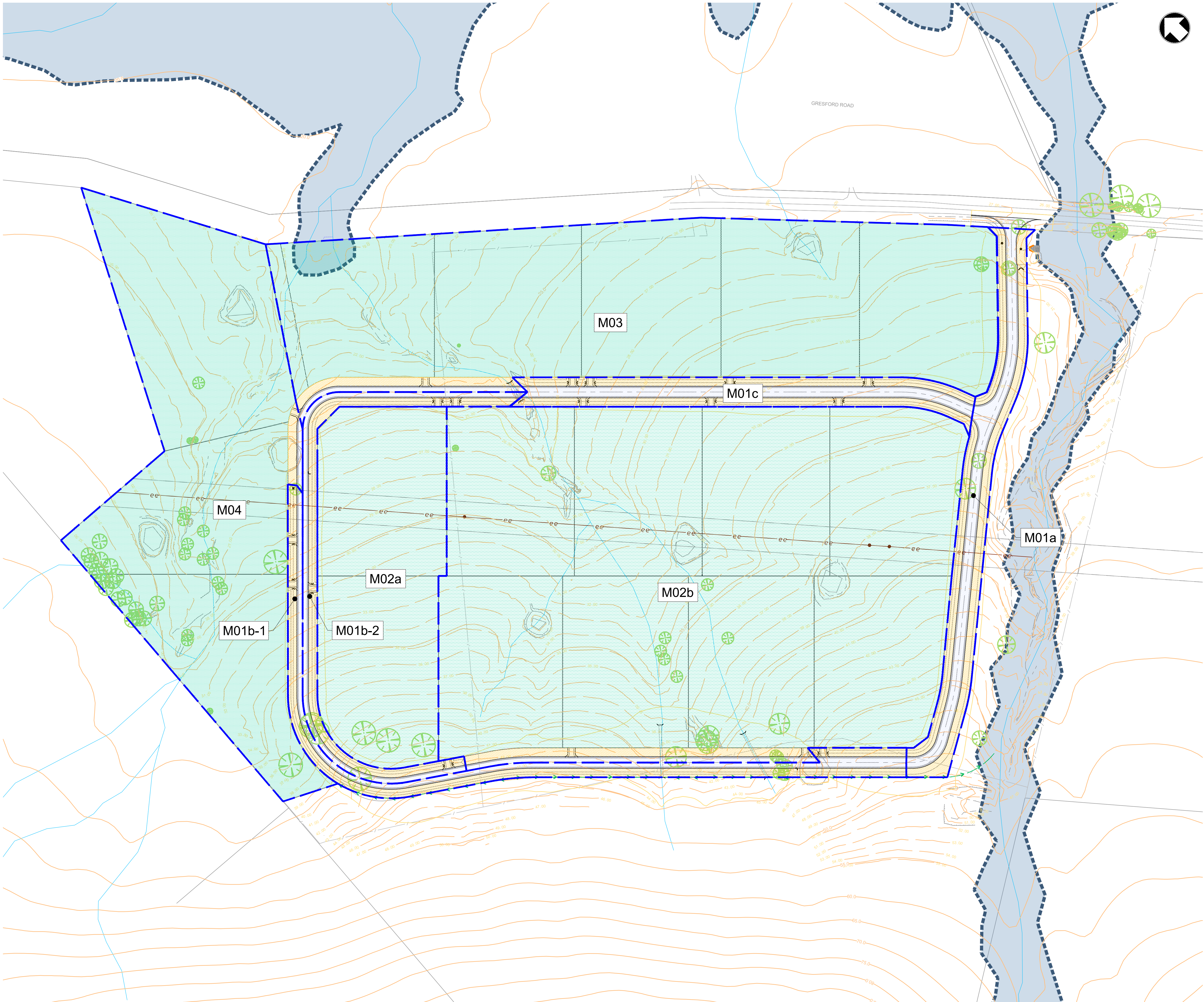
PROJECT

CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE

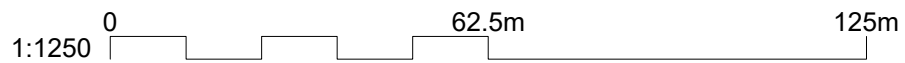
STORMWATER CATCHMENT PLAN

SCALE	1:2500	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C510	REV	C		



CATCHMENT AREAS	
LANDUSE	AREA (ha)
ROAD	1.22
GRASSED TABLE DRAIN/VERGE	1.80
FUTURE LOW DENSITY RESIDENTIAL LOTS	18.95
TOTAL AREA	21.97

LEGEND	
	MUSIC CATCHMENT BOUNDARY
	ROAD PAVEMENT
	GRASSED TABLE DRAIN/VERGE
	FUTURE LOW DENSITY RESIDENTIAL LOTS



REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
B	25.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH
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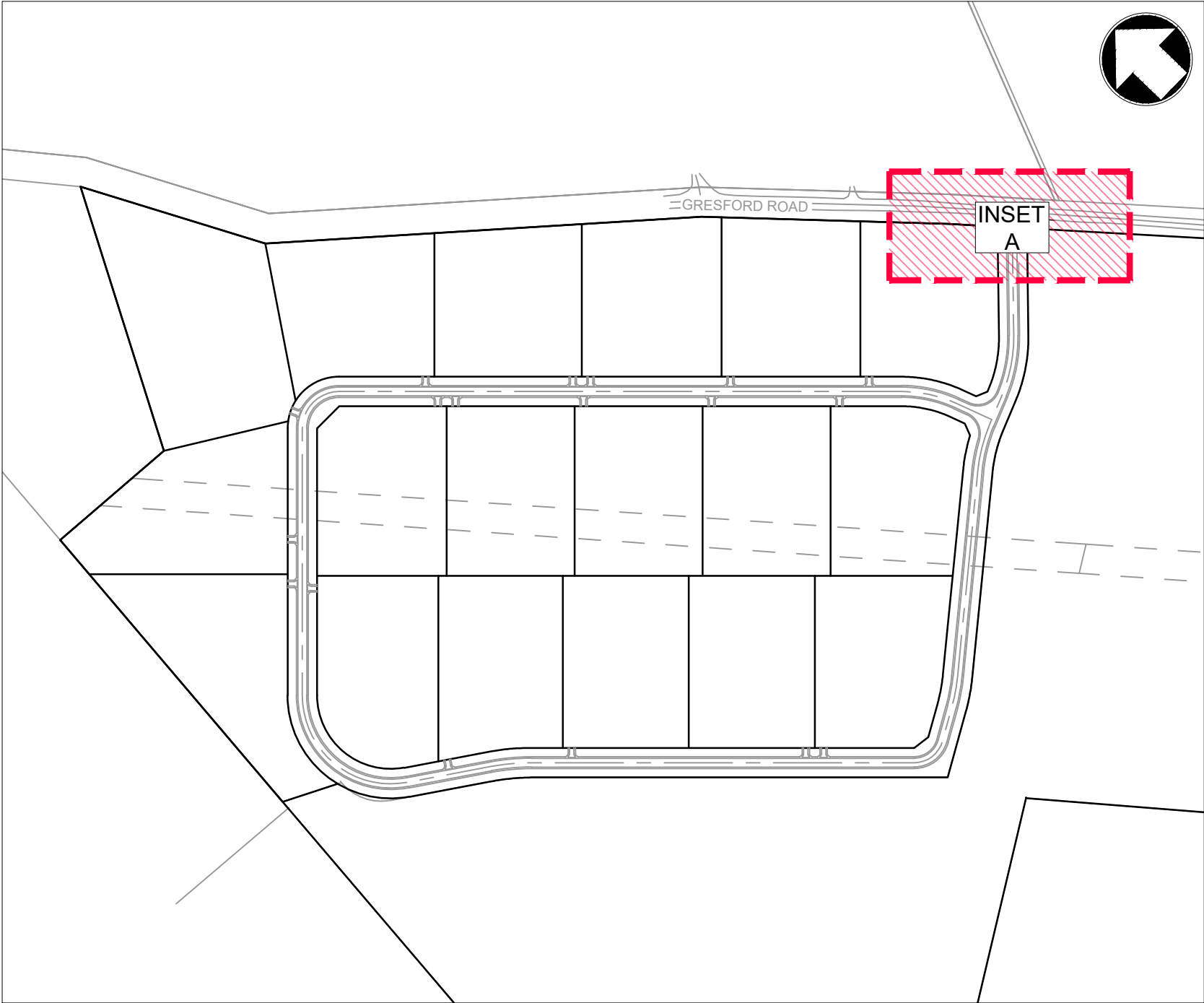


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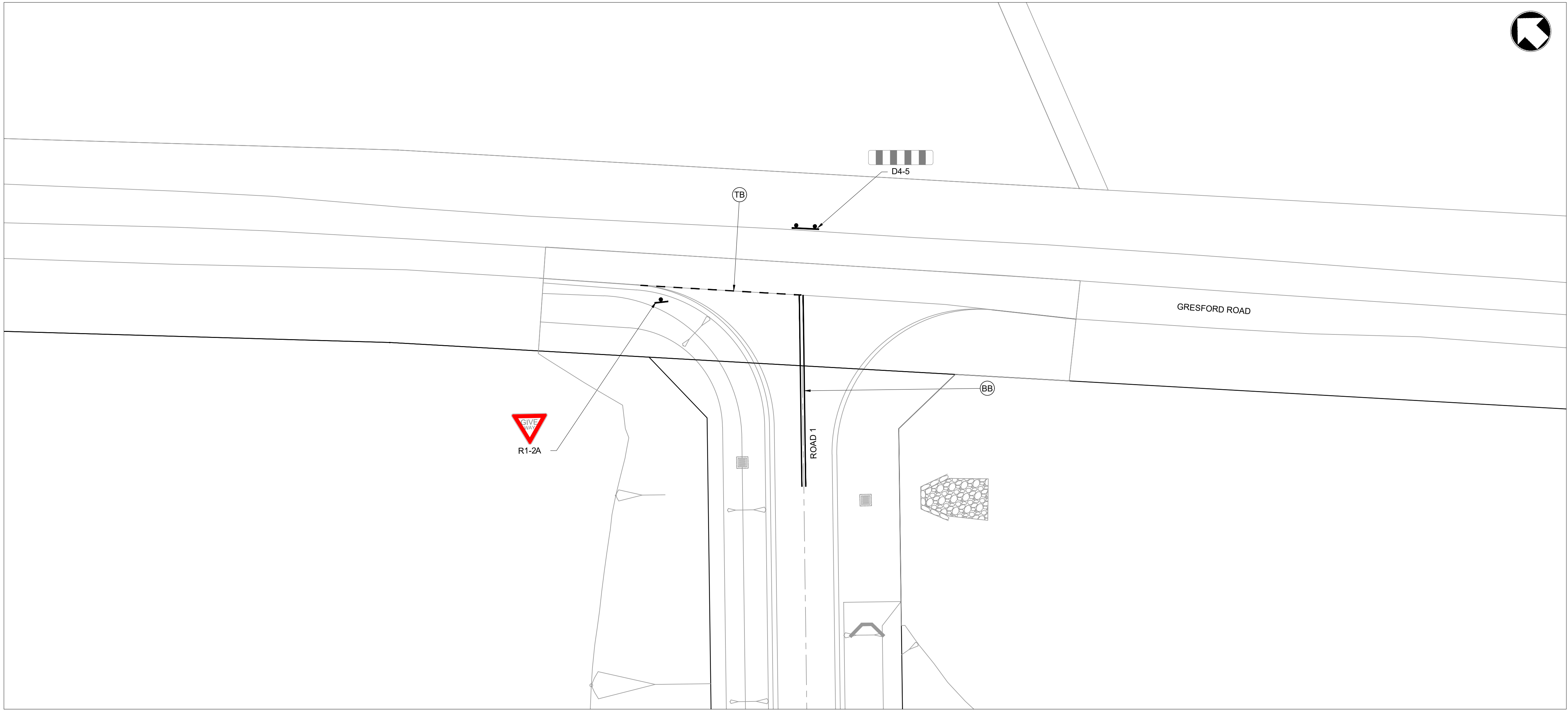
PROJECT
CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE
MUSIC CATCHMENT PLAN

SCALE	1:1250	STATUS	DA	SIZE	A1
DRAWING NO.	24-107-DA-STG5-C530	REV	B		



KEY PLAN
NTS



INSET A
1:250

LEGEND

ALL SIGNPOSTING TO BE IN ACCORDANCE WITH CURRENT RMS REGULATORY SIGNS MANUAL AND AS1742.2

- TB

BB


R1-2A


D4-5

HOLDING LINES

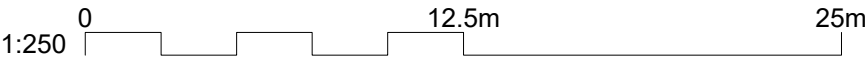
DOUBLE BARRIER LINE

GIVE WAY

OBSTRUCTION MARKER

NOTES:
DETAILS SHOWN ON THIS PLAN ARE INDICATIVE ONLY AND SUBJECT TO LTC APPROVAL

STREET SIGNS TO BE PROVIDED AT EACH INTERSECTION IN ACCORDANCE WITH COUNCIL REQUIREMENTS



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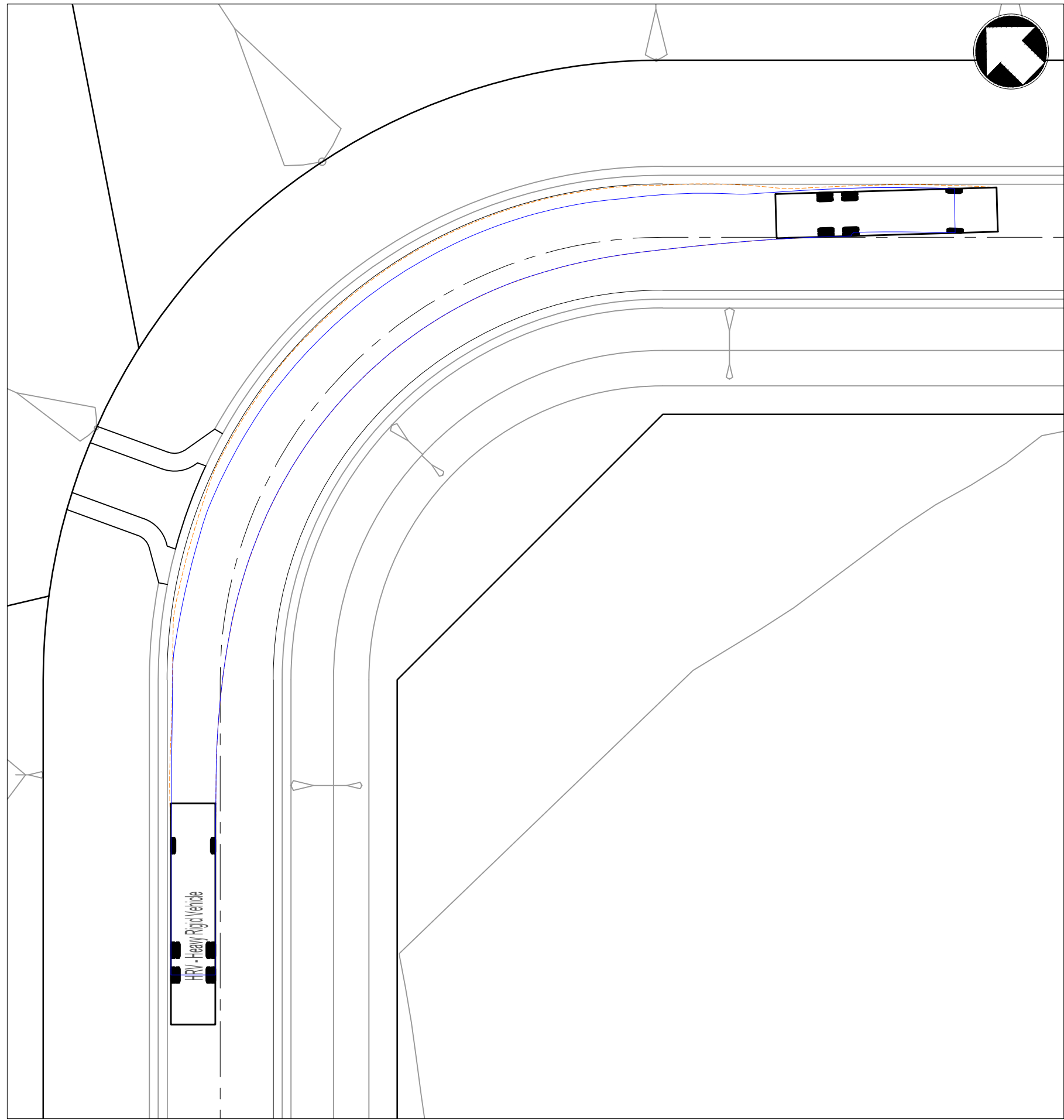


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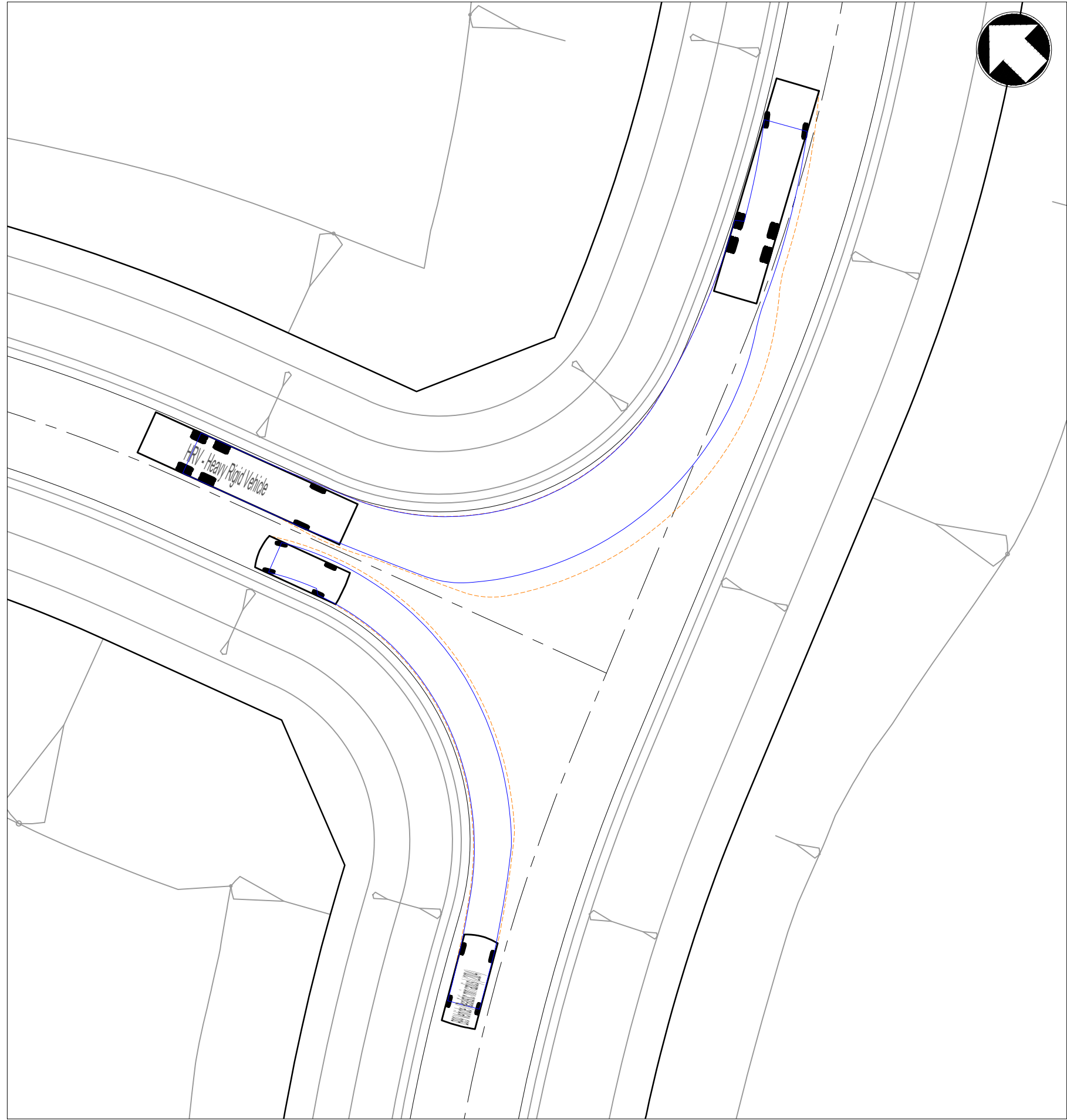
PROJECT
CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557

DRAWING TITLE
SIGNAGE AND LINEMARKING PLAN

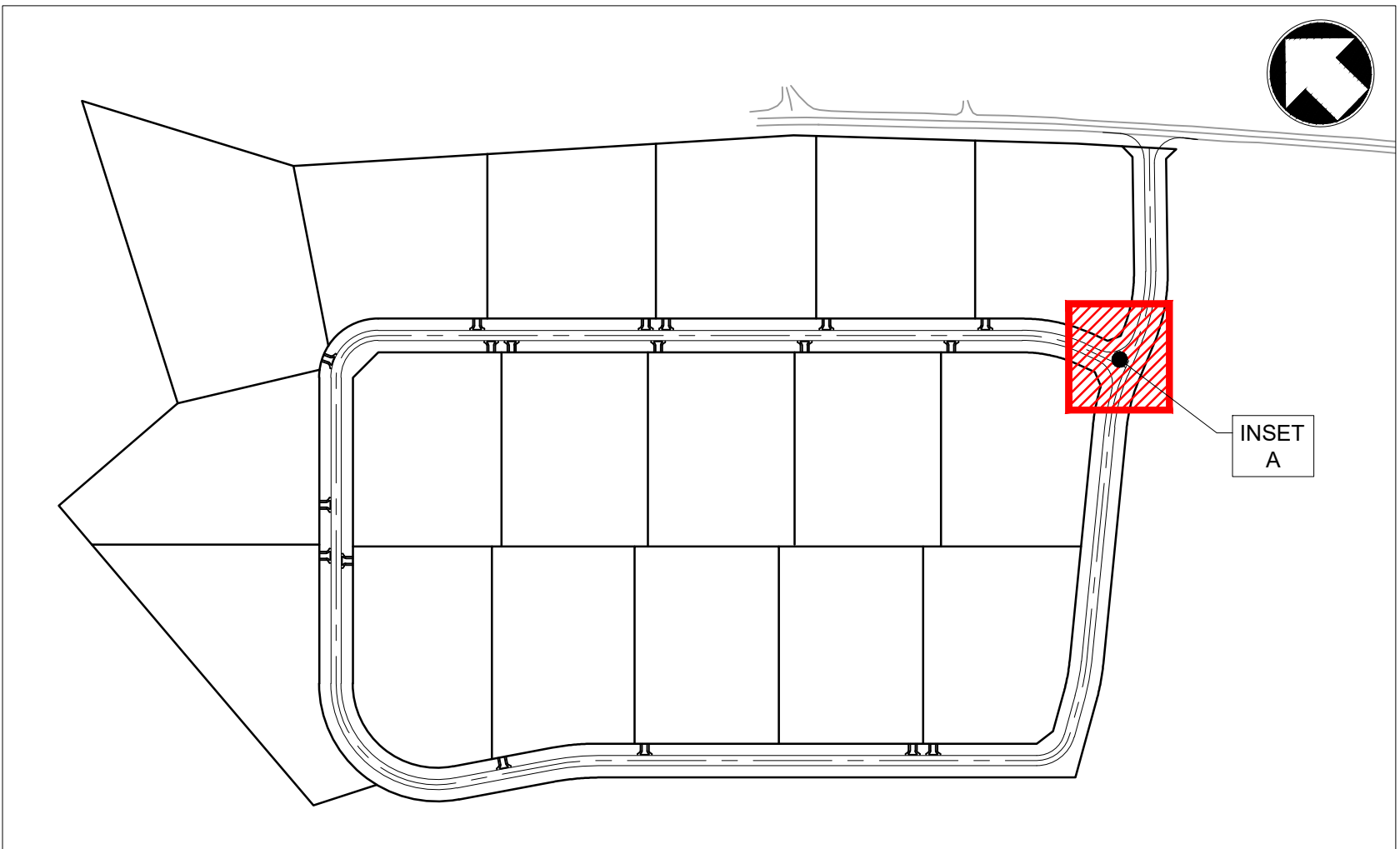
SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C600	REV C	



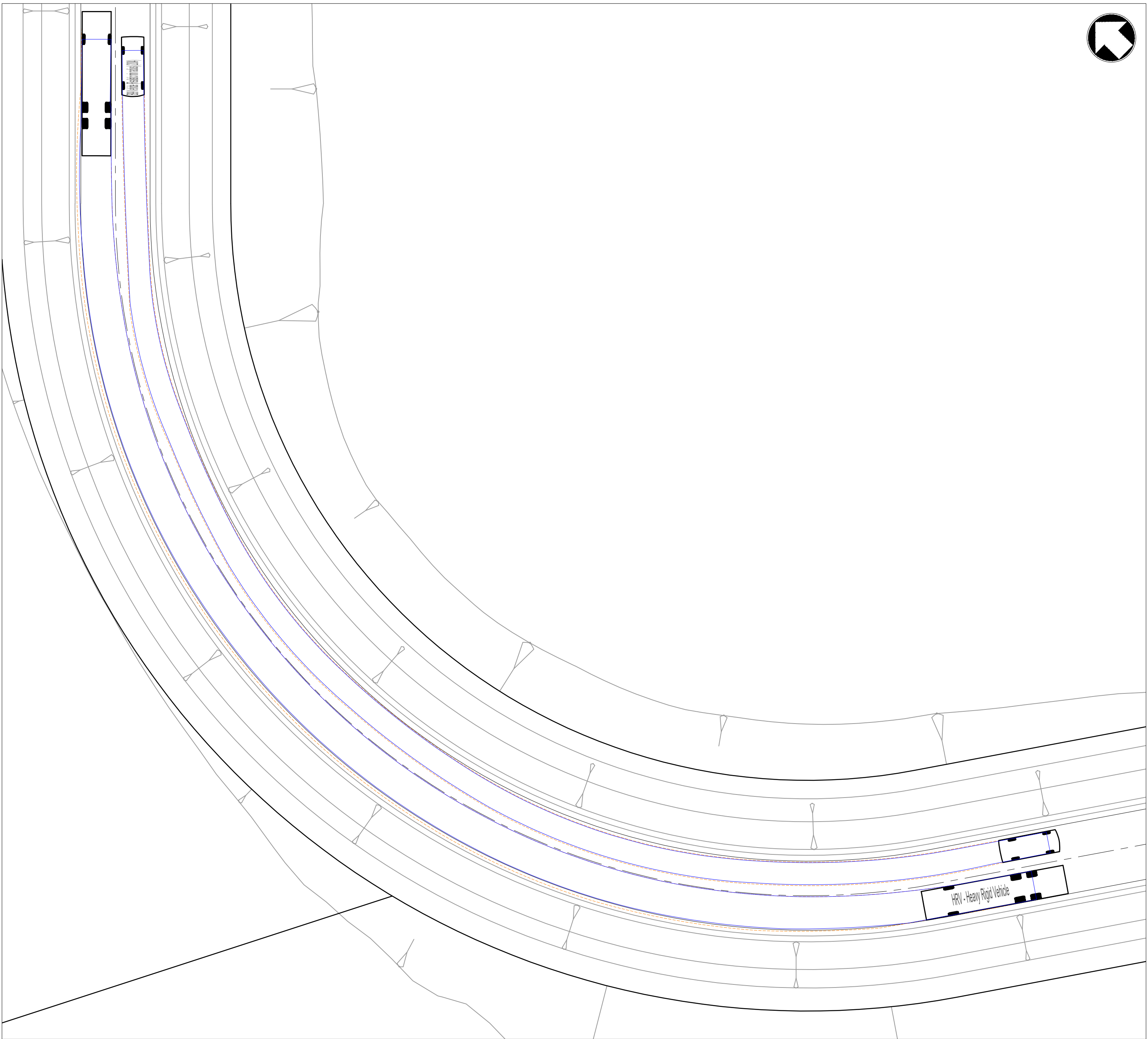
INSET A
HRV AND B99
1:250



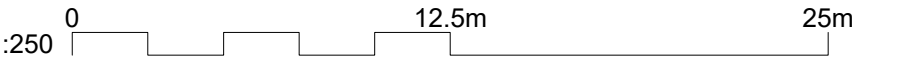
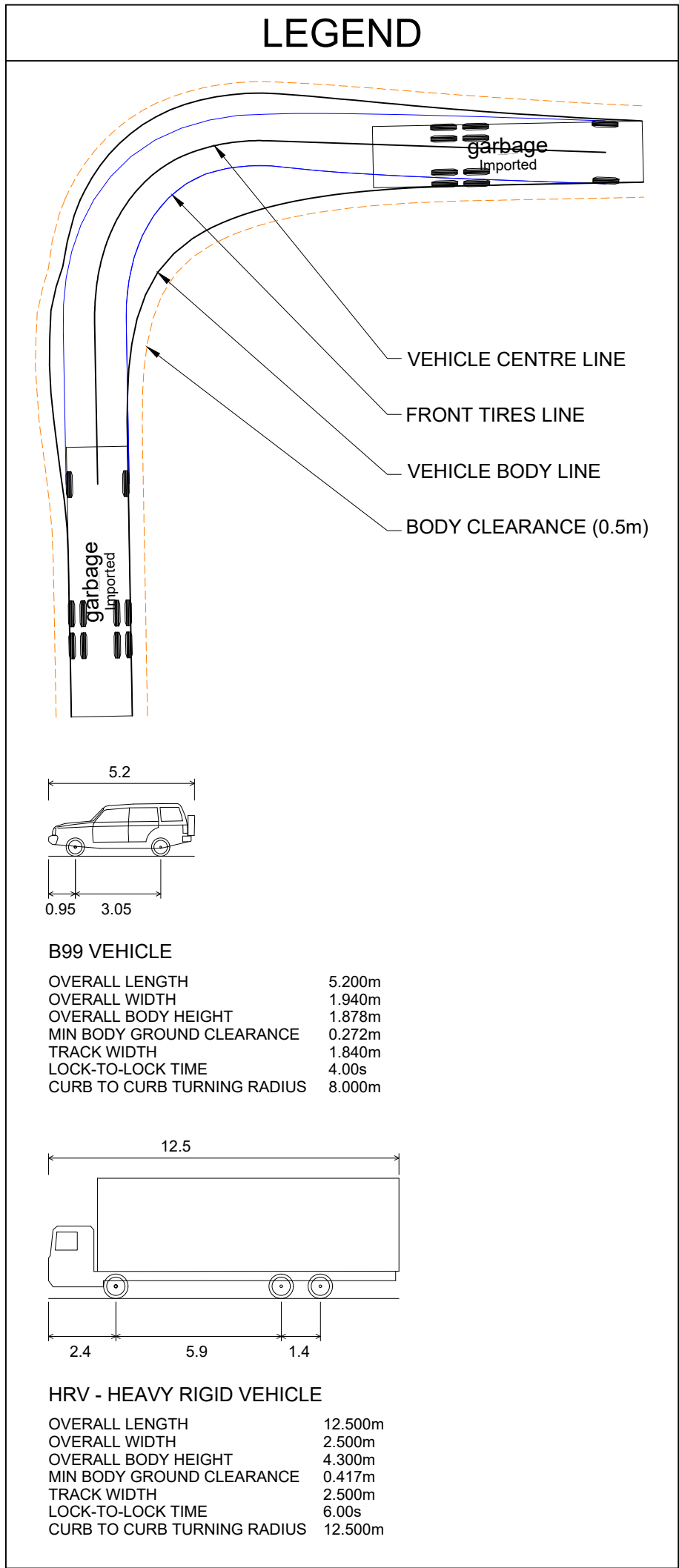
INSET A
HRV AND B99
1:250



KEY PLAN
NTS



INSET A
HRV AND B99
1:250



REV	DATE	DESCRIPTION	DRAWN	VER'D	APPR
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A	10.03.26	RE-ISSUED FOR APPROVAL	VT	X	AH



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PROJECT
**CORNISH GROUP
VACY VILLAGE SOUTH STAGE 5
589 GRESFROD ROAD
LOT123 DP1063557**

DRAWING TITLE
**VEHICLE SIMULATION PLAN
SHEET 1**

SCALE AS SHOWN	STATUS DA	SIZE A1
DRAWING NO. 24-107-DA-STG5-C700	REV B	

