



Our Ref: BS:KL:239312s

29 August 2017

Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

ATTENTION: EMMA BUTCHER

Dear Emma,

RE: ADDITIONAL INFORMATION MP05-0083 SANDY BEACH - MOD 5.

Reference is made to The Department's request for Additional Information with respect to MOD 5 of the Sandy Beach subdivision development.

Your request references the "approved development footprint". We are concerned that this is being interpreted as the road reserve boundary. Due to requirements to provide roads and lots above existing natural surface levels, batters will extend beyond the road reserve boundary into the adjoining land which is reference as the "conservation area". We are proposing that some of this land now be included within the redefined road reserve boundary.

It was envisaged in the concept approval, that drainage facilities would be provided outside the boundary containing the roads and lots. See Figure 60 of the Environmental Assessment that clearly shows the proposed swale and works outside the boundary line. Condition C5e) requires impacts of drainage facilities to be minimised. It should be noted that conservation works comprising additional tree planting will be undertaken within the conservation area and road batters will be revegetated by turf seeding and tree planting. The proposed works do not extend into land proposed to be dedicated to National Parks.

Office of Environment & Heritage Concerns

OEH has requested additional information in relation to impacts on the conservation area, management of peak stormwater discharges, effectiveness of the proposed stormwater management issues and protection of wallum froglet habitat. These issues are addressed below:

Stormwater Quality Assessment

OEH has recommended:

1. *Amend the stormwater quality assessment to consider potential implications of the proposed modification on peak runoff discharges.*

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2. *Ensure that the proposed modification incorporates stormwater management infrastructure with the capacity to attenuate peak post development 100 year recurrence storm discharge from all catchments to match the peak pre-development discharge.*

Comment:

While the Advisian report, which focused on water quality, does not mention stormwater detention to manage peak runoff discharges as identified by OEH, the modification is not proposing to alter the concept approval in this regard.

The Patterson Britton & Partners Stormwater report noted that the proposed water quality control ponds would have a permanent pool above which a transient extended detention storage volume is provided. Additionally the stormwater strategy provided for the provision of rain water tanks and nominal detention within swale drains. The required detention volume for Catchment A which equates to stage 1 and 3 as referenced in the Patterson Britton report of the Concept Approval is 967m³. The volume of storage proposed with the amendment is 1061m³ which is in excess of the amount of detention required. Note this storage volume includes usage of the open channel on the eastern side of the development to achieve some of the required volume.

3. *Revise the stormwater quality assessment to consider the impacts of revised stormwater management measures for all stages of the proposed modification.*

Comment:

With respect to Stage 4 and 5, it is proposed the swale be shifted from adjacent to lots to the outer side of the collector road. The Patterson Britton Strategy remains relevant to this stage. Water quality control facilities and detention consistent with the requirements for Catchment B in the Patterson Britton report will be provided.

Based on this information additional stormwater modelling is not considered warranted at concept approval stage but will be provided with any development application.

4. *Amend the modification application to include a map that compares the approved and proposed development footprint of the stormwater management facilities.*

Comment:

A plan is provided as **Appendix A** for stages 1 and 3 only. This plan includes the location of the Patterson Britton water quality control ponds and facilities now proposed. As referenced above the development footprint is not shown in the concept approval. Road levels require fill batters extending beyond the edge of the road reserve and the impact of these batters needs to be considered in conjunction with the stormwater facilities. We note the level of roads was increased as a requirement of the Concept Plan Approval. While road batters will extend into the nominated Conservation Area batters will be landscaped as part of subdivision works. The proposed facilities have been located to minimise impacts and will have a reduced impact on existing vegetation when compared to the original stormwater concept.

5. *Ensure the proposed changes to the stormwater management infrastructure do not increase the extent of encroachment into the Conservation Area beyond that of the stormwater infrastructure considered in the Environmental Assessment.*

Comment:

The Concept Plan and Environmental Assessment Report for the Sandy Beach project detail the proposed road structure and cross sections envisaged in the original application.

The collector road was proposed with a 21 metre road reserve including 2 x 5.0 metre wide footways incorporating 2.5 metre share way to one side and a swale (as required) for stormwater. A typical swale was to be 300mm deep with a 1.5 metre wide base and 1 in 3 sides. The proposal to remove the laneways also seeks to remove swale drains from the footway adjacent to lots so as to facilitate vehicular and pedestrian access to the lots.

As a result an alternate drainage strategy is required that provides for the collection and conveyance of water through the site, treatment of stormwater and mitigation of peak flows. We note that swale drain BS5 is located on the outside of the proposed road and has been re-designed to convey stormwater flows from upstream of the site.

Figure 6 of the Patterson Britton & Partners Drainage report “Conceptual layout of proposed Water Management Structures” reproduced (below as **Figure 1**) shows the location of proposed swales and a water quality control pond located over the existing drainage line between stages 1 and 3 on the northern side of the development footprint.

The water quality control pond proposed by Patterson Britton sits outside the nominated road reserve boundary. This facility, if constructed, would require removal of vegetation additional to what is proposed in the amended proposal. The location of the water quality control pond is as shown on the plan included as **Appendix A**.

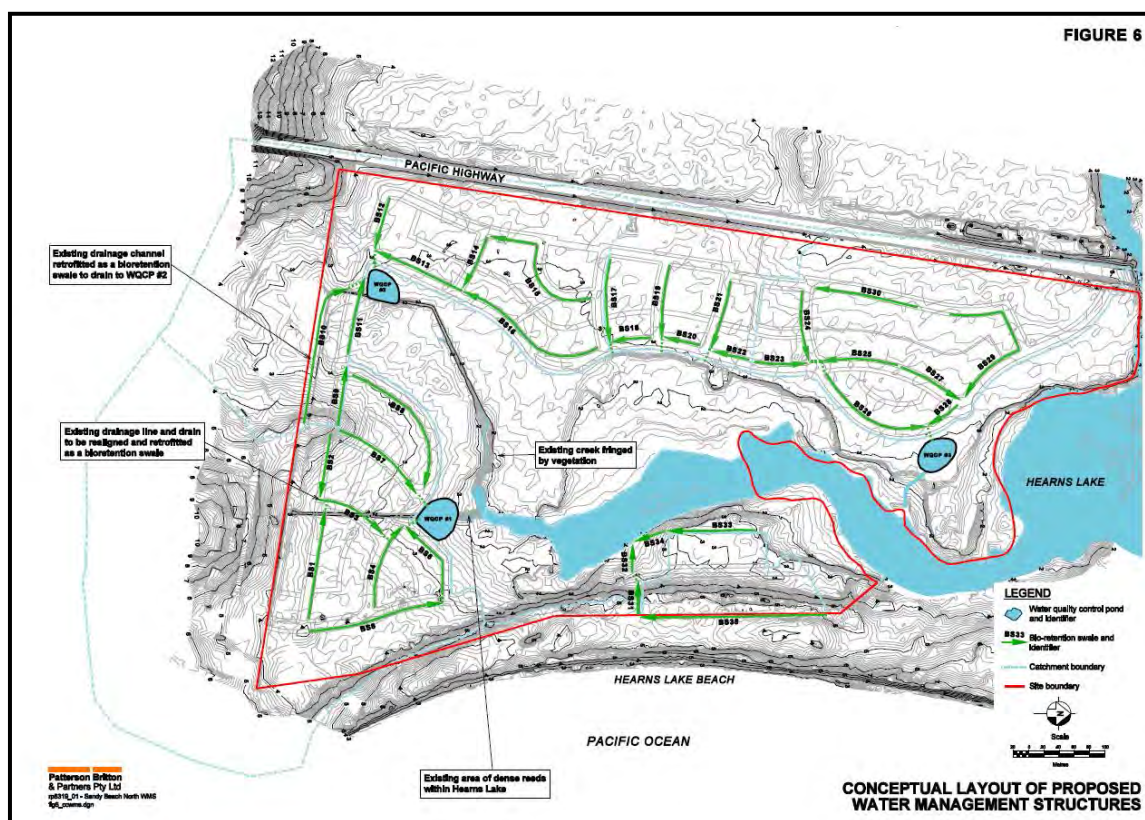


Figure 1: Conceptual Layout of Proposed Water Management Structures.

The proposed drainage solution depicted in the ADW concept engineering drawings (**Appendix B**) has been designed to meet water quality control and detention objectives of the Concept Approval. The proposed solution reduces the overall size and environmental impact of the water quality control pond from that proposed in the Patterson Britton Report by proposing several elongated bio-retention basins on the outside of the road formation. This strategy is documented in the report prepared by Advisian dated 10 May 2017 that has been prepared for the lodgement of a development application for Stages 1 and 3 subject to the 75W application being approved.

The plan attached as **Appendix A** shows the proposed development including the stormwater infrastructure for Stages 1 and 3 overlaid on an aerial photograph. It is proposed that the drainage infrastructure will predominantly be located within the future (amended) road reserve as indicated, and drainage easements will be provided across the community lot to existing watercourses that form a legal point of drainage connection.

The impact on swamp sclerophyll forest marked as Vegetation Type C on the overlay plan (**Appendix A**) sourced from the Flora and Fauna report in the original application is considered to be less than the original proposal noting that road levels necessitate fill batters that extend beyond the edge of the road reserve and the impact of these batters needs to be considered in conjunction with the stormwater facilities.

The open channel to the east of Ti-Tree Road in the current proposal is consistent with the swale BS5, from the Patterson Britten Report. Some additional area is required for the bio retention basin however this has been located in a generally clear area to minimise any impact. The area impacted by the open channel will be landscaped mitigating vegetation loss.

6. *Revise the application for modification to include an explanation of how the proposed design and layout of stormwater retention ponds will meet the wallum froglet habitat enhancement actions specified in the Environmental Assessment.*

Comment:

Additional habitat will be provided within the open channel and bio-retention basins that will provide supplementary Wallum Froglet Habitat, The proposed water quality facilities are only 400 mm deep. The area of the water quality control facilities is 1516 m² which would be comparable to the area of the original proposal. This excludes the area of the two open channels as detailed on the plan in Appendix A.

Council Concerns

Council has advised through you, of concerns about the size and future maintenance of the new swale drain (open channel) and impact of the modified stormwater system on the development site and existing properties in the area.

Dot Point 1 - *The existing site has a Council maintained concrete dish drain along the southern boundary. This dish drain currently discharges stormwater from the existing road network (utilising a piped network that traverses through Lot 524 in DP 227298, within a drainage easement), Ti-tree Road and Sandy Beach Road, and discharges north through the development site. The proposed modification changes the concrete dish drain to a grass swale, reverses its grade, subsequently its depth where it discharges near the eastern boundary prior to heading north. It is observed from the plans that the discharge point is*

relocated approximately 250m east, where the ground elevation is approximately 1m higher than the existing discharge point. Council is concerned about the depth of the new swale drain and the downstream infrastructure that will be required to be maintained by Council.

Comment

The open channel as detailed in the engineering plans will be constructed with a 1.0 metre wide base and 1 in 4 sides that will be plated with native grasses with occasional tree planting and require minimal maintenance. We note the Patterson Britton drainage strategy included a swale (BS5) on the outside of the extension of Ti-Tree Road as indicated in **Figure 1** below. With respect to flood impacts the development is downstream of existing development and drainage from the existing development is being collected and managed through the site. Stormwater Detention will be provided within proposed drainage facilities to mitigate impacts as referenced above in the response to OEH's concerns.

The design of the open channel has been undertaken to cater for the existing drainage discharged onto the subject site via piped drainage easement from Maple Road through Lot 524 DP 227298, discharge from Ti-Tree Road and from Sandy Beach Road. The critical level of the channel is governed by the piped drainage network within Ti-Tree Road not the level of the piped drainage easement through Lot 524. The existing piped drainage system catering for the existing development within Ti-Tree Road and Maple Road is located on the western side of Ti-Tree Road, see attached **Photo 1**. In order to discharge this drainage through the subject site it is required to be done via a swale at a grade of 0.3%. The option of extending the drainage within a piped system was explored however Council design standards and supporting industry documentation does not support a piped drainage network at 0.3%. The level, depth and therefore width of the swale is controlled by the existing drainage system, see attached **Photo 1**, by installing a new pit and extending the drainage system under Ti-Tree Road. In order to maintain adequate cover over the new pipe network the swale drain is required to be at the depth currently depicted.



Photo 1: Northern End of Ti-Tree Road.

In regard to the drainage through Lot 524, the current design has catered for this discharge within the drainage network. The adjusted level of the swale on the southern boundary is below the boundary level for the full length. See attached **Photo 2** showing that the existing piped drainage network discharges across the rear boundary of Lot 524 at ground level. The invert level of the eastern end of the swale is currently 700 mm above the invert of the drainage network. Therefore is not the governing level for the depth of the swale.



Photo 2: Swale drain at rear of existing properties.

We are of the view that the proposal remains consistent with condition C5e) which states that “water quality control devices are to be sited in such a way as to minimise their impact within the Conservation Area. That is not to say they cannot be located within the conservation area and we believe we have minimised the impact.

Dot Point 2 - *It is noted that the downstream infrastructure has been relocated from within the development footprint to outside of the proposed development area, possibly within land to be dedicated to National Parks. The effect of this in regards to ongoing Council maintenance needs to be considered.*

Comment

See discussion on footprint/ development area above. All drainage infrastructure will be located outside of the area to be dedicated to National Parks.

Dot Point 3 - *The modified stormwater system is likely to affect the flood impacts on the development site and existing properties in the area.*

Comment

See discussion on OEH points 1 and 2. The modification does not alter the concept approval in this regard.

A copy of the draft Engineering Plans (**Appendix B**), draft Landscape Plans (**Appendix C**) and Wallum Froglet Habitat report (**Appendix D**) prepared for the Stage 1 and 3 development application are provided for information.

We anticipate this additional information will enable further consideration of the 75W Application for MOD 5. However should you have any questions regarding this information please do not hesitate to contact us at our Hunter Office on 4978 5100.

Yours Faithfully

A handwritten signature in blue ink, appearing to read 'Brett Stein'.

Brett Stein
SENIOR PLANNER
ADW Johnson Pty Ltd
Hunter office

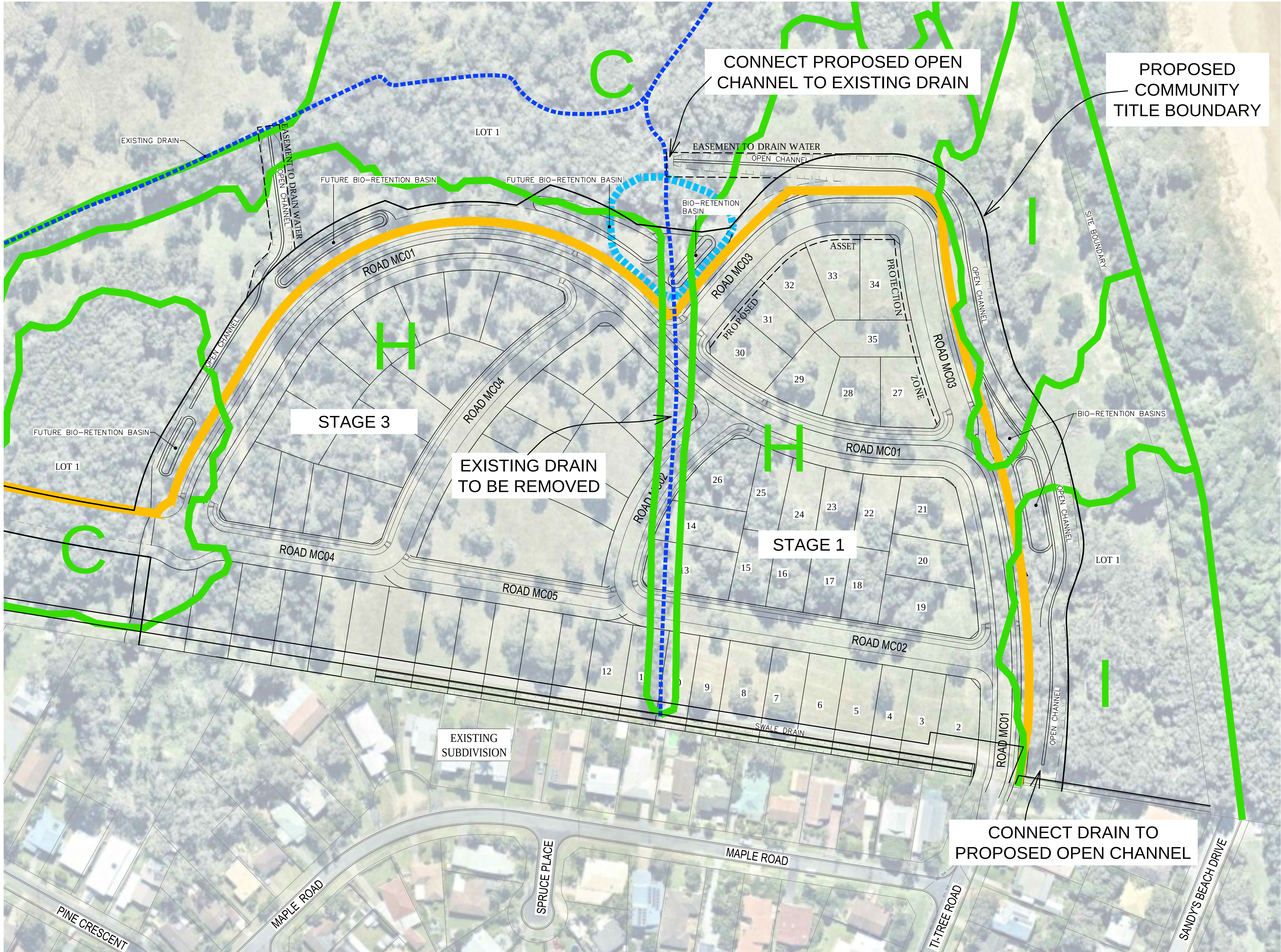
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Appendix A

STAGE 1 & 3 DEVELOPMENT PLAN

239312-VEG-001-A

100mm AT FULL SIZE



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Appendix B

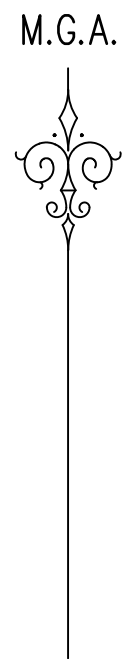
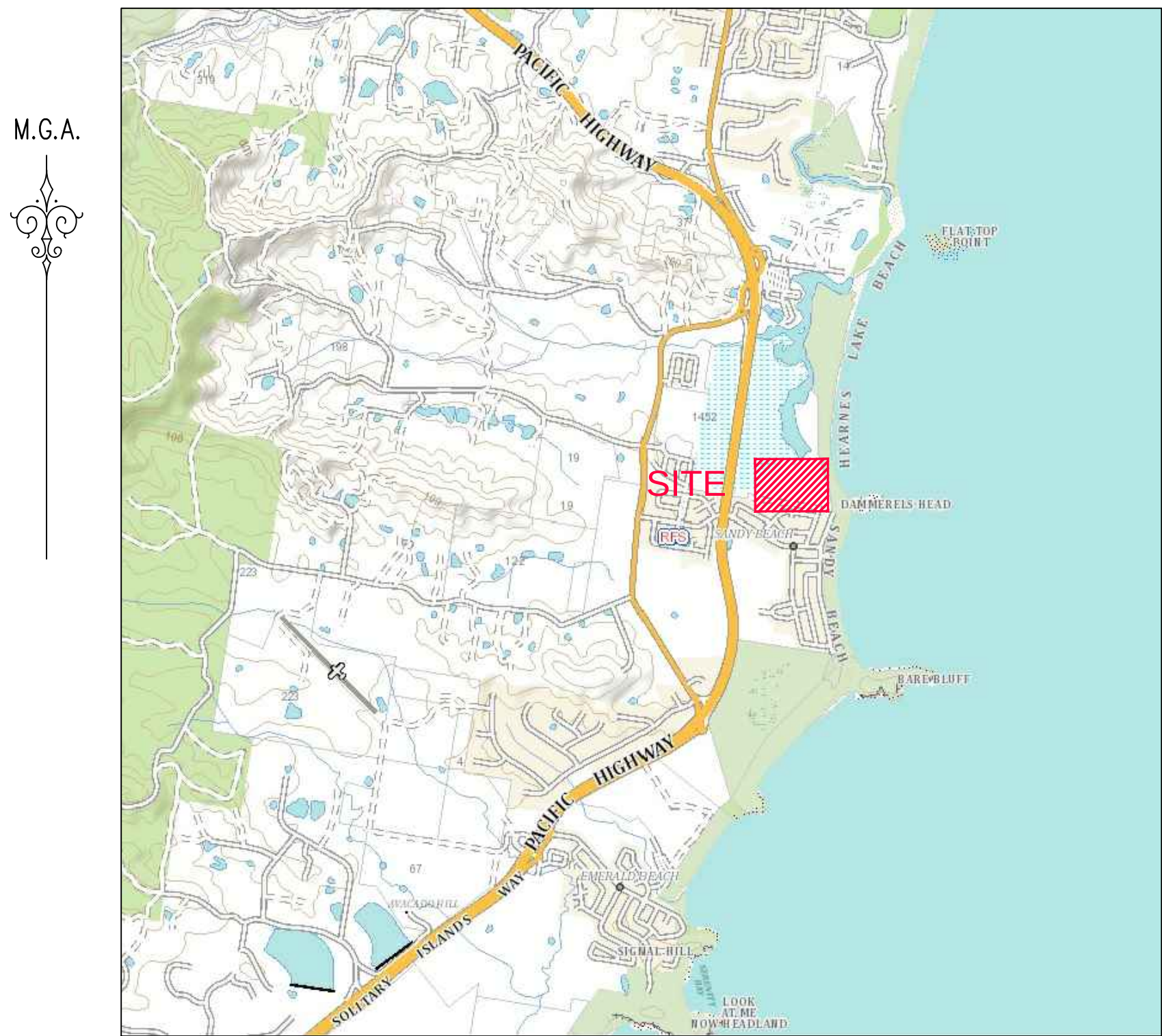
DRAFT ENGINEERING PLANS

239312-CENG-001(A)

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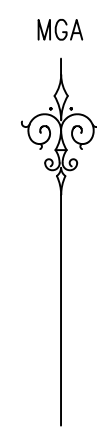


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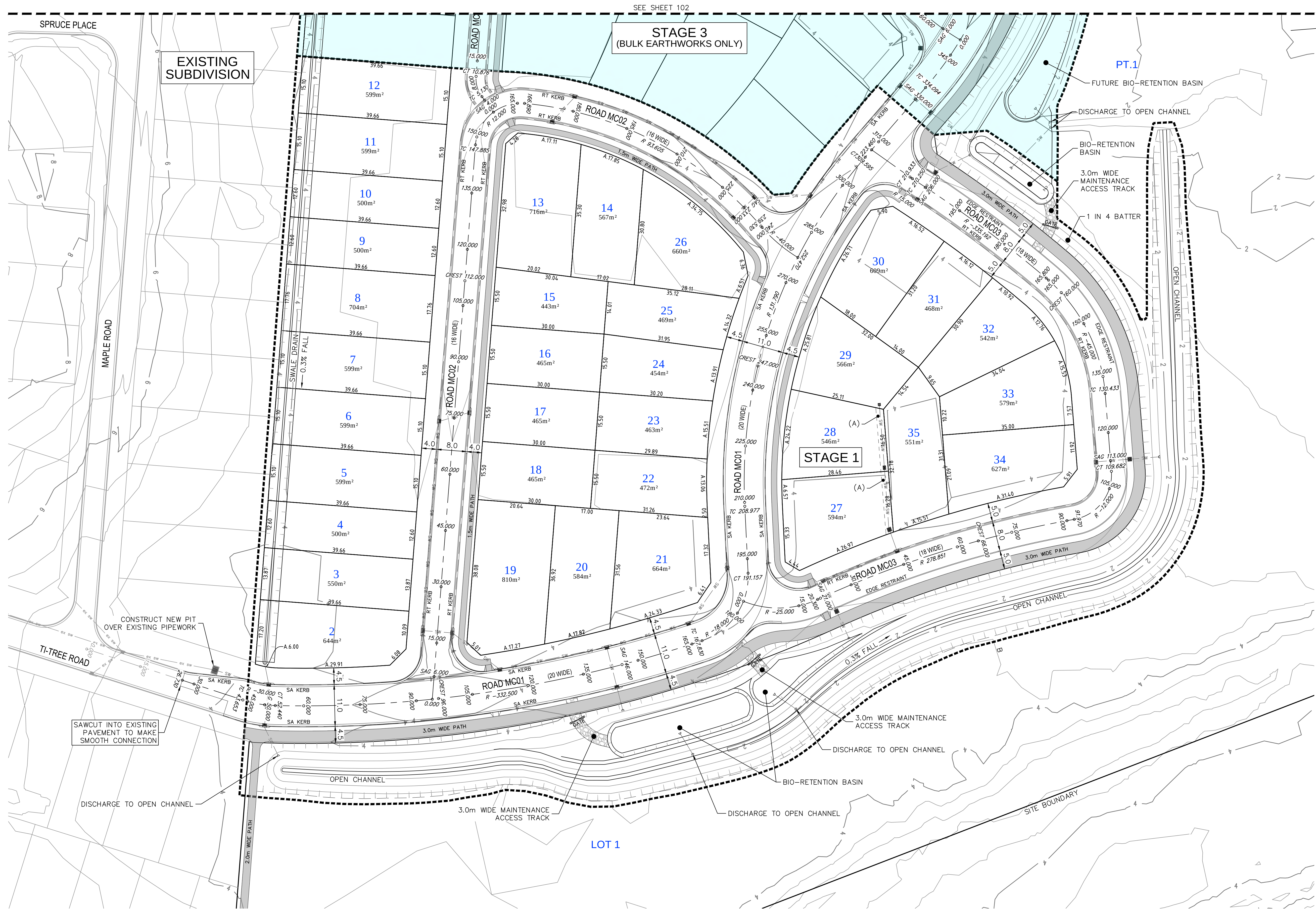
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DRAWING NUMBER	DRAWING TITLE
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239312-CENG-002	OVERALL SITE PLAN
239312-CENG-101	PROPOSED LOT LAYOUT AND GENERAL ARRANGEMENT – SHEET 1
239312-CENG-102	PROPOSED LOT LAYOUT AND GENERAL ARRANGEMENT – SHEET 2
239312-CENG-201	LONGITUDINAL SECTION – ROAD MC01 (CH. 0.000 TO CH. 330.000)
239312-CENG-202	LONGITUDINAL SECTION – ROAD MC01 (CH. 330.000 TO CH. 585.710)
239312-CENG-203	LONGITUDINAL SECTION – ROAD MC02
239312-CENG-204	LONGITUDINAL SECTION – ROAD MC03
239312-CENG-205	LONGITUDINAL SECTION – ROAD MC04
239312-CENG-206	LONGITUDINAL SECTION – ROAD MC05
239312-CENG-221	TYPICAL ROAD CROSS SECTIONS
239312-CENG-222	TYPICAL DRAIN SECTIONS AND BIO-RETENTION BASINS
239312-CENG-301	CUT AND FILL PLAN
239312-CENG-302	SITE SECTIONS
239312-CENG-801	EROSION AND SEDIMENTATION CONTROL PLAN
239312-CENG-802	EROSION AND SEDIMENTATION CONTROL DETAILS

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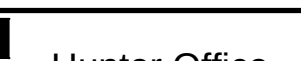


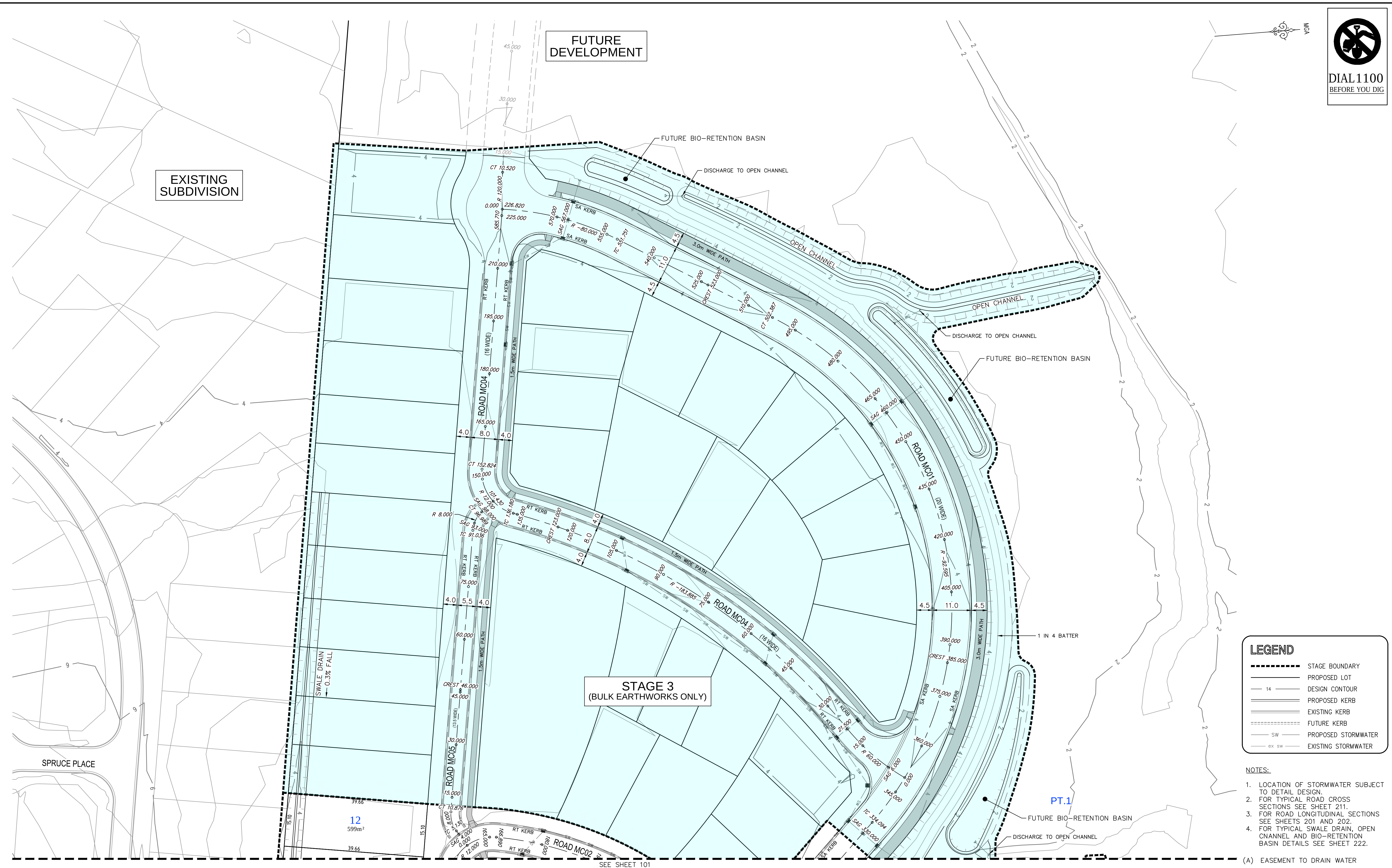
LEGEND

- STAGE BOUNDARY
- PROPOSED LOT
- DESIGN CONTOUR
- PROPOSED KERB
- EXISTING KERB
- FUTURE KERB
- PROPOSED STORMWATER
- EXISTING STORMWATER

- NOTES:**
- LOCATION OF STORMWATER SUBJECT TO DETAIL DESIGN.
 - FOR TYPICAL ROAD CROSS SECTIONS SEE SHEET 211.
 - FOR ROAD LONGITUDINAL SECTIONS SEE SHEETS 201 AND 202.
 - FOR TYPICAL SWALE DRAIN, OPEN CHANNEL AND BIO-RETENTION BASIN DETAILS SEE SHEET 222.
- (A) EASEMENT TO DRAIN WATER

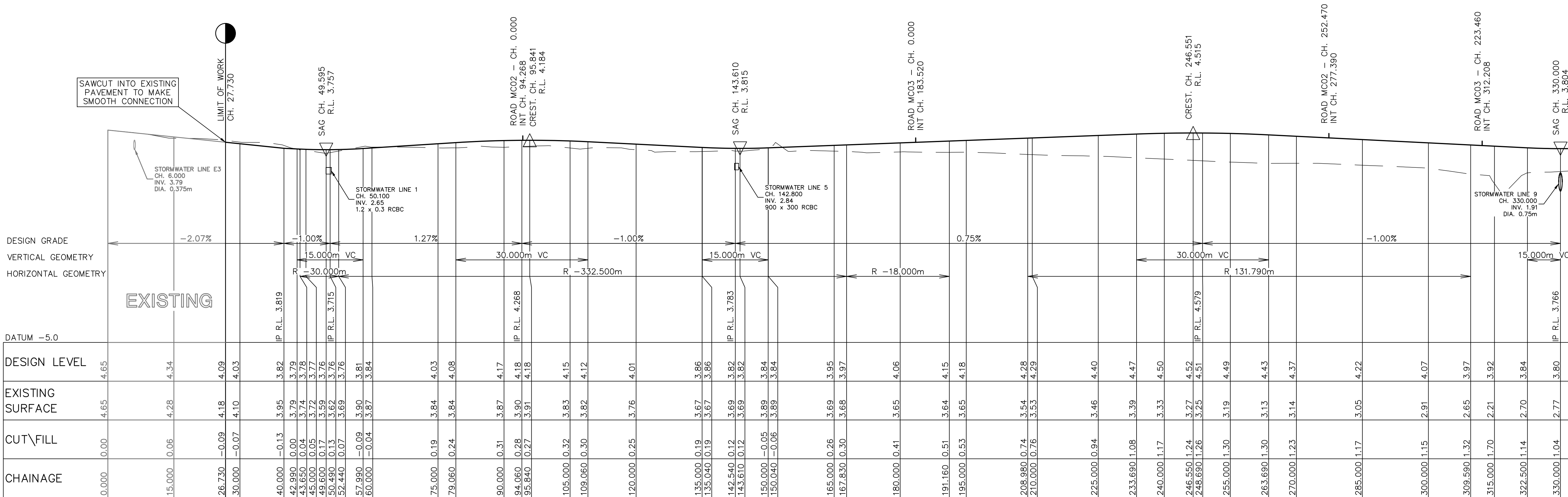
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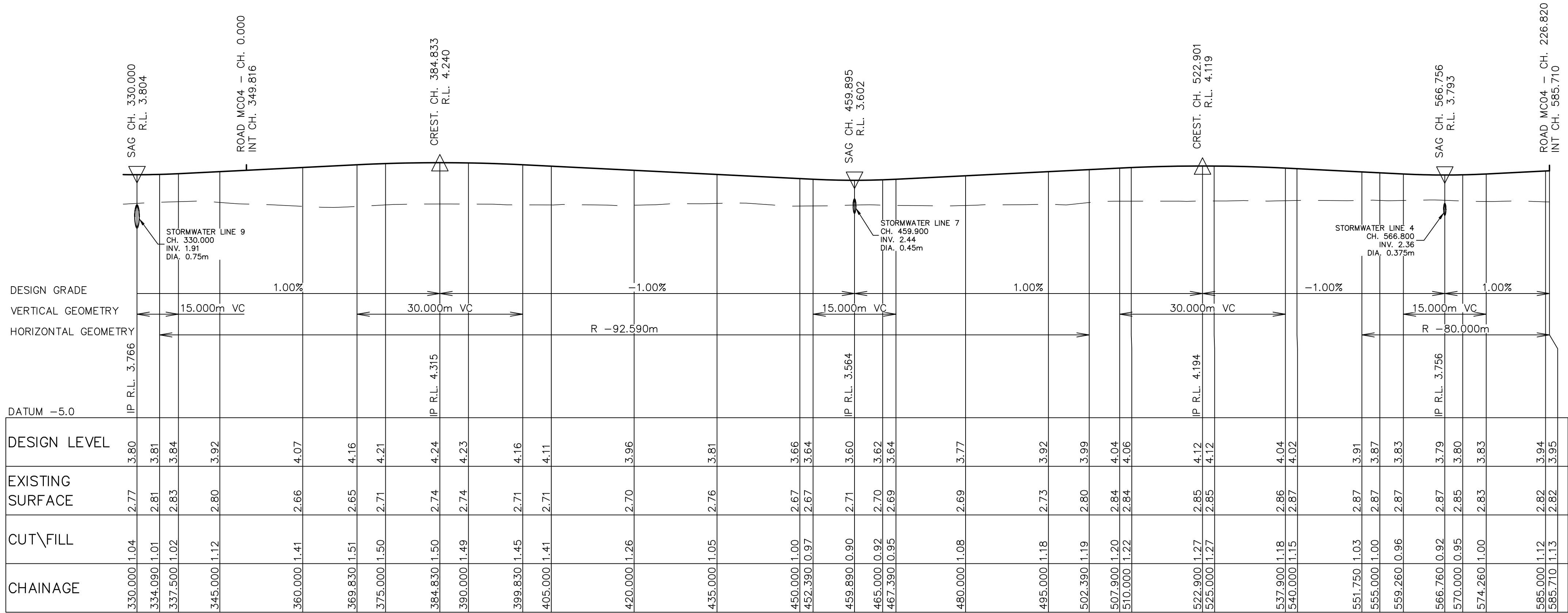


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HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

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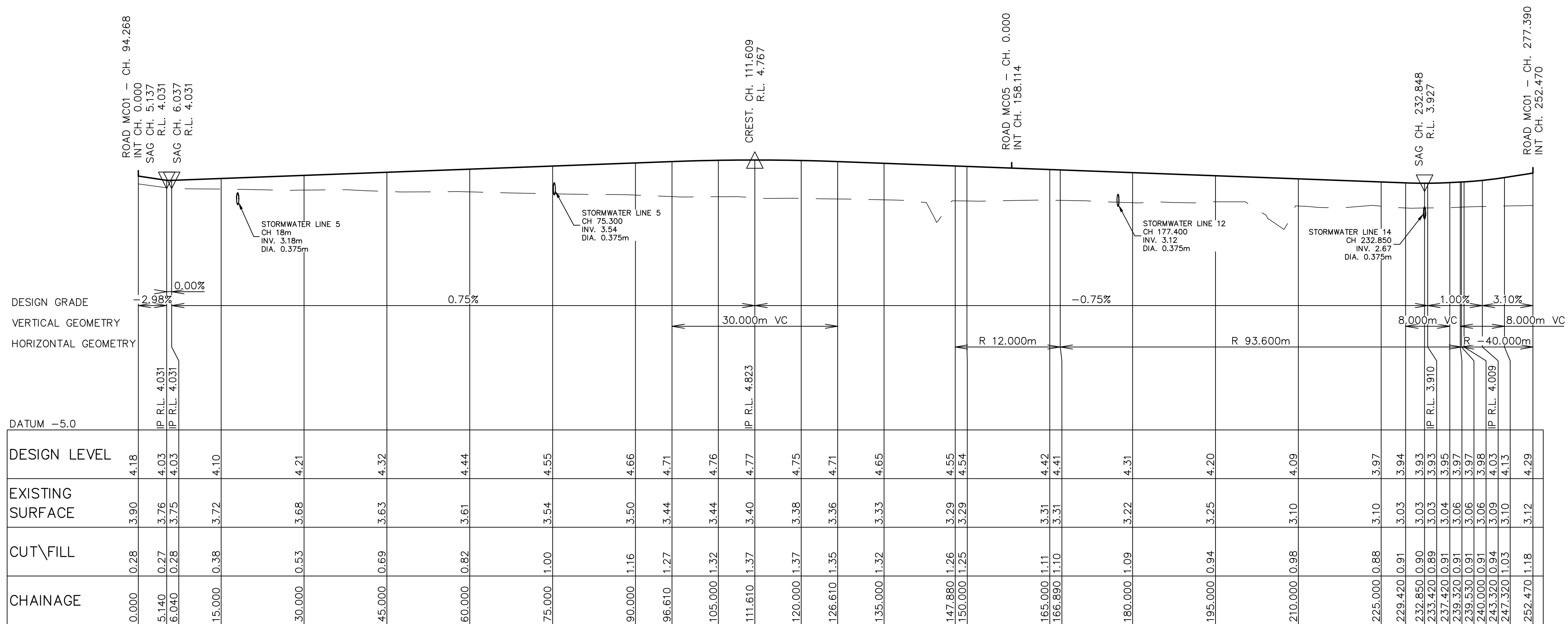
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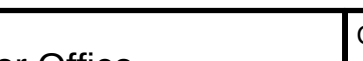
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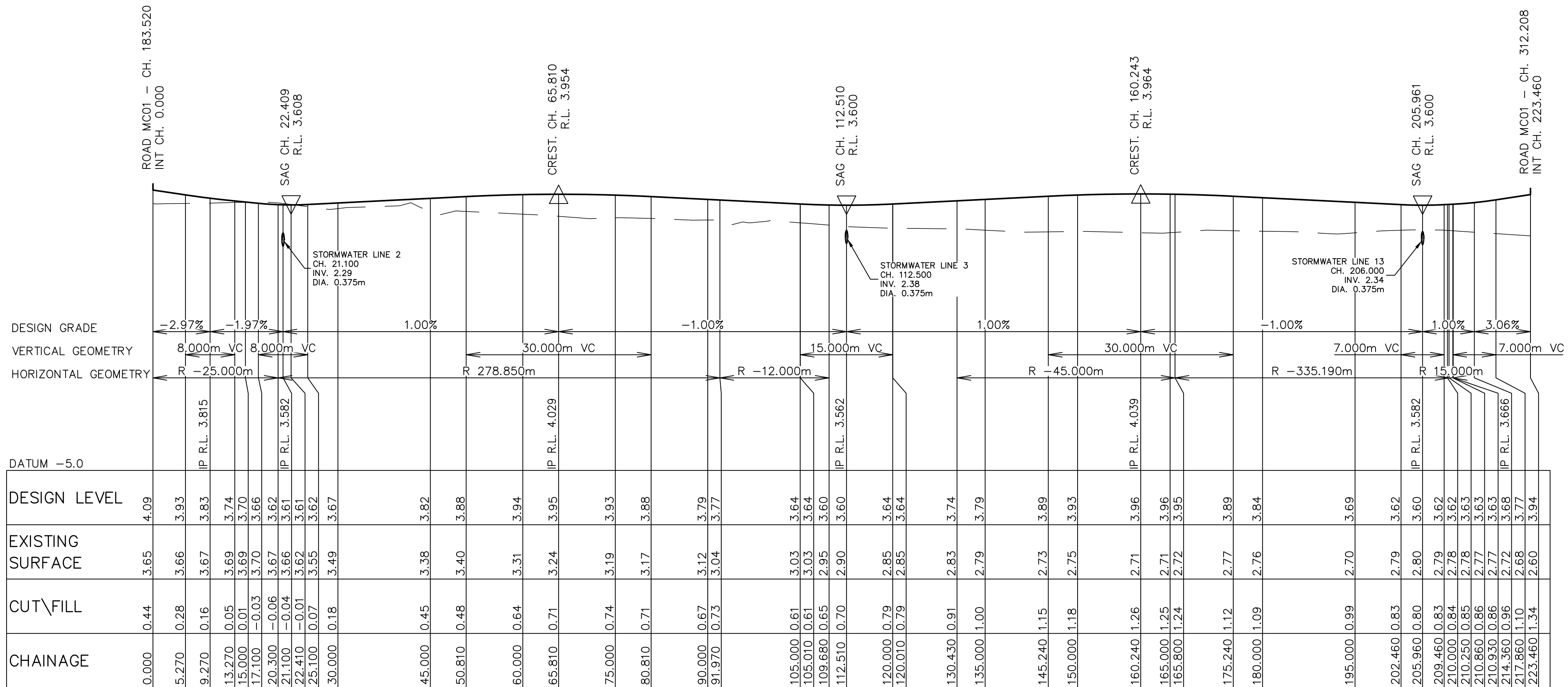
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HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

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SANDY BEACH																		
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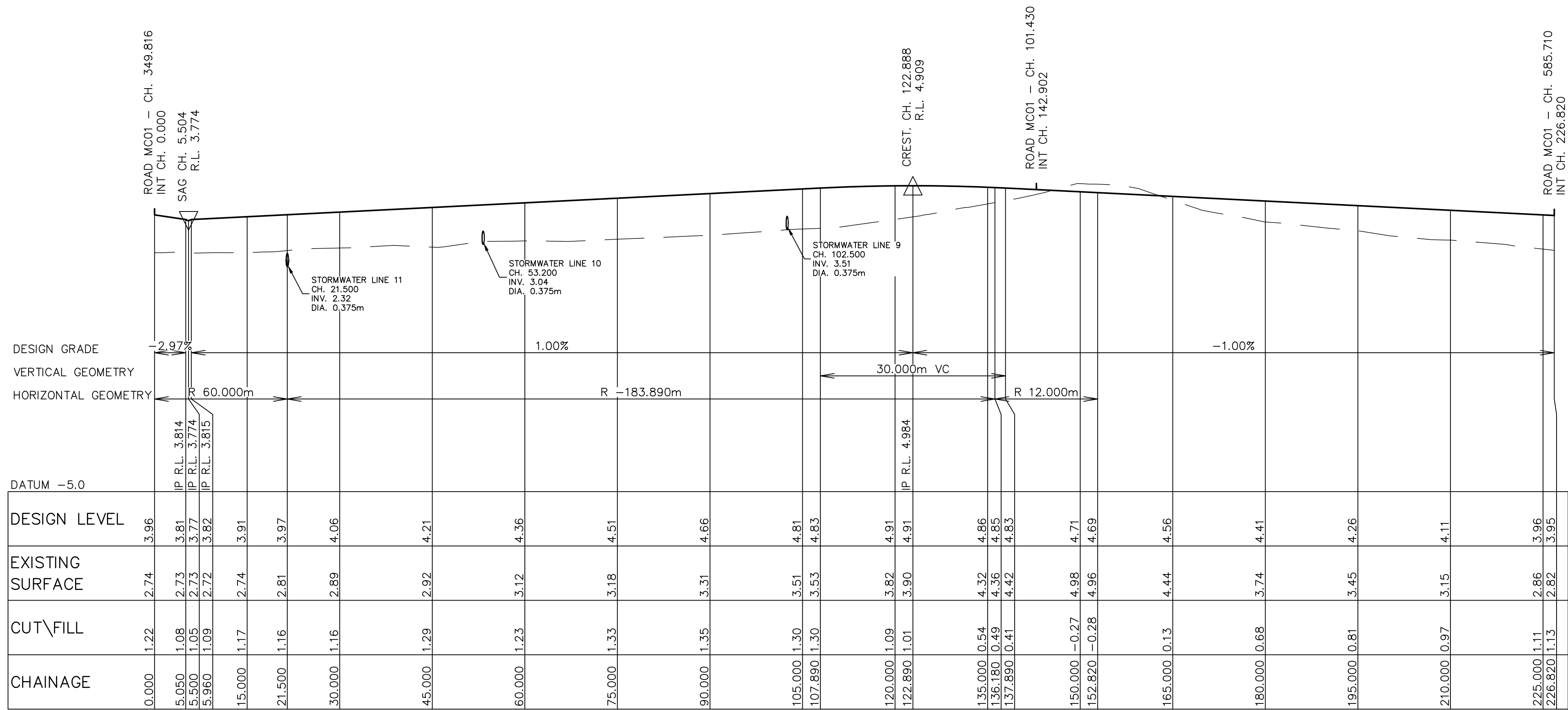


LONGITUDINAL SECTION ROAD MC03

HORIZONTAL SCALE 1:500
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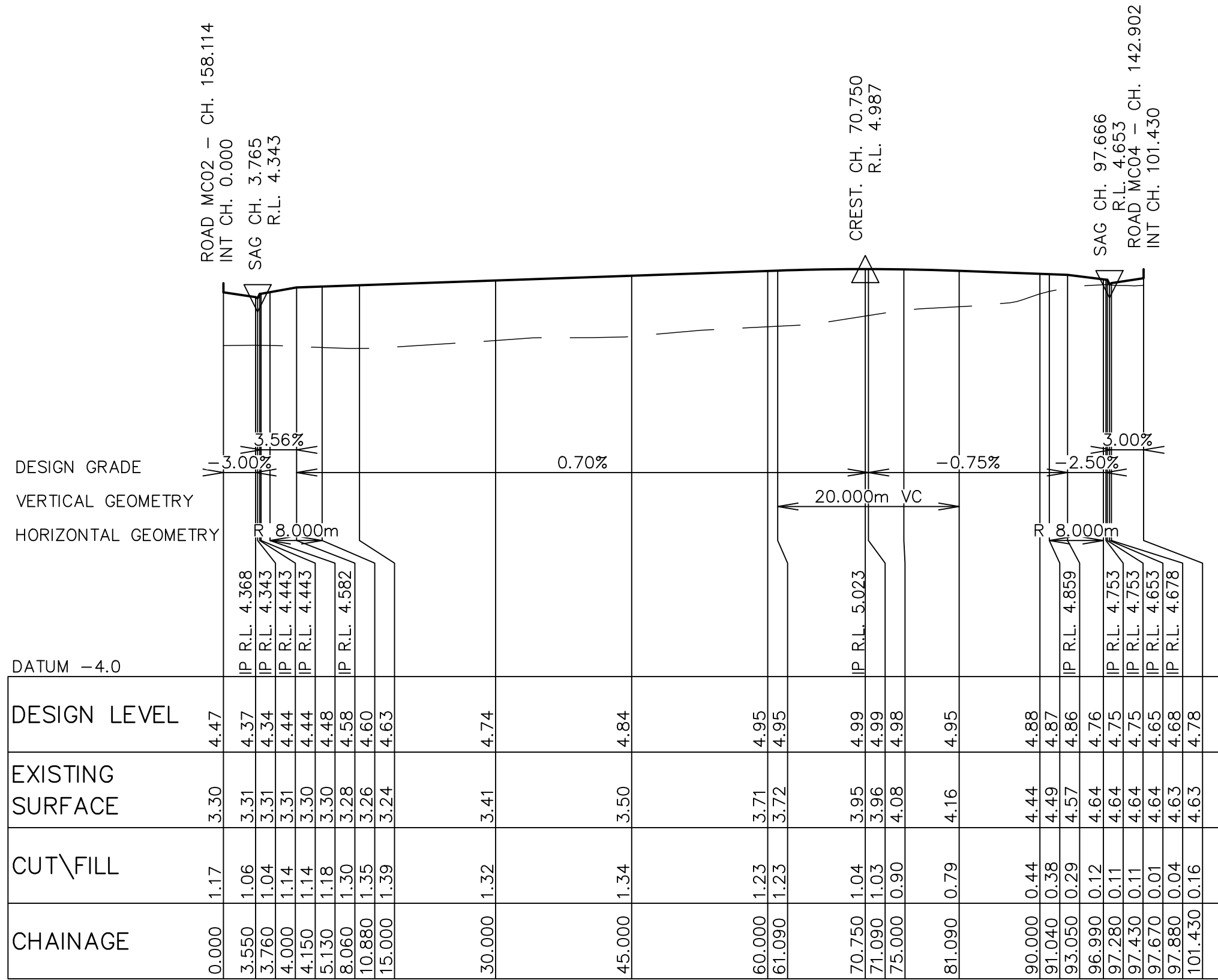


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REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY	SCALES		Hunter Office Unit 7/335 Hillsborough Rd Warners Bay N.S.W. 2282 Phone: (02) 4978 5100 Fax: (02) 4978 5199 email: hunter@adwjohnson.com.au www.adwjohnson.com.au ABN 62 129 445 398	CLIENT Elite Constructions NSW Pty Ltd	PROPERTY DESCRIPTION		PROJECT SANDY BEACH			
A	07.06.2017	PRELIMINARY ISSUE	J.N.	L.G.	M.A.	L.G.	VERT 0 2 4 1:100 / 1:200 HORIZ 0 10 20 A1 / A3 1:500 / 1:1000				SUBDIVISION OF LOT 22, D.P.1070182 & LOT 497 & 498, D.P.227298 TI-TREE ROAD, SANDY BEACH		PLAN TITLE LONGITUDINAL SECTION - ROAD MC04			
DESIGN FILE N:\							ALL DIMENSIONS ARE IN METRES. DO NOT SCALE				SURVEYED ADW Johnson	DATUM A.H.D.	PROJECT No. 239312	DISCIPLINE - CENG	NUMBER - 205	REV. A

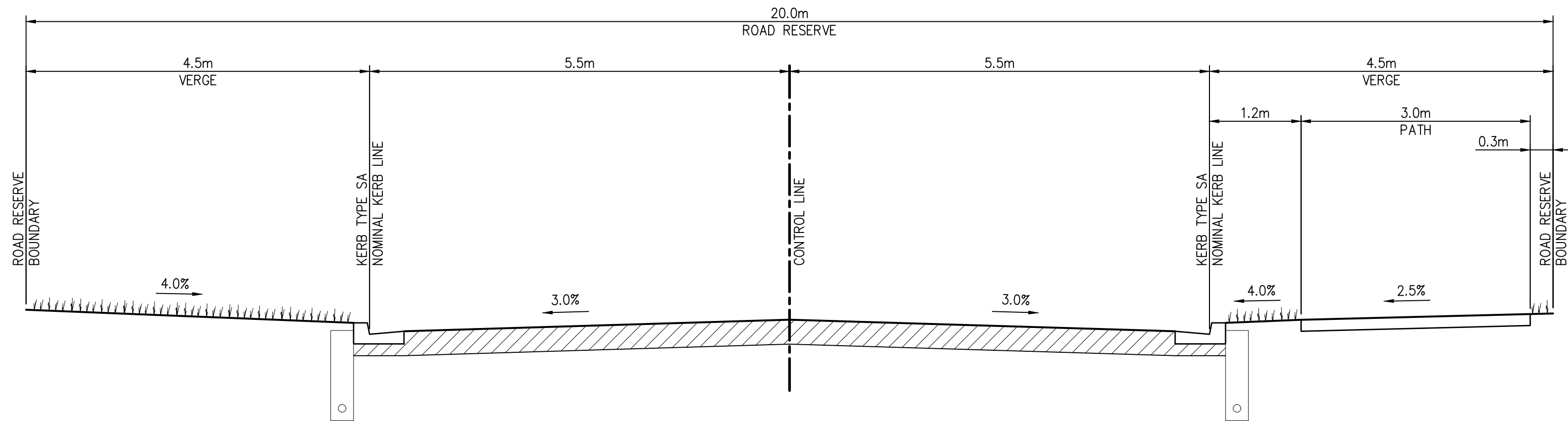


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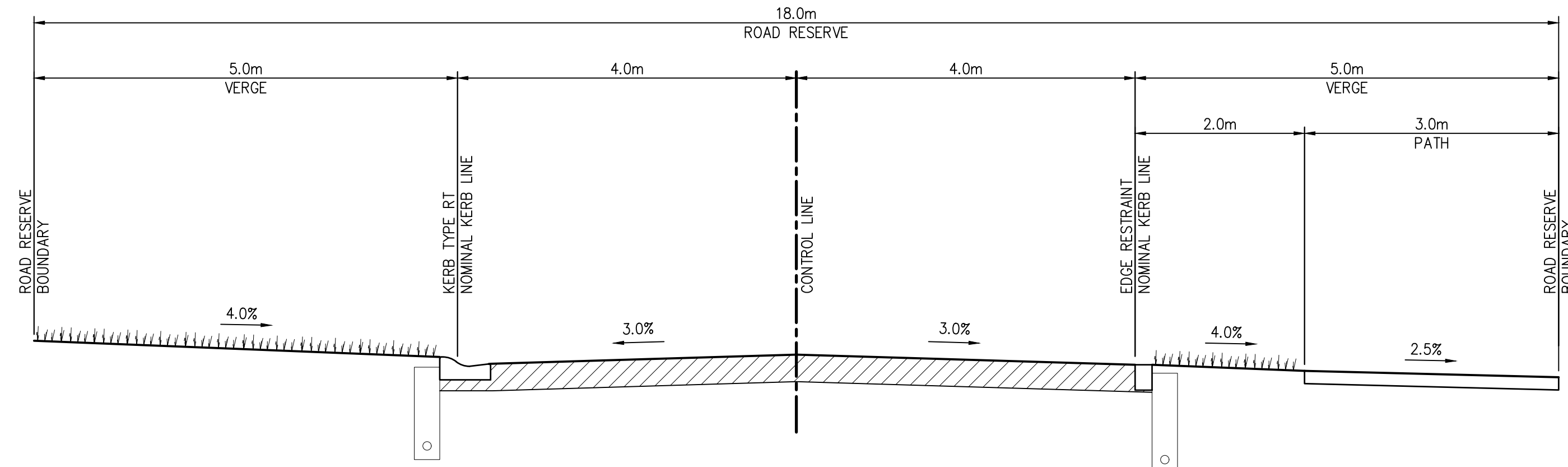
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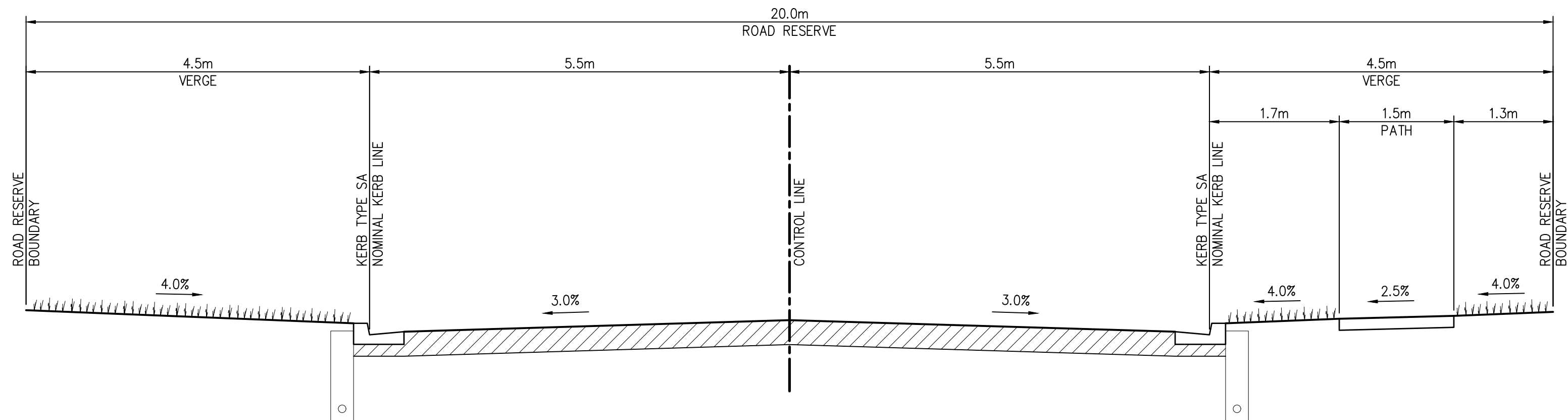
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A	07.06.2017	PRELIMINARY ISSUE	J.N.	L.G.	M.A.	L.G.	PLAN TITLE LONGITUDINAL SECTION - ROAD MC05												
DESIGN FILE N:\							ALL DIMENSIONS ARE IN METRES. DO NOT SCALE				SURVEYED ADW Johnson		DATUM A.H.D.		PROJECT No. 239312	DISCIPLINE - CENG	NUMBER - 206	REV. A	



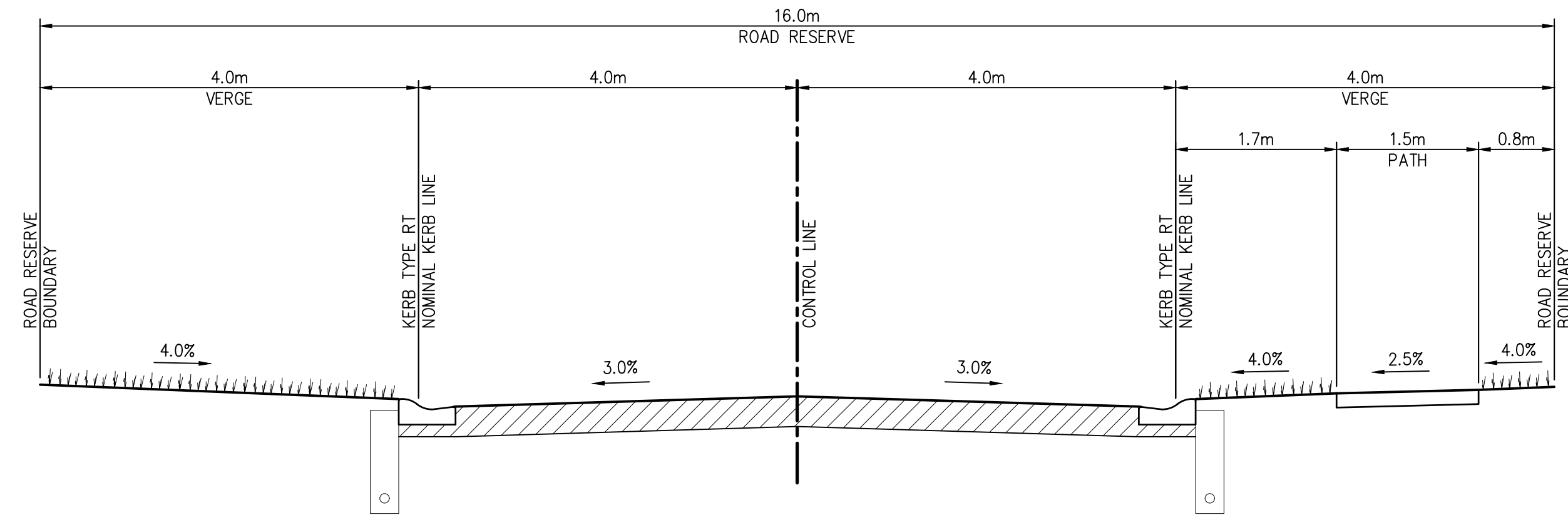
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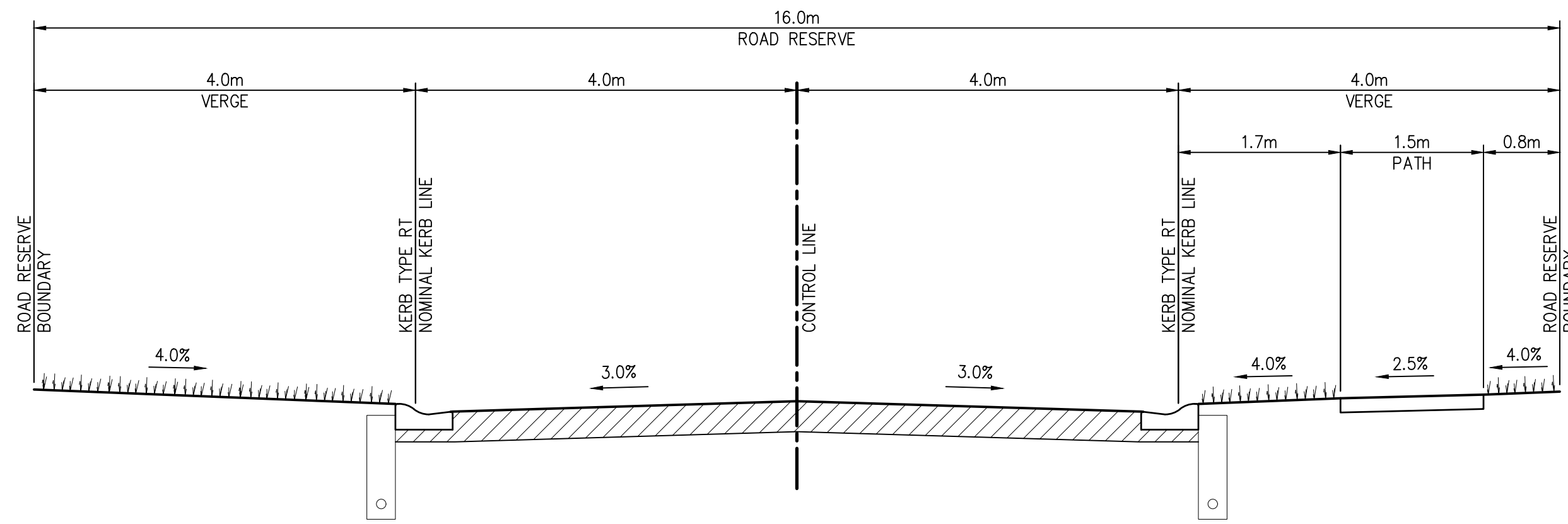
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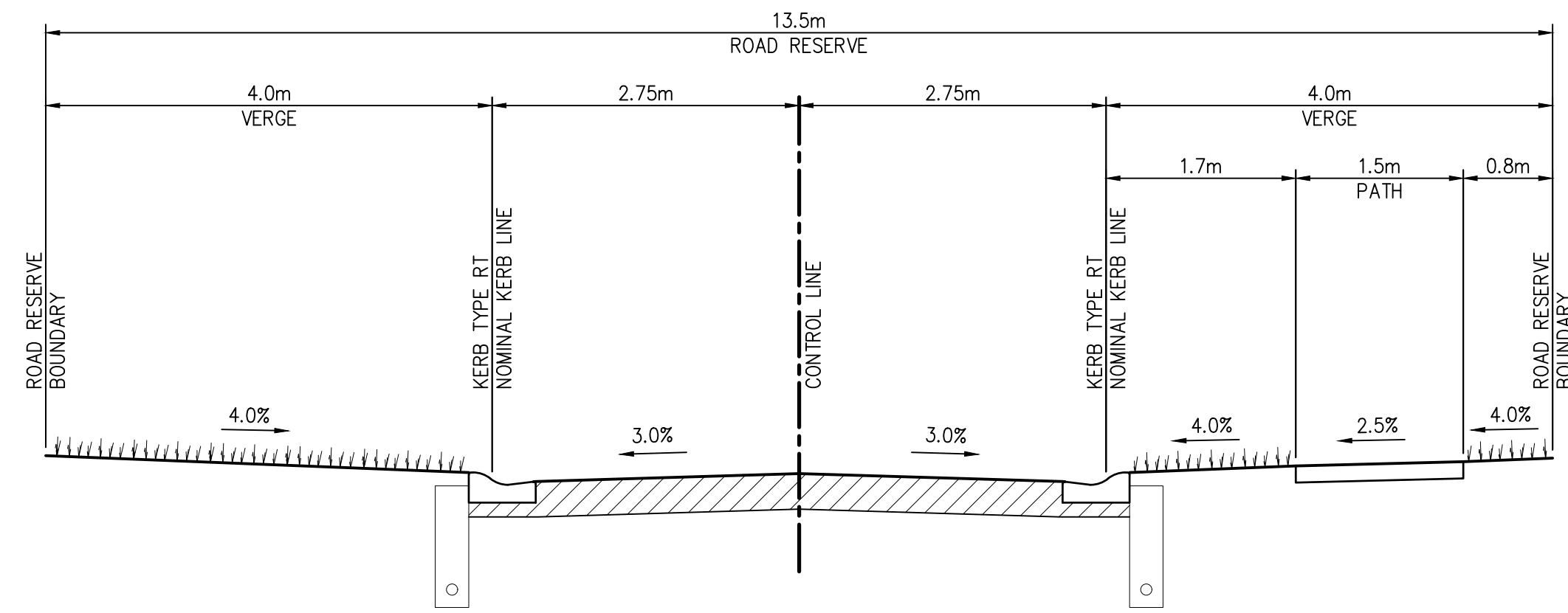
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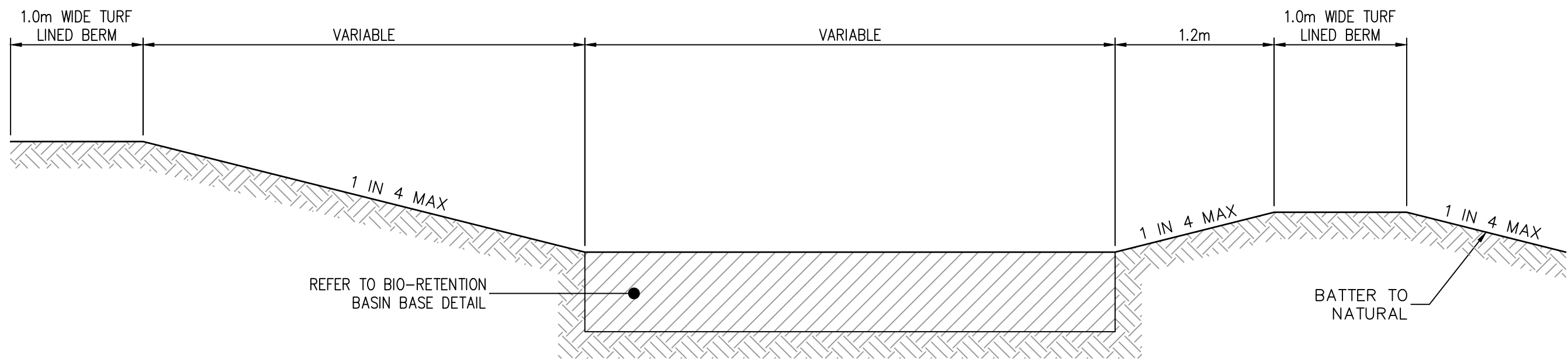
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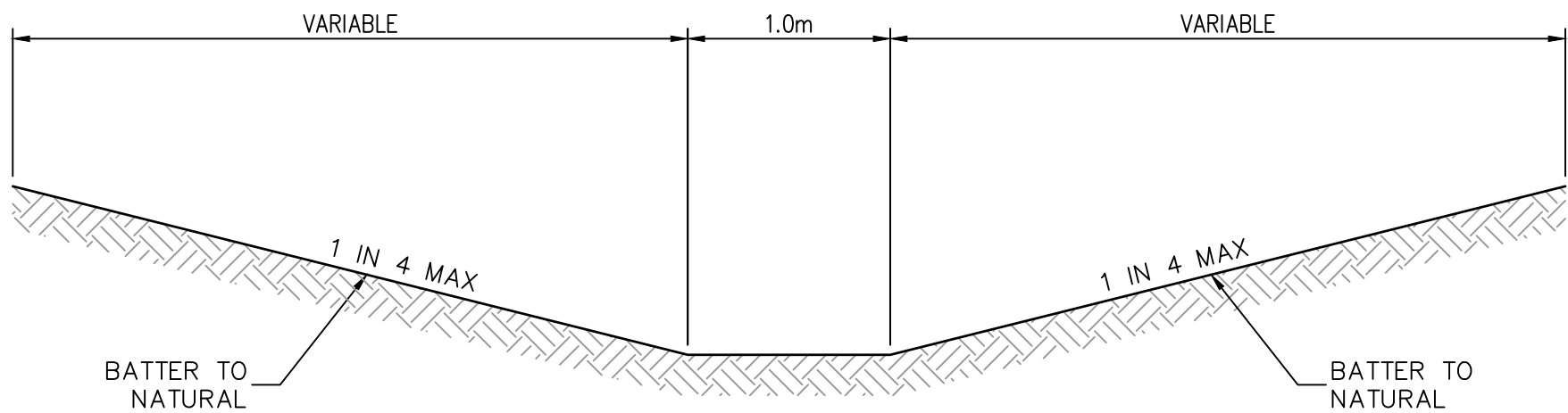
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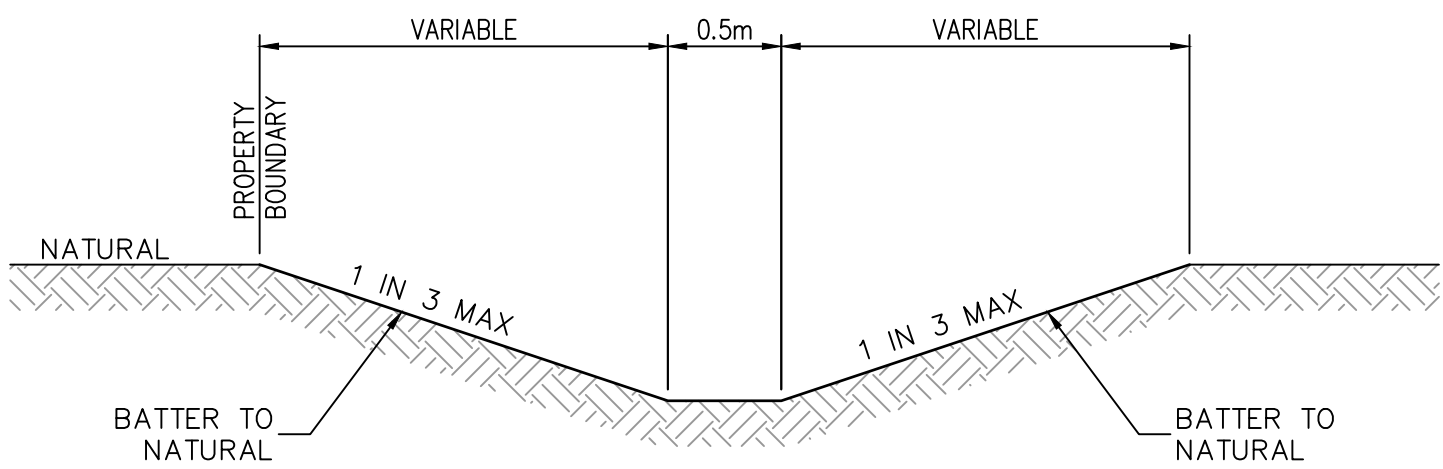
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DESIGN FILE N:\								ADW Johnson		DATUM	A.H.D.	PROJECT No.	DISCIPLINE	NUMBER
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												REV.		
												A		



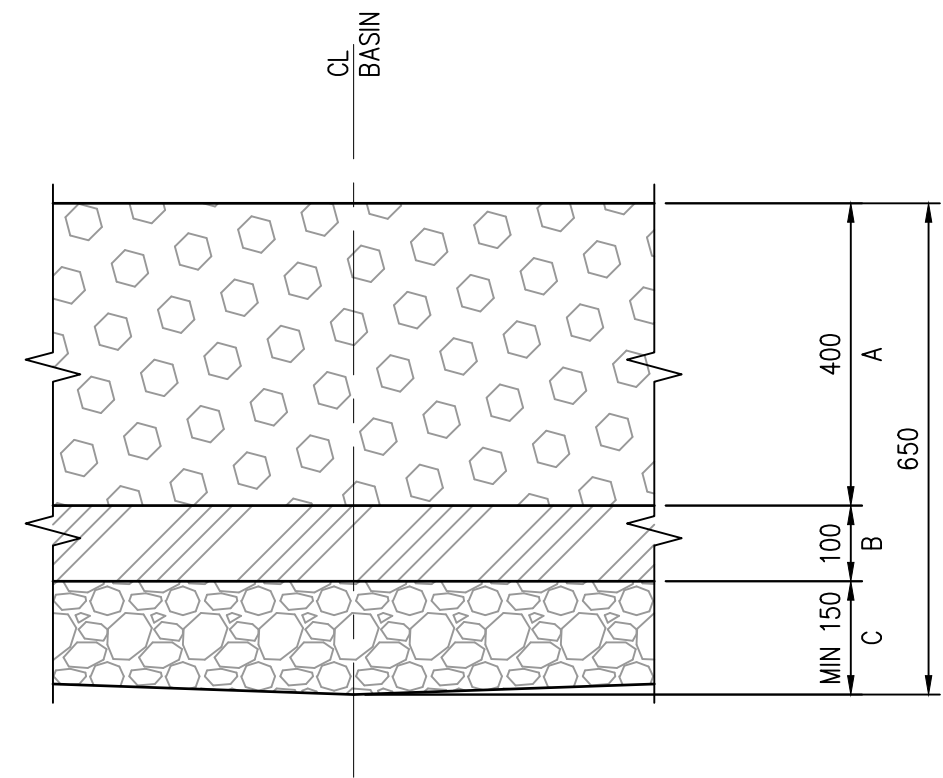
TYPICAL BIO-RETENTION BASIN DETAIL
N.T.S.



TYPICAL OPEN CHANNEL DETAIL
N.T.S.



TYPICAL SWALE DRAIN DETAIL
N.T.S.



BIO-RETENTION BASIN BASE DETAIL
SCALE 1:10

BIORETENTION SPECIFICATION

LAYER	DETAILS	PARTICLE SIZE & DISTRIBUTION																		
FILTER A	- CLEAN WELL GRADED LOAMY SAND (CONTAINING ALL PARTICLE TYPES/SIZES LISTED IN THE ADJACENT COLUMN & SATISFYING THE DISTRIBUTION RANGES SPECIFIED FOR EACH) - SATURATED HYDRAULIC CONDUCTIVITY 150–250mm/hr - ORTHOPHOSPHATE CONTENT <80mg/kg - TOTAL NITROGEN <1000mg/kg - TOP 100mm SHOULD BE AMELIORATED IN ACCORDANCE WITH SECTION 3 OF FAWB FILTER MEDIA GUIDELINES.	<table><tr><td>CLAY & SILT</td><td><3%</td><td>(<0.05mm)</td></tr><tr><td>VERY FINE SAND</td><td>5–30%</td><td>(0.05–0.15mm)</td></tr><tr><td>FINE SAND</td><td>10–30%</td><td>(0.15–0.25mm)</td></tr><tr><td>MEDIUM TO COARSE SAND</td><td>40–60%</td><td>(0.25–1.0mm)</td></tr><tr><td>COARSE SAND</td><td>7–10%</td><td>(1.0–2.0mm)</td></tr><tr><td>FINE GRAVEL</td><td><3%</td><td>(2.0–3.4mm)</td></tr></table>	CLAY & SILT	<3%	(<0.05mm)	VERY FINE SAND	5–30%	(0.05–0.15mm)	FINE SAND	10–30%	(0.15–0.25mm)	MEDIUM TO COARSE SAND	40–60%	(0.25–1.0mm)	COARSE SAND	7–10%	(1.0–2.0mm)	FINE GRAVEL	<3%	(2.0–3.4mm)
CLAY & SILT	<3%	(<0.05mm)																		
VERY FINE SAND	5–30%	(0.05–0.15mm)																		
FINE SAND	10–30%	(0.15–0.25mm)																		
MEDIUM TO COARSE SAND	40–60%	(0.25–1.0mm)																		
COARSE SAND	7–10%	(1.0–2.0mm)																		
FINE GRAVEL	<3%	(2.0–3.4mm)																		
TRANSITION B	- CLEAN WELL GRADED SAND WITH LESS THAN 2% FINES. - PARTICLE SIZE DISTRIBUTION TO ENSURE FILTER MATERIAL BRIDGED	D ₁₅ (TRANSITION LAYER) ≤ 5 x D ₈₅ (FILTER LAYER) NOMINAL DIAMETER RANGE 0.6–2.0mm																		
DRAINAGE C	- CLEAN FINE GRAVEL - PARTICLE DISTRIBUTION TO ENSURE TRANSITION LAYER BRIDGED	D ₁₅ (DRAINAGE LAYER) ≤ 5 x D ₈₅ (TRANSITION LAYER) NOMINAL DIAMETER RANGE 2.0–5.0mm																		

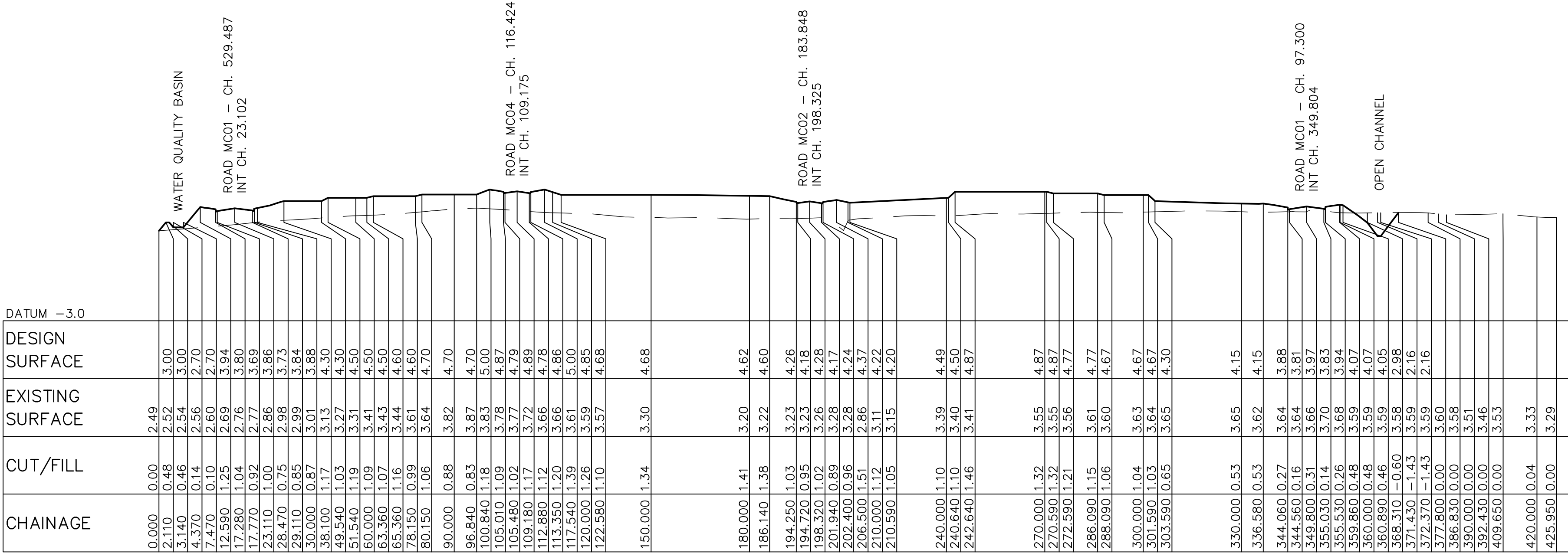
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REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY	SCALES	 Hunter Office Unit 7/335 Hillsborough Rd Warners Bay N.S.W. 2282 Phone: (02) 4978 5100 Fax: (02) 4978 5199 email: hunter@adwjohnson.com.au www.adwjohnson.com.au ABN 62 129 445 398	CLIENT Elite Constructions NSW Pty Ltd	PROPERTY DESCRIPTION SUBDIVISION OF LOT 22, D.P.1070182 & LOT 497 & 498, D.P.227298 TI-TREE ROAD, SANDY BEACH	PROJECT SANDY BEACH						
A	07.06.2017	PRELIMINARY ISSUE	J.N.	L.G.	M.A.	L.G.					PLAN TITLE TYPICAL DRAIN SECTIONS AND BIO-RETENTION BASINS						
DESIGN FILE N:\							ALL DIMENSIONS ARE IN METRES. DO NOT SCALE				SURVEYED ADW Johnson	DATUM A.H.D.	PROJECT No. 239312	DISCIPLINE - CENG	NUMBER - 222	REV. A	

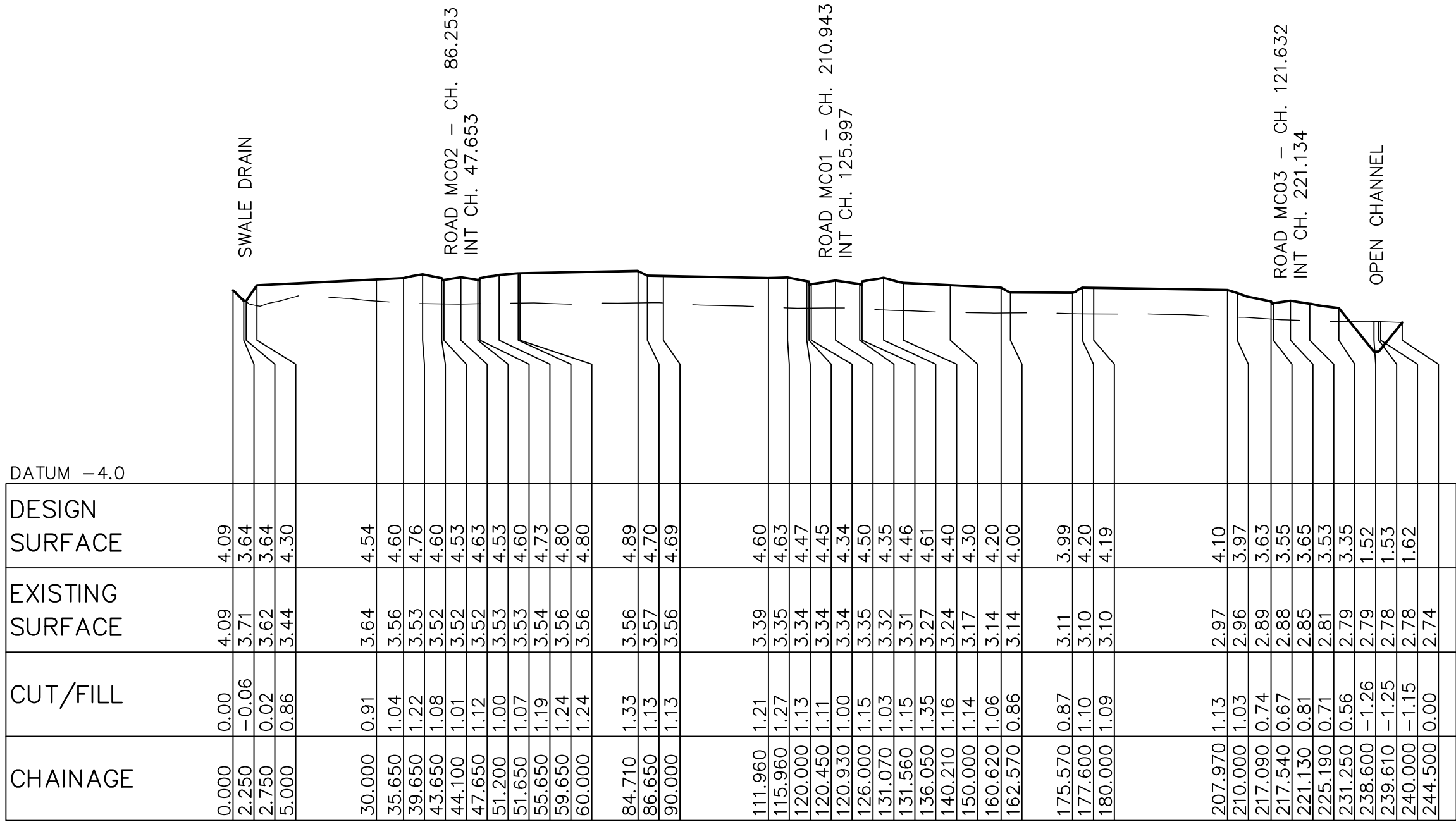


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SITE SECTION B-B
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VERTICAL SCALE 1:200



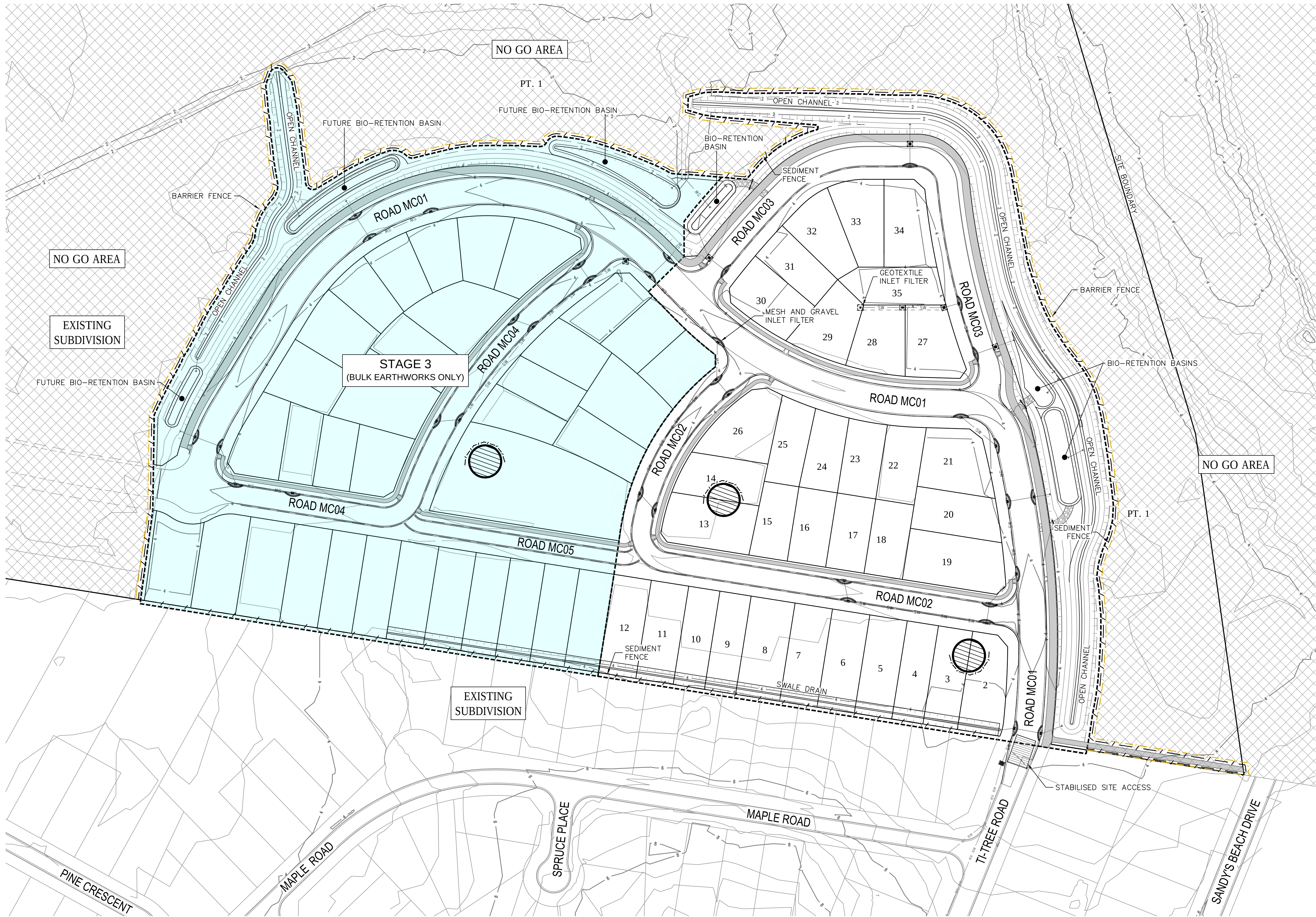
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HORIZONTAL SCALE 1:1000
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PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

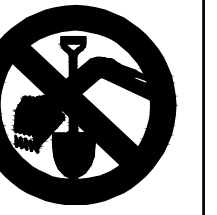
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A	07.06.2017	PRELIMINARY ISSUE	J.N.	L.G.	M.A.	L.G.	VERT 0 2 4 6 8 1:200 / 1:400 A1 / A3 HORIZ 0 10 20 30 40 1:1000 / 1:2000 A1 / A3					SUBDIVISION OF LOT 22, D.P.1070182 & LOT 497 & 498, D.P.227298 TI-TREE ROAD, SANDY BEACH		SANDY BEACH			
												PLAN TITLE					
												SITE SECTIONS					
DESIGN FILE N:\							ALL DIMENSIONS ARE IN METRES. DO NOT SCALE					SURVEYED ADW Johnson	DATUM A.H.D.	PROJECT No. 239312	DISCIPLINE - CENG -	NUMBER 302	REV. A

239312-CENG-801(A)

100mm AT FULL SIZE



MGA



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BEFORE YOU DIG

LEGEND

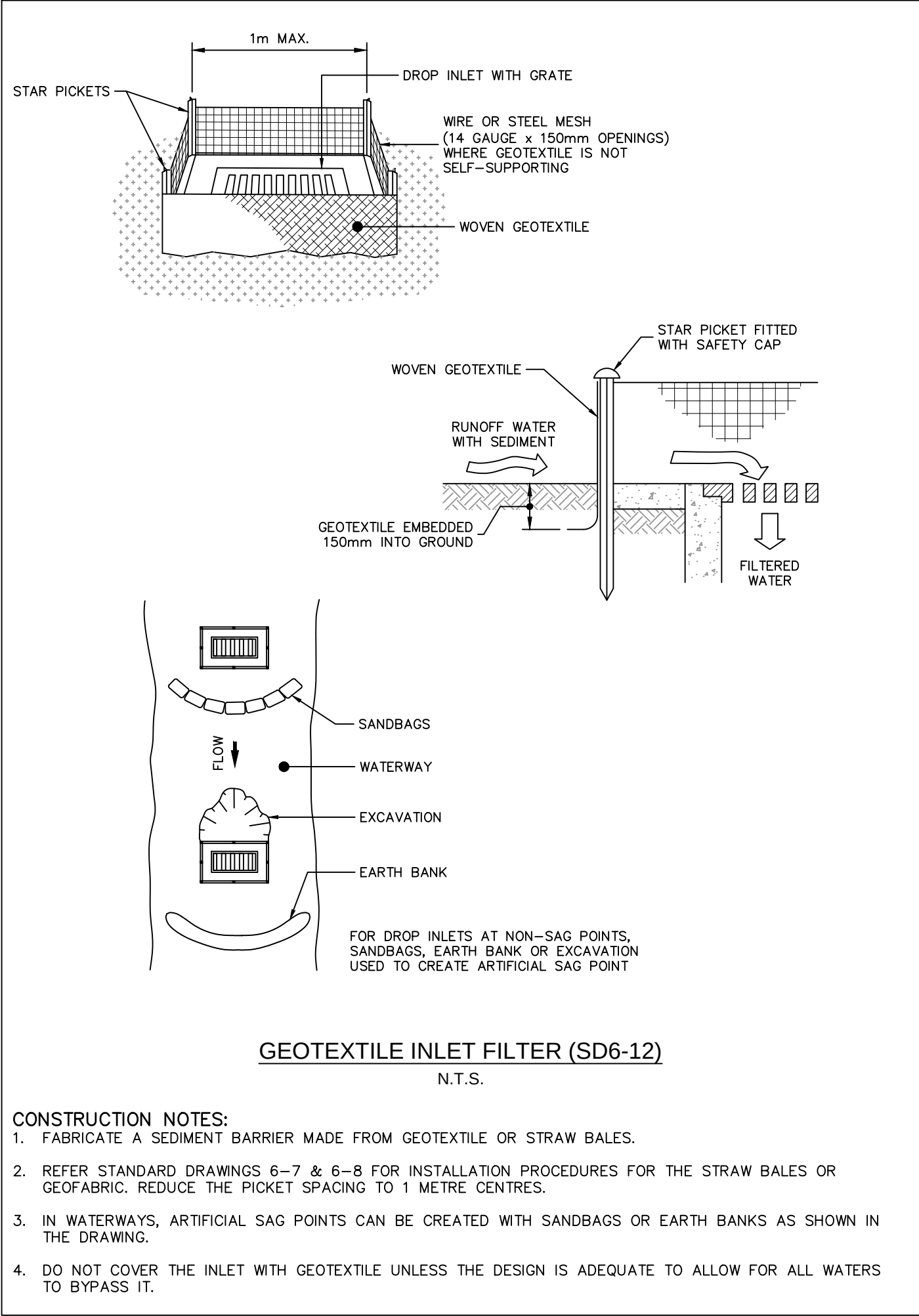
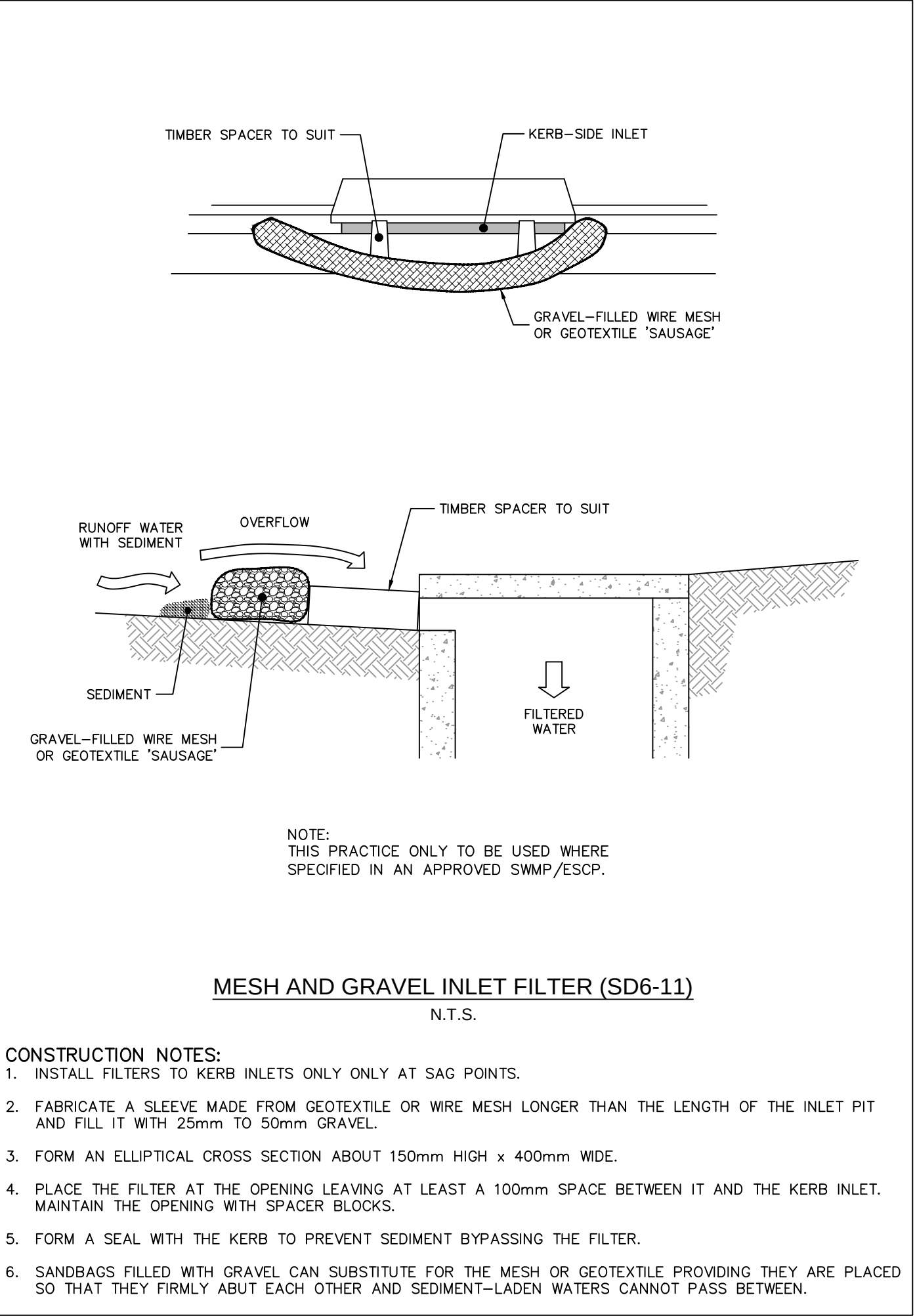
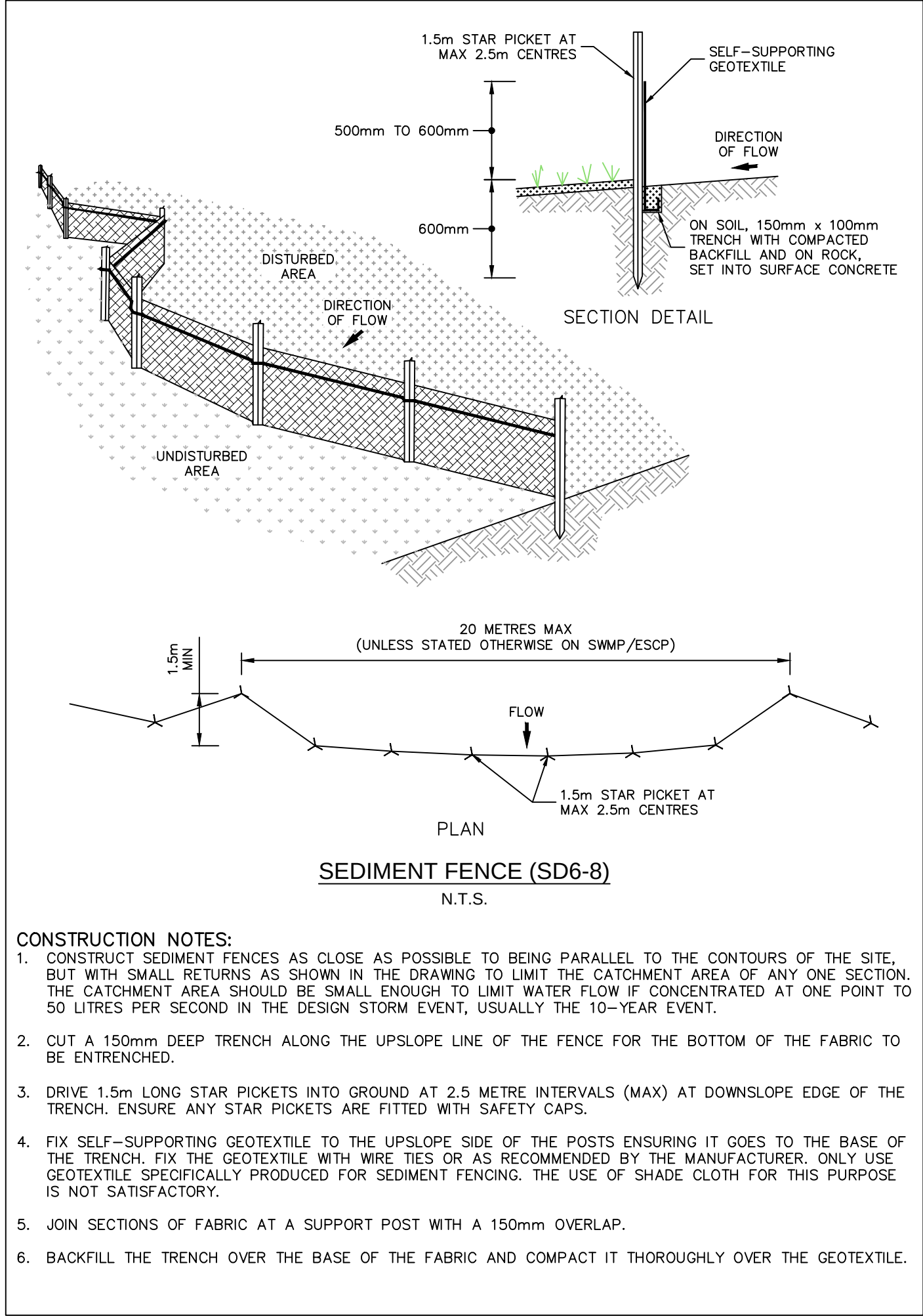
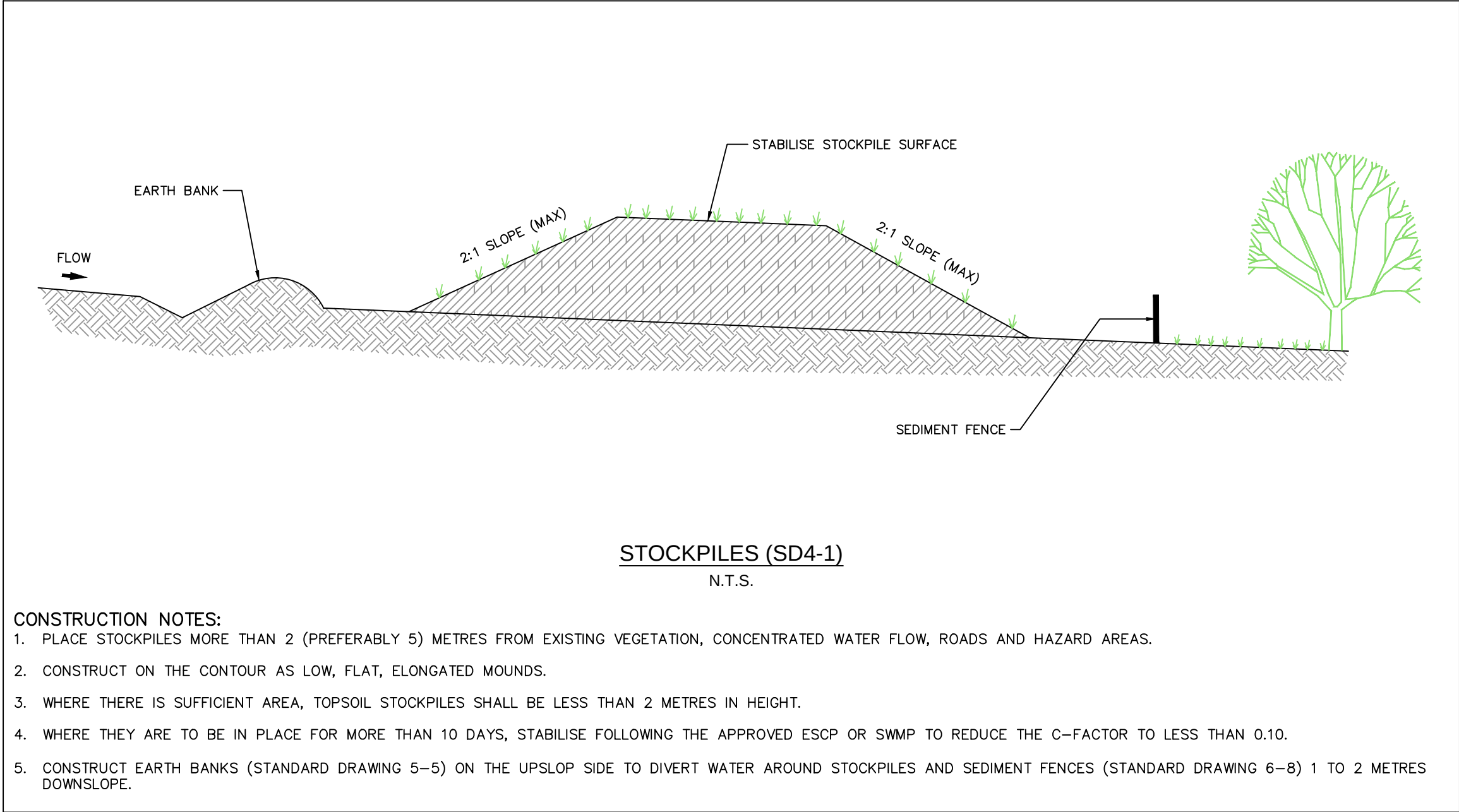
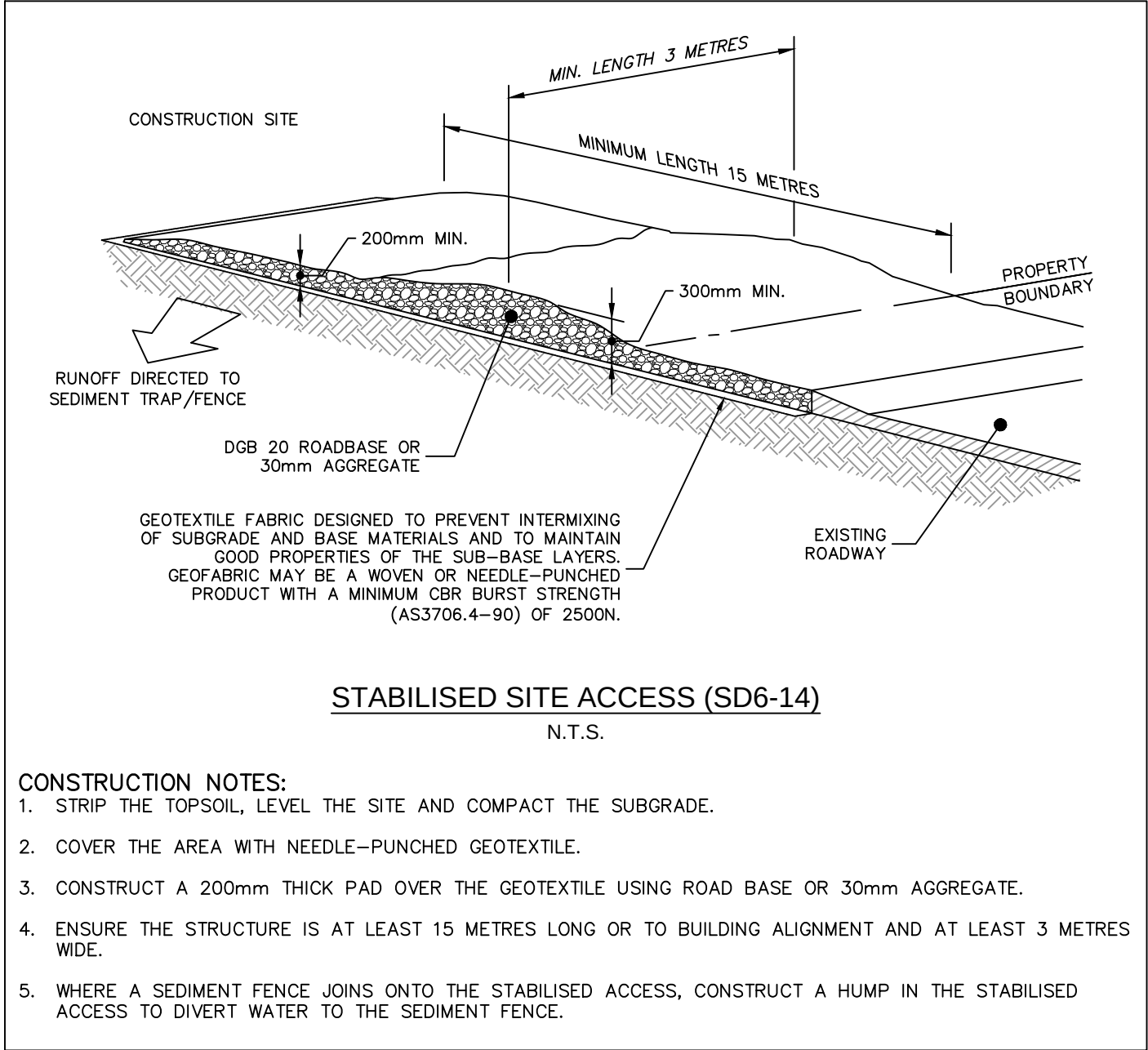
- EXISTING LOT BOUNDARY
- PROPOSED LOT BOUNDARY
- PROPOSED KERB
- EXISTING KERB
- DESIGN SURFACE CONTOURS
- EXTENT OF BATTER
- PROPOSED STORMWATER
- EXISTING STORMWATER
- SEDIMENT FENCE
- BARRIER FENCE
- MESH AND GRAVEL INLET FILTER
- DIVERSION DRAIN
- GEOTEXTILE INLET FILTER
- STABILISED SITE ACCESS
- PROPOSED STOCKPILE LOCATION

CONTOUR INTERVAL = 0.5m

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A	07.06.2017	PRELIMINARY ISSUE	J.N.	L.G.	M.A.	L.G.	0 10 20 30 A1 / A3 1:600 / 1:1200	Elite Constructions NSW Pty Ltd		SUBDIVISION OF LOT 22, D.P.1070182 & LOT 497 & 498, D.P.227298 TI-TREE ROAD, SANDY BEACH		SANDY BEACH		
DESIGN FILE N:\								ADW Johnson		A.H.D.		PLAN TITLE EROSION AND SEDIMENTATION CONTOL PLAN		
ALL DIMENSIONS ARE IN METRES. DO NOT SCALE								PROJECT No. 239312		DISCIPLINE - CENG -		NUMBER 801		REV. A

Plotted By: paulg Plot Date: 19/06/17 - 16:16 Cad File: N:\239312\Drawings\ENG\Concept Eng\239312-CENG-801(A).dwg



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A		07.06.2017	PRELIMINARY ISSUE		J.N.	L.G.	M.A.	L.G.	 A1 / A3 1:600 / 1:1200	SUBDIVISION OF LOT 22, D.P.1070182 & LOT 497 & 498, D.P.227298 TI-TREE ROAD, SANDY BEACH				SANDY BEACH						
														PLAN TITLE		EROSION AND SEDIMENTATION CONTOL DETAILS				
DESIGN FILE N:\											ALL DIMENSIONS ARE IN METRES. DO NOT SCALE		SURVEYED ADW Johnson		DATUM A.H.D.		PROJECT No. 239312	DISCIPLINE - CENG -	NUMBER 802	REV. A

Appendix C

DRAFT LANDSCAPE PLANS

LOT 22 DP1070182 & LOT 497 & 498 DP227298

SANDY BEACH NORTH STATEMENT OF LANDSCAPE INTENT

FOR:
Elite Construction NSW Pty Ltd
June 2017

CONTENTS

Location & Context	1<
Design Statement	2<
Landscape Master Plan	3<
Landscape Planting Plan	4<
Typical landscape section	5<
Planting Palette	6<

LOCATION & CONTEXT

The subject site comprises the follow property descriptions:

- Lot 22 on DP1070182,
- Lot 497 on DP227298, &
- Lot 498 on DP227298

Located in the area known as Sandy Beach of Woolgoolga within the Coffs Harbour Local Government Area (LGA) the site is approximately 22km north of Coffs Harbour.

The site is defined by the Pacific Highway to the west, the coastal foreshore to east, existing residential pocket to the south and Hearnese Lake wetland environment to the north.

The site comprises direct access to the coastal foreshore and beach environment of Sandy Beach. The Dammerels Head coastal seascape feature provides a clearly defined natural landscape marker to the south of the site.

With close proximity to the Pacific Highway future residents will have convenient access to the surrounding services and wider natural landscape features, such as the Wedding Bells State Forest. The State Forest provides a visually prominent backdrop to the west.

The site currently comprises a coastal rural character framed by low density residential development.



Image courtesy of Google Maps



Images courtesy of onthehouse.com.au

DESIGN STATEMENT

The key landscape design principles applied to the landscape concept comprise the following:

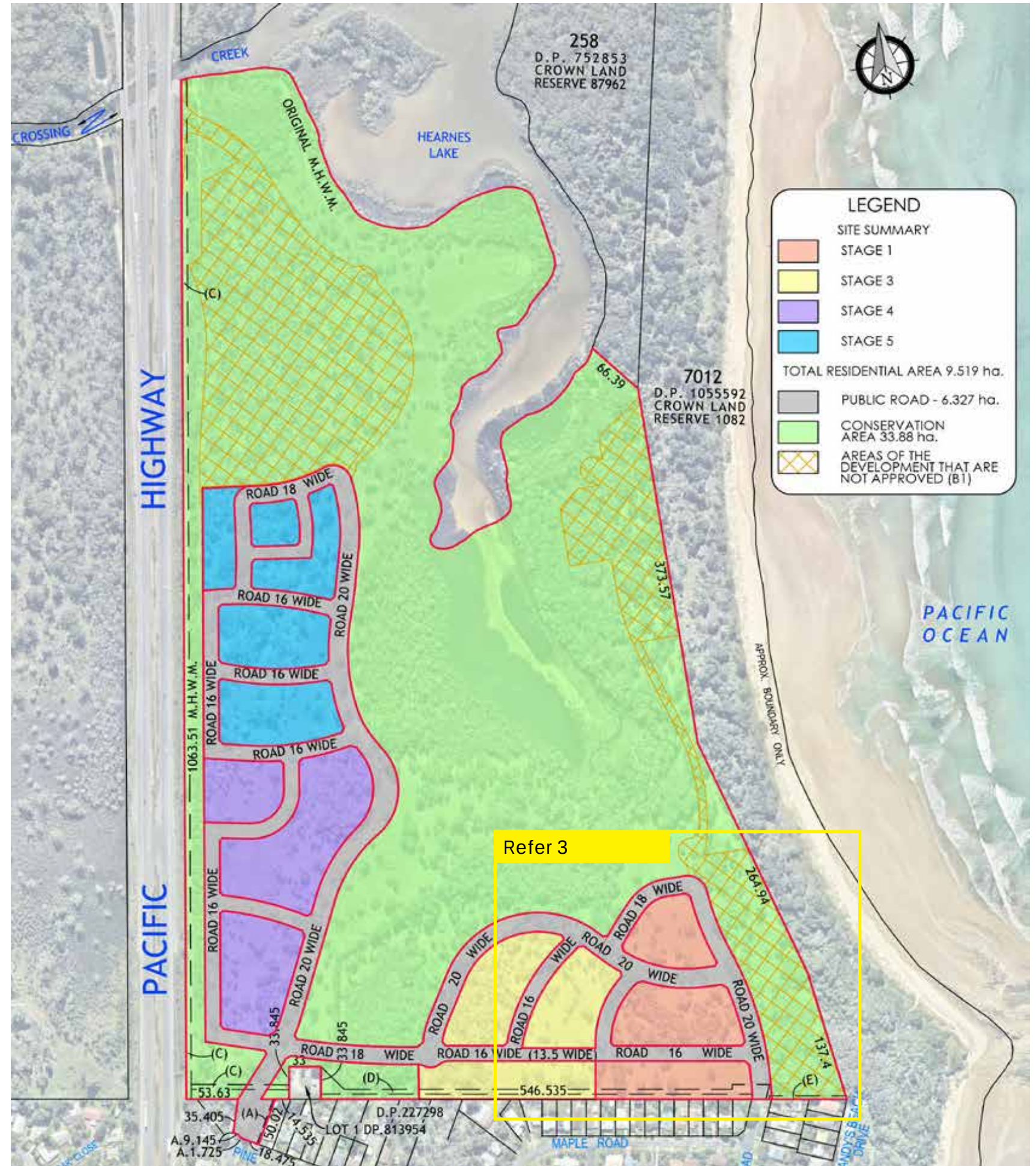
- Enhancing (maximising planting opportunities)
- Connected (multiple access points and lines of movement)
- Diverse (a planting palette that provides a mix of natives and exotics)
- Enduring (sustainable and resilient material selection)
- Comfortable (humanised scale where you can be yourself)
- Vibrant (providing spaces for spaces for interaction and activity)
- Safe (open sight lines and security where appropriate)

The landscape concept for the proposed residential development is based on the surrounding context, response to the proposed urban and civil layout, and the desired outcomes of the Coffs Harbour Development Control Plan 2015.

The design intent is to contribute positively to the image, identity and overall quality of Sandy Beach providing a contemporary landscape environment reflective of the above landscape design principles.

The landscape concept plan comprises the following key design outcomes:

- Coastal suitable street tree planting with an informal character to reflect the relaxed coastal character (refer to planting palette)
- Provision for 3m wide concrete shared pedestrian and bicycle path along coastal park frontage with links to surrounding residents
- Vehicle control and access to future dedicated public open space
- Integration of Water Sensitive Urban Design devices within the dedicated public open including appropriate plant selection (refer to planting palette)
- Provision of 1.5m wide concrete footpath within turf verge for future residents and visitors.



Schematic Development Plan courtesy of MHDP Architects Pty Ltd

LANDSCAPE MASTER PLAN

Legend

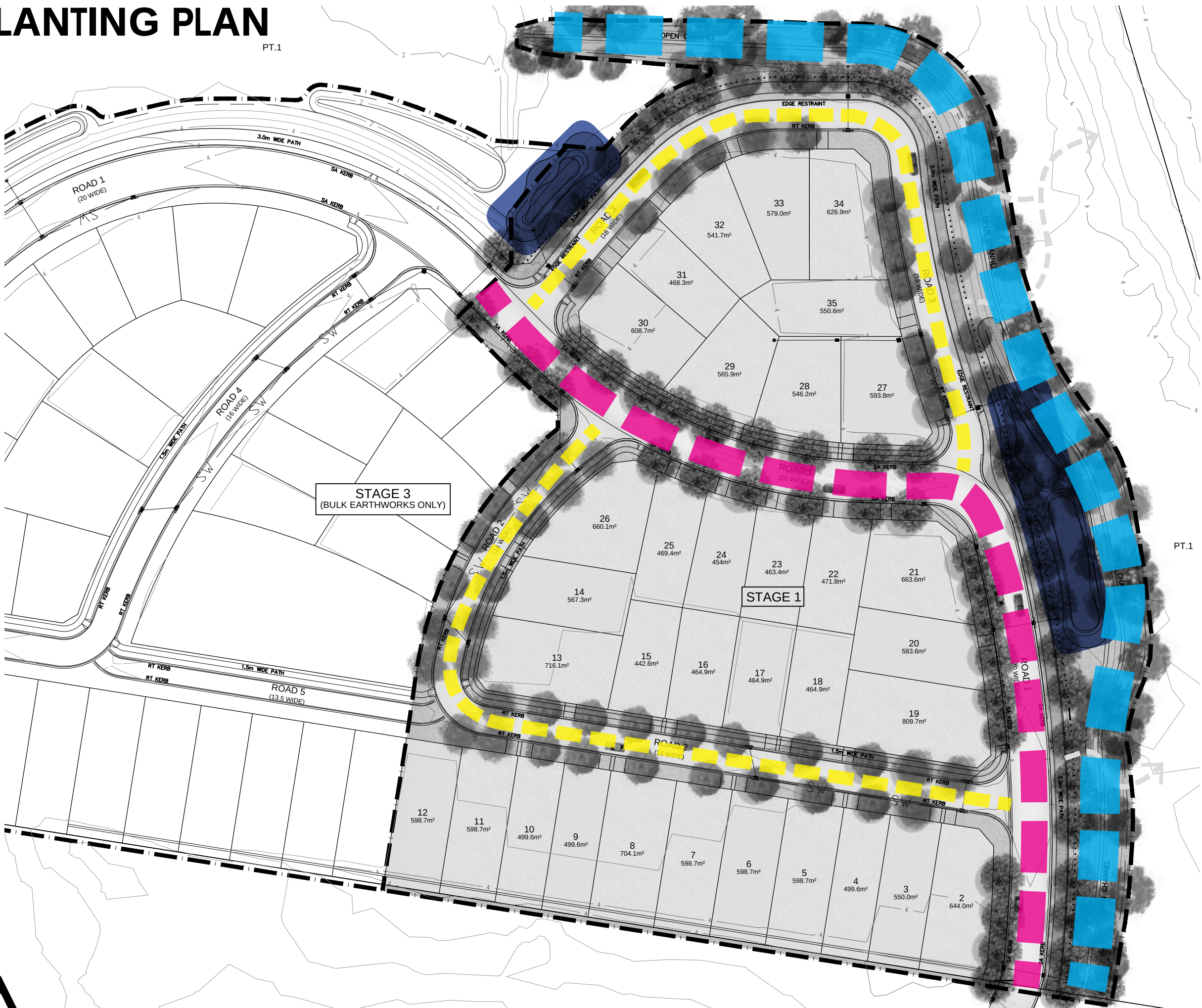
- 1 Landscape entry statement (subject to detail design and approval)
- 2 3m wide concrete shared pedestrian and bicycle path (selected colour oxide and finish)
- 3 Coastal street tree planting (refer to planting palette)
- 4 Maintenance vehicle control access gate within alignment of timber bollards (to Coffs Harbour City Council specifications)
- 5 Planted Water Sensitive Urban Design stormwater quality device (refer to planting palette)
- 6 Potential future controlled pedestrian beach access path (subject to future detail design and approval)
- 7 Turf seeding to Stage 3 bulk earthworks (subject to detail design and approval)
- 8 Coastal buffer tree planting to future dedicated public open space
- 9 Indicative driveway locations based on proposed typical dwelling architectural layouts
- 10 Existing residential houses



LANDSCAPE PLANTING PLAN

Legend

- Primary Street Tree (HARPULLIA pendula)
- Secondary Street Tree (CUPANIOPSIS anacardioides)
- Coastal Buffer Park Tree (Varies refer to planting palette)
- Native Detention Basin Planting (Varies refer to planting palette)



North
0 10 20 30 40 50m
Scale 1:1000@A3



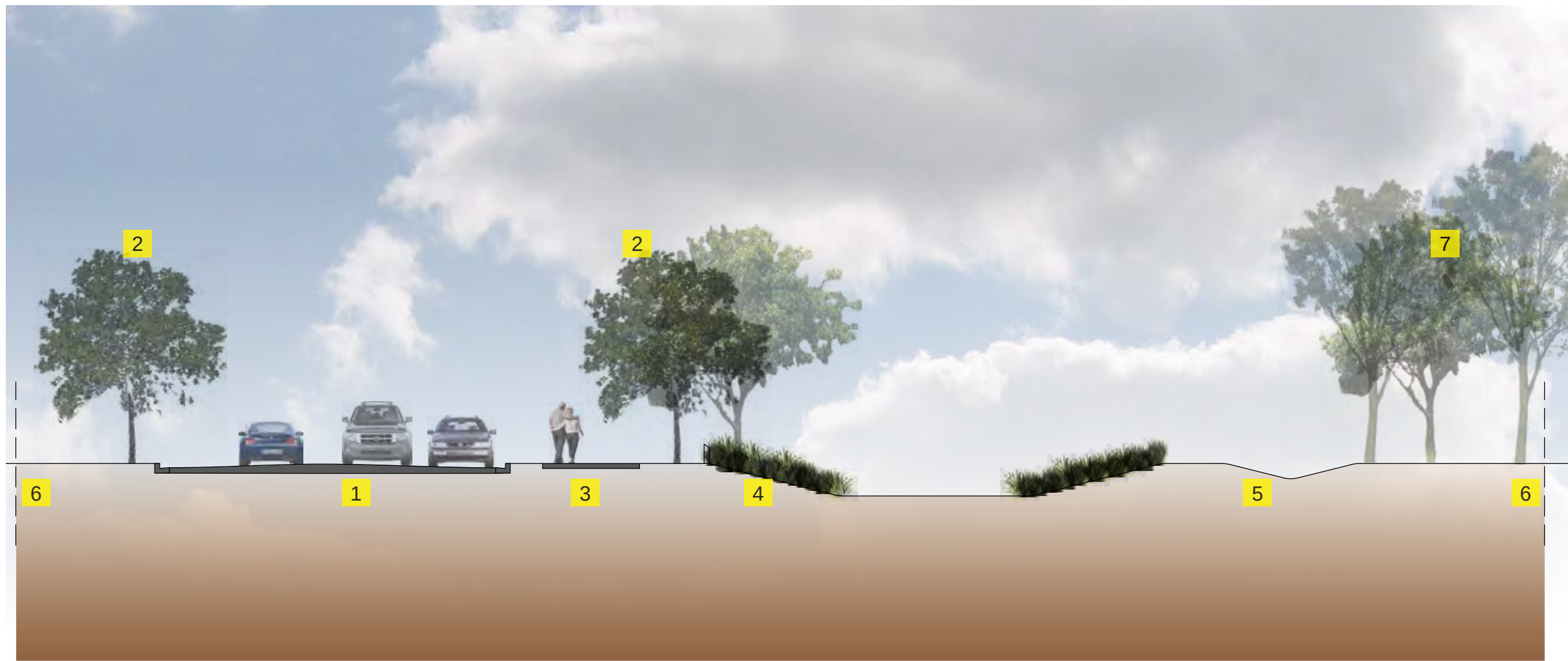
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SANDY BEACH NORTH | STATEMENT OF LANDSCAPE INTENT | JUNE 2017

TYPICAL LANDSCAPE SECTION

Legend

- 1 Road 1 20m wide corridor with 11m wide carriageway
- 2 Coastal street tree with turf verge (refer to planting palette)
- 3 3m wide concrete shared pedestrian bicycle pathway (selected colour oxide and finish)
- 4 Planting to WSUD basin batter (refer to planting palette)
- 5 turfed open channel
- 6 Proposed lot boundary
- 7 Coastal buffer tree planting (refer to planting palette)



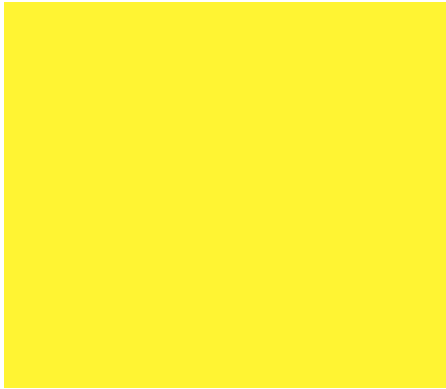
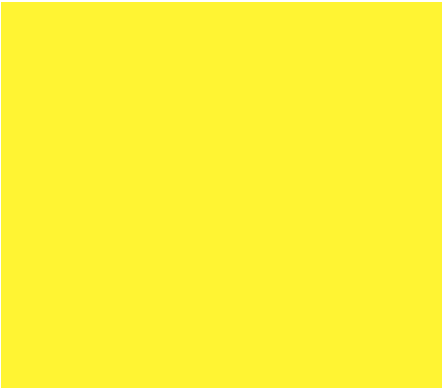
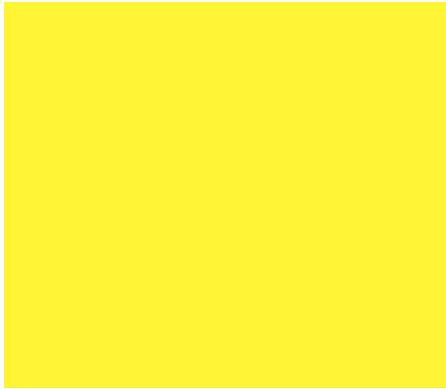
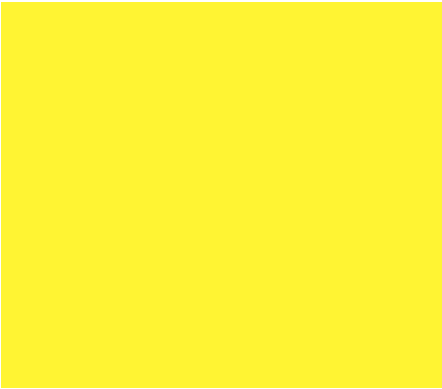
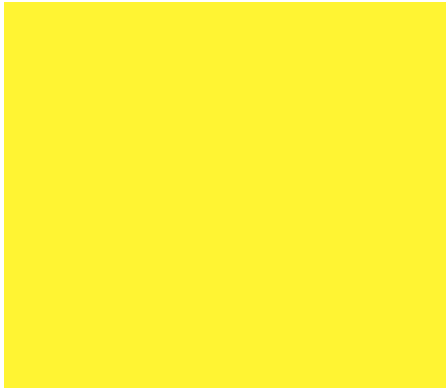
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Scale 1:150@A3

GROUP GSA

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SANDY BEACH NORTH | STATEMENT OF LANDSCAPE INTENT | JUNE 2017

PLANTING PALETTE



Species	Common Name
STREET TREES	
CUPANIOPSIS anacardioides	Tuckeroo
HARPULLIA pendula	Tupilwood
COASTAL BUFFER PARK TREES	
BANKSIA integrifolia	Coast Banksia
CASUARINA equisetifolia	Coastal She-Oak
CUPANIOPSIS anacardioides	Tuckeroo
PANDANUS tectorius	Screwpine
SHRUBS	
CALLISTEMON viminalis cv.	Slim
GREVILLEA rosmarinifolia cv.	Crimson Villea
KUNZEA ambigua cv.	Rivan
Magnolia x Michelia x Yunnanensis	Fairy White
SYZYGIUM australe cv.	Elite
GROUNDCOVERS	
EREMOPHILA glabra cv	Blue Horizon
CASUARINA glauca cv	Free Fall
LIRIOPE muscari cv	Evergreen Giant
LIRIOPE muscari cv	Just Right
LOMANDRA longifolia	Matt Rush
RHAGODIA spinescens cv.	Aussie Flat Bush
BIO-RETENTION BASIN	
CAREX appressa	Tall Sedge
CYPERUS polystachyos	Bunchy Sedge
JUNCUS krasussii	Sea Rush
LOMANDA longfolia	Matt Rush
CALLISTEMON salignus	White Bottlebrush
MELALEUCA sieberi	Small-leaved Paperbark



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7

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Appendix D

WALLUM FROGLET HABITAT REPORT



**REPORT ON WALLUM FROGLET
HABITAT EXTENT AND PROTECTION MEASURES**

FOR

**APPROVED CONCEPT PLAN STAGE 1 & 3 AREAS
SANDY BEACH NORTH
RESIDENTIAL SUBDIVISION**

**TI-TREE ROAD
SANDY BEACH**

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PREFACE

This report on Wallum Froglet (*Crinia tinnula*) habitat extent and protection measures has been prepared by *Conacher Consulting* to address Part C3 of the Further Environmental Assessment Requirements identified within the Concept Approval for the approved areas of stage 1 and stage 3 of the Sandy Beach North Residential Subdivision at Ti-Tree Road, Sandy Beach NSW.

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1. INTRODUCTION

1.1 Background

This report on Wallum Froglet (*Crinia tinnula*) habitat extent and protection measures has been prepared by *Conacher Consulting* to address Part C3 of the Further Environmental Assessment Requirements identified within the Concept Approval for the approved areas of stage 1 and stage 3 of the Sandy Beach North Residential Subdivision at Ti-Tree Road, Sandy Beach NSW.

There is currently a Concept Approval (dated December 2010) for a Residential Subdivision within a portion of the site. As part of the current approval the following previous reports which included assessments of significance for threatened species were prepared:

- Ecological Survey and Assessment Report (*Conacher Environmental Group* 2008)
- Ecological Survey and Assessment Addendum Report (*Conacher Environmental Group* 2010)

A Threatened Species Assessment Addendum Report and Conservation Area Management Plan have also been prepared by Conacher Consulting (2015a; 2015b).

Part C2 of the Concept Approval states that Pursuant to section 75P(2)(C) of the Act, the following environmental assessment requirements apply in respect to future stages of the project, "*Clarification of the nature and extent of Wallum Froglet habitat, including details of protective measures to mitigate against impacts to this species*".

This Report provides updated mapping and description of the extent of the Wallum Froglet habitats present within the site.

1.2 Site Characteristics

The planning and cadastral details of the subject site are provided in Table 1.1.

TABLE 1.1 SITE DETAILS	
Location	Lot 22 DP 1070182
Site Area	Approximately 49.5 hectares
Proposed Development Area	Approximately 6.6 hectares
Local Government Area	Coffs Harbour
Existing Land Use	Agriculture

1.3 Proposed Development

It is proposed to construct a residential housing subdivision within the Stage 1 and Stage 3 areas of the subject site subject which have Concept Plan approval. Detailed plans of the proposal have been provided as separate documentation to this report.

2. ASSESSMENT OF EXTENT OF HABITATS PRESENT

2.1. WALLUM FROGLET HABITAT AND ECOLOGY DETAILS

The Wallum Froglet (*Crinia tinnula*) is a species of small terrestrial frog restricted to coastal areas of southern Queensland and central and northern New South Wales. This species lives in wallum habitats consisting of low lying freshwater wetlands, paperbark swamps and wet heaths in coastal areas on acidic, nutrient poor sandy soils. Habitat usage during non-breeding periods is not well documented, however breeding habitats and surrounding areas are considered likely to be utilised (Cogger 2000; Myer *et al.*, 2006).

Males call throughout the year from secluded positions beside water or while afloat, particularly after heavy periods of rain (Anstis 2002).

The suitability of breeding habitats is subject to weather conditions and seasonal variation associated with the following factors:

- presence of water
- water depth (preference for shallow water)
- water and associated soil pH, (preference for acidic habitats)
- water nutrient levels (preference for lower nutrient levels)
- Salinity (preference for fresh water)
- turbidity (can withstand some turbidity)
- hydroperiod (preference for hydroperiods which exclude fish species)
- presence of predators (often influenced by hydroperiod and water chemistry)

2.2 NATURE AND EXTENT OF WALLUM FROGLET HABITAT

The Wallum Froglet has been detected calling from two low lying areas containing surface water during surveys in March 2004 following several days of rainfall. The location of these observations is shown in Figure 2.1. The observation locations include an area of Low Wallum Heath along the western areas of Hearn's Lake and a similar area of vegetation in the south-west part of the site where runoff from the Pacific Highway ponds on the site.

The following additional site surveys for this species:

- Nocturnal listening, call playback and spotlight survey: 09/07/15 - 1.5hrs (1700-1830)
- Diurnal search and habitat assessment survey: 10/07/15 - 4 hrs (0830-1230)
- Nocturnal listening, call playback and spotlight survey: 10/07/15 – 1hr (1730-1830)

No Wallum Froglets were observed during the additional surveys undertaken. During the recent habitat surveys, no areas of Wallum Froglet habitat were observed within the proposed development area. The development area contains mostly dry habitats which have been affected by the historical construction of a man-made drainage channel which intersects the centre of the site.

Based on the site survey records and presence of areas of higher quality habitat for this species within the western sections of the site, it is considered that this species does not utilise the proposed development area as habitat. The observed areas of habitat for this species occur at and surrounding the locations of where this species has previously been observed within the site, as shown in Figure 2.1.



3. MITIGATION MEASURES FOR WALLUM FROGLET HABITAT PROTECTION

The objective of the following mitigation and habitat protection measures is to prevent harm from impacts associated within the proposed development to the identified habitat locations for this species within the western sections of the site. No known habitats for this species are present within the proposed development area.

The following protective measures to mitigate impacts on this species should be implemented for the proposal:

- Implementation of erosion and sedimentation controls;
- Installation of protection fencing around development areas to prevent impacts to retained habitats;
- Proper identification and management of acid sulphate soils;
- No stockpiling of materials in drainage line areas;
- Implementation and maintenance of suitable construction site water management protocols;
- Rehabilitation of the Conservation Areas of the site in accordance with the Conservation Area Management Plan; and
- Utilisation of suitable stormwater design and control measures to provide habitat for this species where possible and prevent changes to water chemistry in known habitat areas.

The mitigation measures identified above have been addressed in the Statement of Commitments for the proposal and/or in detailed separate reports prepared as additional information to this report.

4. CONCLUDING COMMENTS

Based on the details provided this report and the ecological surveys, assessments and management previously completed for this project it is concluded that:

- i. The areas of identified habitat for this species are located outside of the proposed Stage 1 and Stage 3 development areas.
- ii. The protective measures outlined within this report should be implemented to mitigate against potential impacts associated with the proposed development.

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