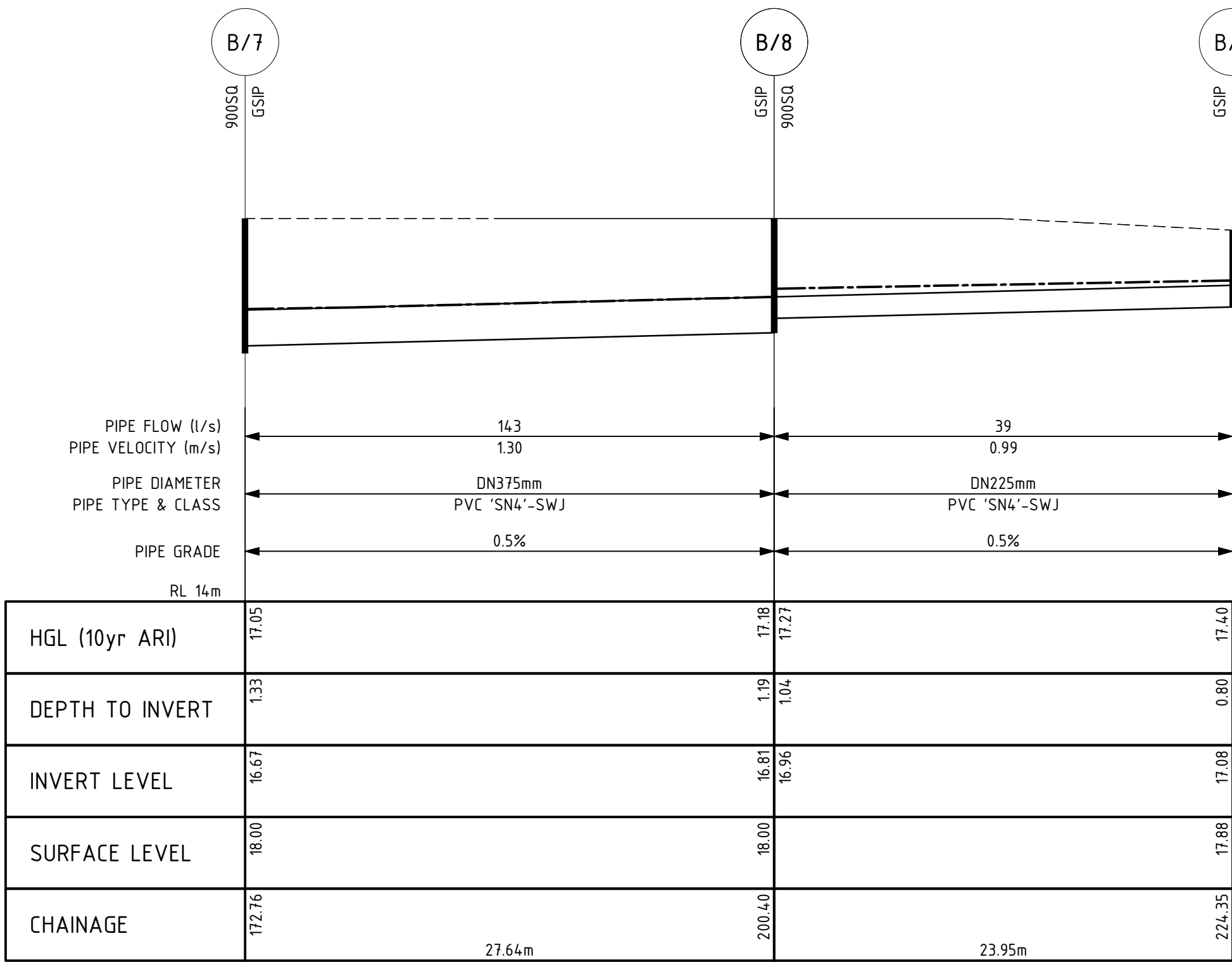
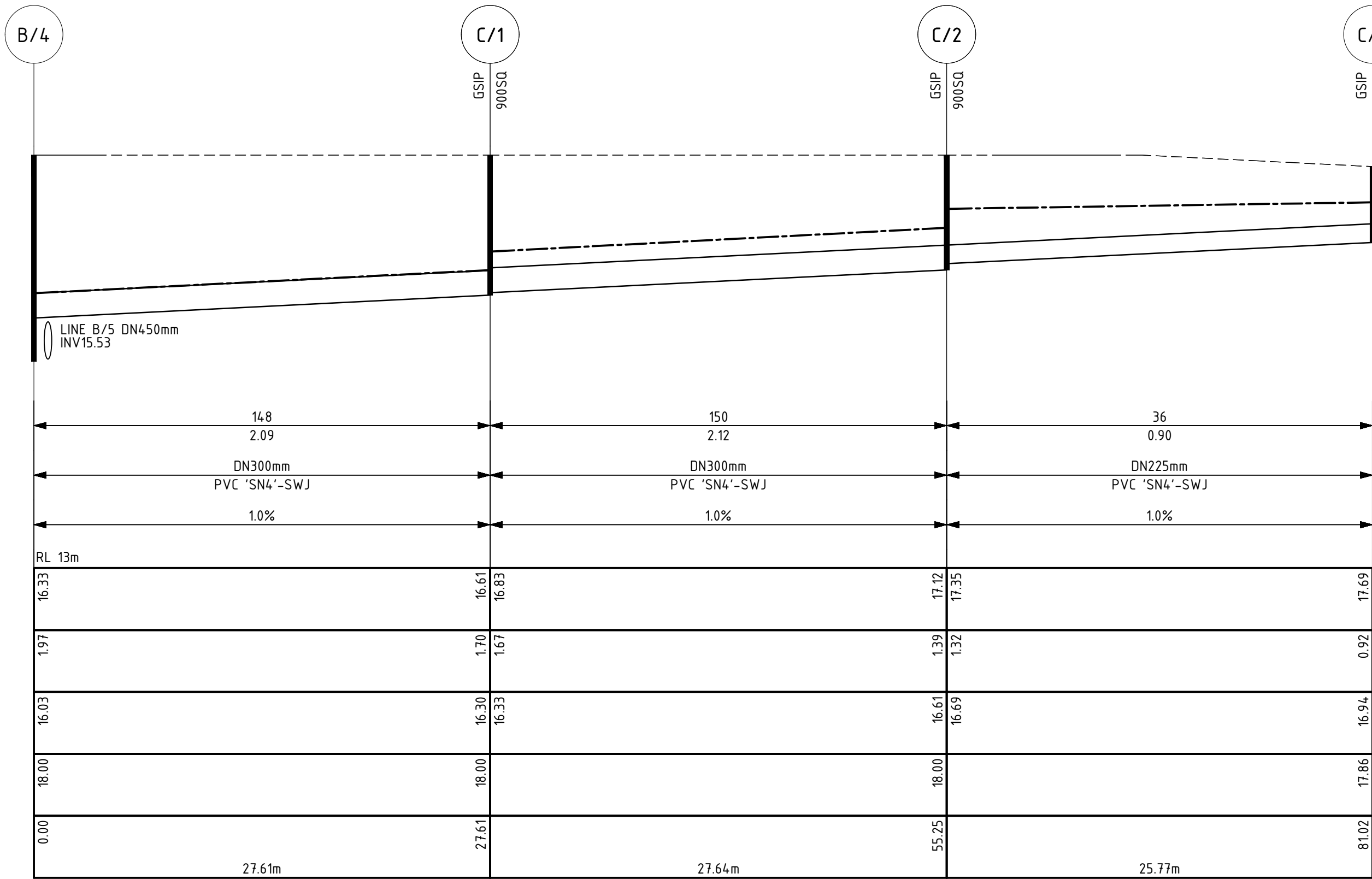


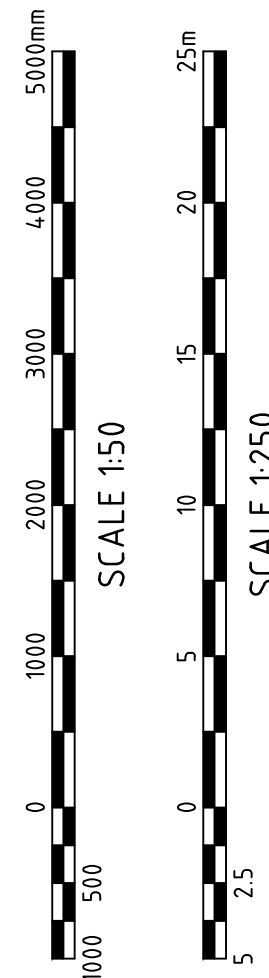
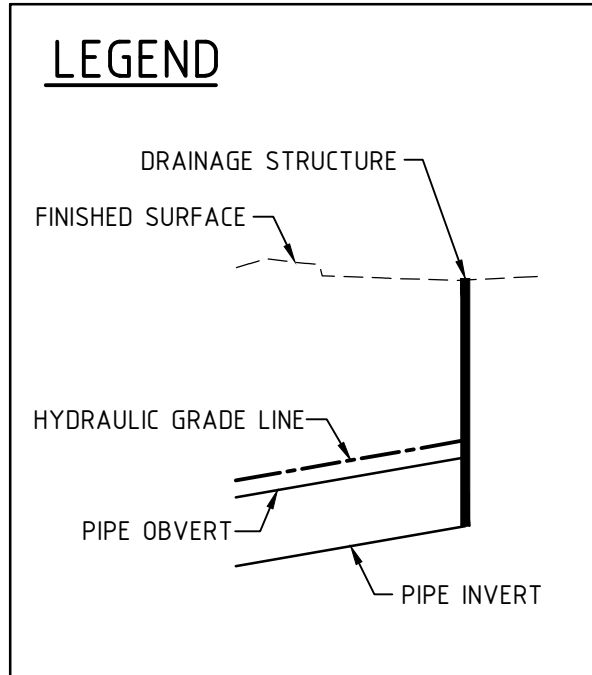
NOTE: FOR STORMWATER DRAINAGE LINE A REFER DRG.C624



LINE B
1:250(H) & 1:50(V)



LINE C
1:250(H) & 1:50(V)



NOT FOR CONSTRUCTION

01	W.M.	22/08/17	A.M.	ISSUED FOR DA APPROVAL
REV.	DES.	DATE	VER.	DESCRIPTION

CIVIL AND HYDRAULIC
ENGINEERING DESIGN AND
PROJECT MANAGEMENT

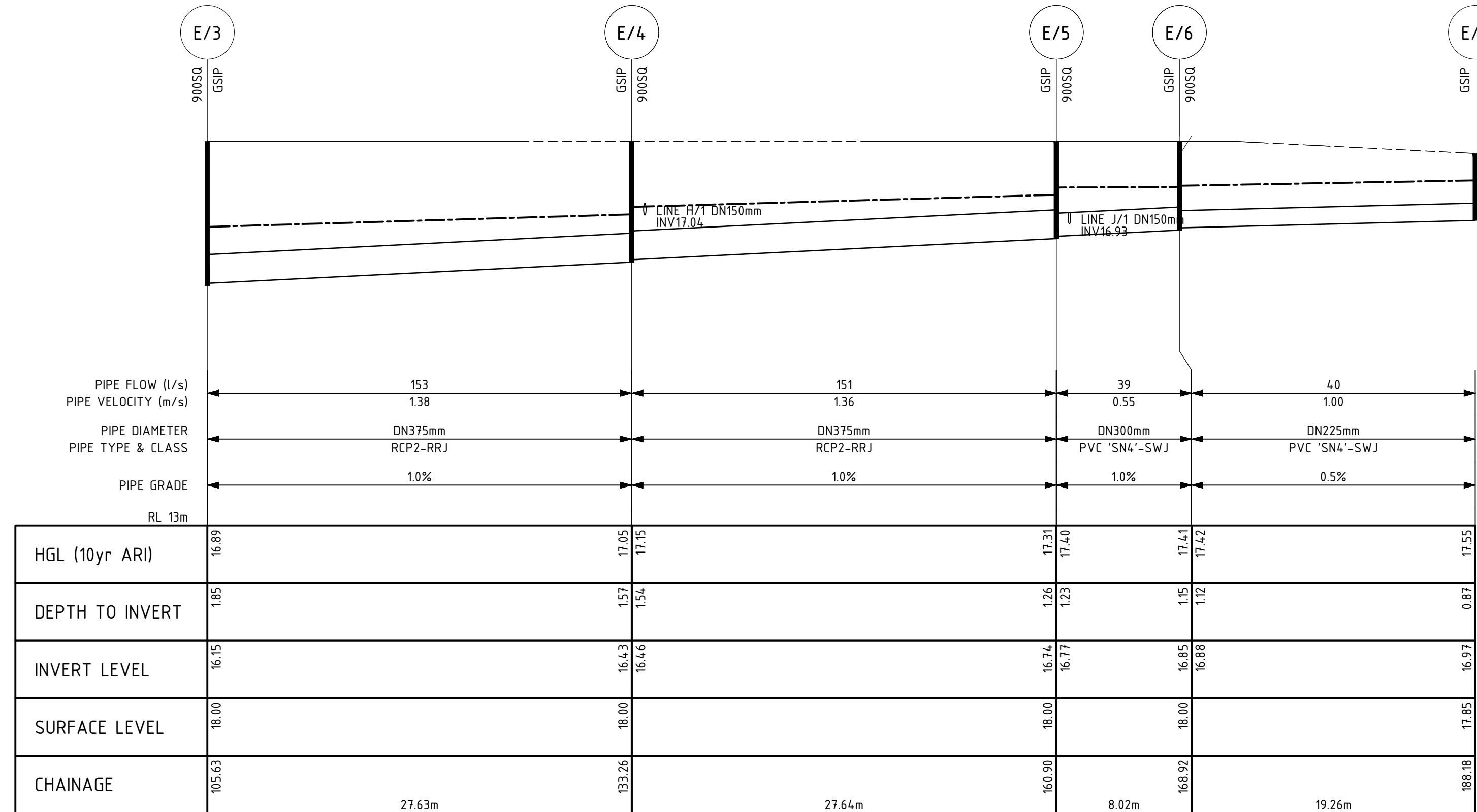
SUITE 26
11 - 13 BROOKHOLLOW AVE
BAULKHAM HILLS NSW 2153

PHONE: (02) 9680 3100
FAX: (02) 9634 6989
ABN 21 118 134 240

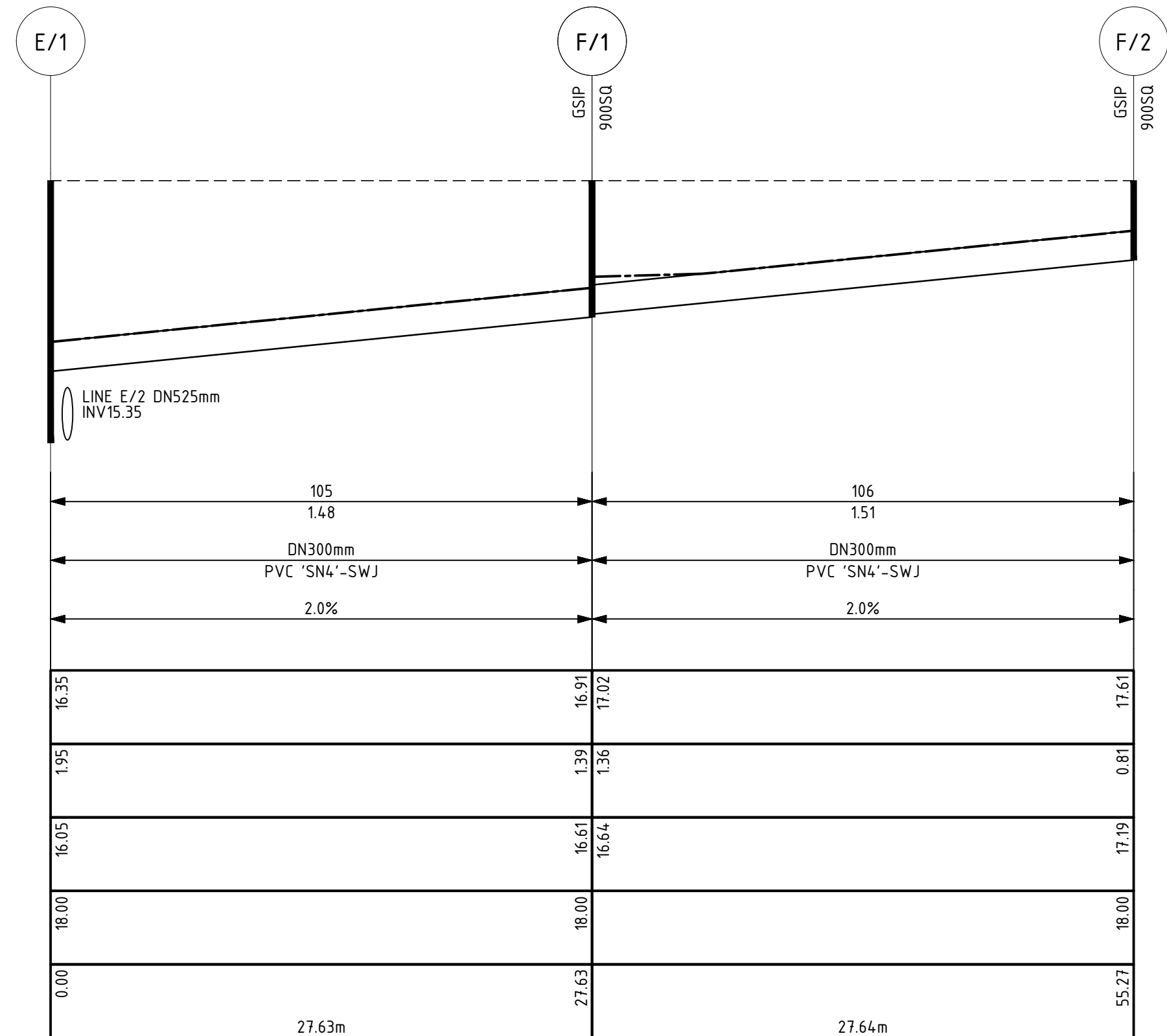
DESIGNER	W.M.	DATE	22/08/17
ENGINEER	X.P.	LGA	WOLLONGONG
VERIFIER	A.M.	SCALE @ A1	AS NOTED

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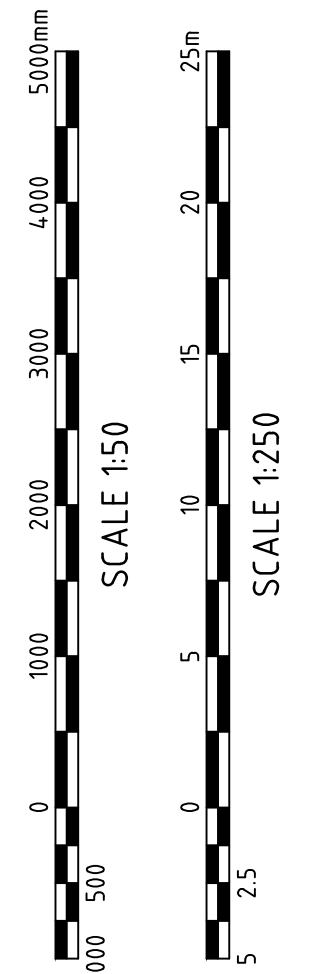
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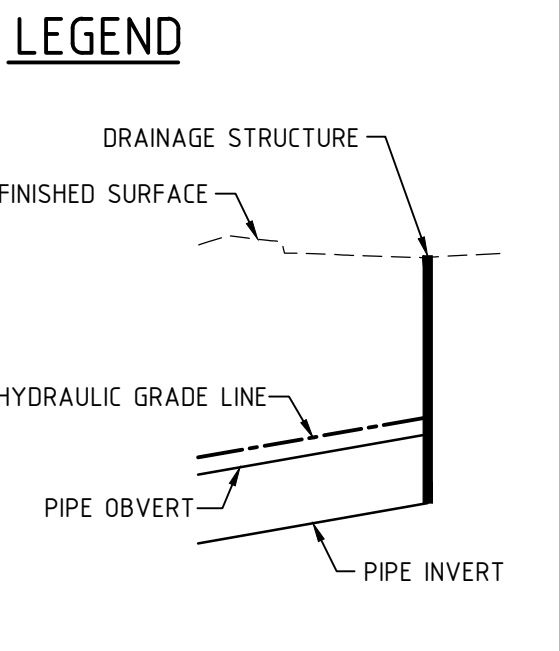
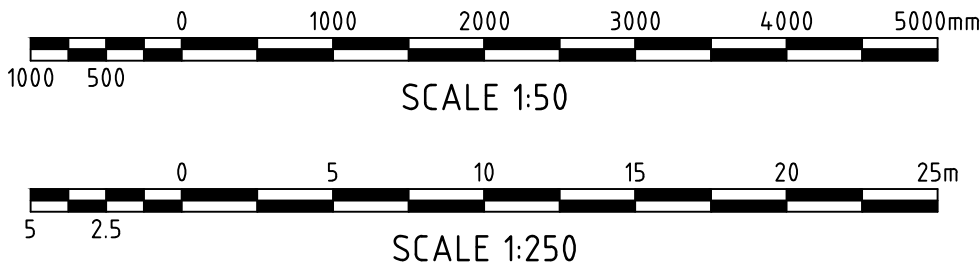
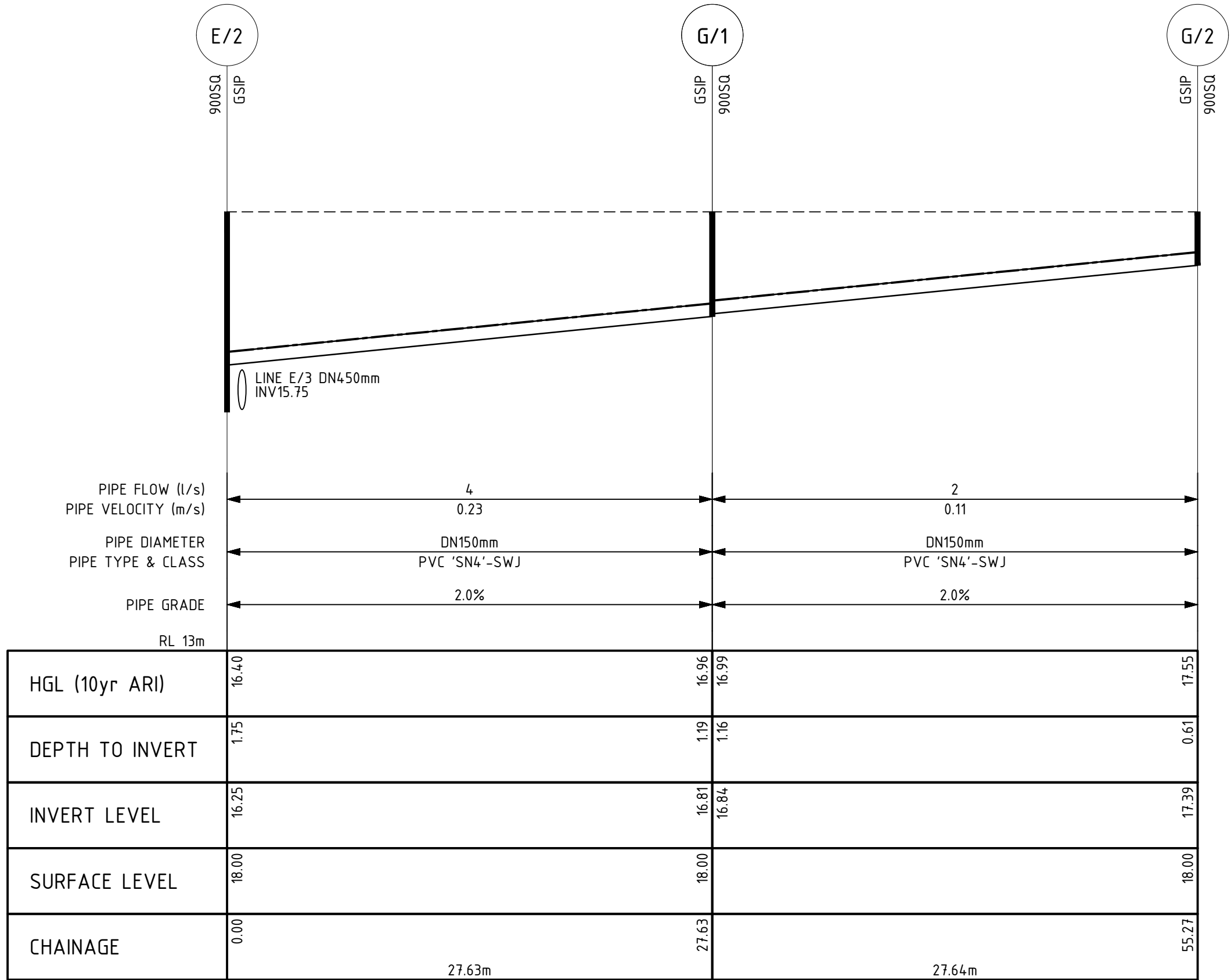


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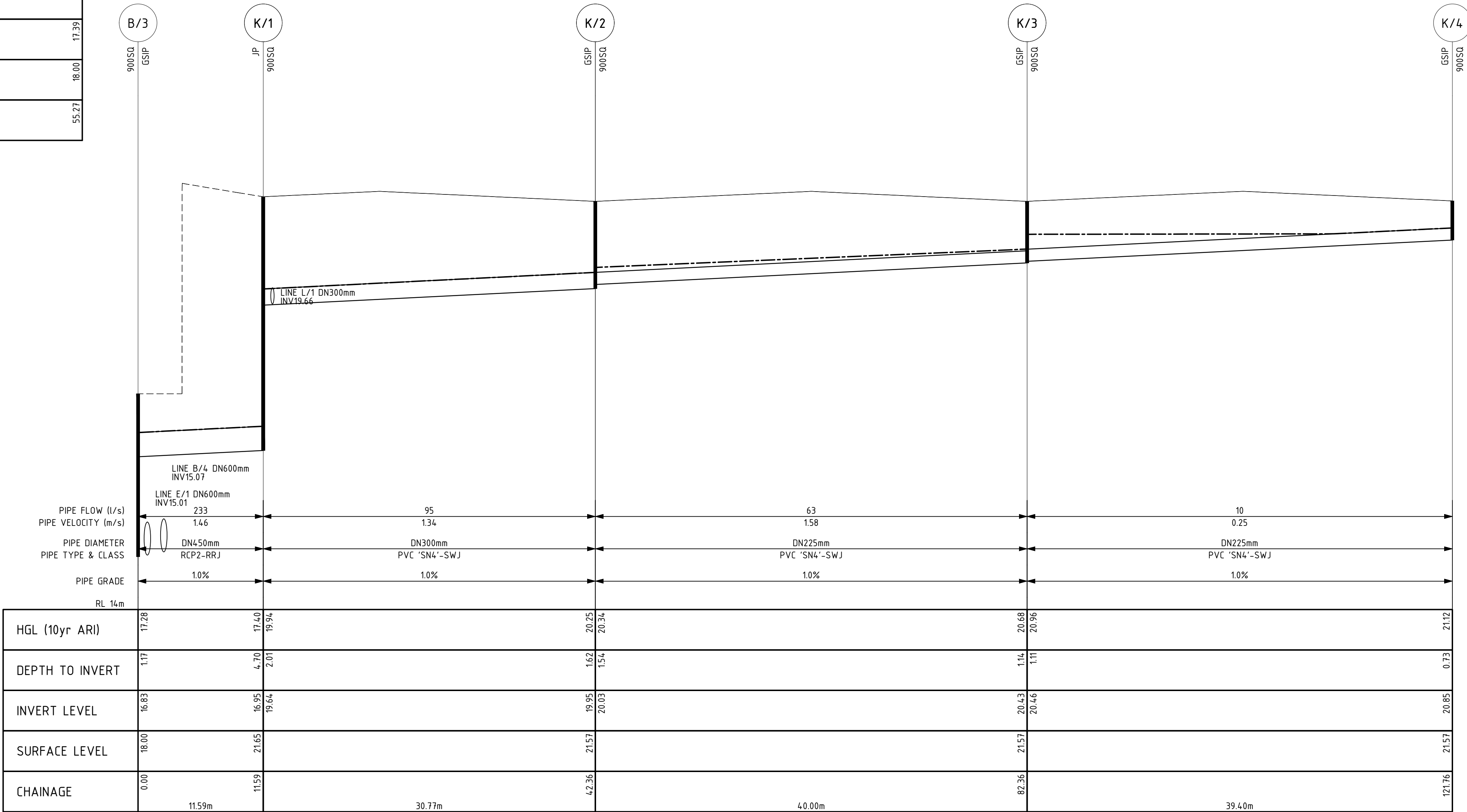
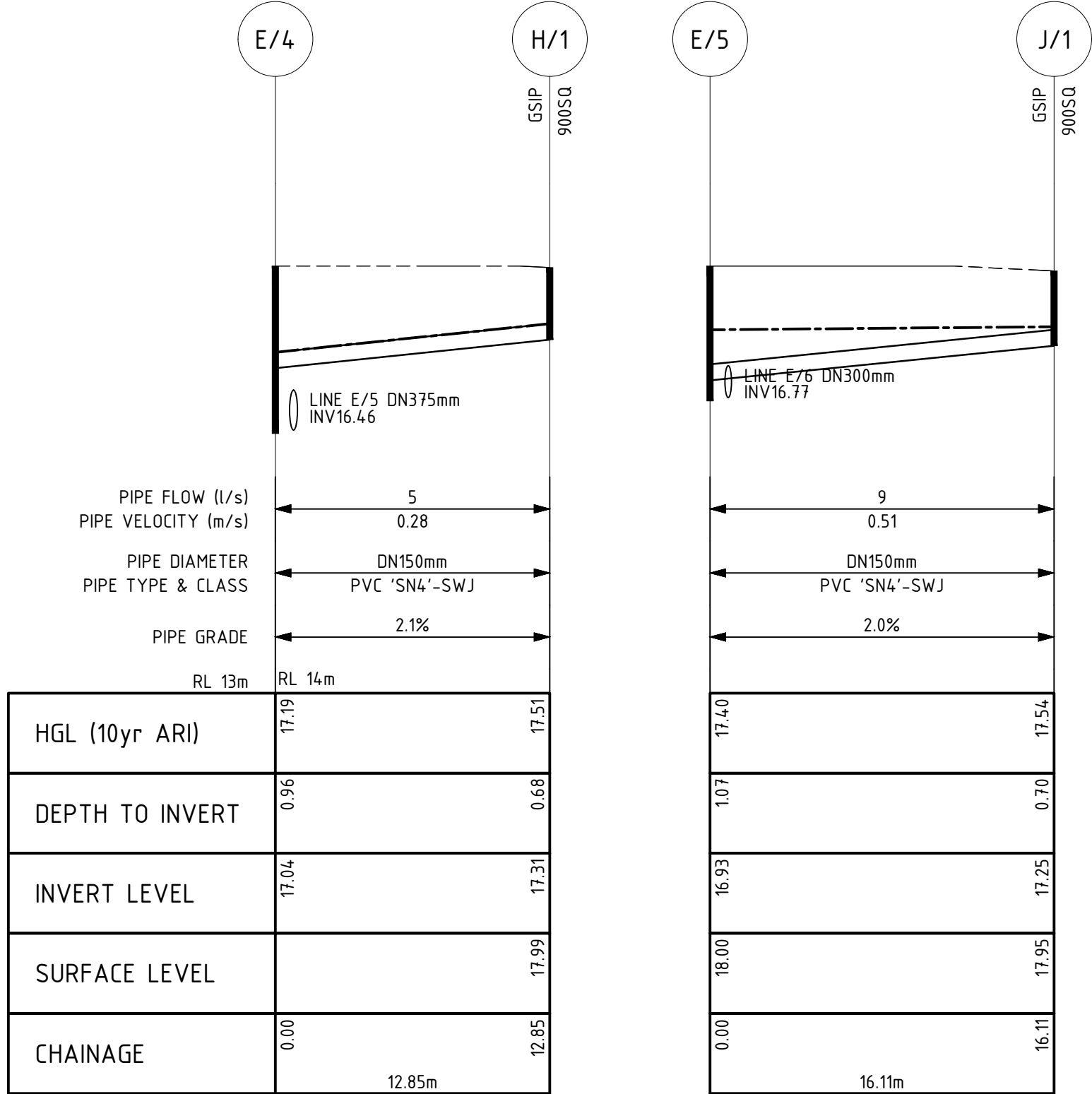


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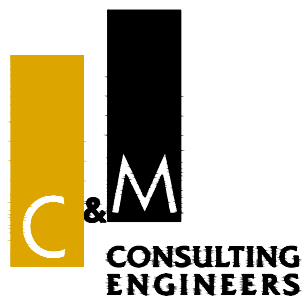
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REV.	DES.	DATE	VER.	DESCRIPTION



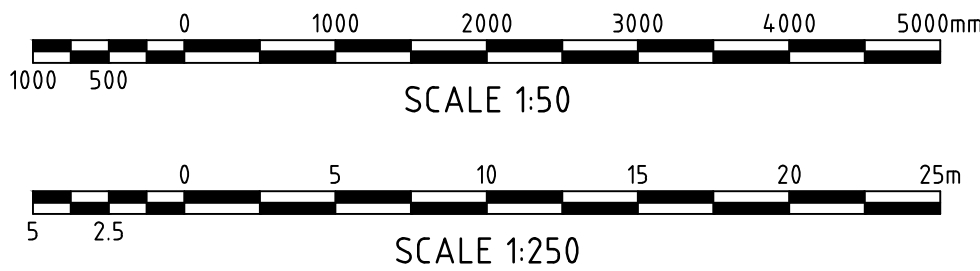
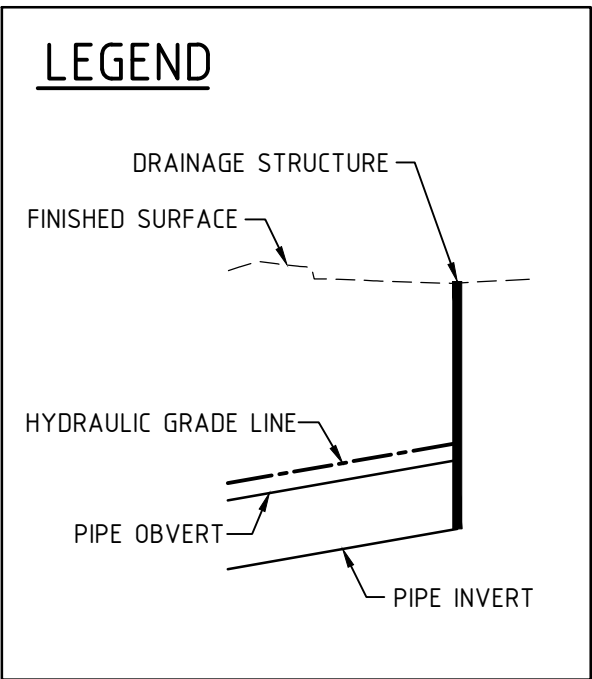
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PROJECT MANAGEMENT

SUITE 26
11 - 13 BROOKHOLLOW AVE
BAULKHAM HILLS NSW 2153

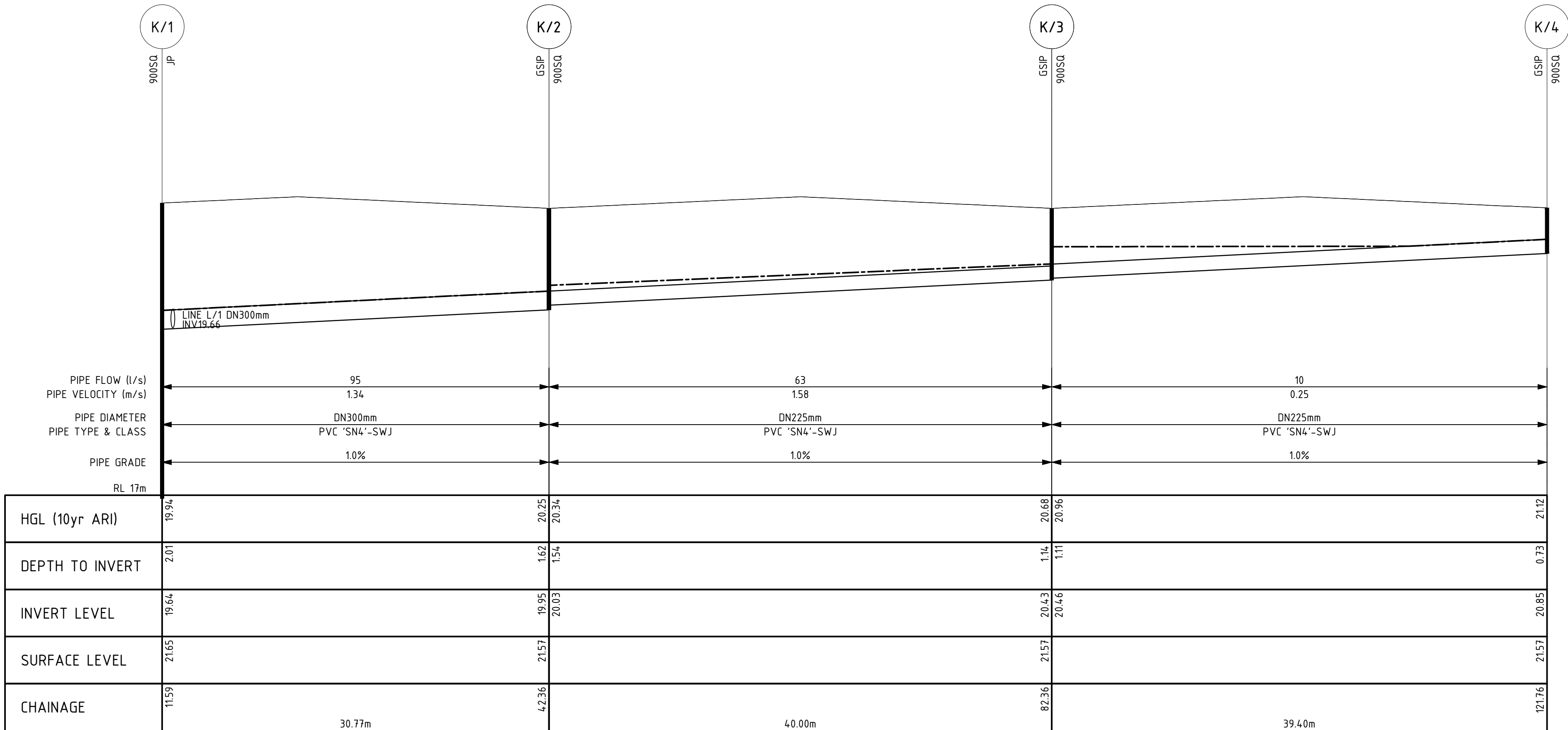
PHONE: (02) 9680 3100
FAX: (02) 9634 6989
ABN 21 118 134 240

DESIGNER	W.M.	DATE	22/08/17
ENGINEER	X.P.	LGA	WOLLONGONG
VERIFIER	A.M.	SCALE @ A1	AS NOTED
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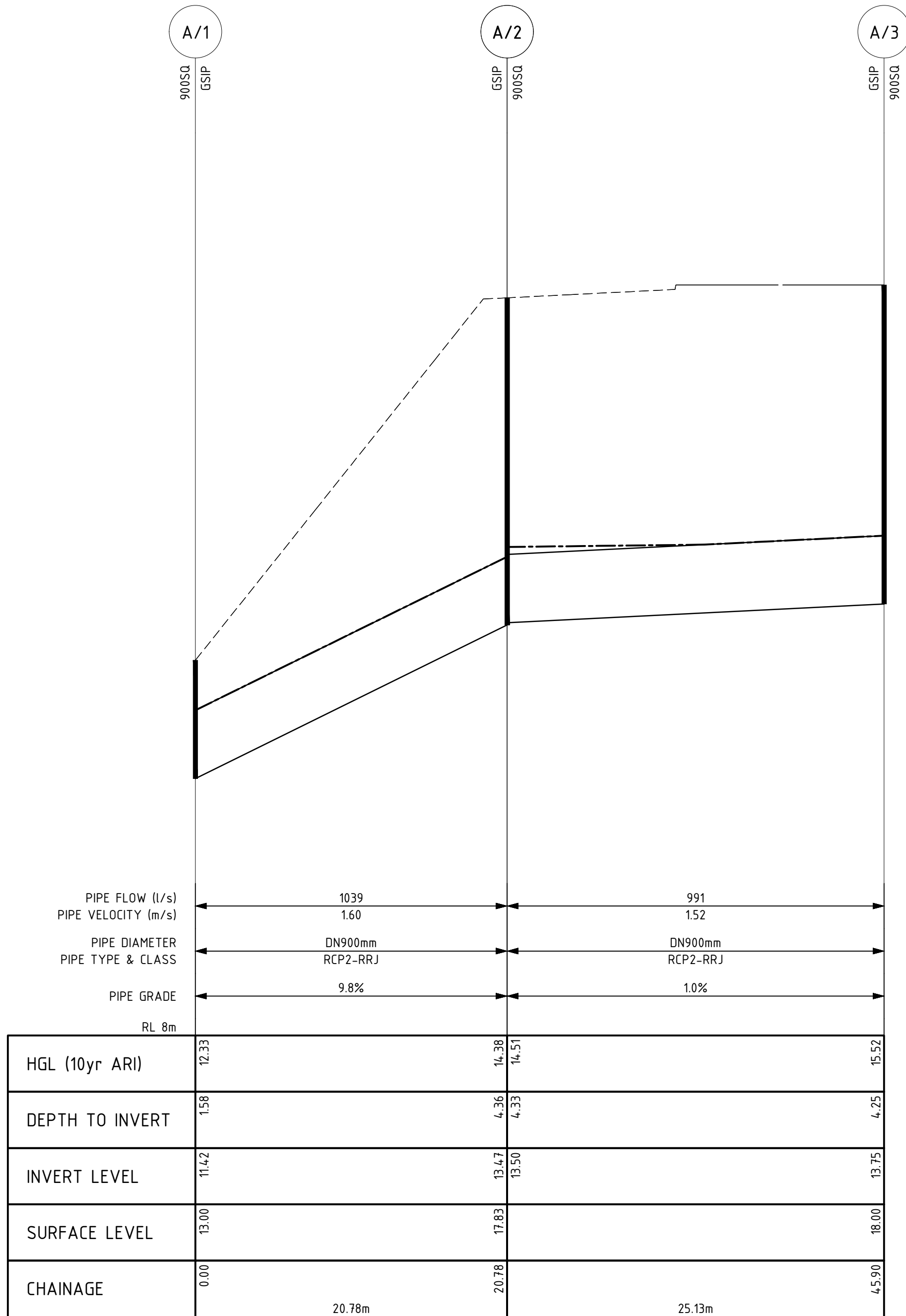
BUNNINGS WAREHOUSE KEMBLA GRANGE			
STORMWATER DRAINAGE PIPE LONGITUDINAL SECTIONS - SHEET 3			
STATUS	DEVELOPMENT APPLICATION	DRAWING No.	01327_C623
REVISION			01



NOT FOR CONSTRUCTION



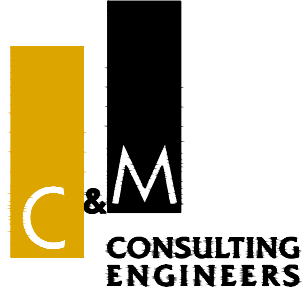
LINE K
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LINE A
1:250(H) & 1:50(V)

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REV.	DES.	DATE	VER.	DESCRIPTION

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PROJECT MANAGEMENT

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BAULKHAM HILLS NSW 2153

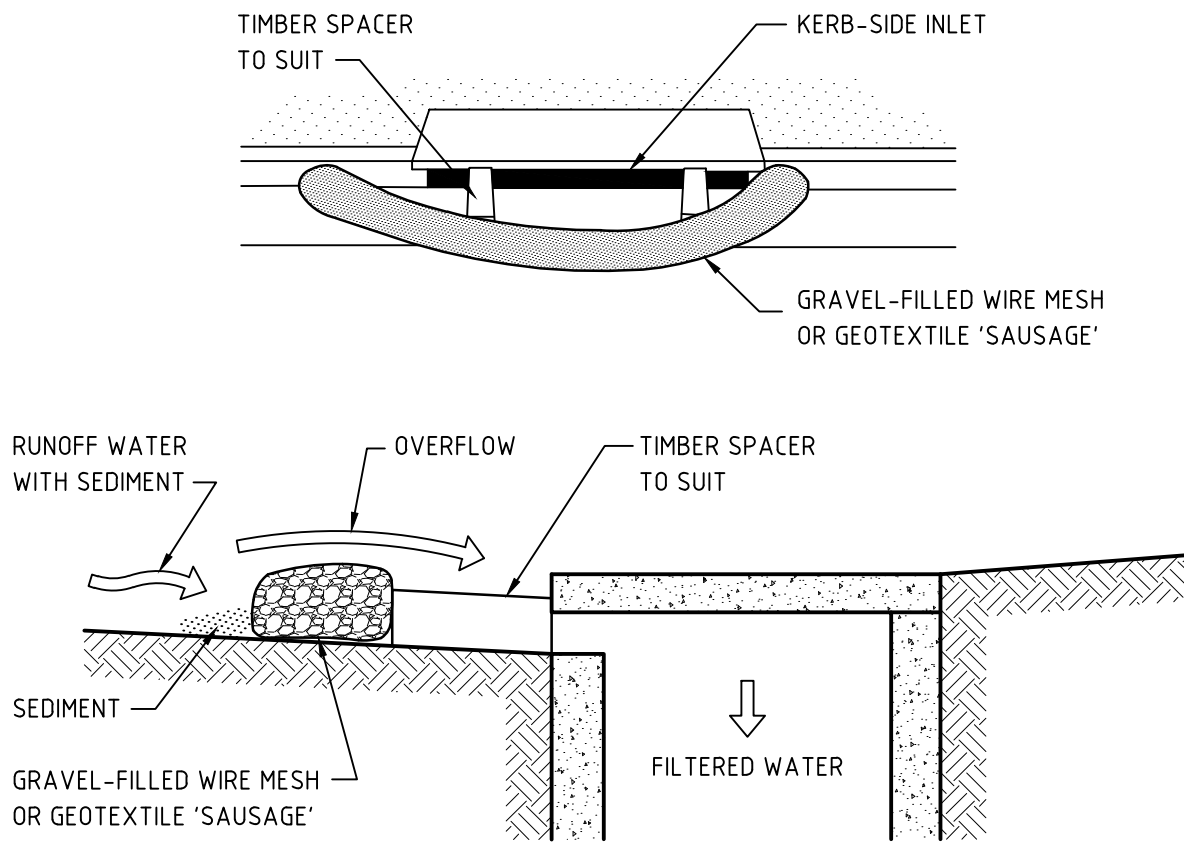
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FAX: (02) 9634 6989
ABN 21 118 134 240

DESIGNER	W.M.	DATE	22/08/17
ENGINEER	X.P.	LGA	WOLLONGONG
VERIFIER	A.M.	SCALE @ A1	AS NOTED
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BUNNINGS WAREHOUSE KEMBLA GRANGE

STORMWATER DRAINAGE
PIPE LONGITUDINAL SECTIONS - SHEET 4

STATUS DEVELOPMENT APPLICATION DRAWING No. 01327_C624 REVISION 01

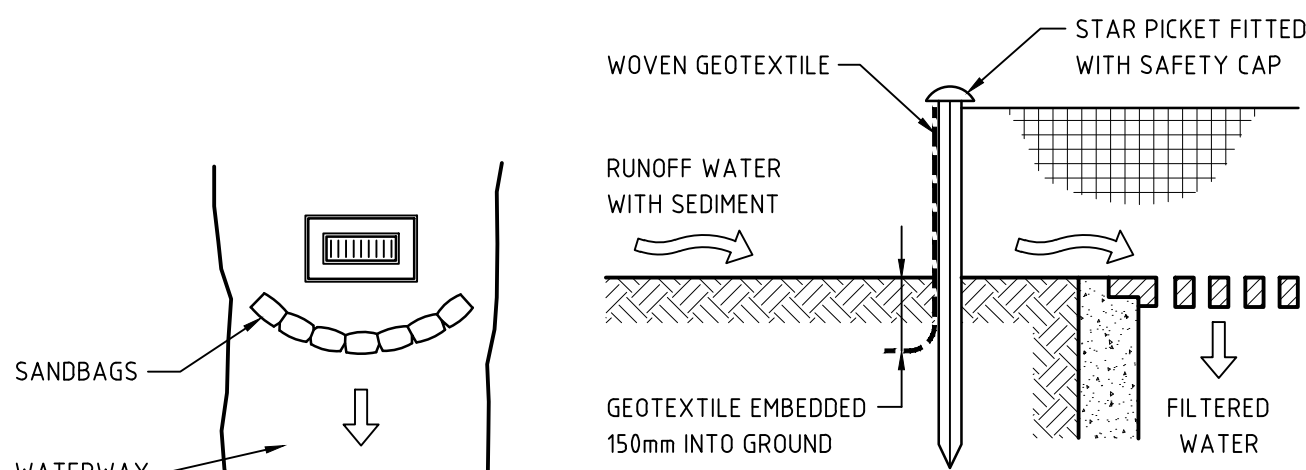
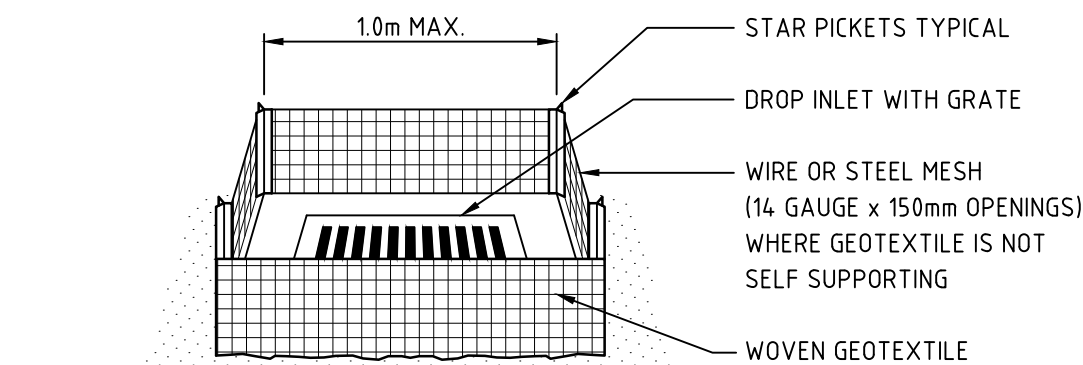


CONSTRUCTION NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL INLET FILTER DETAIL

NOT TO SCALE



FOR DROP INLETS AT NON-SAG POINTS, SANDBAGS, EARTH BANK OR EXCAVATION SHALL BE USED TO CREATE ARTIFICIAL SAG POINT

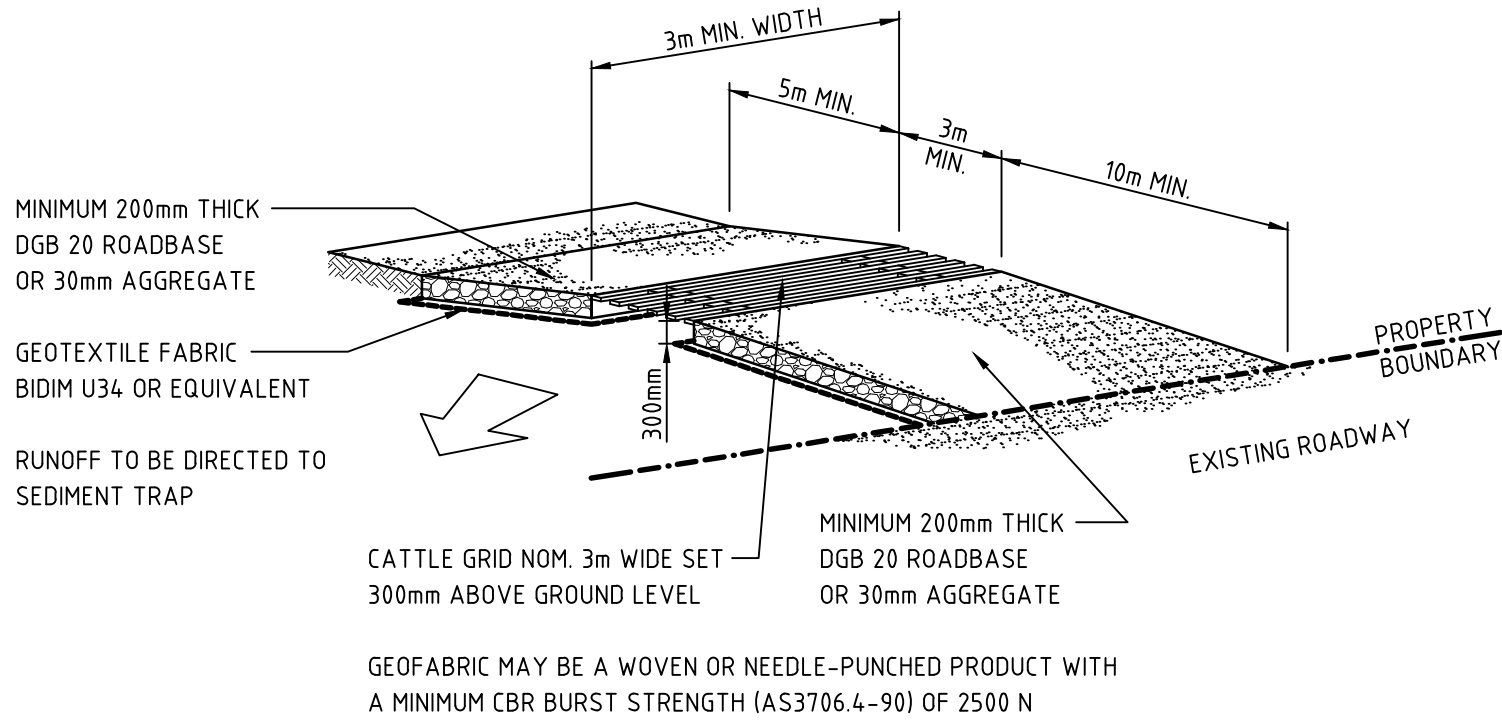
CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
3. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER DETAIL

FOR PITS WITHIN LANDSCAPED AREAS

NOT TO SCALE

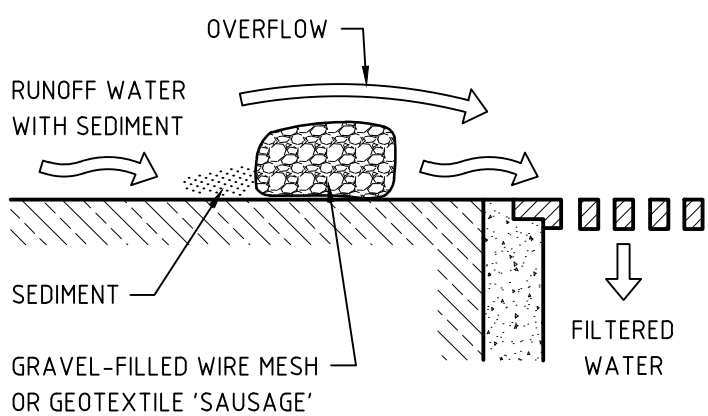
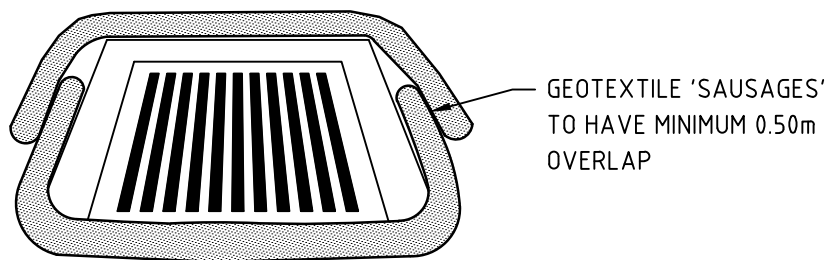


CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15m LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3m WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS WITH SHAKER GRID DETAIL

NOT TO SCALE



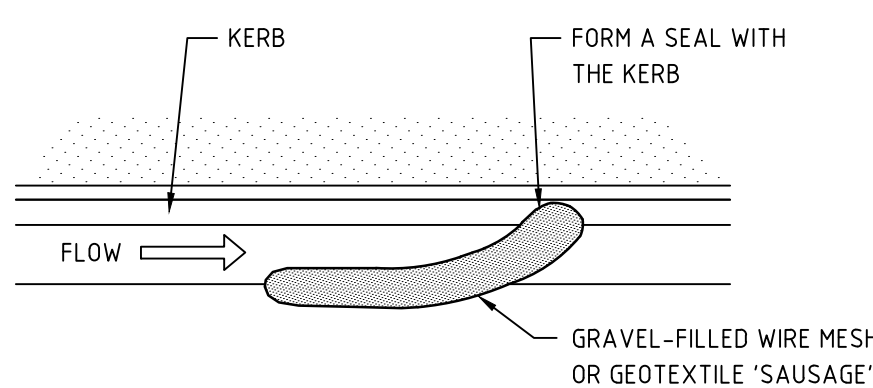
CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER DETAIL

FOR PITS WITHIN PAVEMENT AREAS

NOT TO SCALE

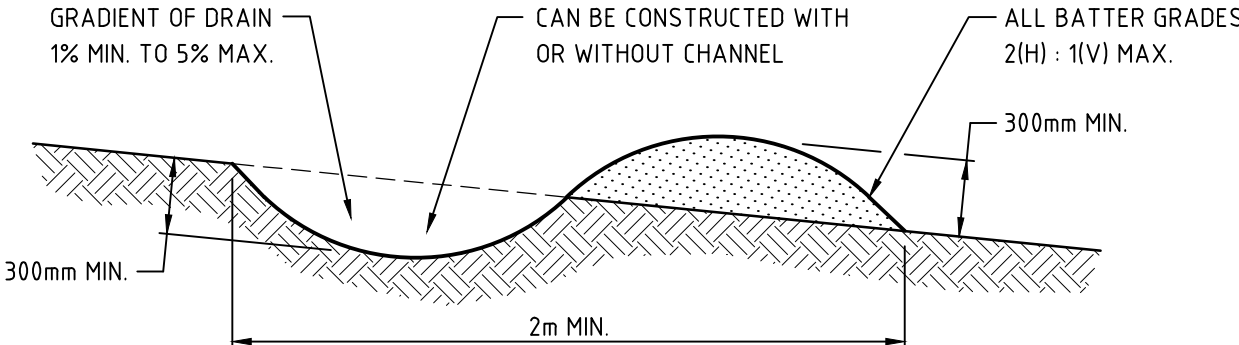


CONSTRUCTION NOTES:

1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH APPROXIMATELY 1.0m IN LENGTH AND FILL IT WITH 25mm TO 50mm GRAVEL.
2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
3. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE KERB.
4. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL KERB FILTER DETAIL

NOT TO SCALE



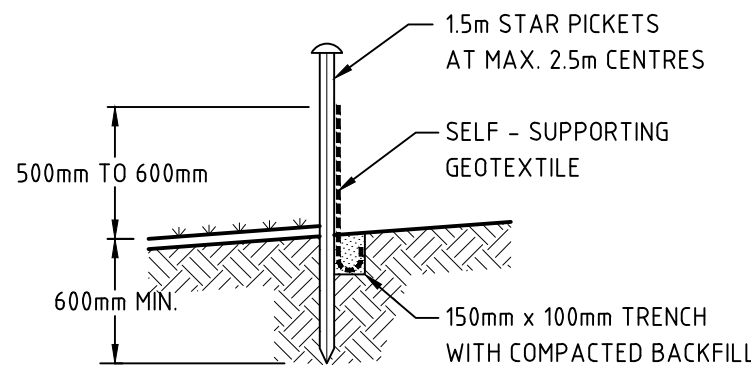
NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE UPSLOPE LENGTH IS 80 METRES.

CONSTRUCTION NOTES:

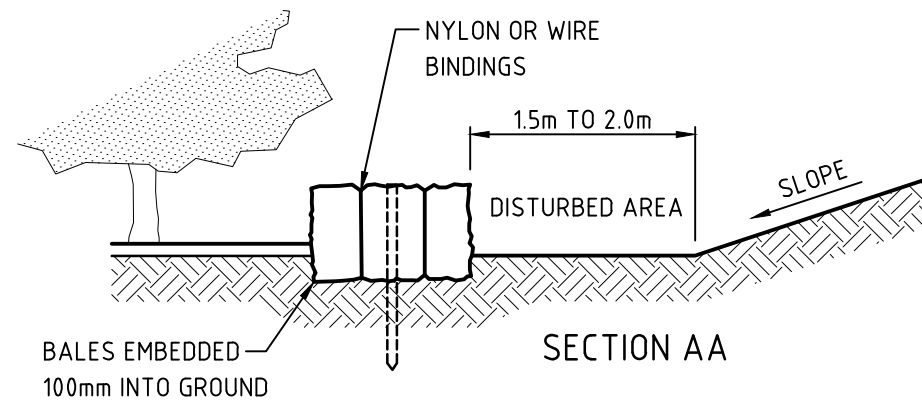
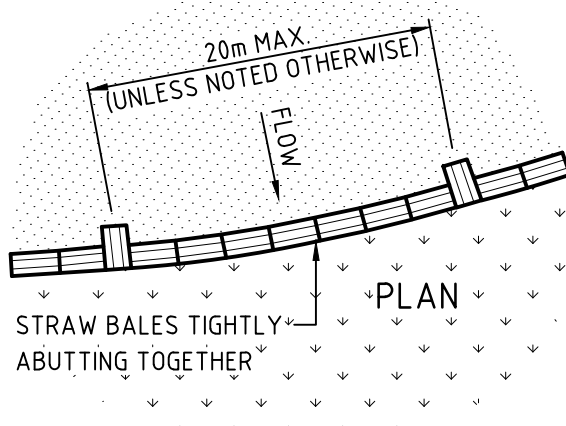
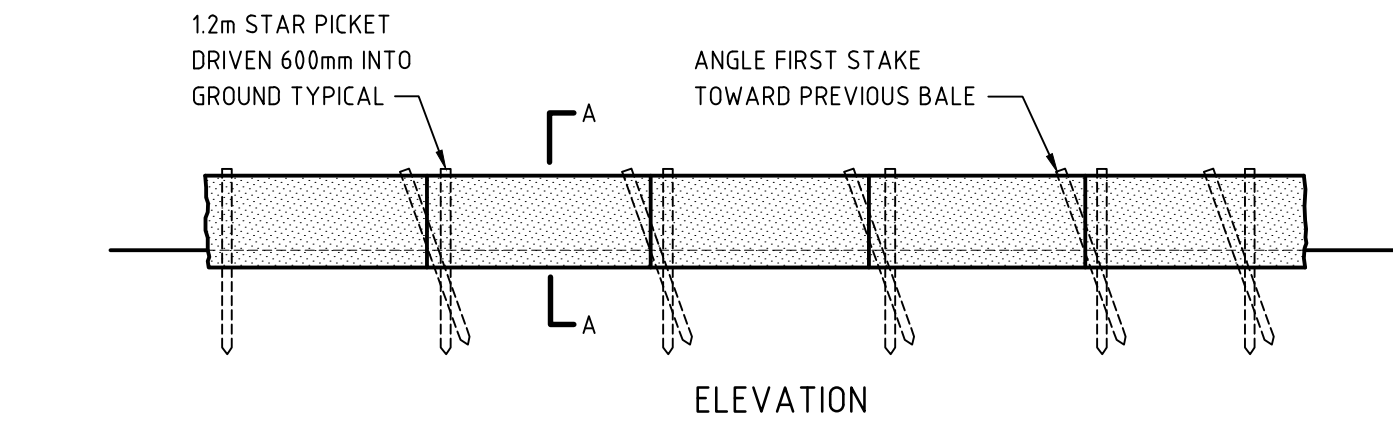
1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

TEMPORARY DIVERSION CHANNEL (LOW FLOW)

NOT TO SCALE



SECTION DETAIL

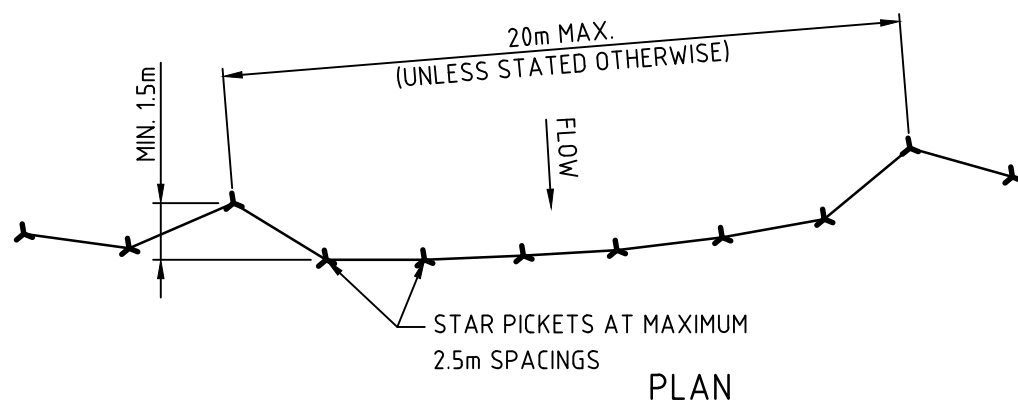


CONSTRUCTION NOTES:

1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE.
2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS ARE TO BE PLACED PARALLEL TO GROUND.
3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
4. EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 12m STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.
5. WHERE STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE THE BALES ARE PLACED 1.0m TO 2.0m DOWNSLOPE FROM THE TOE.
6. ESTABLISH A MAINTENANCE PROGRAMME THAT ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.

STRAW BALE FILTER DETAIL

NOT TO SCALE



CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 15 METRE LONG STAR PICKETS INTO THE GROUND AT 25 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150-mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE DETAIL

NOT TO SCALE

01	W.M.	22/08/17	A.M.	ISSUED FOR DA APPROVAL
REV.	DES.	DATE	VER.	DESCRIPTION

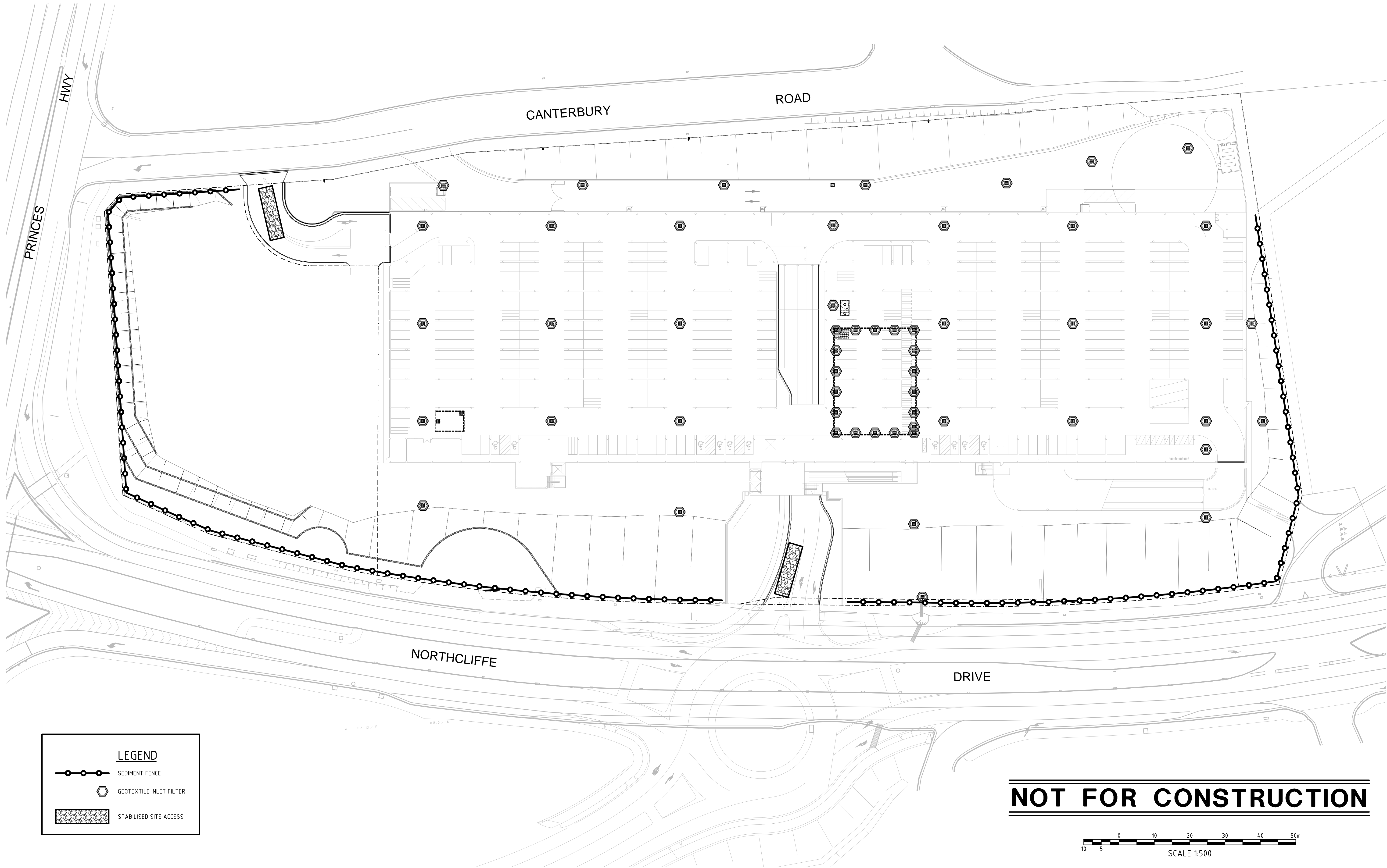
CLIENT

CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT
SUITE 26 11 - 13 BROOKHOLLOW AVE BAULKHAM HILLS NSW 2153
PHONE: (02) 9680 3100 FAX: (02) 9634 6989 ABN 21 118 134 240

DESIGNER	W.M.	DATE	22/08/17
ENGINEER	X.P.	LGA	WOLLONGONG
VERIFIER	A.M.	SCALE @ A1	N/A
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BUNNINGS WAREHOUSE KEMBLA GRANGE			
SEDIMENT & EROSION CONTROL DETAILS			
STATUS	DEVELOPMENT APPLICATION	DRAWING No.	01327_C702
REVISION	01		

CAD FILENAME: C:\WAZ\Wollongong Projects\01327\DA 2017\01327_C701.dwg



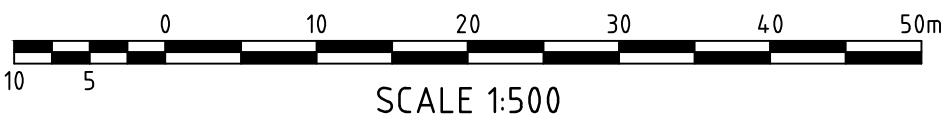
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SEDIMENT FENCE

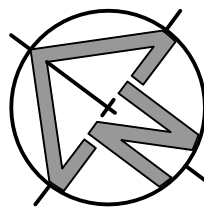
GEOTEXTILE INLET FILTER

STABILISED SITE ACCESS

NOT FOR CONSTRUCTION



REV.	DES.	DATE	VER.	DESCRIPTION
02	W.M.	30/08/17	A.M.	GENERAL AMENDMENTS, ISSUED FOR DA APPROVAL
01	W.M.	22/08/17	A.M.	ISSUED FOR DA APPROVAL



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ENGINEERING DESIGN AND
PROJECT MANAGEMENT

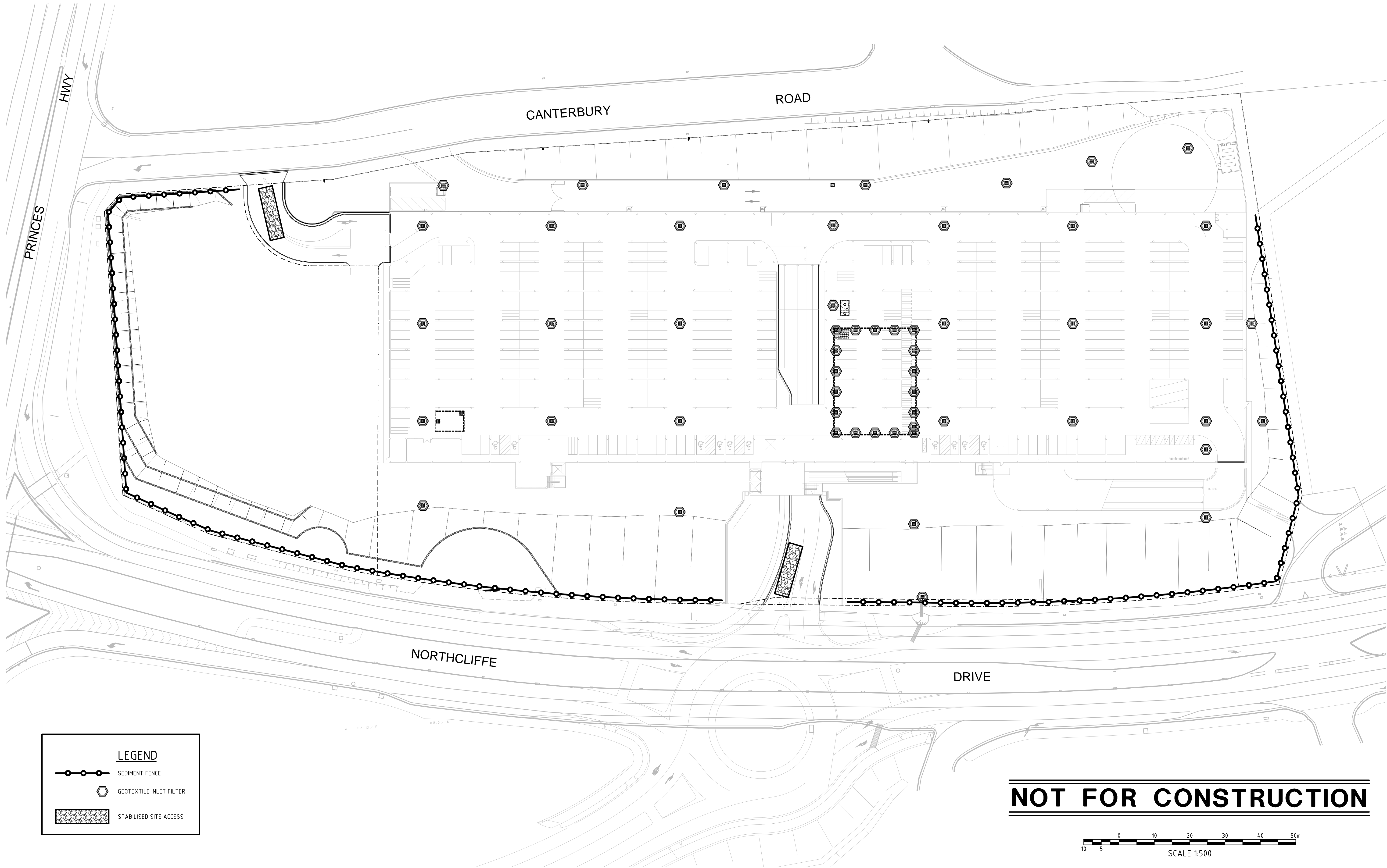
SUITE 26
11 - 13 BROOKHOLLOW AVE
BAULKHAM HILLS NSW 2153

PHONE: (02) 9680 3100
FAX: (02) 9634 6989
ABN 21 118 134 240

DESIGNER	W.M.	DATE	22/08/17
ENGINEER	X.P.	LGA	WOLLONGONG
VERIFIER	A.M.	SCALE @ A1	1:500
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BUNNINGS WAREHOUSE KEMBLA GRANGE			
SEDIMENT & EROSION CONTROL PLAN			
STATUS	DEVELOPMENT APPLICATION	DRAWING No.	01327_C701
REVISION	02		

CAD FILENAME: C:\WAZ\Wollongong Projects\01327\DA 2017\01327_C701.dwg



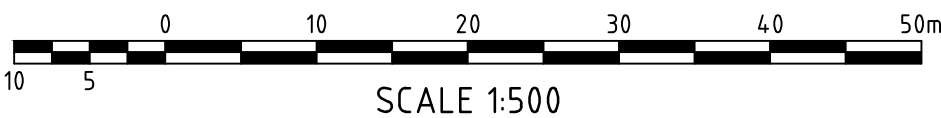
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SEDIMENT FENCE

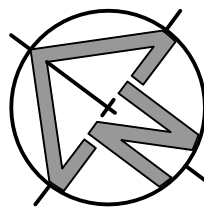
GEOTEXTILE INLET FILTER

STABILISED SITE ACCESS

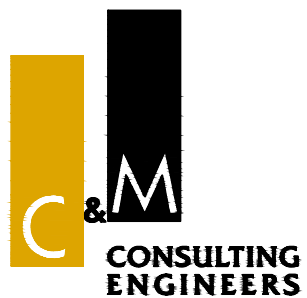
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REV.	DES.	DATE	VER.	DESCRIPTION
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01	W.M.	22/08/17	A.M.	ISSUED FOR DA APPROVAL



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CIVIL AND HYDRAULIC
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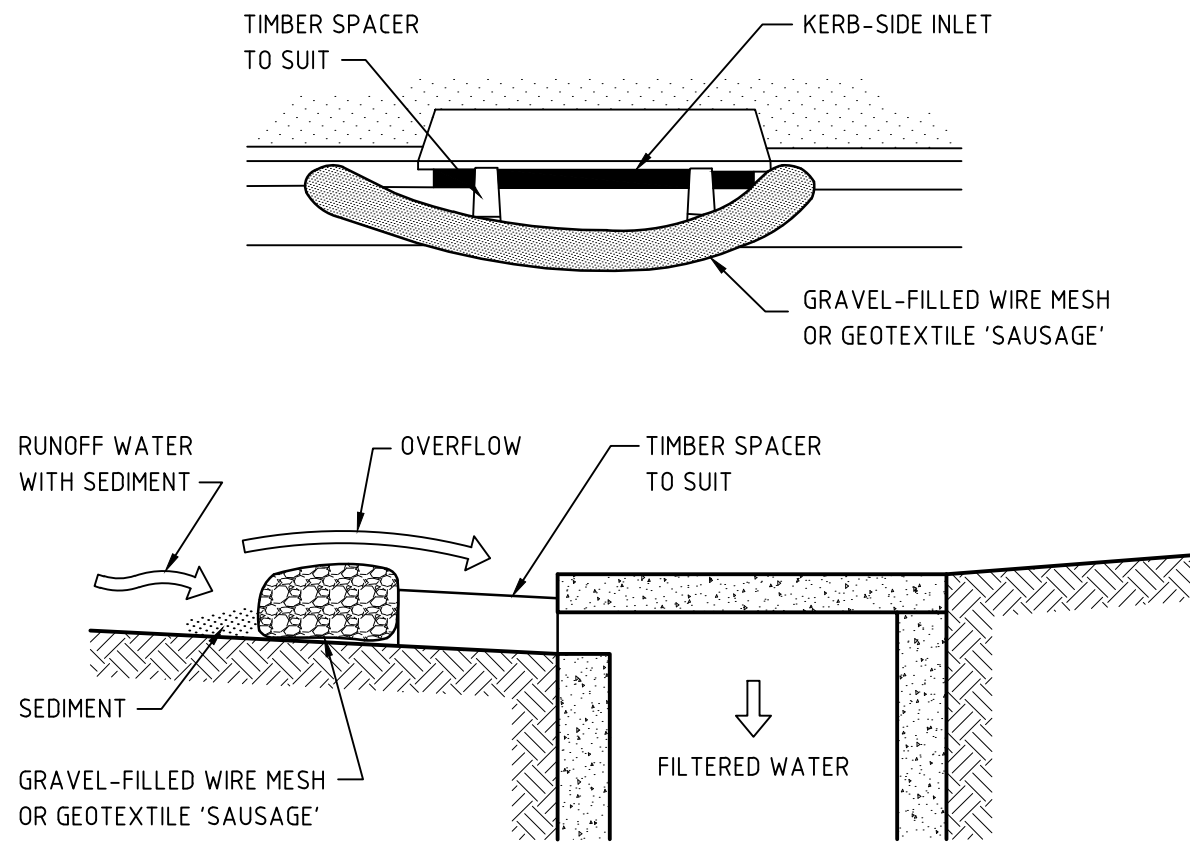
PHONE: (02) 9680 3100
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ENGINEER	X.P.	LGA	WOLLONGONG
VERIFIER	A.M.	SCALE @ A1	1:500
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BUNNINGS WAREHOUSE KEMBLA GRANGE

SEDIMENT & EROSION CONTROL PLAN

STATUS DEVELOPMENT APPLICATION DRAWING No. 01327_C701 REVISION 02

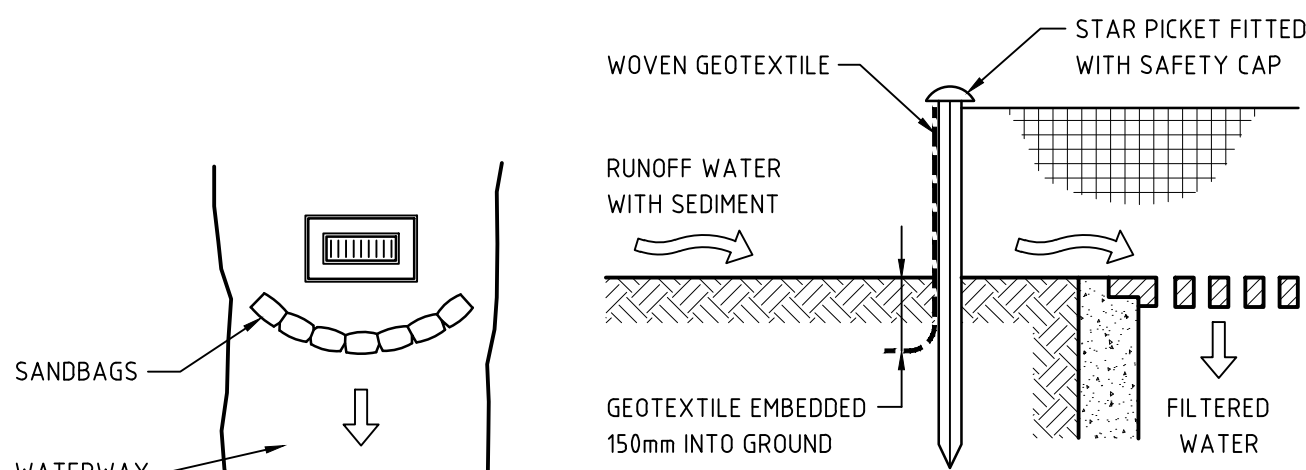
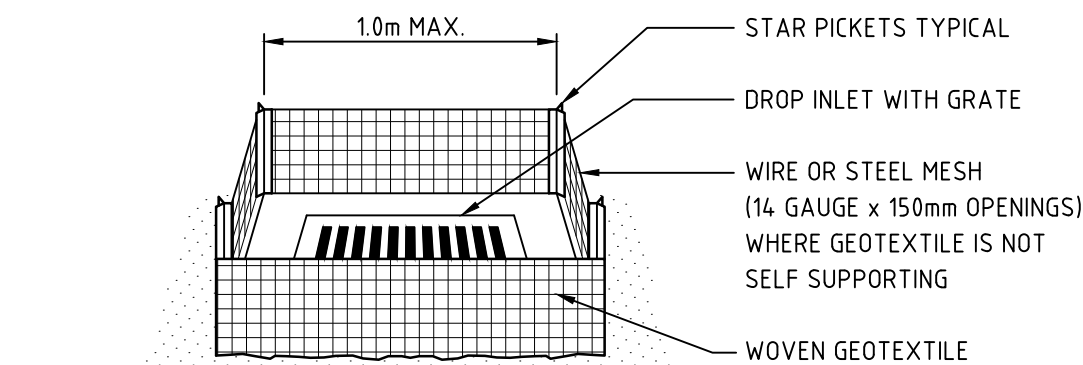


CONSTRUCTION NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL INLET FILTER DETAIL

NOT TO SCALE



FOR DROP INLETS AT NON-SAG POINTS, SANDBAGS, EARTH BANK OR EXCAVATION SHALL BE USED TO CREATE ARTIFICIAL SAG POINT

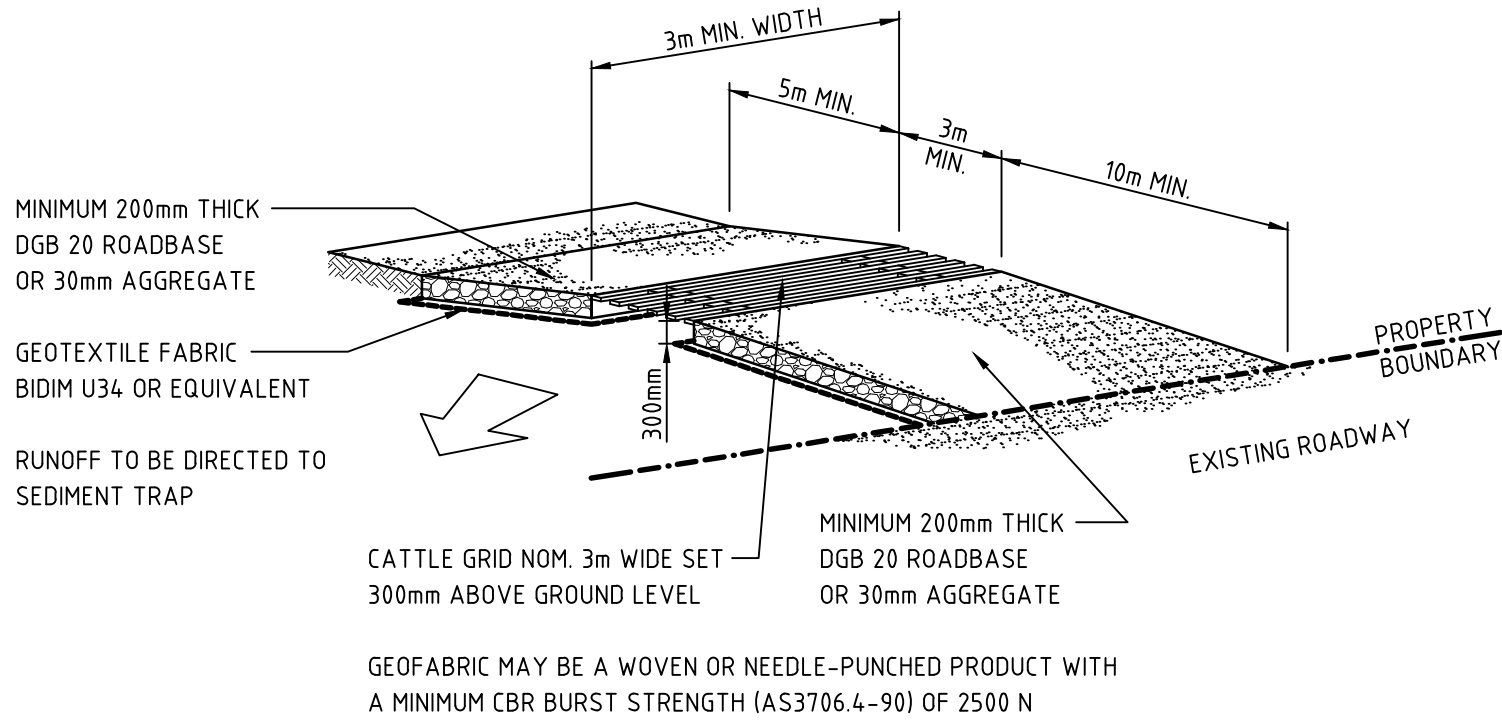
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1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
3. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER DETAIL

FOR PITS WITHIN LANDSCAPED AREAS

NOT TO SCALE

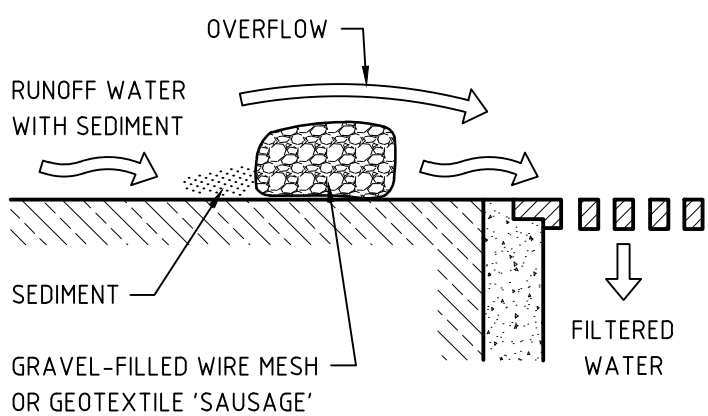
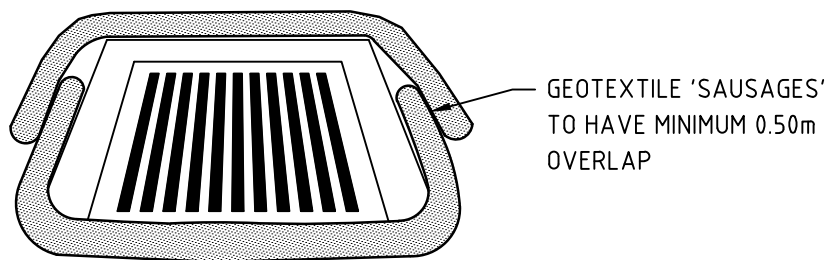


CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15m LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3m WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS WITH SHAKER GRID DETAIL

NOT TO SCALE



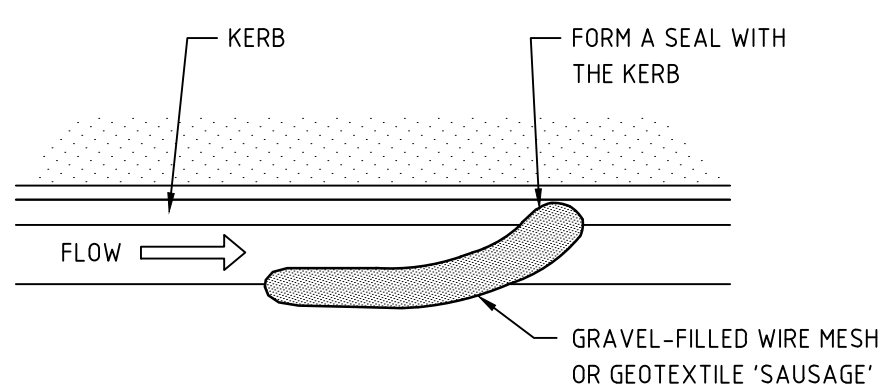
CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER DETAIL

FOR PITS WITHIN PAVEMENT AREAS

NOT TO SCALE

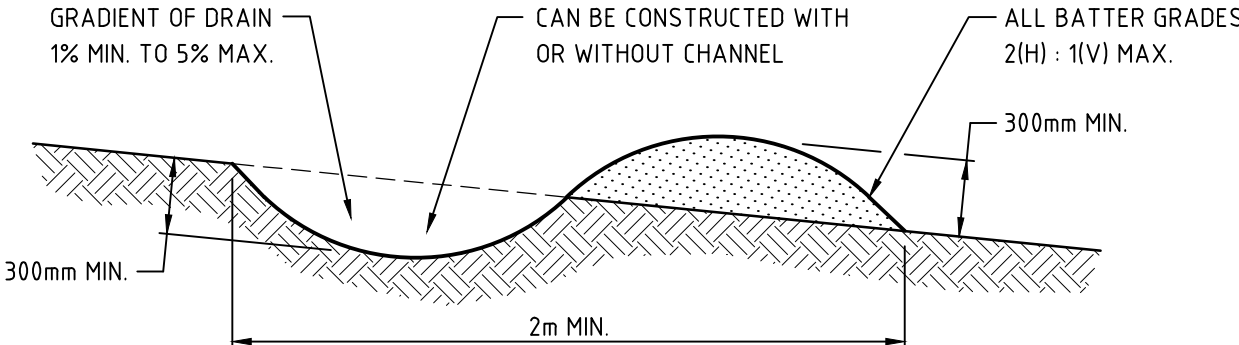


CONSTRUCTION NOTES:

1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH APPROXIMATELY 10m IN LENGTH AND FILL IT WITH 25mm TO 50mm GRAVEL.
2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
3. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE KERB.
4. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL KERB FILTER DETAIL

NOT TO SCALE



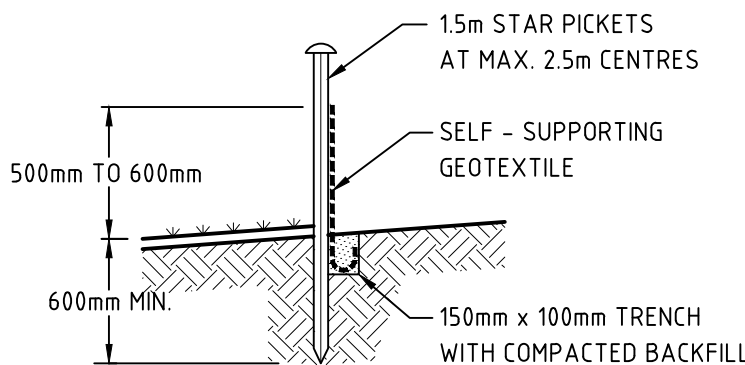
NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE UPSLOPE LENGTH IS 80 METRES.

CONSTRUCTION NOTES:

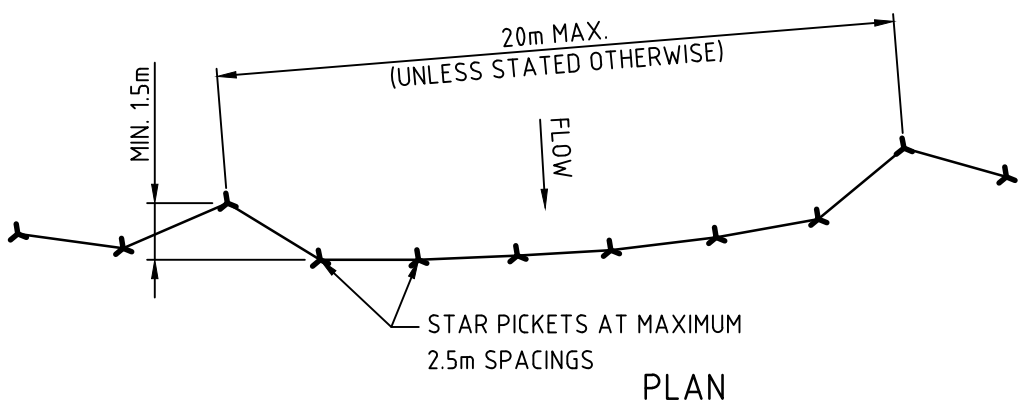
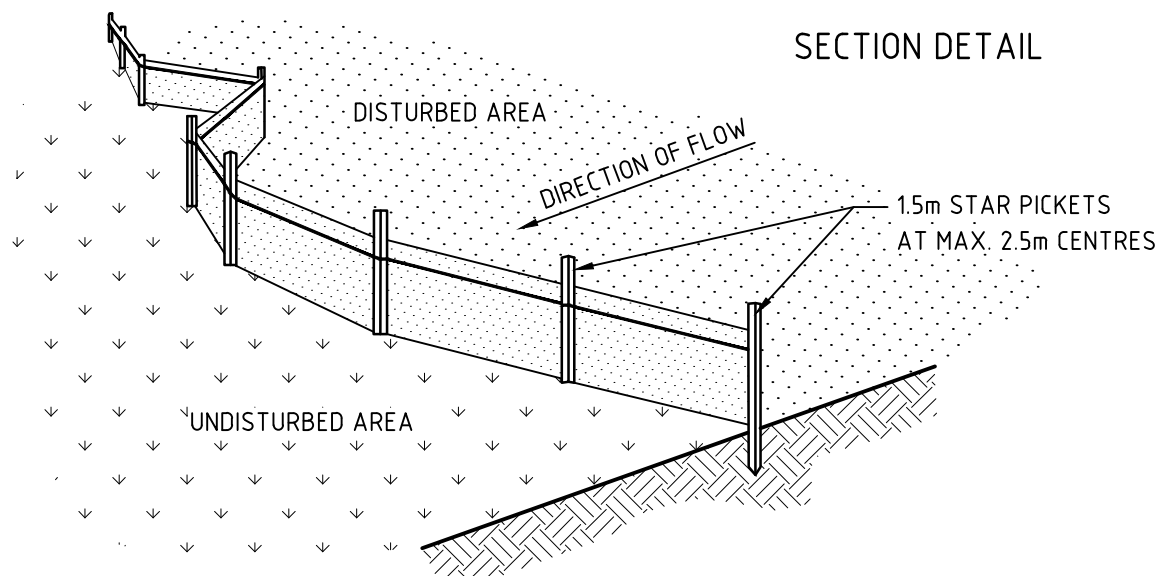
1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

TEMPORARY DIVERSION CHANNEL (LOW FLOW)

NOT TO SCALE



SECTION DETAIL



CONSTRUCTION NOTES:


1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 15 METRE LONG STAR PICKETS INTO THE GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150-mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE DETAIL

NOT TO SCALE

01	W.M.	22/08/17	A.M.	ISSUED FOR DA APPROVAL
REV.	DES.	DATE	VER.	DESCRIPTION

CLIENT	
	

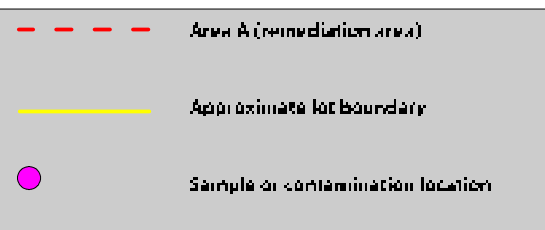
	
CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT	
SUITE 26 11 - 13 BROOKHOLLOW AVE BAULKHAM HILLS NSW 2153	
PHONE: (02) 9680 3100 FAX: (02) 9634 6989 ABN 21 118 134 240	

DESIGNER	W.M.	DATE	22/08/17
ENGINEER	X.P.	LGA	WOLLONGONG
VERIFIER	A.M.	SCALE @ A1	N/A
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BUNNINGS WAREHOUSE KEMBLA GRANGE			
SEDIMENT & EROSION CONTROL DETAILS			
STATUS	DEVELOPMENT APPLICATION	DRAWING No.	01327_C702
REVISION	01		



This plan should be read in conjunction with the EIS report.



SCALE (m) @ A3: 0 7 14 21 28 35

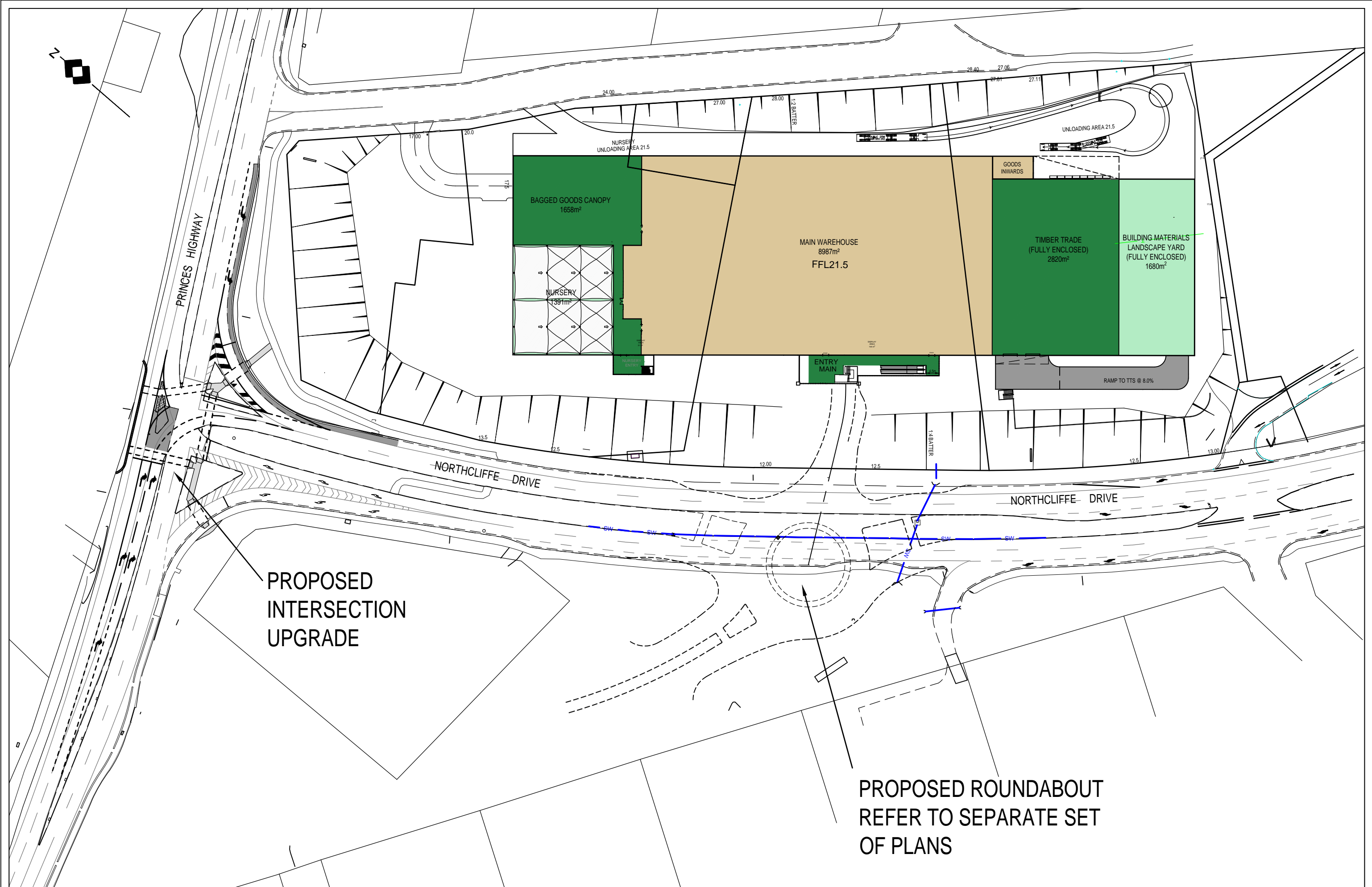
EIS
ENVIRONMENTAL
INVESTIGATION
SERVICES
 www.kgroup.net.au

REMEDIATION PLAN

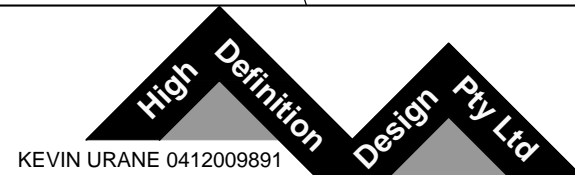
638-650 NORTHCLIFFE DRIVE &
 1-9 CANTERBURY ROAD, KEMBLA GRANGE

PROJECT ID: E29056KM

Fig 4

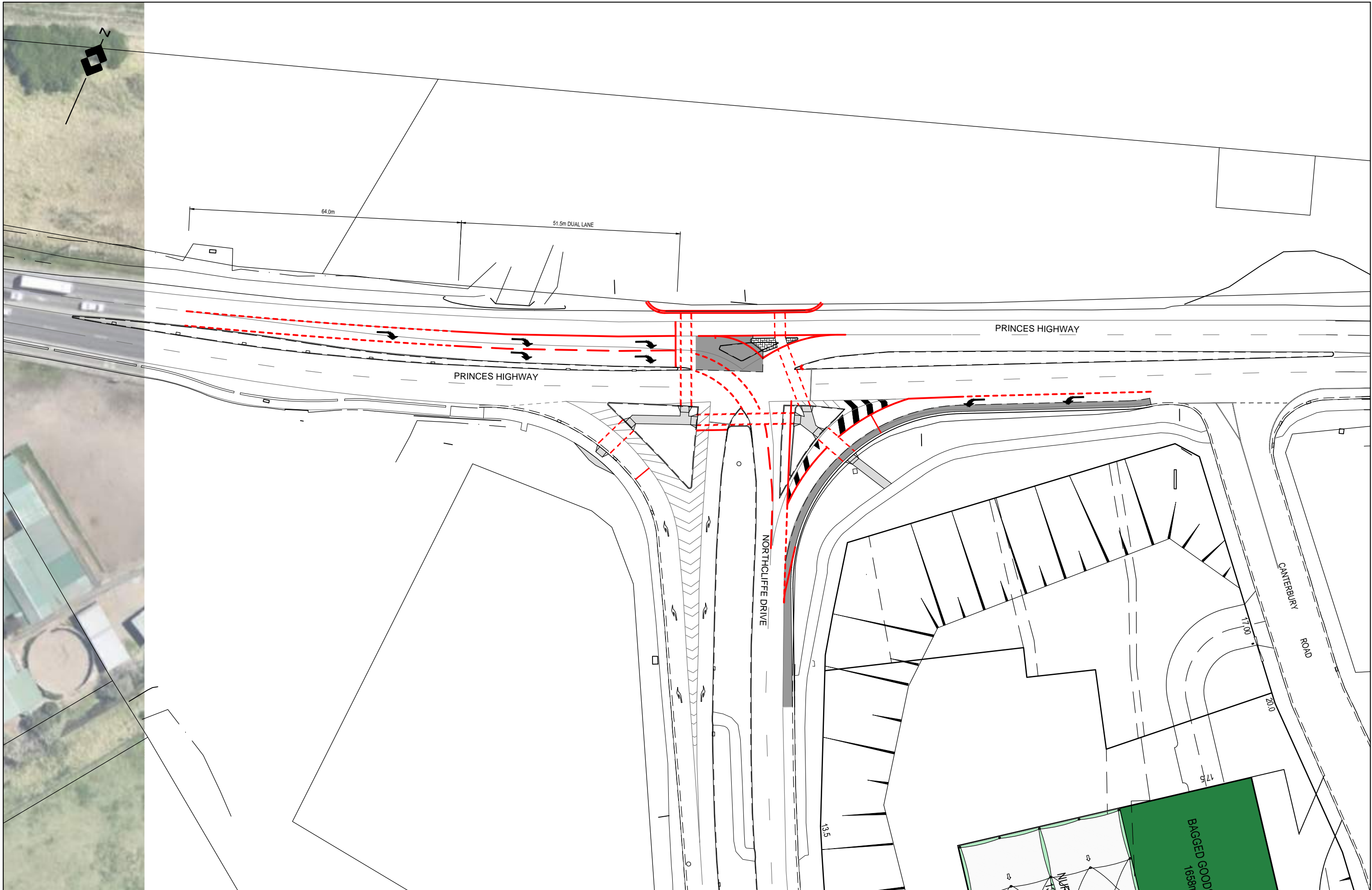


TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
OVERALL CONCEPT PLAN
CLIENT: BUNNINGS GROUP LIMITED

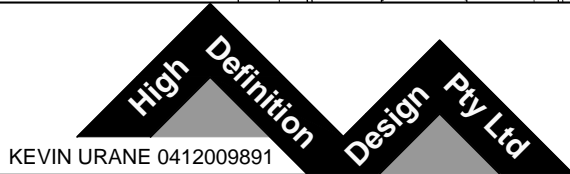


NOTE:
ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

Date: 24.01.17		Scale: 1:600 A1		Designed: KU		Project No	
Cad Ref: HD101 r8 intersection works						HD101	
8	ADD PEDESTRIAN CROSSING	KU	21.11.17	Drawing No	Revision		
7	AMEND BUILDING	KU	21.07.17				
6	AMEND LAYOUT AFTER SURVEY	KU	24.01.17				
No	Amendment	Drawn	Date	INT1		8	



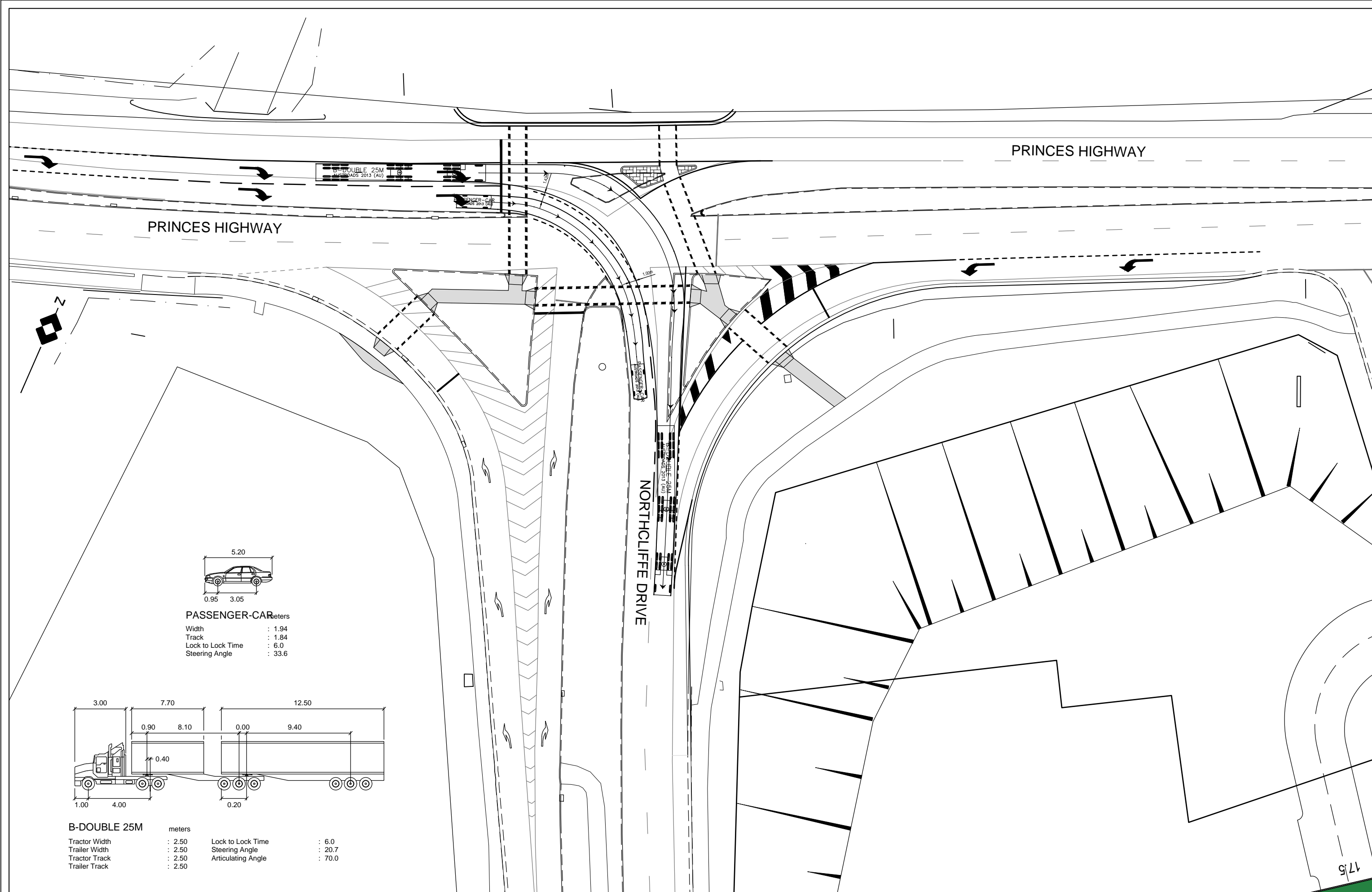
TITLE: PROPOSED INTERSECTION UPGRADE
PRINCES HIGHWAY AND NORTHCLIFFE DRIVE
KEMBLA GRANGE
OVERALL INTERSECTION PLAN
CLIENT: BUNNINGS GROUP LIMITED



NOTE:
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PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE
PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE
UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

0 5 10 15 20 25m
1:250

Date: 24.01.17		Scale: 1:400 A1		Designed: KU		Project No	
Cad Ref: HD101 r8 intersection works						HD101	
8	ADD PEDESTRIAN CROSSING	KU	22.11.17	Drawing No	Revision		
7	AMEND BUILDING	KU	21.7.17				
6	CONCEPT INTERSECTION UPGRADE	KU	24.01.17				
No	Amendment	Drawn	Date			INT2 8	

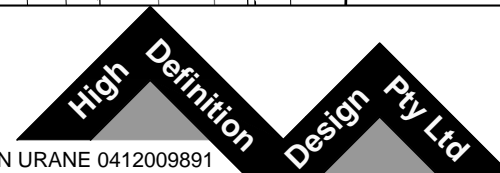


TITLE: PROPOSED INTERSECTION UPGRADE
PRINCES HIGHWAY AND NORTHCLIFFE DRIVE
KEMBLA GRANGE
B-DOUBLE TURNING MOVEMENTS

CLIENT: BUNNINGS GROUP LIMITED

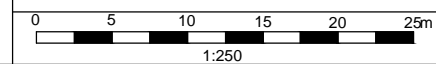


KEVIN URANE 0412009891



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Date:	24.01.17	Scale:	1:250 A1
Cad Ref:	HD101 r8 intersection works		

Designed: KU

Project No	
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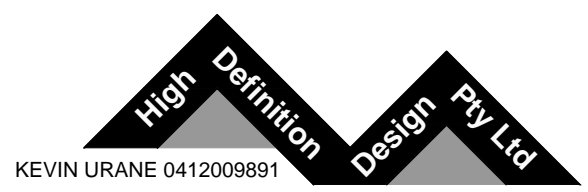
Project No
HD101

17	Drawing No	Revision
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17	INT5	8
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PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE
KEMBLA DRIVE, NSW

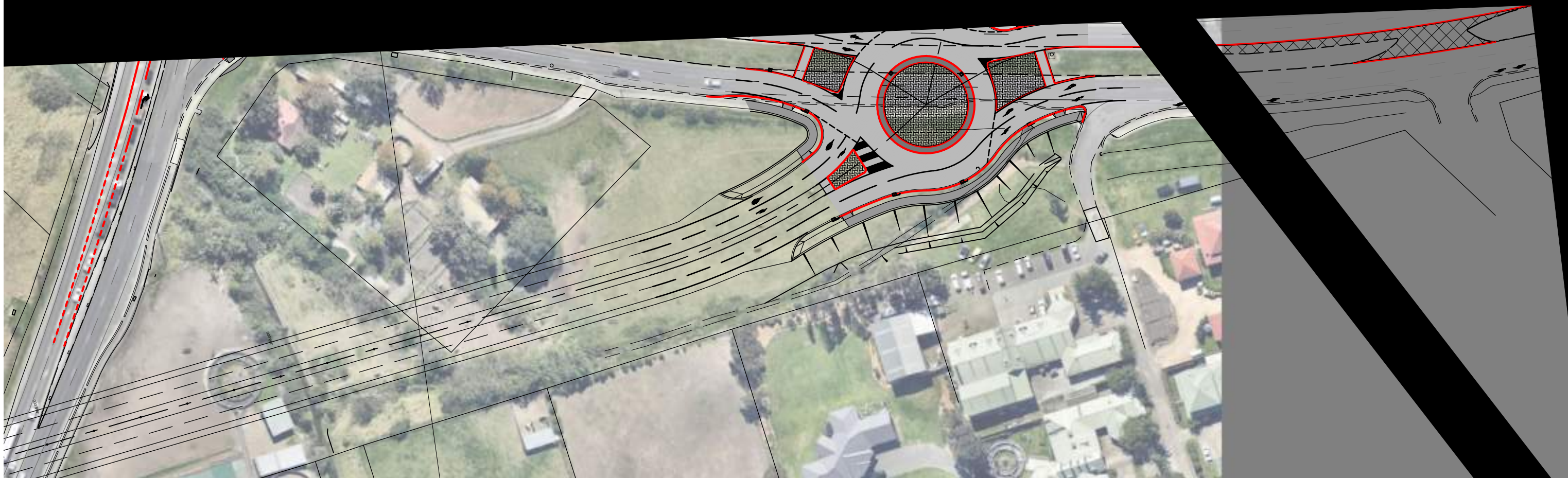
BUNNINGS GROUP LIMITED

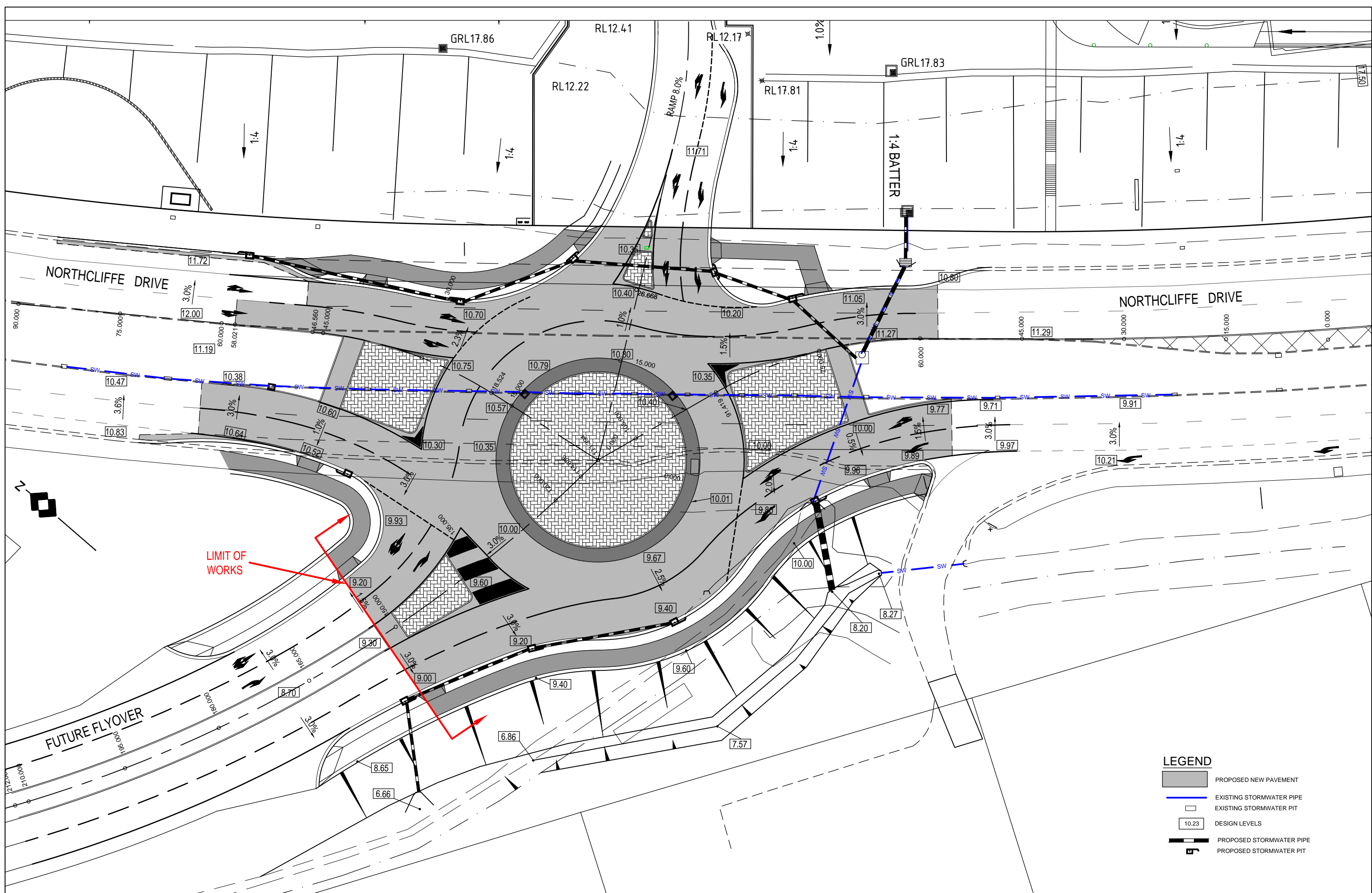


DRAWING SCHEDULE JOB NUMBER HD101

DWG No.	SHEET TITLE	REV
HD00	COVER SHEET	11
HD01	OVERALL PLAN	11
HD02	ROUNDABOUT LAYOUT PLAN	11
HD03	CONCEPT DESIGN LEVELS	11
HD04	EXISTING SERVICES PLAN	11
HD05	PROPOSED RELOCATED SERVICES PLAN	11
HD06	PROPOSED LONGITUDINAL SECTIONS	11
HD07	VEHICLE MOVEMENT PLAN 1 OF 9	11
HD08	VEHICLE MOVEMENT PLAN 2 OF 9	11
HD09	VEHICLE MOVEMENT PLAN 3 OF 9	11
HD10	VEHICLE MOVEMENT PLAN 4 OF 9	11
HD11	VEHICLE MOVEMENT PLAN 5 OF 9	11
HD12	VEHICLE MOVEMENT PLAN 6 OF 9	11
HD13	VEHICLE MOVEMENT PLAN 7 OF 9	11
HD14	VEHICLE MOVEMENT PLAN 8 OF 9	11
HD15	VEHICLE MOVEMENT PLAN 9 OF 9	11
HD16	INTERIM LINEMARKING BEFORE FLYOVER IS CONSTRUCTED	11

CONCEPT DESIGN





TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
CONCEPT ROUNDABOUT DESIGN LEVELS
AND PROPOSED DRAINAGE
CLIENT: BUNNINGS GROUP LIMITED

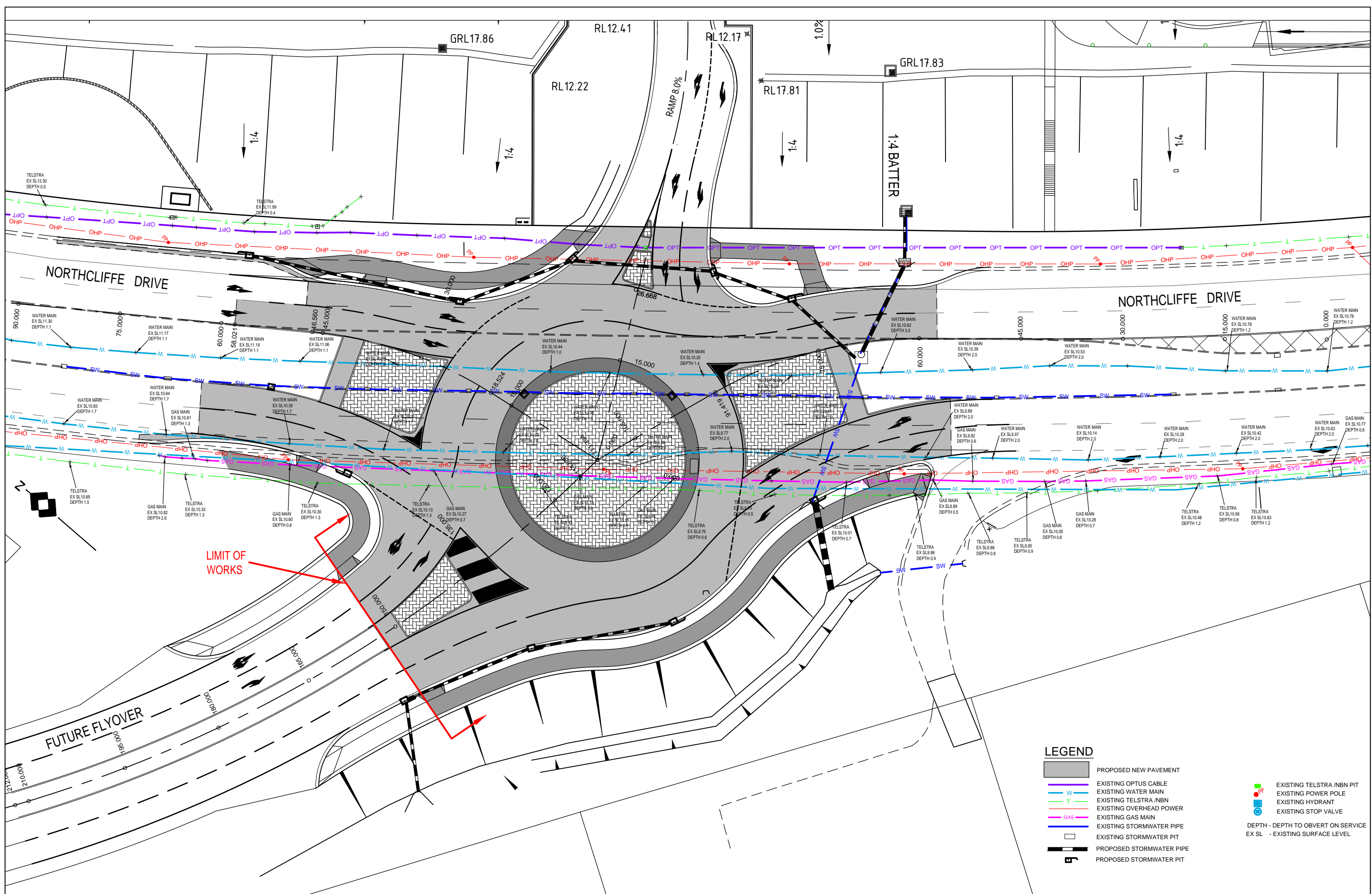


KEVIN URANE 0412009891



NOTE:
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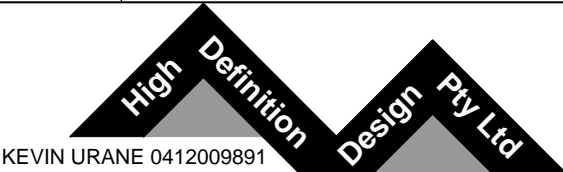
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Cad Ref: HD101 r11 roundabout works				HD101	
8	COUNCIL COMMENTS	KU	07.04.17	Drawing No	Revision
11	AMEND DRAINAGE NOTES	KU	22.11.17		
9	AMEND CARPARK AND WAREHOUSE	KU	24.01.17		
No	Amendment	Drawn	Date	HD03	11



LEGEND

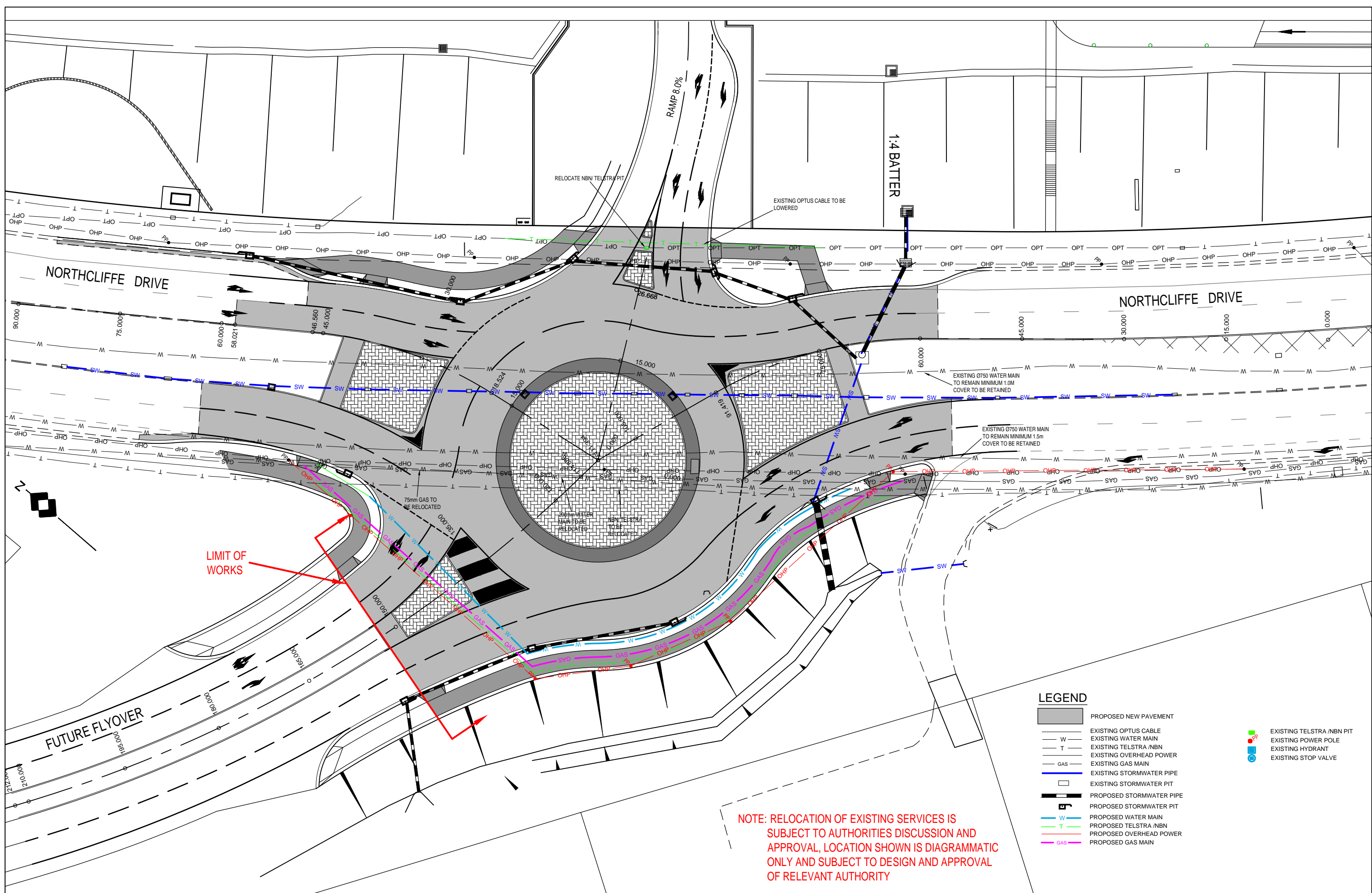
- PROPOSED NEW PAVEMENT
- EXISTING OPTUS CABLE
- EXISTING WATER MAIN
- EXISTING TELSTRA /NBN
- EXISTING OVERHEAD POWER
- EXISTING GAS MAIN
- EXISTING STORMWATER PIPE
- EXISTING STORMWATER PIT
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER PIT
- EXISTING TELSTRA /NBN PIT
- EXISTING POWER POLE
- EXISTING HYDRANT
- EXISTING STOP VALVE
- DEPTH - DEPTH TO OVERT ON SERVICE
- EX SL - EXISTING SURFACE LEVEL

TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
EXISTING SERVICES PLAN
CLIENT: BUNNINGS GROUP LIMITED



NOTE:
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Date:	24.01.17	Scale:	1:250 A1	Designed:	KU	Project No:	HD101
Cad Ref:	HD101 r11	roundabout works				Drawing No:	HD04
8	COUNCIL COMMENTS			KU	07.04.17	Revision:	11
11	AMEND LINEMARKING			KU	22.11.17		
9	AMEND CARPARK AND WAREHOUSE			KU	24.01.17		
No	Amendment			Drawn	Date		



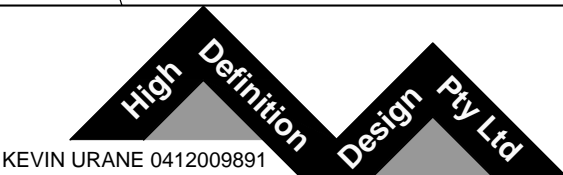
NOTE: RELOCATION OF EXISTING SERVICES IS
SUBJECT TO AUTHORITIES DISCUSSION AND
APPROVAL, LOCATION SHOWN IS DIAGRAMMATIC
ONLY AND SUBJECT TO DESIGN AND APPROVAL
OF RELEVANT AUTHORITY

LEGEND

- PROPOSED NEW PAVEMENT
- EXISTING OPTUS CABLE
- EXISTING WATER MAIN
- EXISTING TELSTRA /NBN
- EXISTING OVERHEAD POWER
- EXISTING GAS MAIN
- EXISTING STORMWATER PIPE
- EXISTING STORMWATER PIT
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER PIT
- PROPOSED WATER MAIN
- PROPOSED TELSTRA /NBN
- PROPOSED OVERHEAD POWER
- PROPOSED GAS MAIN
- EXISTING TELSTRA /NBN PIT
- EXISTING POWER POLE
- EXISTING HYDRANT
- EXISTING STOP VALVE

TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
PROPOSED RELOCATED SERVICES PLAN

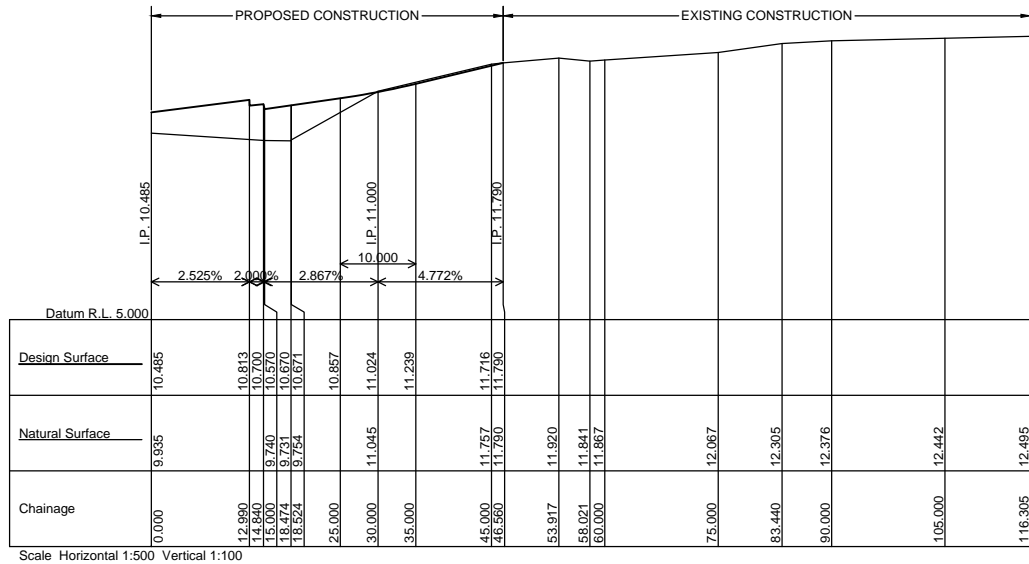
CLIENT: BUNNINGS GROUP LIMITED



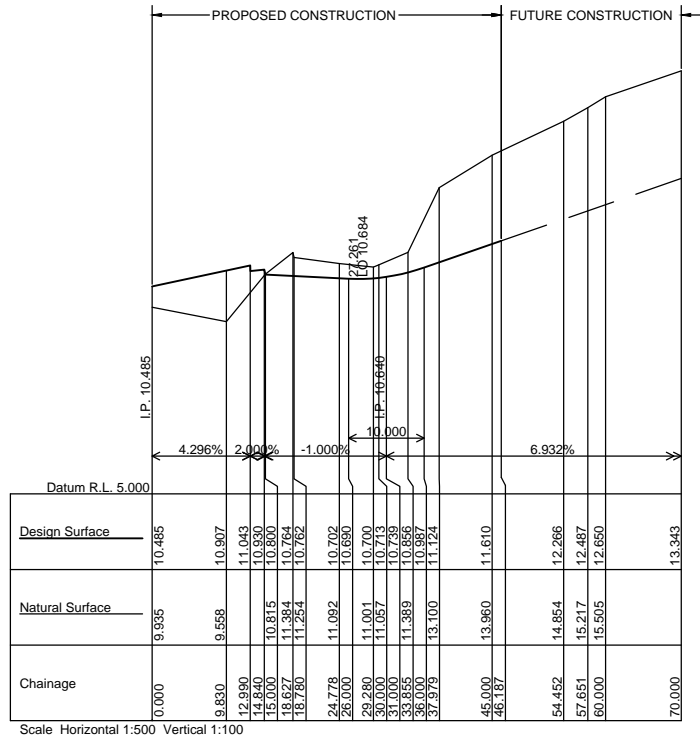
NOTE:
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PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE
PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE
UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

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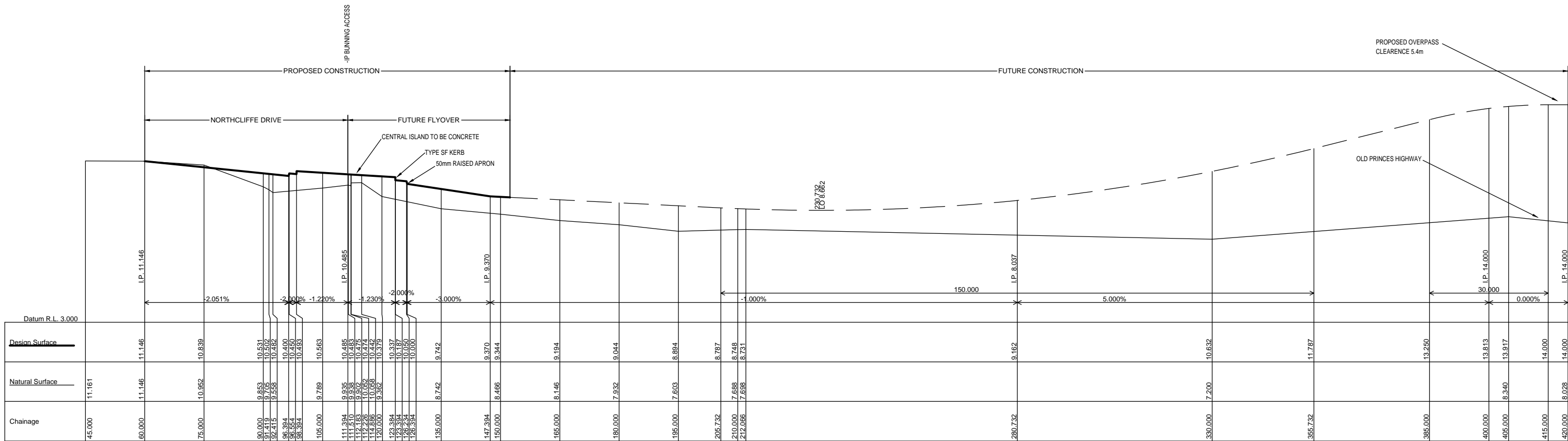
Date: 24.01.17 Scale: 1:250 A1		Designed: KU		Project No	
Cad Ref: HD101 r11 roundabout works				HD101	
8	COUNCIL COMMENTS	KU	07.04.17	Drawing No HD05	Revision 11
10	AMEND LINEMARKING	KU	22.11.17		
9	CARPARK AND WAREHOUSE AMENDED	KU	18.08.17		
No	Amendment	Drawn	Date		



NORTHCLIFFE DRIVE LONGITUDINAL SECTION
ROUNDBOUT TOWARDS PRINCESS HIGHWAY

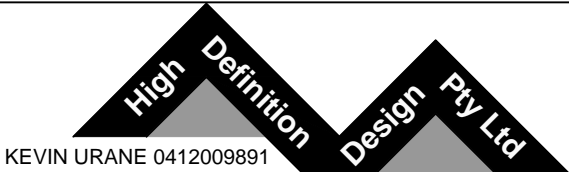


BUNNINGS ACCESS LONGITUDINAL SECTION



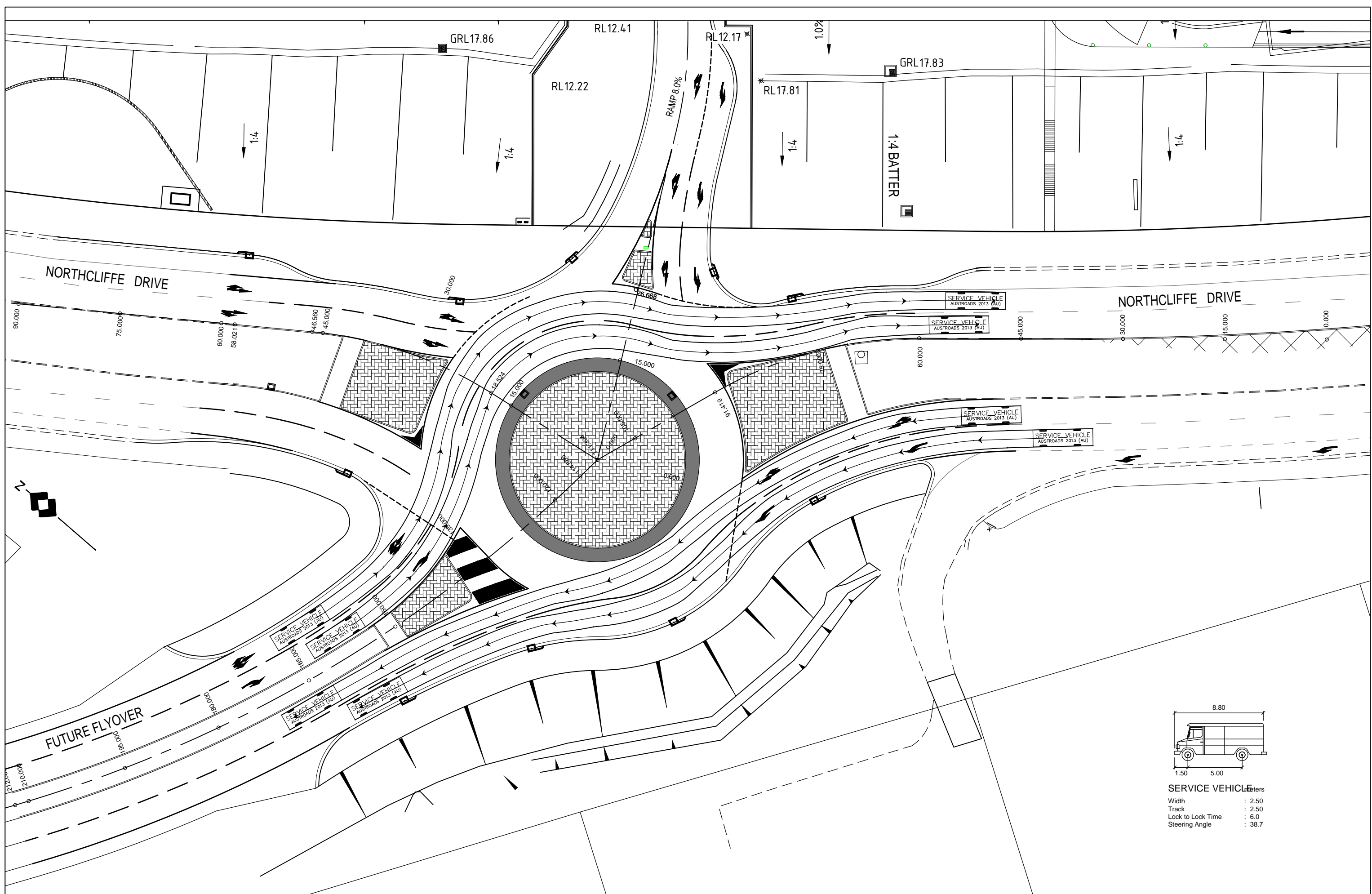
NORTHCLIFFE DRIVE AND FUTURE FLYOVER LONGITUDINAL SECTION

TITLE: PROPOSED ROUNDBOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
PROPOSED LONGITUDINAL SECTIONS
CLIENT: BUNNINGS GROUP LIMITED



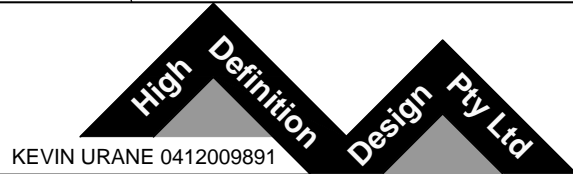
NOTE:
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PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE
PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE
UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

Date:	24.01.17	Scale:	1:250 A1	Designed:	KU	Project No	HD101
Cad Ref:	HD101 r11	roundabout works				Drawing No	HD06
8	COUNCIL COMMENTS			KU	07.04.17	Revision	11
11	AMEND LINEMARKING			KU	22.11.17		
9	CARPARK AND WAREHOUSE AMENDED			KU	18.08.17		
No	Amendment			Drawn	Date		



TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
VEHICLE TURNING MOVEMENTS 1 OF 9

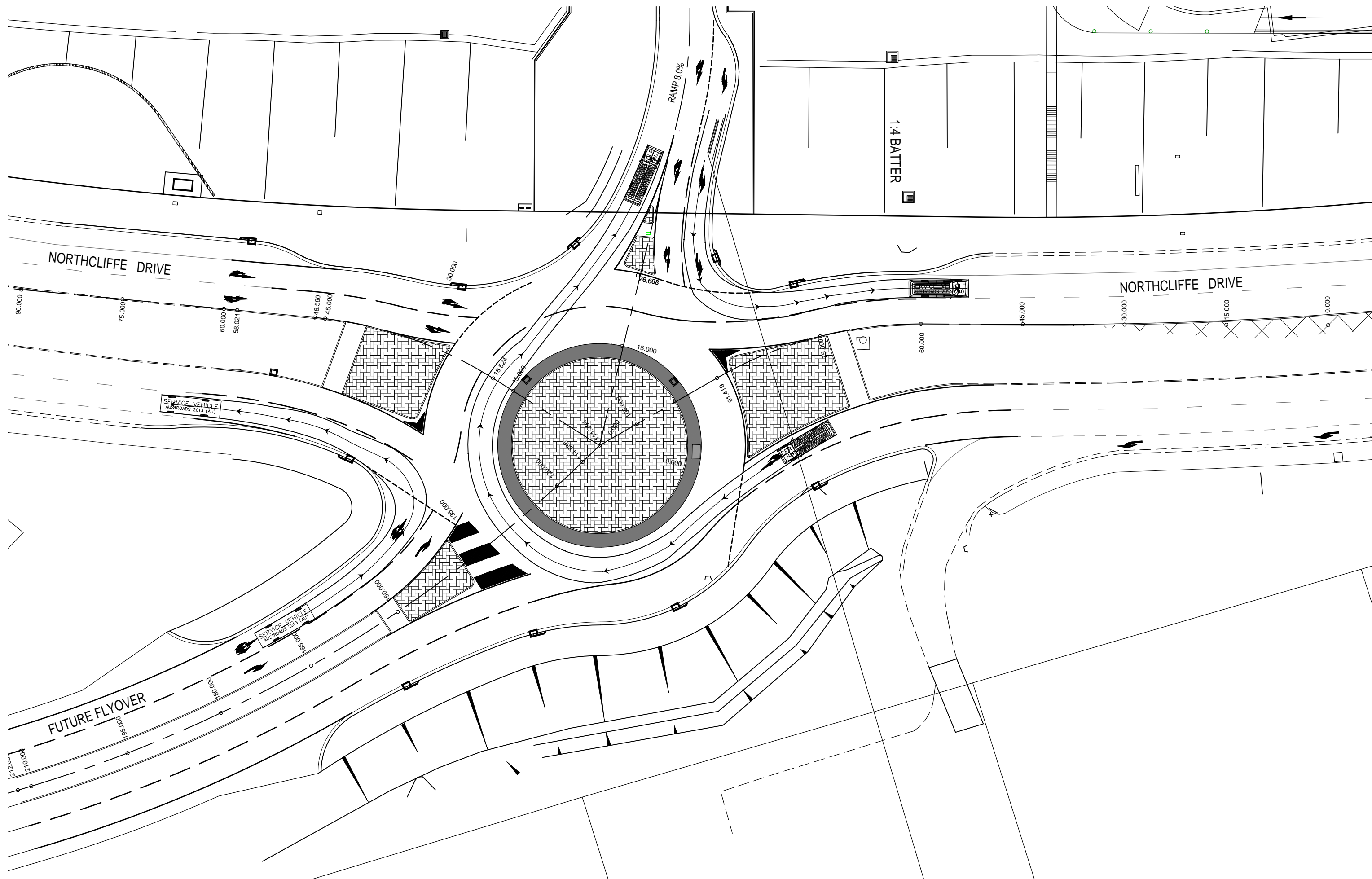
CLIENT: BUNNINGS GROUP LIMITED

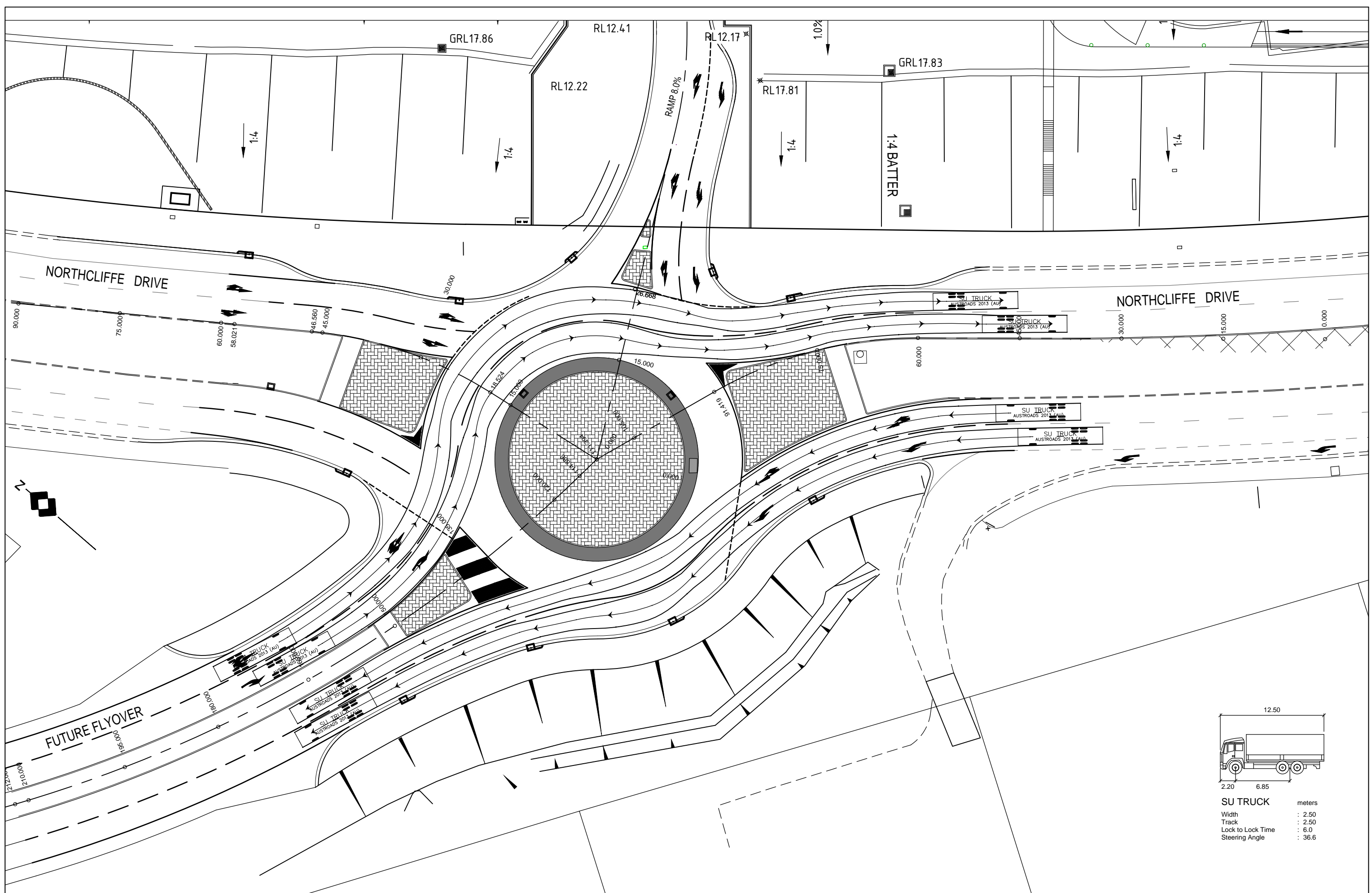


NOTE:
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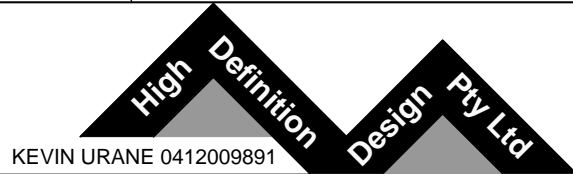
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Cad Ref: HD101 r11 roundabout works						HD101	
8	COUNCIL COMMENTS			KU	07.04.17	Drawing No	Revision
11	AMEND LINEMARKING			KU	22.11.17		
9	CARPARK AND WAREHOUSE AMENDED			KU	18.08.17		
No	Amendment			Drawn	Date	HD07	11





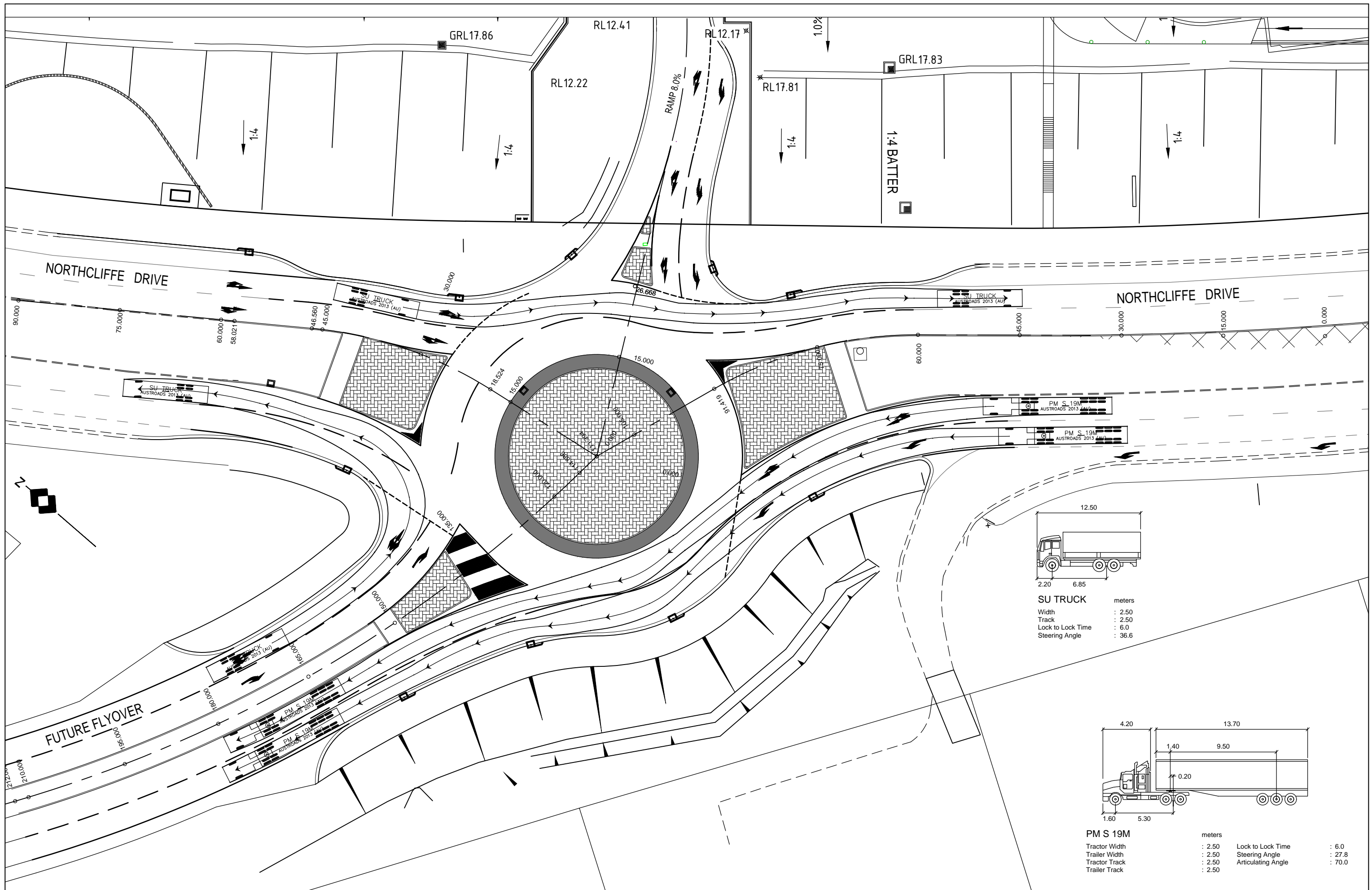
TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
VEHICLE TURNING MOVEMENTS 3 OF 9
CLIENT: BUNNINGS GROUP LIMITED



NOTE:
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0 5 10 15 20 25m
1:250

Date: 24.01.17		Scale: 1:250 A1		Designed: KU		Project No	
Cad Ref: HD101 r11 roundabout works						HD101	
8	COUNCIL COMMENTS	KU	07.04.17	Drawing No	Revision		
11	AMEND LINEMARKING	KU	22.11.17	HD09	11		
9	CARPARK AND WAREHOUSE AMENDED	KU	18.08.17				
No	Amendment	Drawn	Date				

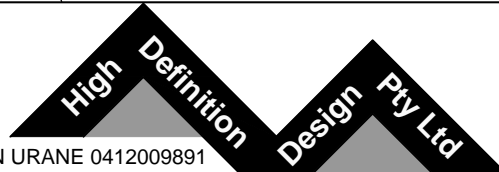


TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
VEHICLE TURNING MOVEMENTS 4 OF 9

CLIENT: BUNNINGS GROUP LIMITED

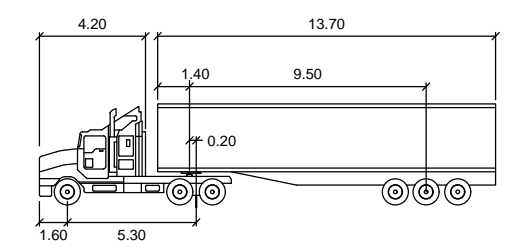


KEVIN URANE 0412009891

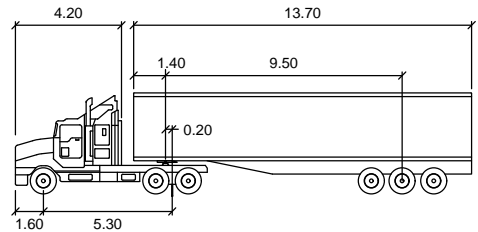
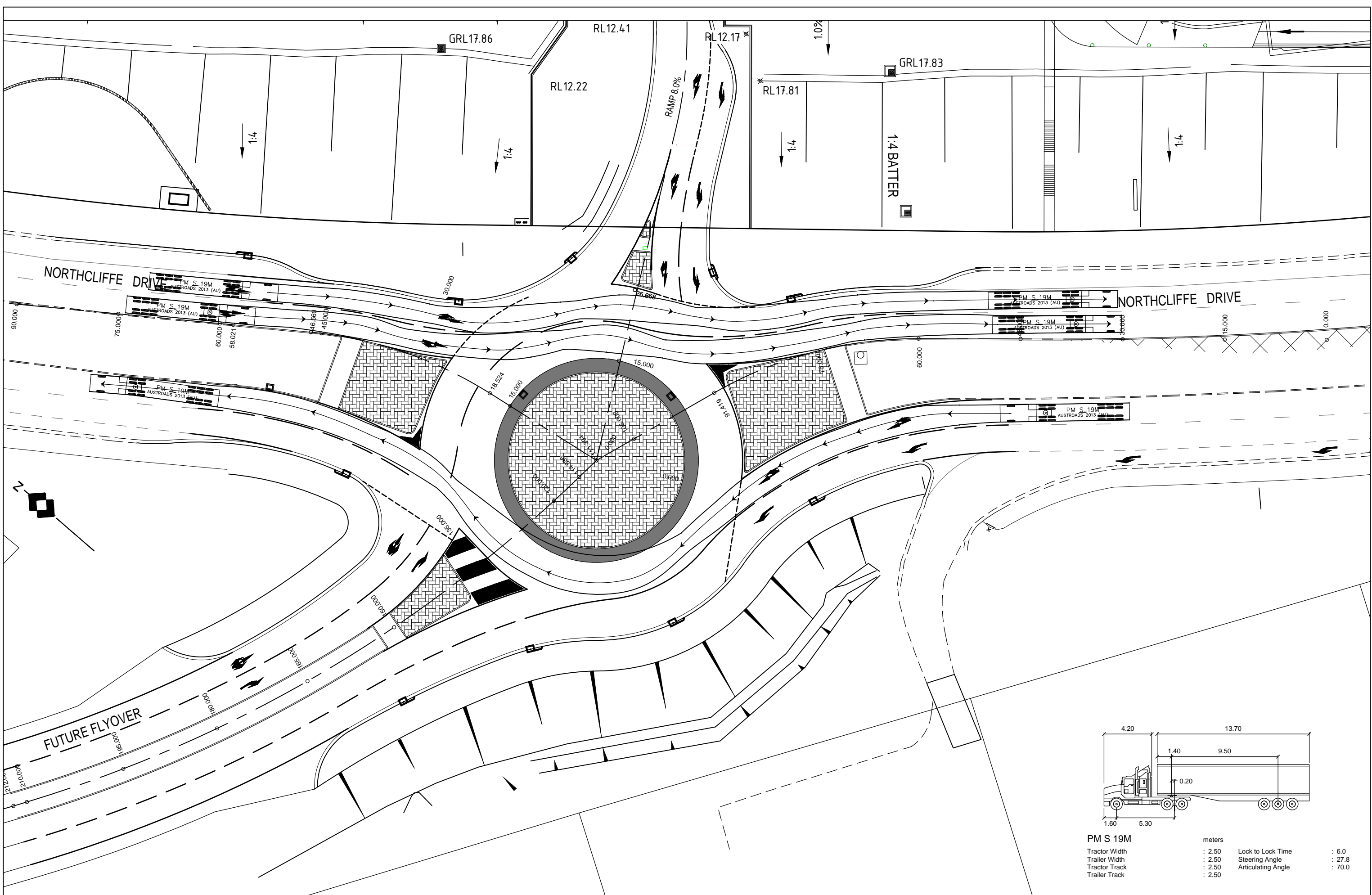


NOTE:
ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

Date: 24.01.17		Scale: 1:250 A1		Designed: KU		Project No	
Cad Ref: HD101 r11 roundabout works						HD101	
8	COUNCIL COMMENTS	KU	07.04.17	Drawing No		Revision	
11	AMEND LINEMARKING	KU	22.11.17	HD10		11	
9	CARPARK AND WAREHOUSE AMENDED	KU	18.08.17				
No	Amendment	Drawn	Date				

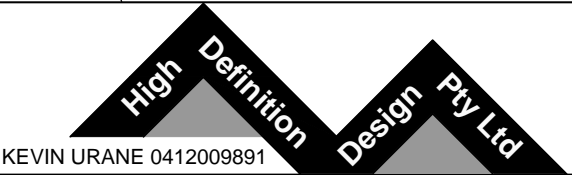


Date: 24.01.17 Scale: 1:250 A1		Designed: KU		Project No	
Cad Ref: HD101 r11 roundabout works				HD101	
8	COUNCIL COMMENTS	KU	07.04.17		
11	AMEND LINEMARKING	KU	22.11.17	Drawing No	Revision
9	CARPARK AND WAREHOUSE AMENDED	KU	18.08.17	HD11	11
No	Amendment	Drawn	Date		



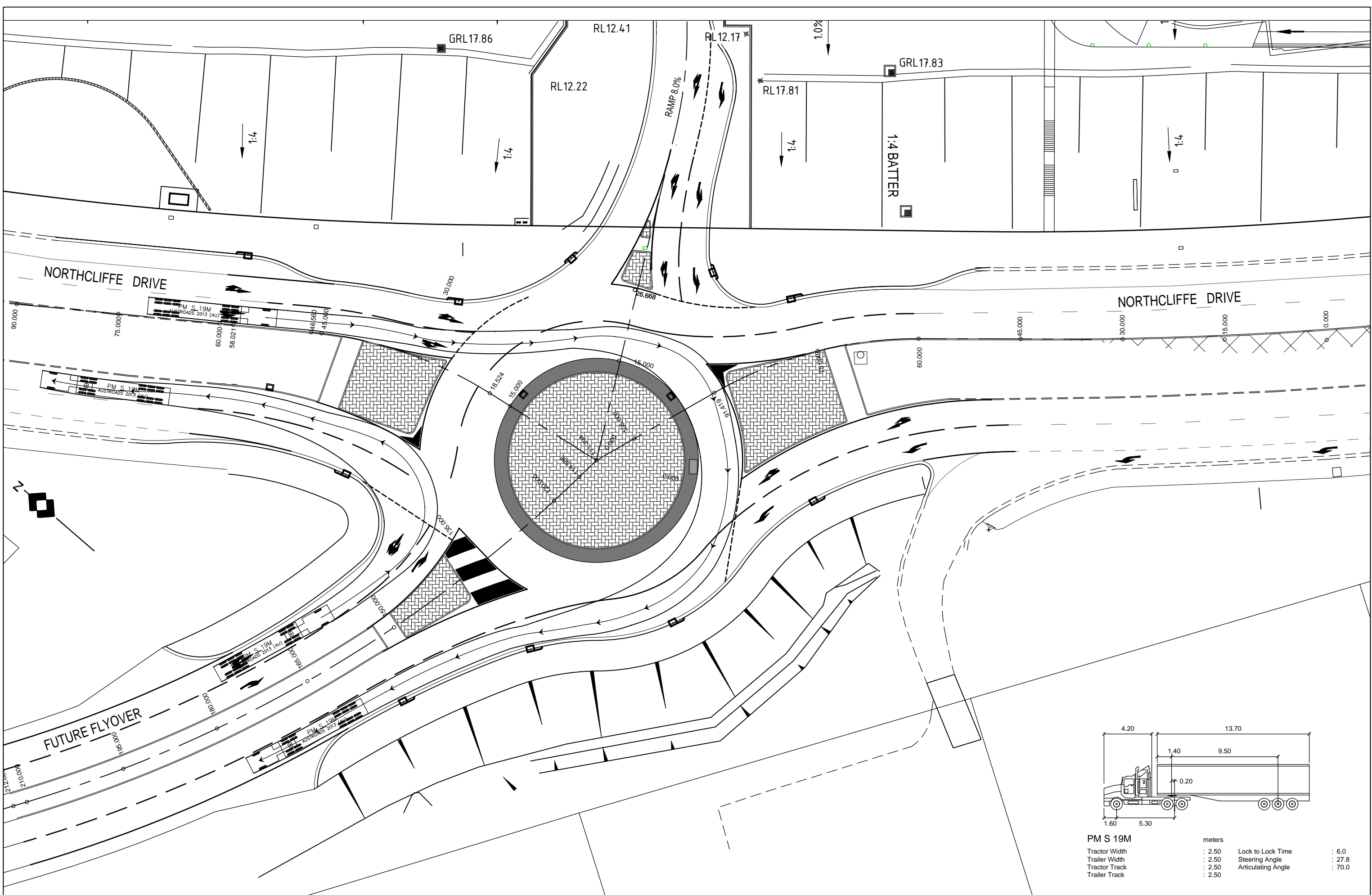
PM S 19M	metres		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
VEHICLE TURNING MOVEMENTS 6 OF 9
CLIENT: BUNNINGS GROUP LIMITED



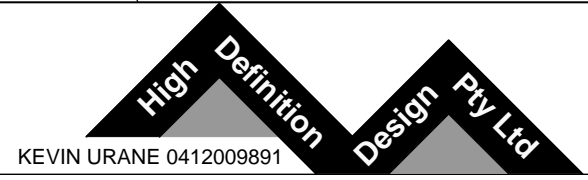
NOTE:
ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED
PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE
PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE
UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

Date:	24.01.17	Scale:	1:250 A1	Designed:	KU	Project No	HD101
Cad Ref:	HD101 r11 roundabout works					Drawing No	Revision
8	COUNCIL COMMENTS	KU	07.04.17			HD12	11
11	AMEND LINEMARKING	KU	22.11.17				
9	CARPARK AND WAREHOUSE AMENDED	KU	18.08.17				
No	Amendment	Drawn	Date				



TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
VEHICLE TURNING MOVEMENTS 7 OF 9

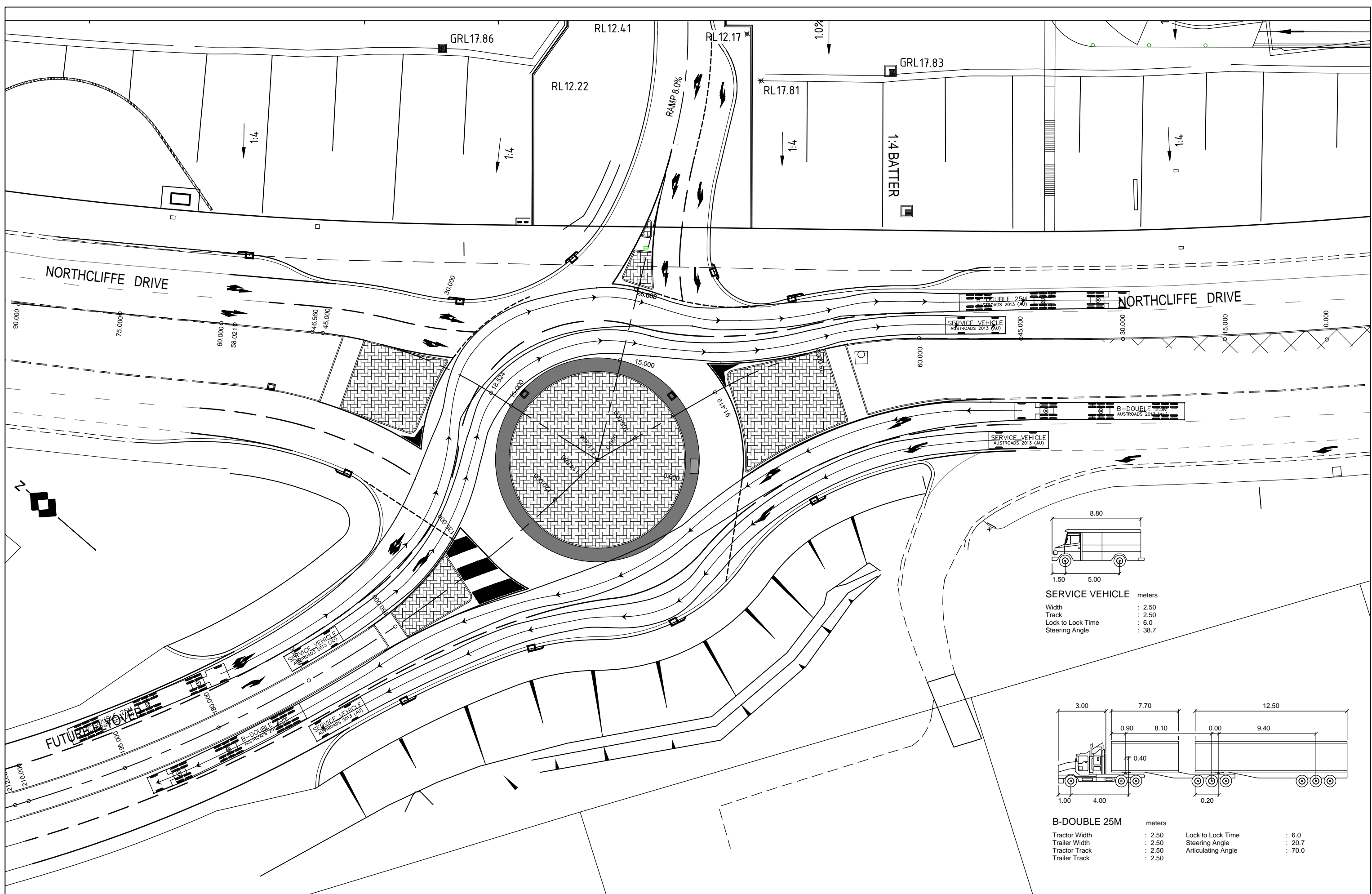
CLIENT: BUNNINGS GROUP LIMITED



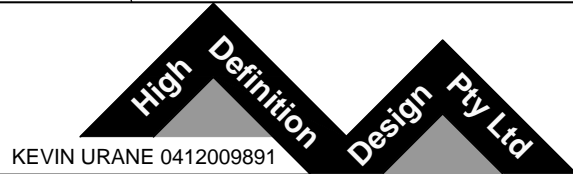
NOTE:
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0 5 10 15 20 25m
1:250

Date: 24.01.17		Scale: 1:250 A1		Designed: KU		Project No	
Cad Ref: HD101 r11 roundabout works						HD101	
8	COUNCIL COMMENTS	KU	07.04.17	Drawing No		Revision	
11	AMEND LINEMARKING	KU	22.11.17	HD13		11	
9	CARPARK AND WAREHOUSE AMENDED	KU	18.08.17				
No	Amendment	Drawn	Date				



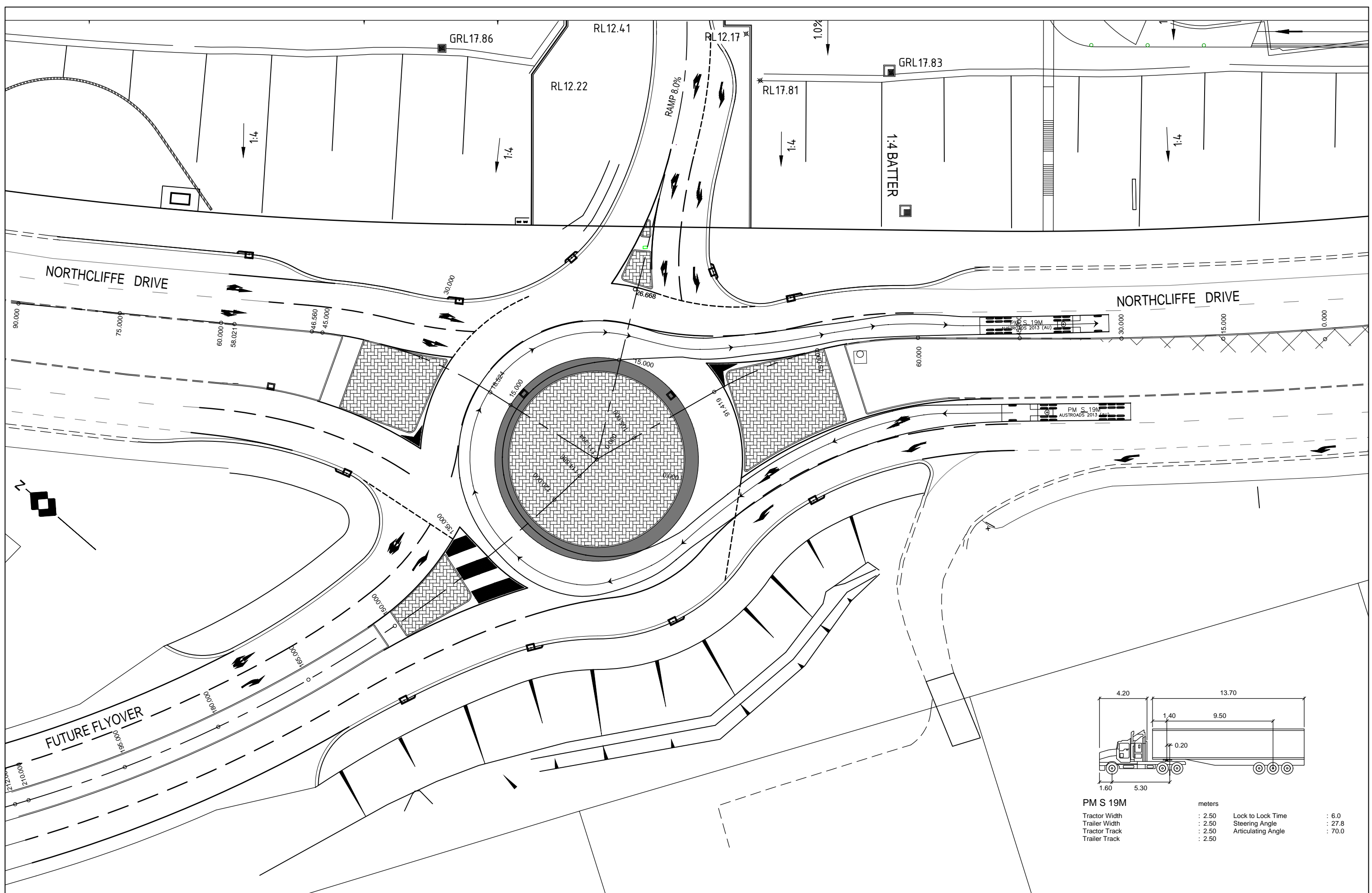
TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
VEHICLE TURNING MOVEMENTS 8 OF 9
CLIENT: BUNNINGS GROUP LIMITED



NOTE:
ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

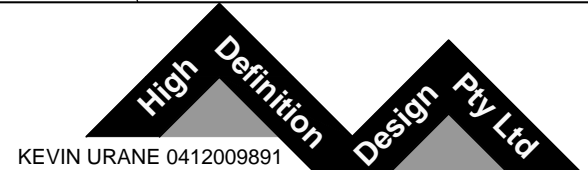
0 5 10 15 20 25m
1:250

Date: 24.01.17 Scale: 1:250 A1		Designed: KU		Project No	
Cad Ref: HD101 r11 roundabout works				HD101	
8	COUNCIL COMMENTS	KU	07.04.17	Drawing No	Revision
11	AMEND LINEMARKING	KU	22.11.17		
9	CARPARK AND WAREHOUSE AMENDED	KU	18.08.17		
No	Amendment	Drawn	Date	HD14	11



PM S 19M		meters	
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

TITLE: PROPOSED ROUNDABOUT
NORTHCLIFFE DRIVE, KEMBLA GRANGE
VEHICLE TURNING MOVEMENTS 9 OF 9
CLIENT: BUNNINGS GROUP LIMITED



NOTE:
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UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

Date:	24.01.17	Scale:	1:250 A1	Designed:	KU	Project No	HD101	
Cad Ref:	HD101 r11 roundabout works						Drawing No	Revision
8	COUNCIL COMMENTS			KU	07.04.17		HD15	11
11	AMEND LINEMARKING			KU	22.11.17			
9	CARPARK AND WAREHOUSE AMENDED			KU	18.08.17			
No	Amendment			Drawn	Date			