

# PROPOSED CHILD CARE FACILITY

18102

22 AUSTRAL AVENUE, WESTMEAD 2145  
LOT / PLAN NO. - 2 / DP35155; CUMBERLAND CITY COUNCIL

## COMPLIANCE TABLE

ITEM	PROPOSED	STANDARD	COMPLIANCE	
A SITE AREA	793.45 m <sup>2</sup>	-	-	
B SETBACK				
	FRONT	6 m	5 m	YES
	REAR	11.6 m	-	YES
	SIDE	1 m	0.9 m	YES
C GROSS FLOOR AREA				
	BASEMENT	467 m <sup>2</sup>	-	
	GROUND FLOOR	245 m <sup>2</sup>	-	
	FIRST FLOOR	145 m <sup>2</sup>	-	
	TOTAL GROSS FLOOR AREA	390 m <sup>2</sup>	396.725 m <sup>2</sup>	YES
D FSR	0.50 : 1	0.5 : 1	YES	
E HEIGHT	8 m	9.0 m	YES	
F LANDSCAPE AREA	-	-	YES	
G DEEP SOIL	-	-		
H CHILDCARE				
	NUMBER OF CHILDREN			
	0-2 YEARS	8 KIDS	-	YES
	2-3 YEARS	15 KIDS	-	YES
	3-5 YEARS	20 KIDS	-	YES
	TOTAL NO.	43 KIDS	-	YES
	NUMBER OF TEACHERS			
	0-2 YEARS	2 TEACHERS	1:4 KIDS	YES
	2-3 YEARS	3 TEACHERS	1:5 KIDS	YES
	3-5 YEARS	2 TEACHERS	1:10 KIDS	YES
	TOTAL NO.	7 TEACHERS	-	YES
	INDOOR PLAY AREA			
	0-2 YEARS	39 m <sup>2</sup>	3.25 m <sup>2</sup> / KID	YES
	2-3 YEARS	55 m <sup>2</sup>	3.25 m <sup>2</sup> / KID	YES
	3-5 YEARS	67 m <sup>2</sup>	3.25 m <sup>2</sup> / KID	YES
	TOTAL AREA	161 m <sup>2</sup>	3.25 m <sup>2</sup> / KID	YES
	OUTDOOR PLAY AREA			
	TOTAL AREA	329 m <sup>2</sup>	7 m <sup>2</sup> / KID	YES
H CAR PARKING				
	STAFF	8 SPACE	-	
	DISABLED	1 SPACE	-	
	VISITORS	8 SPACES	-	
	TOTAL CAR SPACES	16 SPACES	15 SPACES	YES
K WASTE MANAGEMENT				
	TOTAL BINS	8 BINS	-	YES

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08	ELEVATIONS

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14	2-3 & 3-5 INDOOR PLAY AREA CALCULATION PLAN
15	EVACUATION PLAN
16	SOLAR STUDY
17	SECTIONS



## CONSULTANTS

SPECIALITY	COMPANY	NAME	PHONE	EMAIL
HYDRAULICS STORMWATER	AUSTRALIAN CONSULTING ENGINEERS PTY LTD	JOE BACHA	(02) 9763 1500	joeb@aceeng.com.au
TOWN PLANNER	THINK PLANNERS	JONATHAN WOOD	(02) 9890 8543	jonathon@thinkplanners.com.au
LANDSCAPE ARCHITECT	OUTSIDE IN DESIGN GROUP PTY LTD	REBECCA SURIAN	0413 448 447	rebecca@outsideindesign.com.au
ACOUSTIC	RODNEY STEVENS ACOUSTIC PTY LTD	PENNY EDNEY	0419 606 192	penny@rodneystevensacoustics.com.au
TRAFFIC MANAGEMENT	STANBURY TRAFFIC PLANNING	MORGAN STANBURY	0410 561 848	morgan@stanburytraffic.com.au
ACCESS	J SQUARED ENGINEERING PTY LTD	MARK SADGROVE	0401 140 781	mark.sadgrove@jsquared.com.au

REV	DESCRIPTION	DATE	BY
A	DEVELOPMENT APPLICATION	25/06/18	CB
B	AMENDMENTS AS PER COUNCIL REQUEST	05/02/19	CB



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PROJECT TITLE  
**PROPOSED CHILD CARE FACILITY**  
**22 AUSTRAL AVENUE, WESTMEAD 2145**  
DRAWING TITLE  
**COMPLIANCE TABLE**

PROJECT NUMBER	DRAWING NUMBER	DATE	REVISION
<b>18102</b>	01	05/02/19	B
	SCALE @ A1	DRAWN BY	CHECKED BY

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## ACOUSTIC NOTES

The following measures are recommended to be incorporated in the design of the proposed centre in order for the child care centre to operate in an acoustically compliant manner.

- Precise type and location of proposed mechanical plant is currently unknown. It is recommended a mechanical plant noise assessment for the proposed air conditioning system(s) and site specific plant equipment should be carried out for the proposed development before the issuing of a Construction Certificate. The accumulative noise impact of all mechanical plant operating at one time cannot exceed the criteria level of **51 dB(A)** @ the boundary of the proposed development site.

- The mechanical plant should not be used, or left on, after the centre's hours of operation (excluding a window period before and after opening hours) in order to minimise any adverse impacts to nearby sensitive receivers.

- A 1.8m barrier should be constructed around the proposed external play area. The barrier(s) should be of solid continuous construction (ie free of gaps) and of masonry or SlimWall type construction. The location of the proposed wall is shown in green below.

- Windows to be closed to control noise emissions from the centre to nearby sensitive receivers when centre is at capacity.

- The following rules should be incorporated into the centre's management plan in order to achieve acoustic compliance:

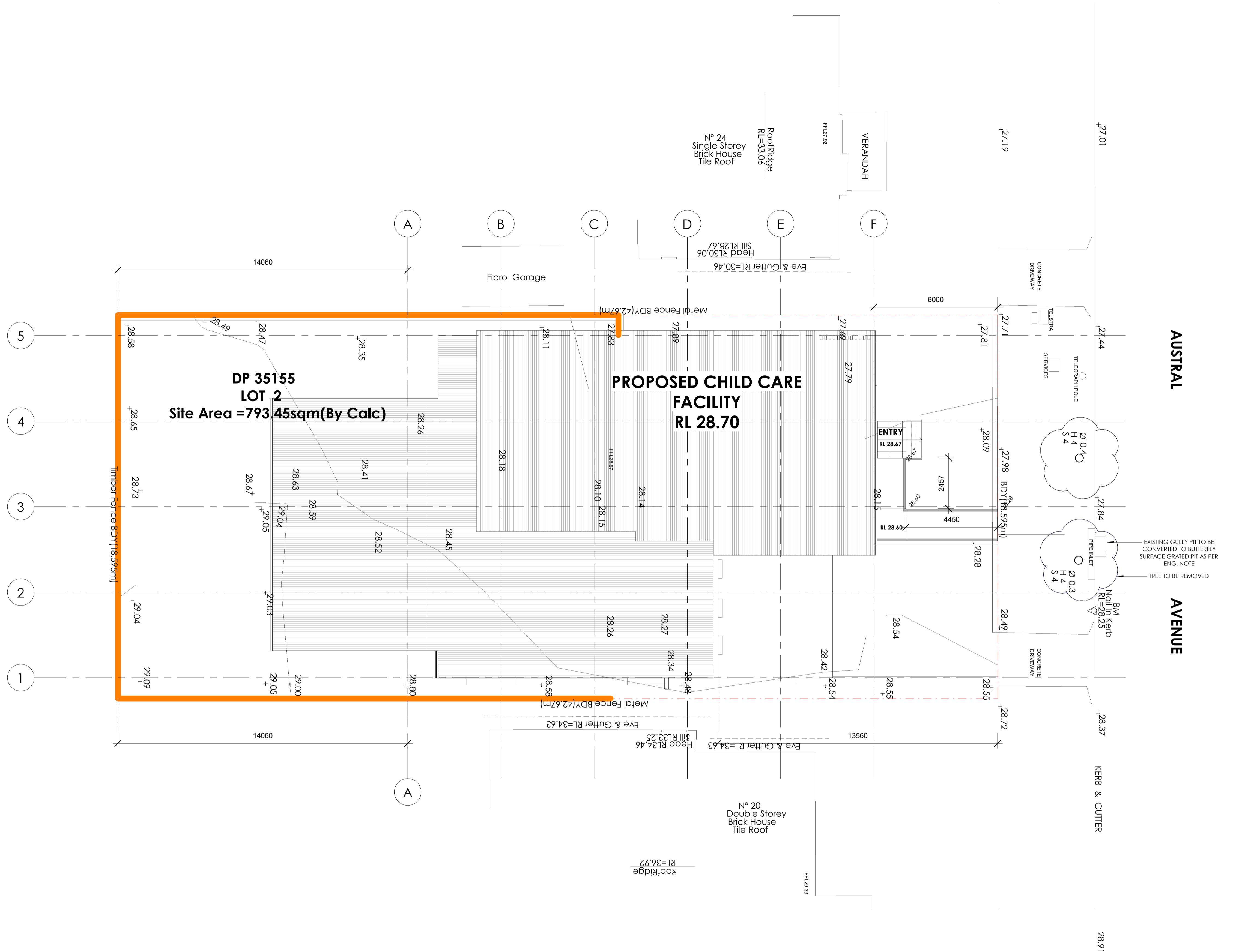
- A contact phone number for the centre's director should be made available to parents and neighbours.

- Crying children should be taken inside the centre and comforted.

- The behaviour of children should be monitored and modified as required by adequately trained child care workers.

- Parents and guardians should be informed of the importance of noise minimisation when entering the site, dropping off or picking up children.

1.8m barrier 



**1** SITE PLAN  
1 : 100

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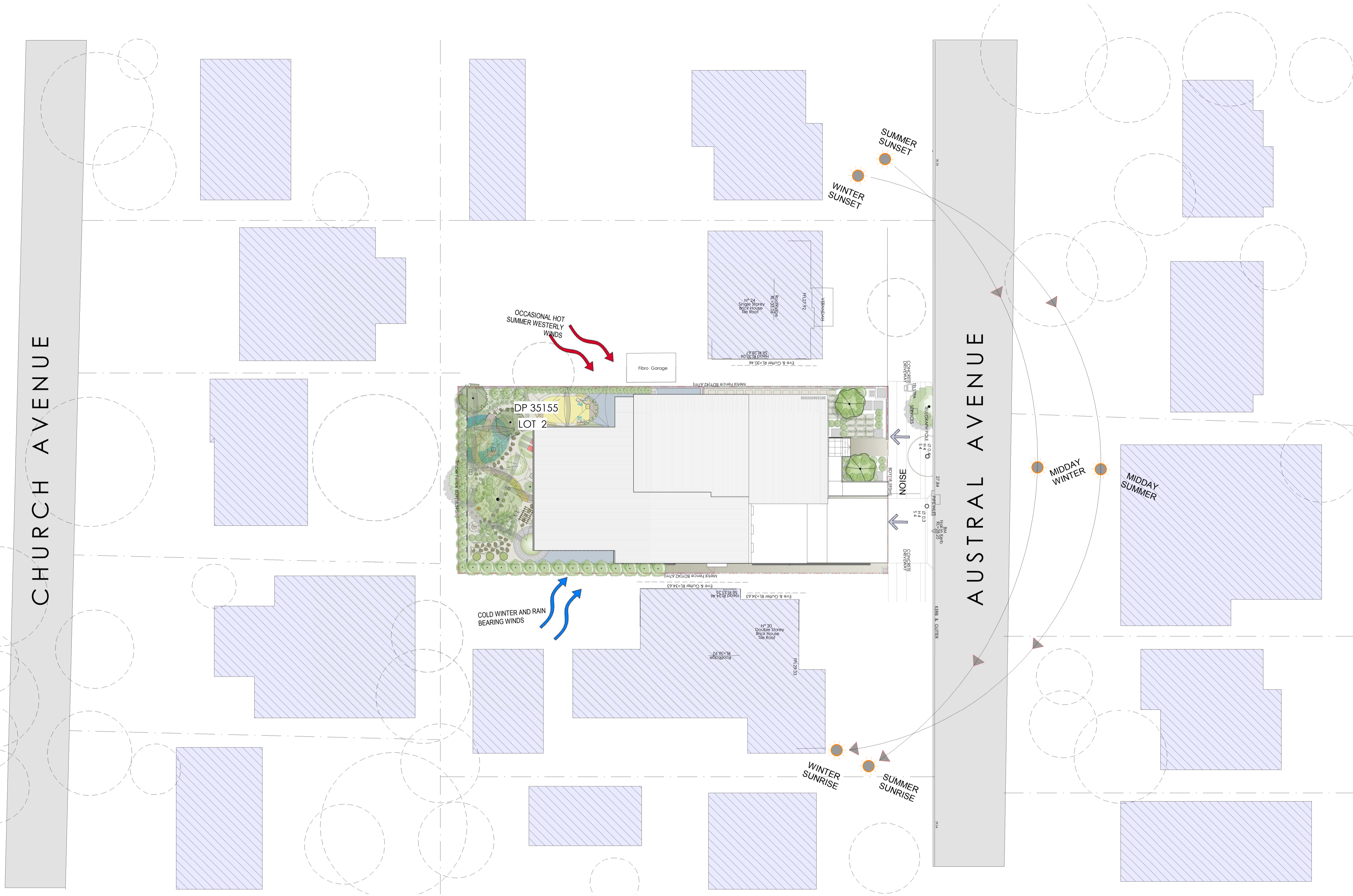
PROJECT TITLE  
**PROPOSED CHILD CARE FACILITY**  
**22 AUSTRAL AVENUE, WESTMEAD 2145**  
DRAWING TITLE  
**SITE PLAN**

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<b>18102</b>	03	05/02/19	B
SCALE @ A1	DRAWN BY	CHECKED BY	
1 : 100			

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**1 SITE ANALYSIS**  
1 : 200

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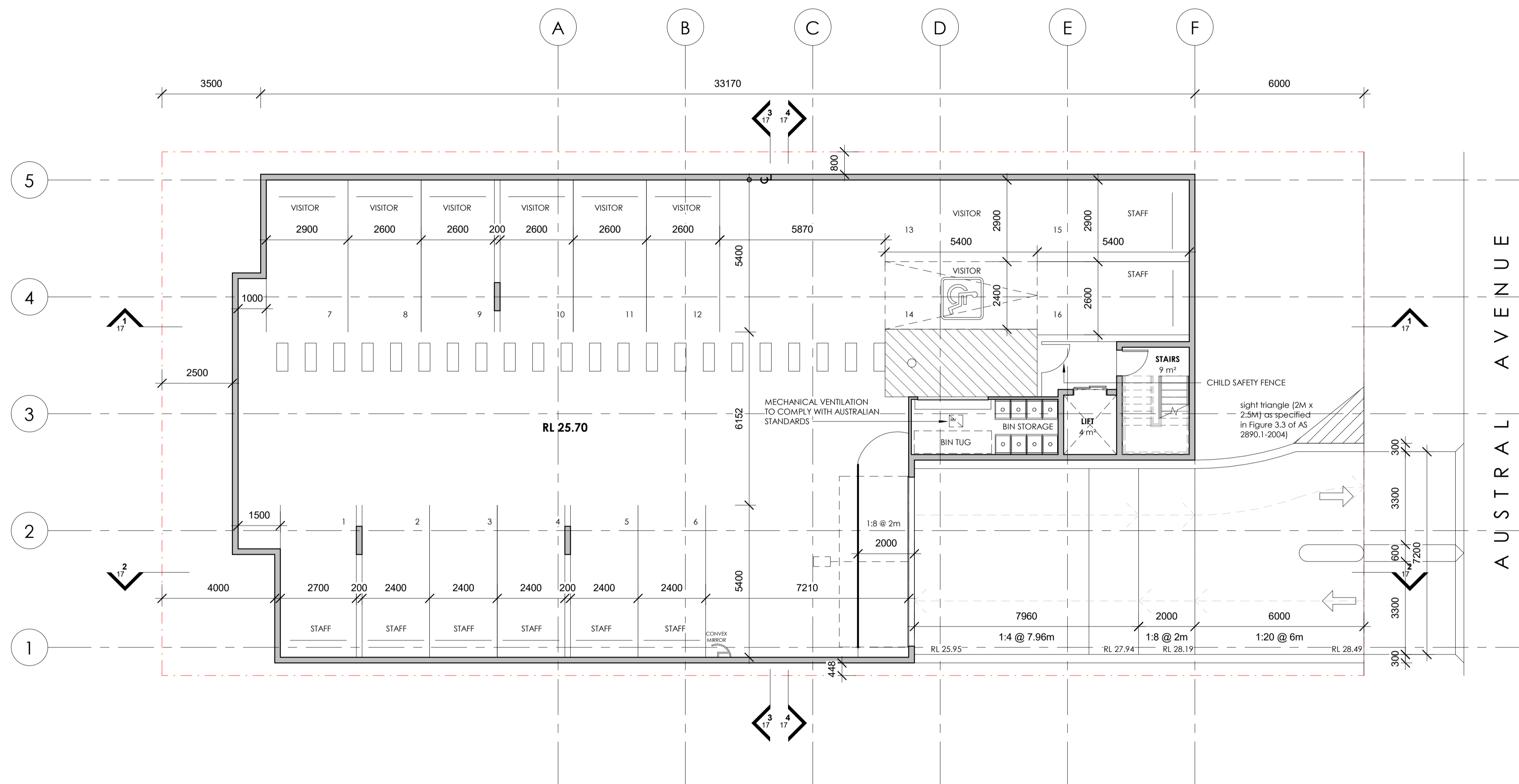
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**PROPOSED CHILD CARE FACILITY**  
**22 AUSTRAL AVENUE, WESTMEAD 2145**  
DRAWING TITLE  
**SITE ANALYSIS PLAN**

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<b>18102</b>	04	05/02/19	B
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**1** BASEMENT FLOOR LEVEL  
1 : 100

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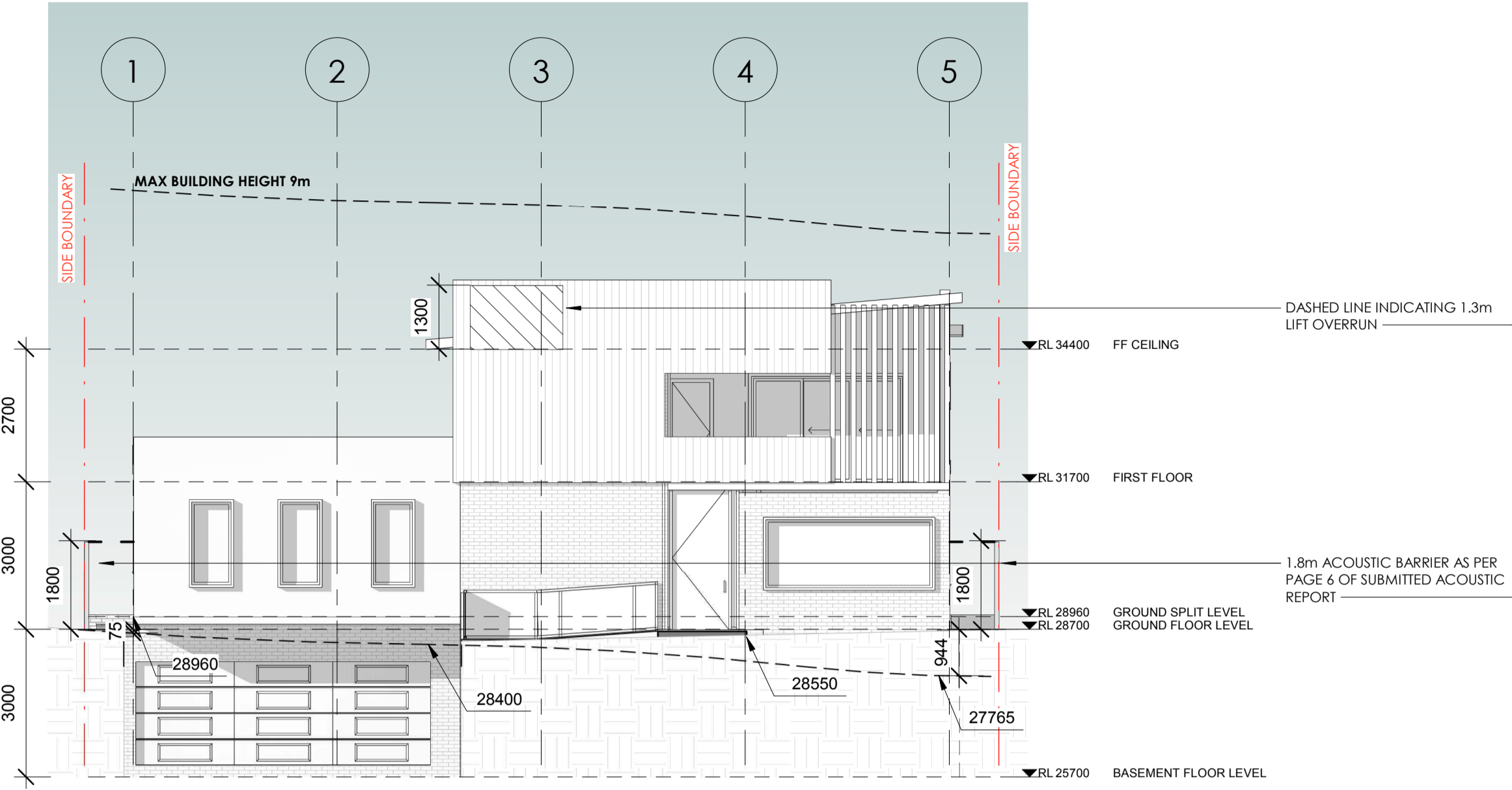


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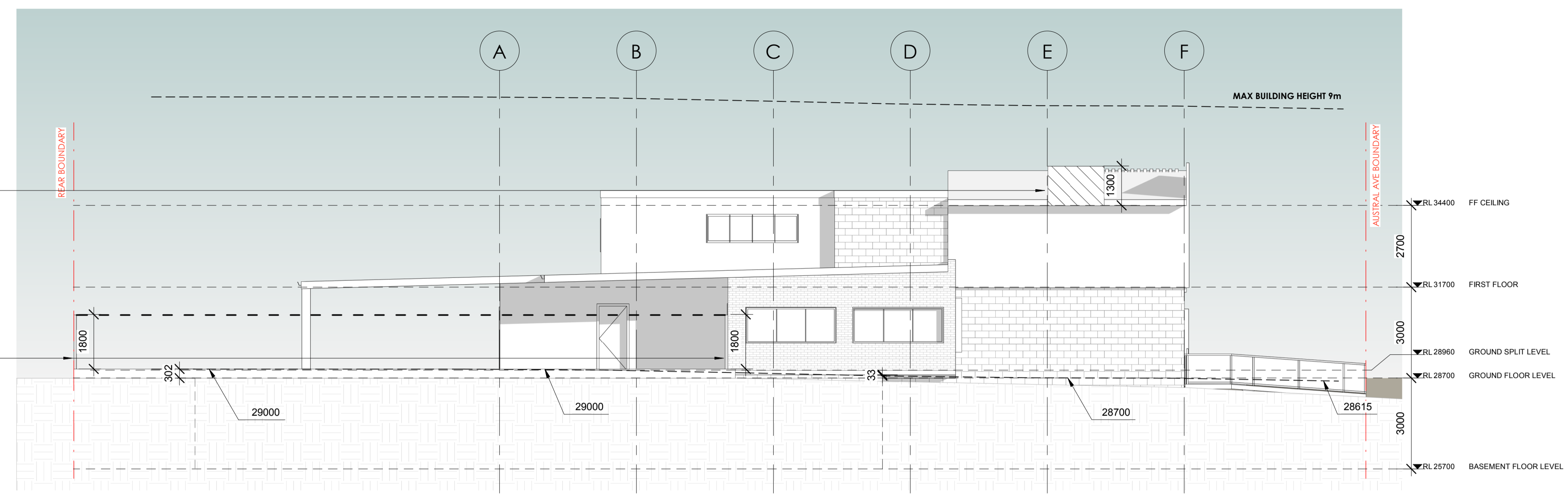
PROJECT TITLE			
<b>PROPOSED CHILD CARE FACILITY</b>			
<b>22 AUSTRAL AVENUE, WESTMEAD 2145</b>			
DRAWING TITLE			
<b>BASEMENT PLAN</b>			
PROJECT NUMBER	DRAWING NUMBER	DATE	REVISION
<b>18102</b>	05	05/02/19	B
SCALE @ A1	DRAWN BY	CHECKED BY	
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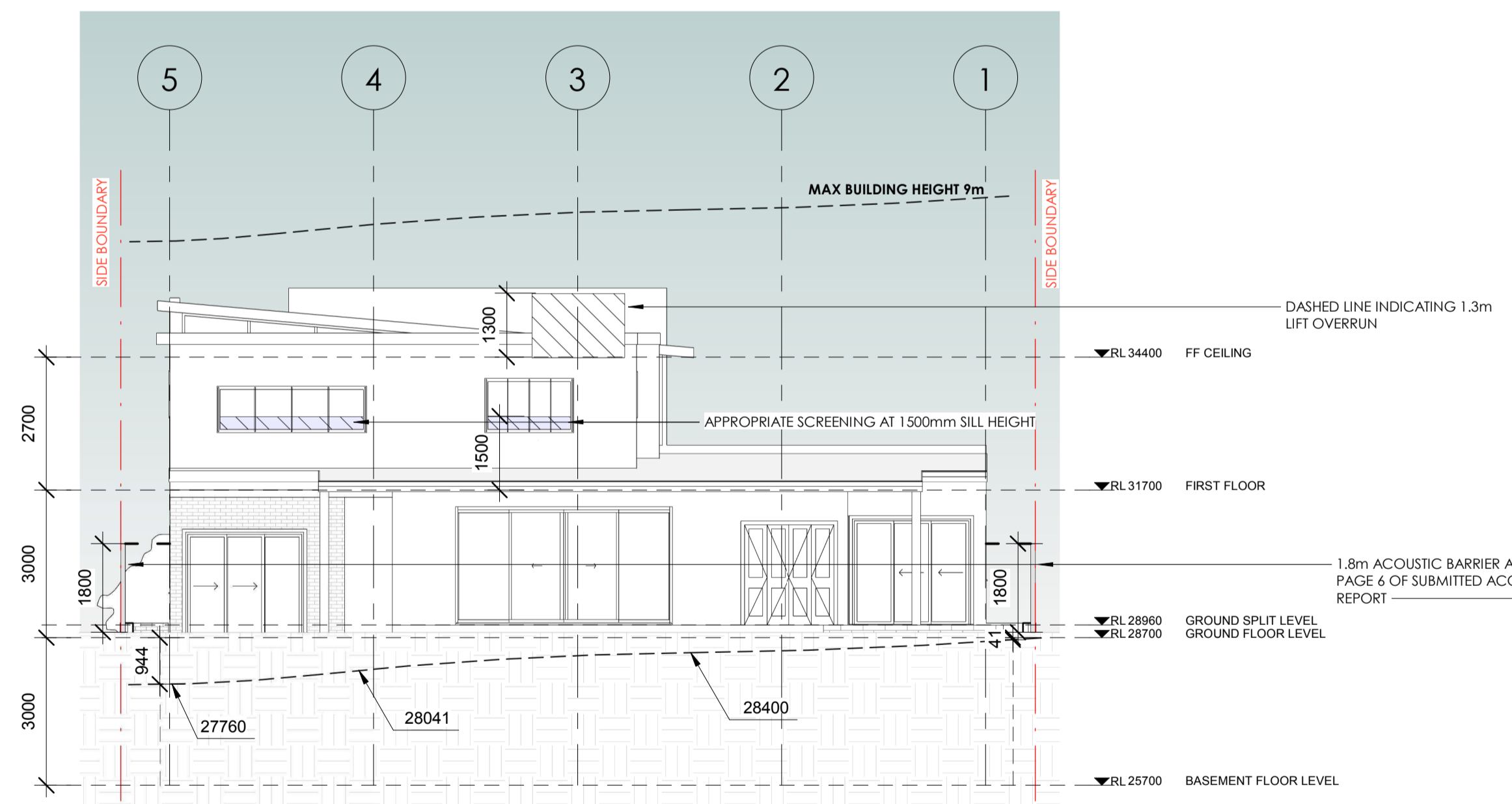




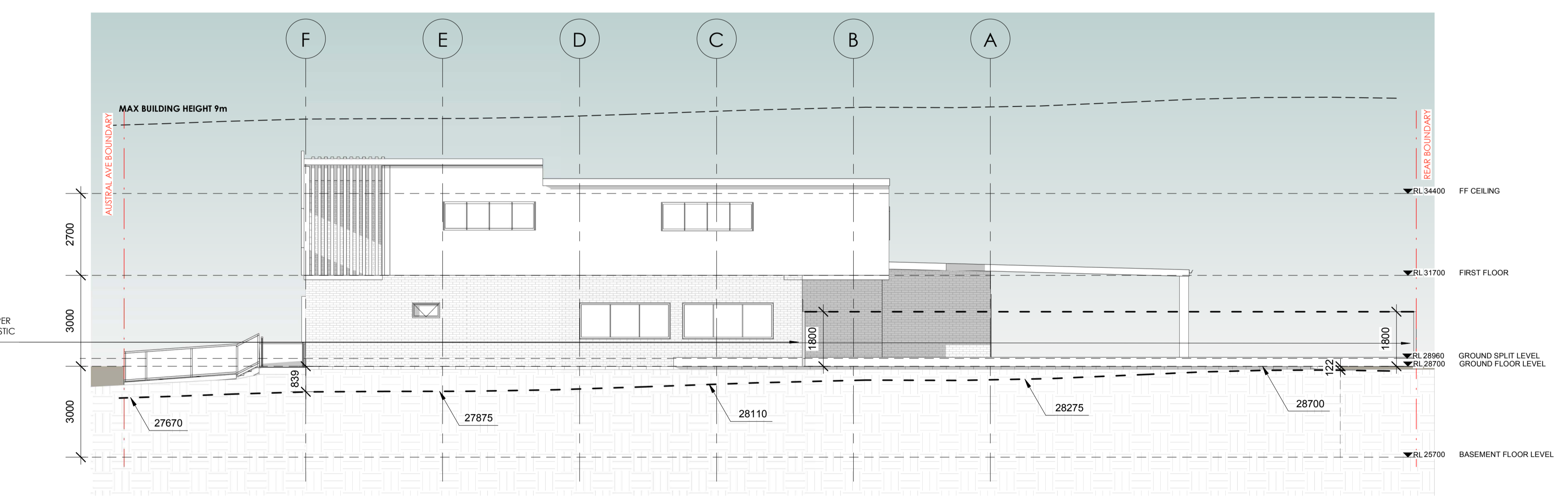
1 North  
1 : 100



2 East  
1 : 100



3 South  
1 : 100



4 West  
1 : 100

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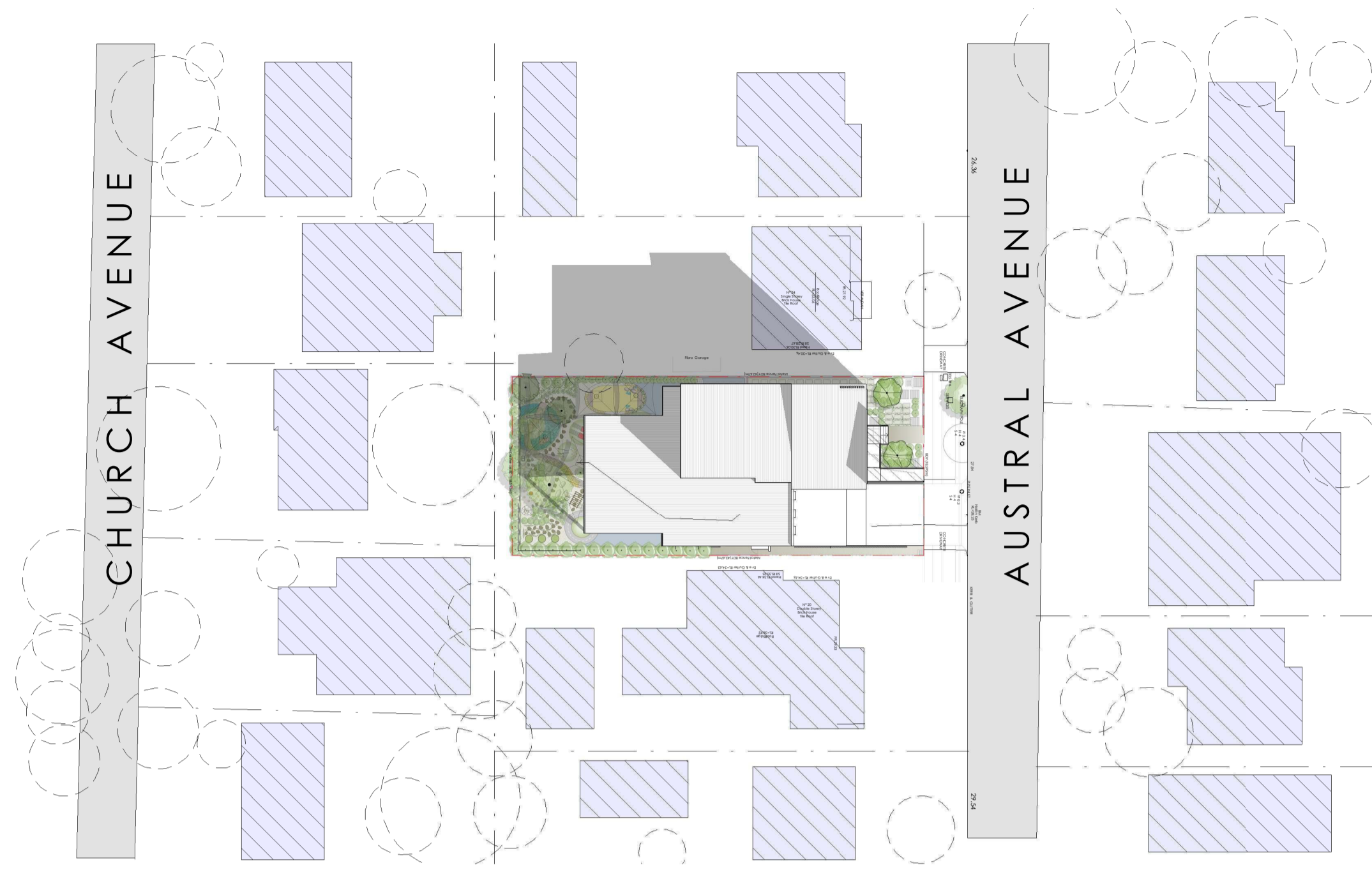
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PROJECT TITLE			
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<b>22 AUSTRAL AVENUE, WESTMEAD 2145</b>			
DRAWING TITLE			
<b>ELEVATIONS</b>			
PROJECT NUMBER	DRAWING NUMBER	DATE	REVISION
<b>18102</b>	08	05/02/19	B
SCALE @ A1		DRAWN BY	CHECKED BY
1 : 100			

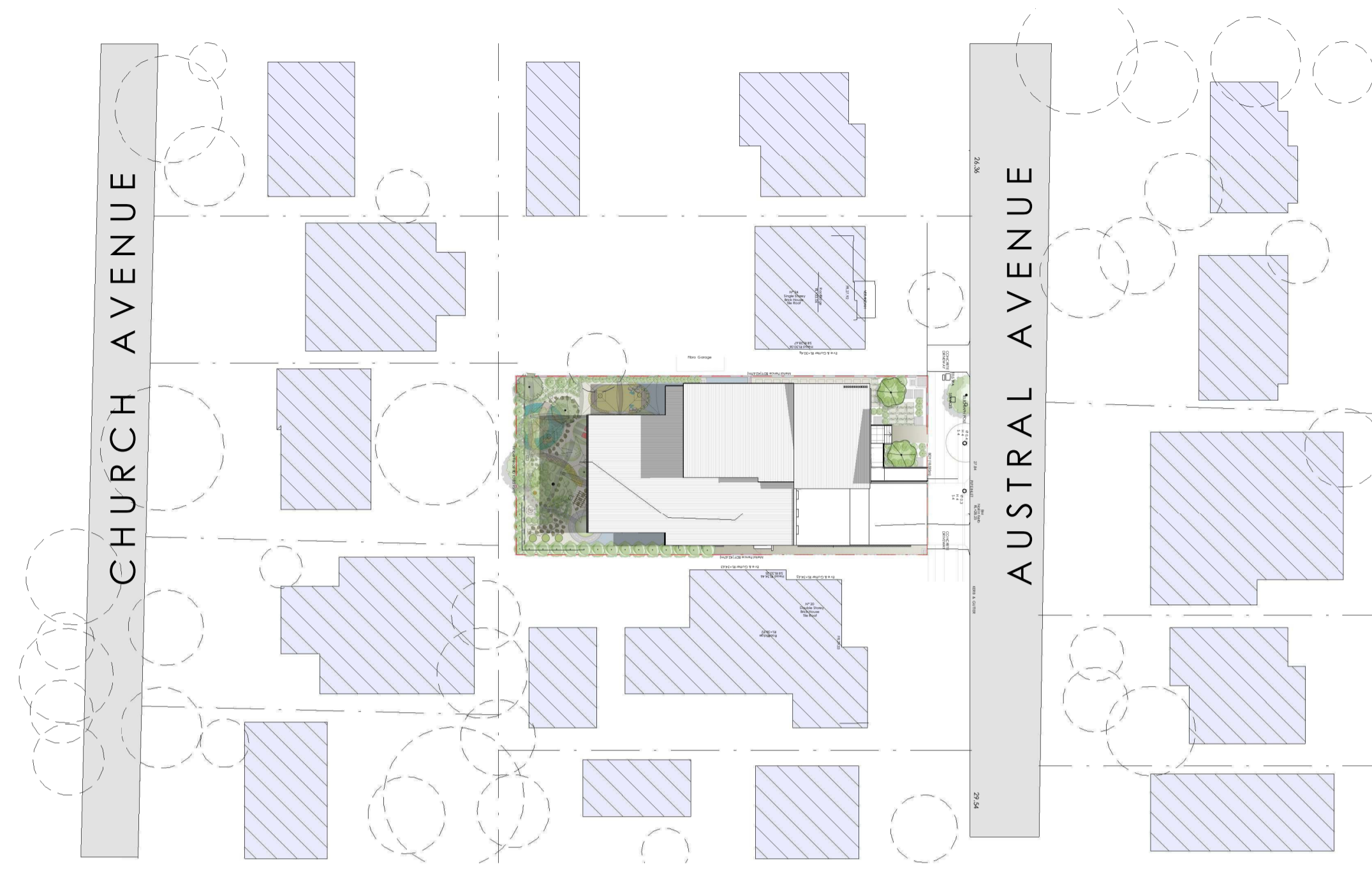
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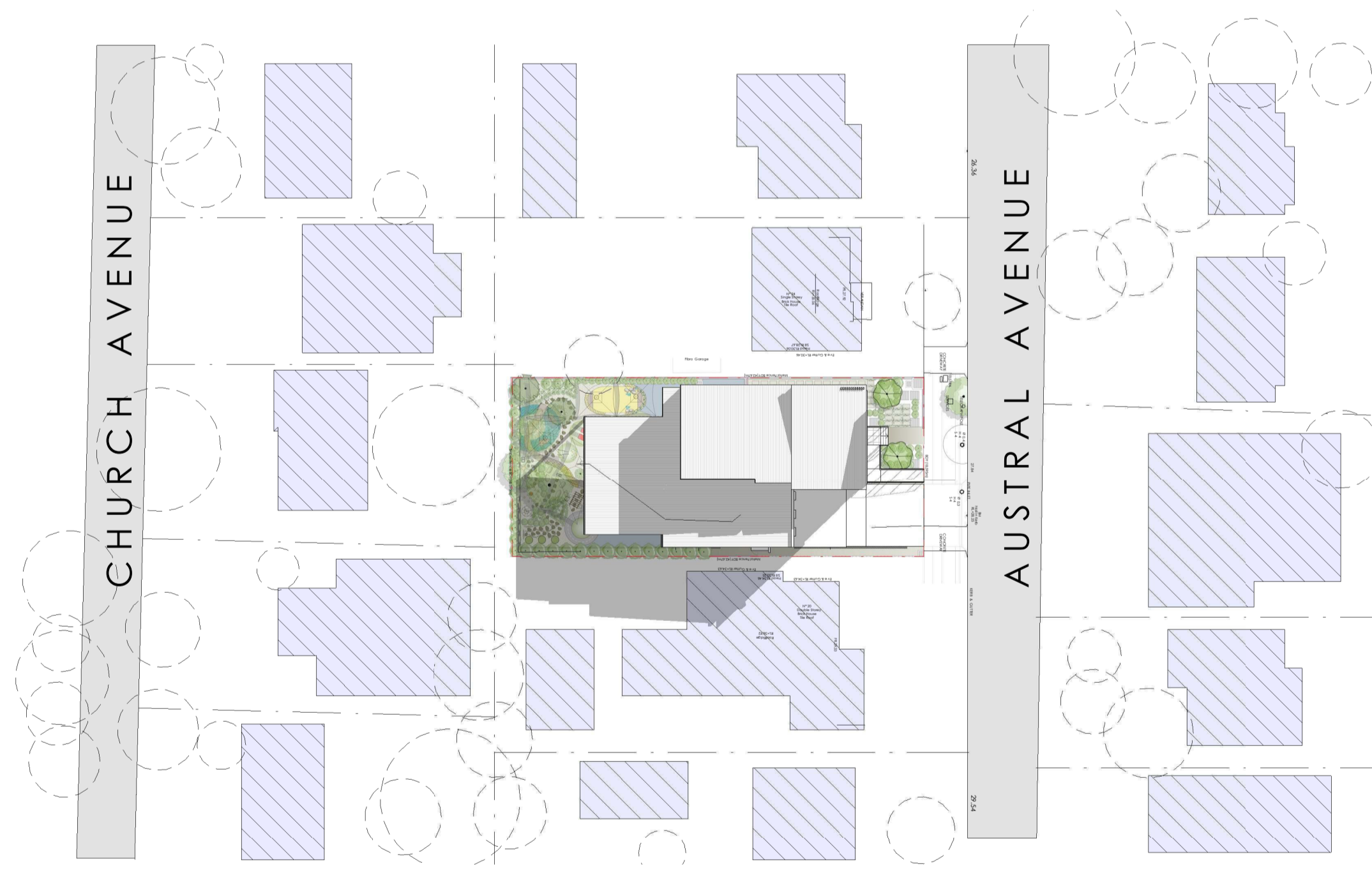




1 9AM WINTER SHADOW  
1 : 500



2 12PM WINTER SHADOW  
1 : 500



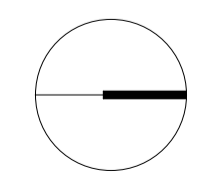
3 3PM WINTER SHADOW  
1 : 500

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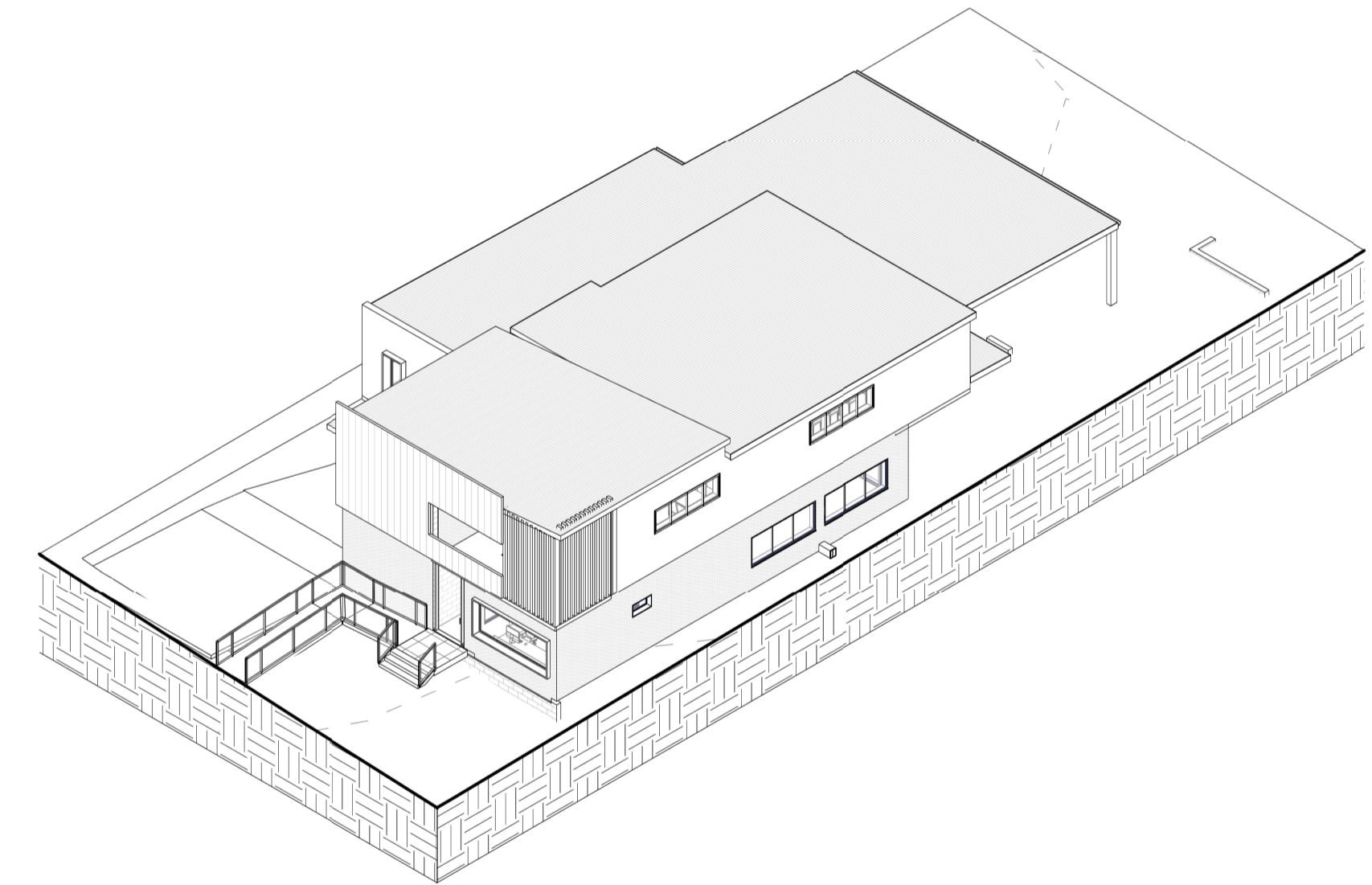
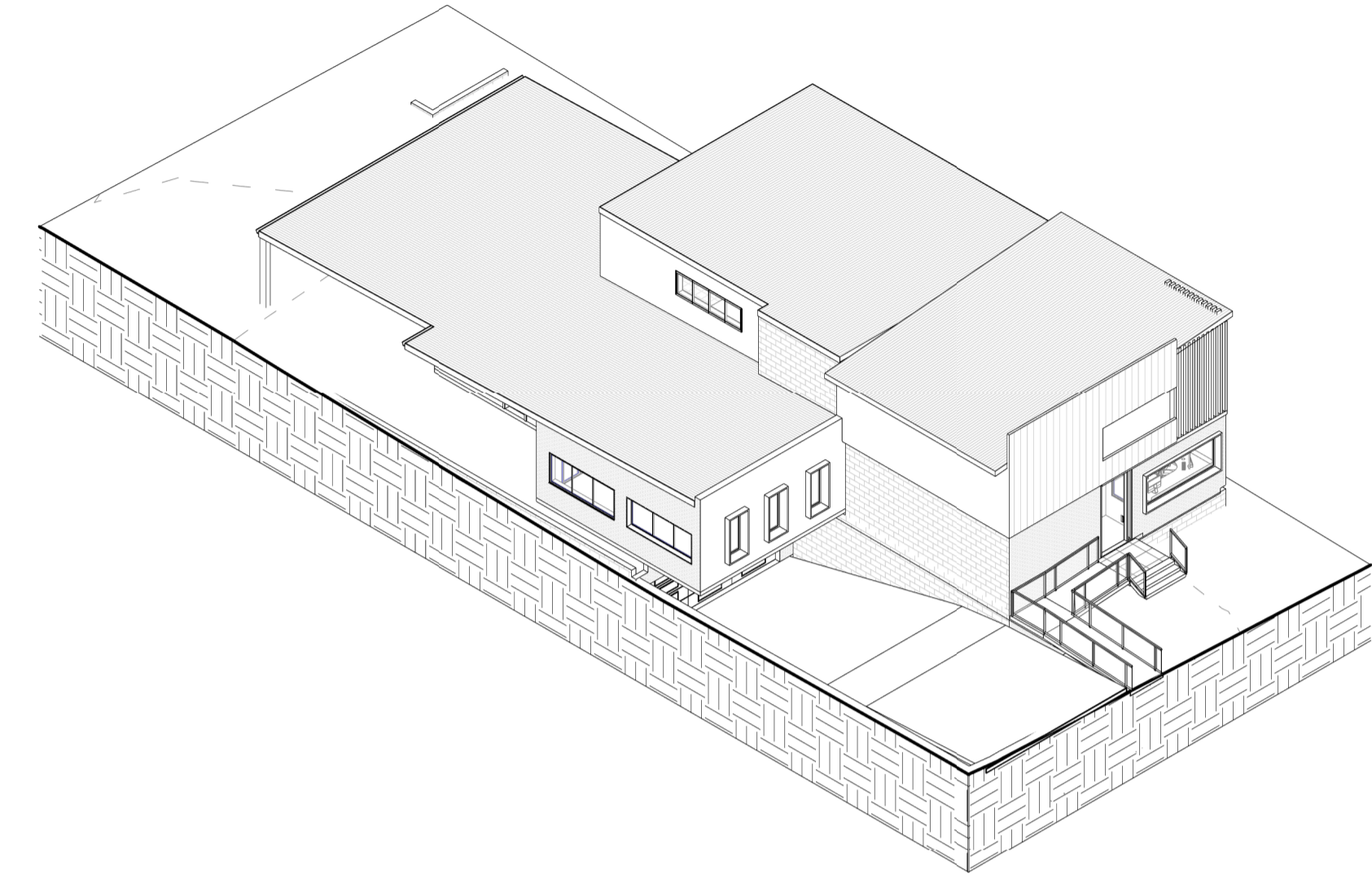
PROJECT TITLE  
**PROPOSED CHILD CARE FACILITY**  
**22 AUSTRAL AVENUE, WESTMEAD 2145**  
 DRAWING TITLE  
**SHADOW DIAGRAM WINTER SOLSTICE**

PROJECT NUMBER	DRAWING NUMBER	DATE	REVISION
<b>18102</b>	10	05/02/19	B
SCALE @ A1	DRAWN BY	CHECKED BY	
1 : 500			

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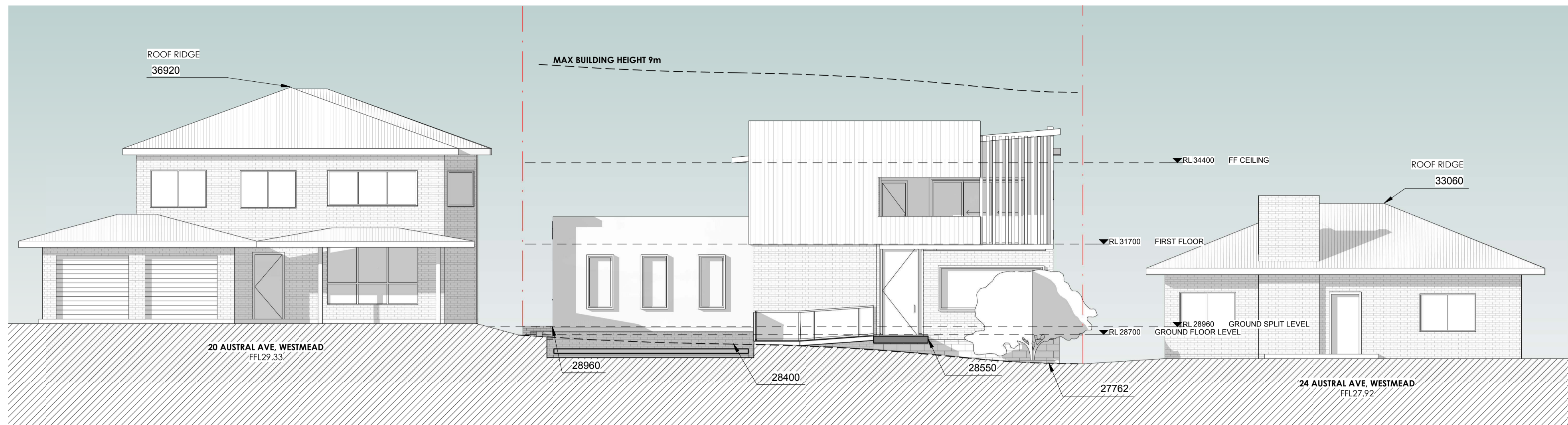
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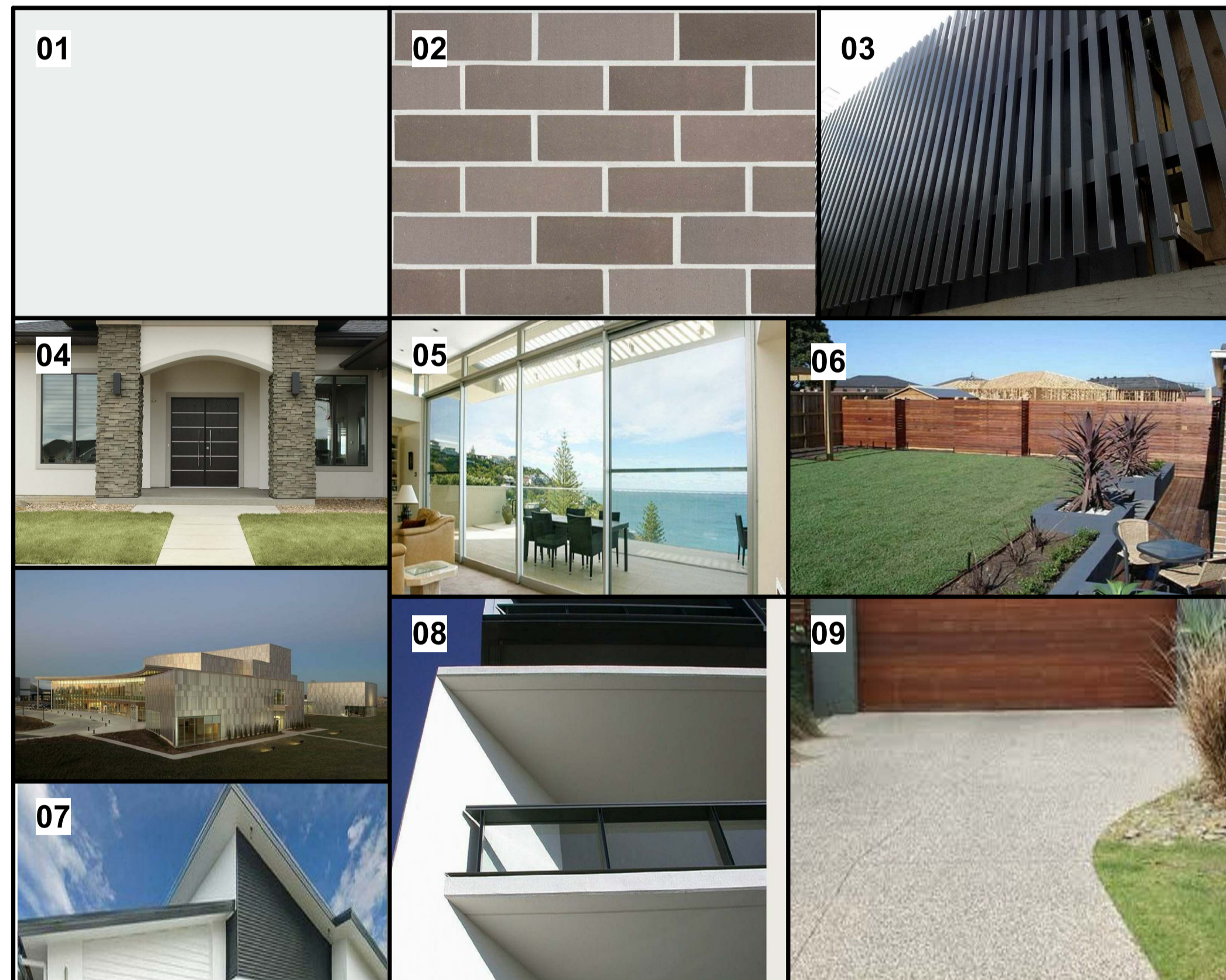
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<b>PROPOSED CHILD CARE FACILITY</b>			
<b>22 AUSTRAL AVENUE, WESTMEAD 2145</b>			
DRAWING TITLE			
<b>3D PERSPECTIVE / AXONOMETRIC VIEWS</b>			
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<b>18102</b>	11	05/02/19	B
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1 Streetscape Elevation  
1:100



**SCHEDULE OF MATERIALS AND FINISHES**

REFERENCE	ELEMENT	MATERIAL	FINISH / SPECIFICATION
01 RW-01	EXTERNAL WALL	RENDER AND PAINT	DULUX B12 VIVID WHITE OR SIMILAR / CLADDING
02 BW-01	EXTERNAL WALL	BRICK	AUSTRAL SYMMETRY / ASPHALT
03 CW-01	EXTERNAL WALL	CLADDING	TIMBER CLADDING
04 PL-01	ARCHITECTURAL FEATURE	CLADDING	INTAGLIO PRO-FIT MODERA LEDGESTONE
05 SD-01	SLIDING DOOR	GLASS SET IN POWDER COATED ALUMINIUM FRAME	DULUX DURATEC X15 "ZEUS SILVER GREY" OR SIMILAR
06 AF-01	PRIVACY SCREEN FENCE	TIMBER FENCE	TIMBER
07 RO-01	ROOF	COLORBOND ROOF	WHITE / SIGNATURE
08 BA-01	BALUSTRADE	GLASS SET IN POWDER COATED ALUMINIUM FRAME	DULUX DURATEC X15 "ZEUS SILVER GREY" OR SIMILAR
09 DR-01	DRIVEWAY	CONCRETE	COLORED DRIVEWAY / DUNE

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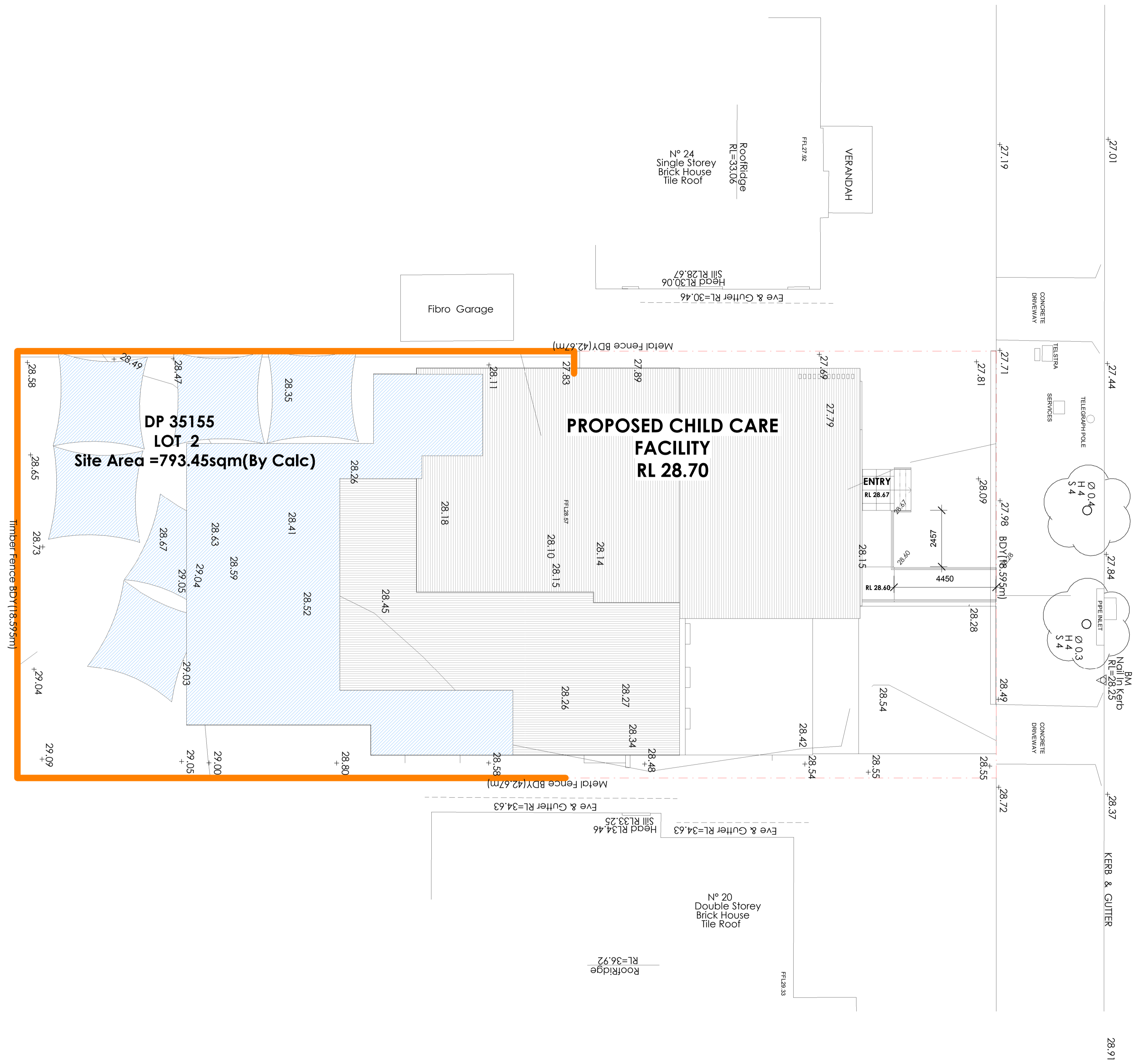
PROJECT TITLE  
**PROPOSED CHILD CARE FACILITY**  
**22 AUSTRAL AVENUE, WESTMEAD 2145**  
 DRAWING TITLE  
 STREETSCAPE ELEVATION /SCHEDULE OF FINISHES

PROJECT NUMBER	DRAWING NUMBER	DATE	REVISION
<b>18102</b>	12	06/26/18	B
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1:100			

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SHADING DEVICES	
OUTDOOR SHADED AREA FROM PERGOLA:	78 m <sup>2</sup>
OUTDOOR ROOF AREA:	122 m <sup>2</sup>
TOTAL AREA OF OUTDOOR PLAY AREA:	329 m <sup>2</sup>
TOTAL SHADING AREA:	200 m <sup>2</sup>
PERCENTAGE OF SHADE/OUTDOOR:	60%



AUSTRAL AVENUE

FOR DA APPROVAL

1 SOLAR STUDY  
1 : 100

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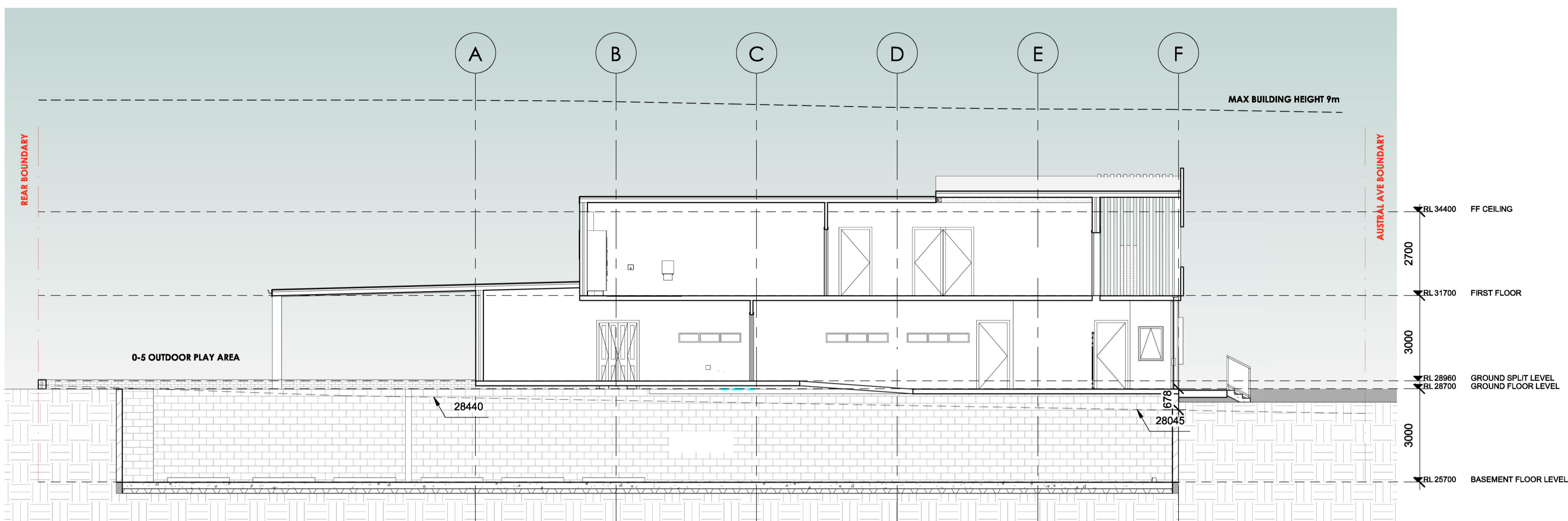


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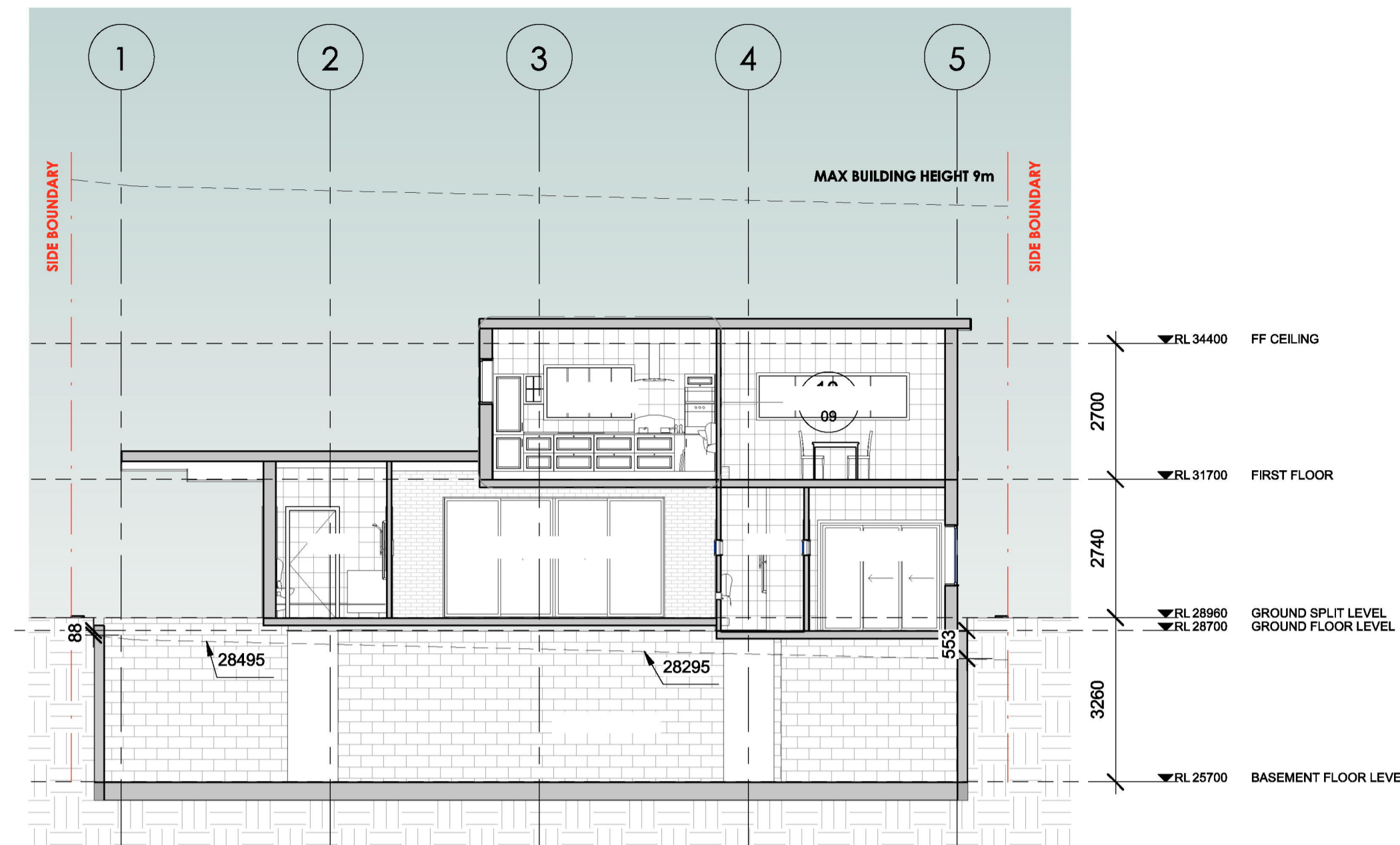
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DRAWING TITLE			
SOLAR STUDY			
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<b>18102</b>	16	05/02/19	B
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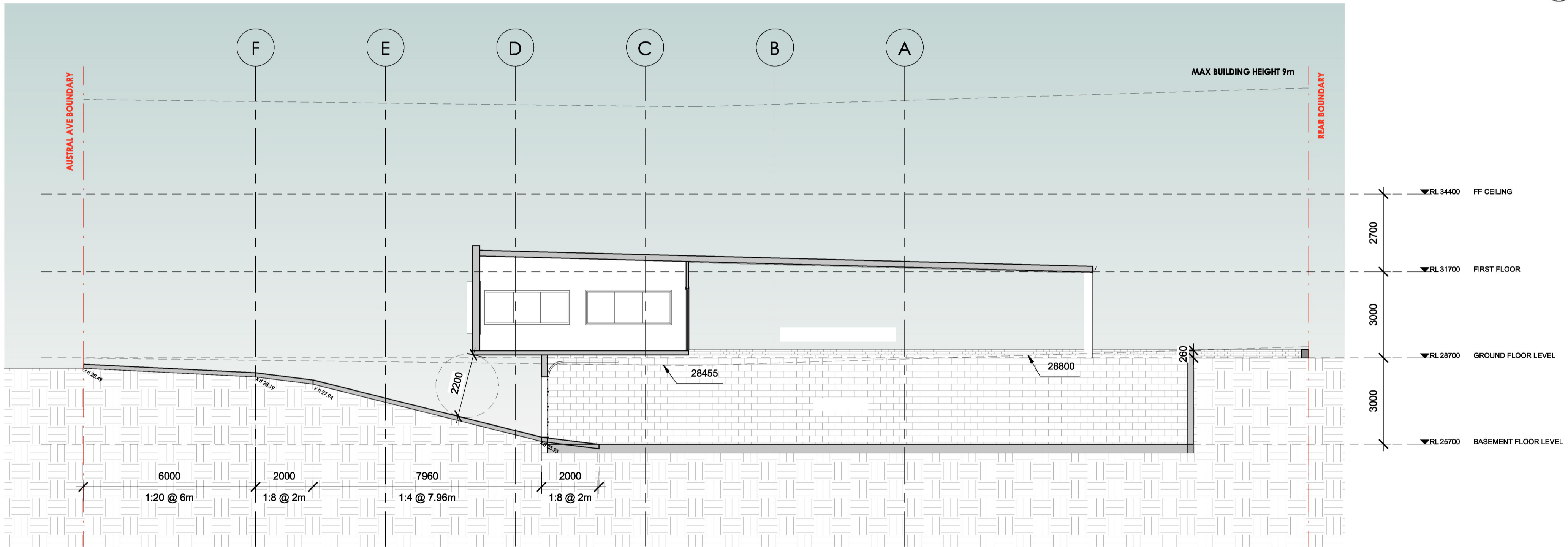




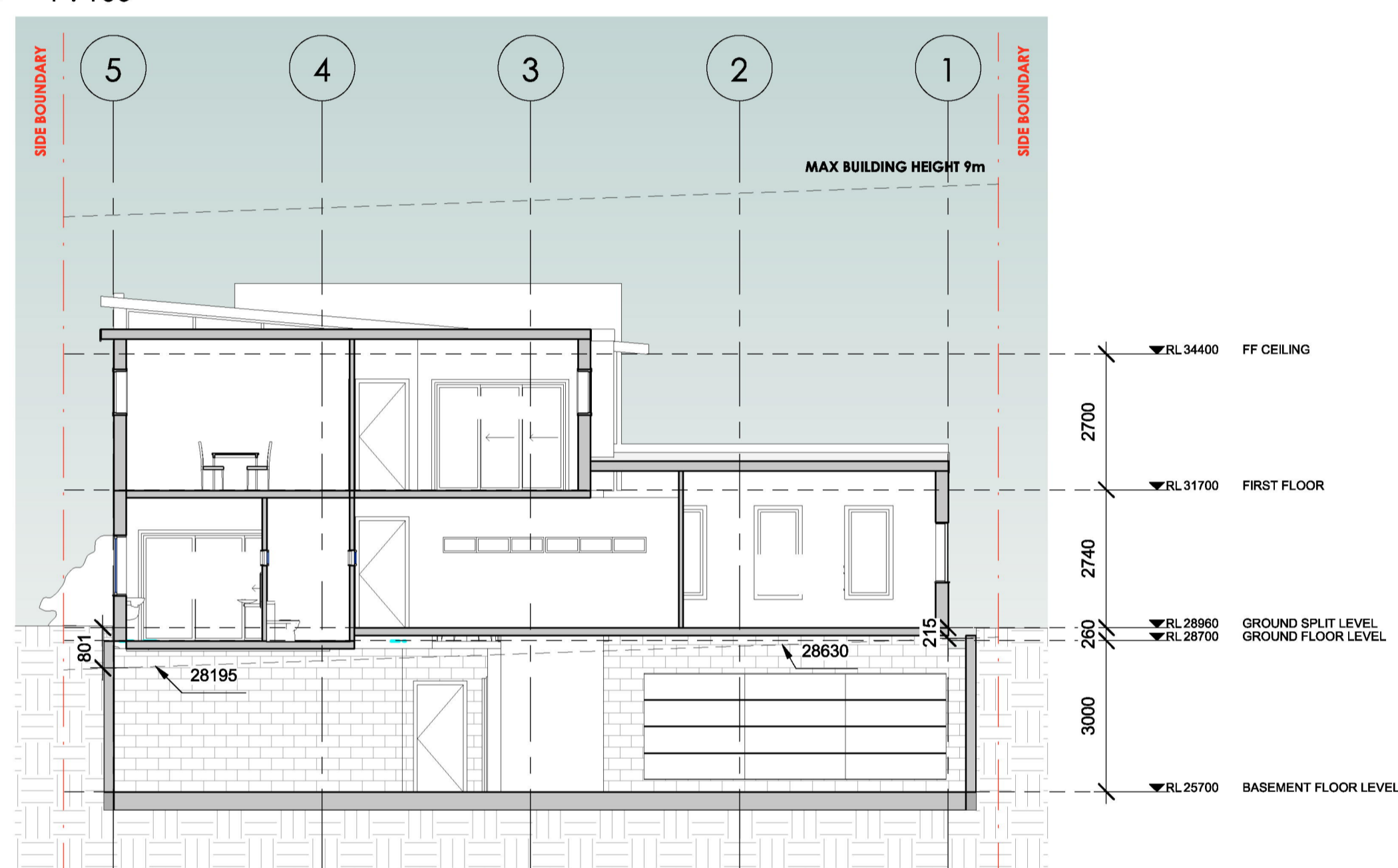
1 SECTION A-A  
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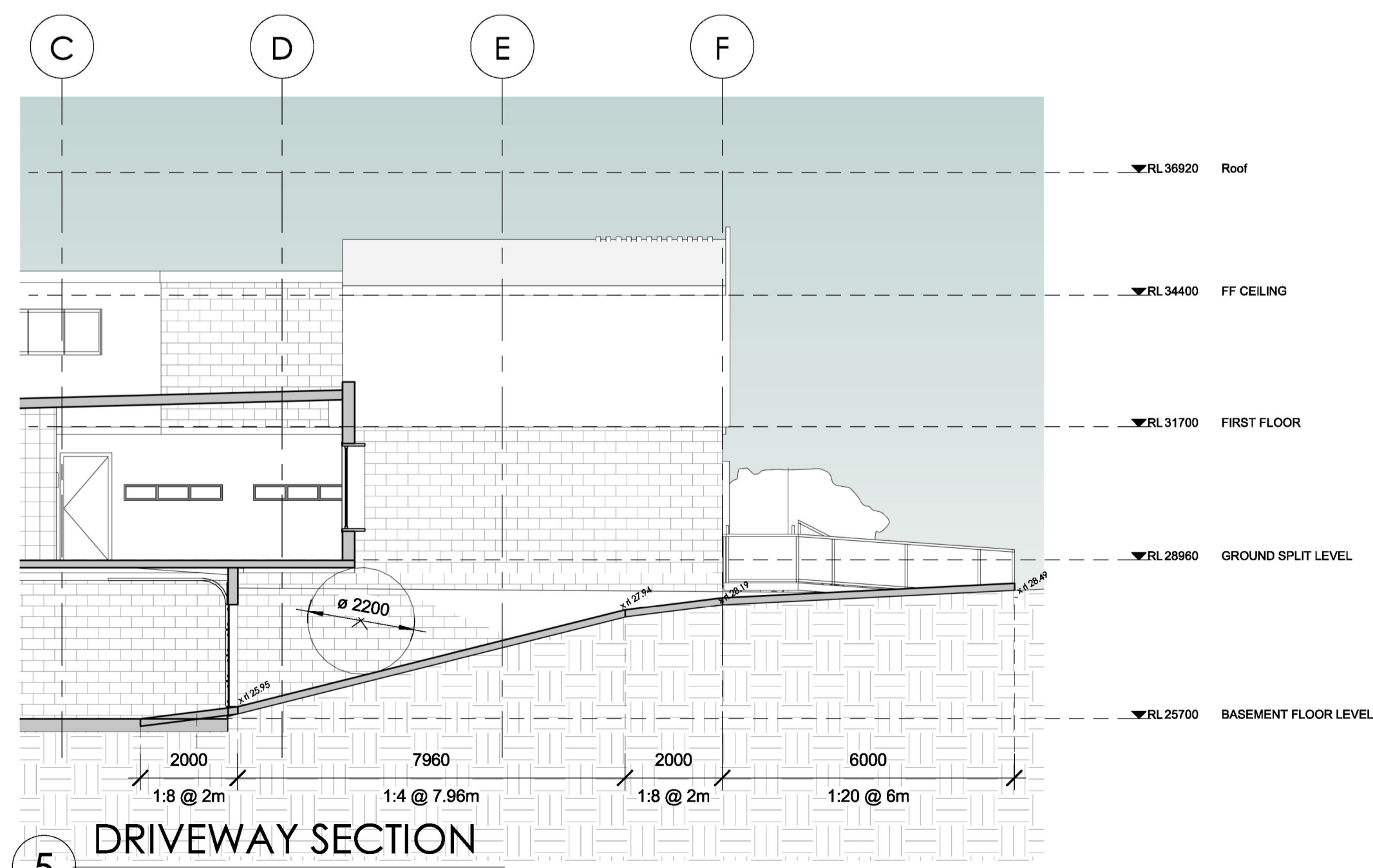
3 SECTION C-C  
1 : 100



2 SECTION B-B  
1 : 100



4 SECTION D-D  
1 : 100



5 DRIVEWAY SECTION  
1 : 100

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PROJECT TITLE			
PROPOSED CHILD CARE FACILITY 22 AUSTRAL AVENUE, WESTMEAD 2145			
DRAWING TITLE			
SECTIONS			
PROJECT NUMBER	DRAWING NUMBER	DATE	REVISION
18102	17	05/02/19	B
SCALE @ A1		DRAWN BY	CHECKED BY
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# 22 AUSTRAL AVENUE, WESTMEAD PROPOSED CHILD CARE CENTRE

## STORMWATER MANAGEMENT PLANS

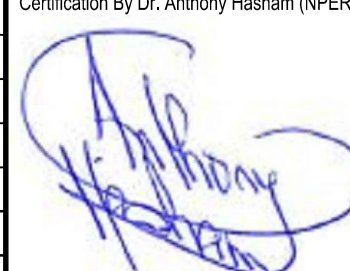


LOCALITY PLAN  
N.T.S

### DRAWING INDEX

Drawing No.	DESCRIPTION
000	COVER SHEET PLAN
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102	STORMWATER LAYOUT PLAN BASEMENT LEVEL SHEET 2 OF 2
103	STORMWATER LAYOUT PLAN
104	ON-SITE DETENTION DETAILS AND CALCULATION SHEET SHEET 1 OF 4
105	ON-SITE DETENTION DETAILS AND CALCULATION SHEET SHEET 2 OF 4
106	ON-SITE DETENTION DETAILS AND CALCULATION SHEET SHEET 3 OF 4
107	ON-SITE DETENTION DETAILS AND CALCULATION SHEET SHEET 4 OF 4
108	MISCELLANEOUS DETAILS SHEET

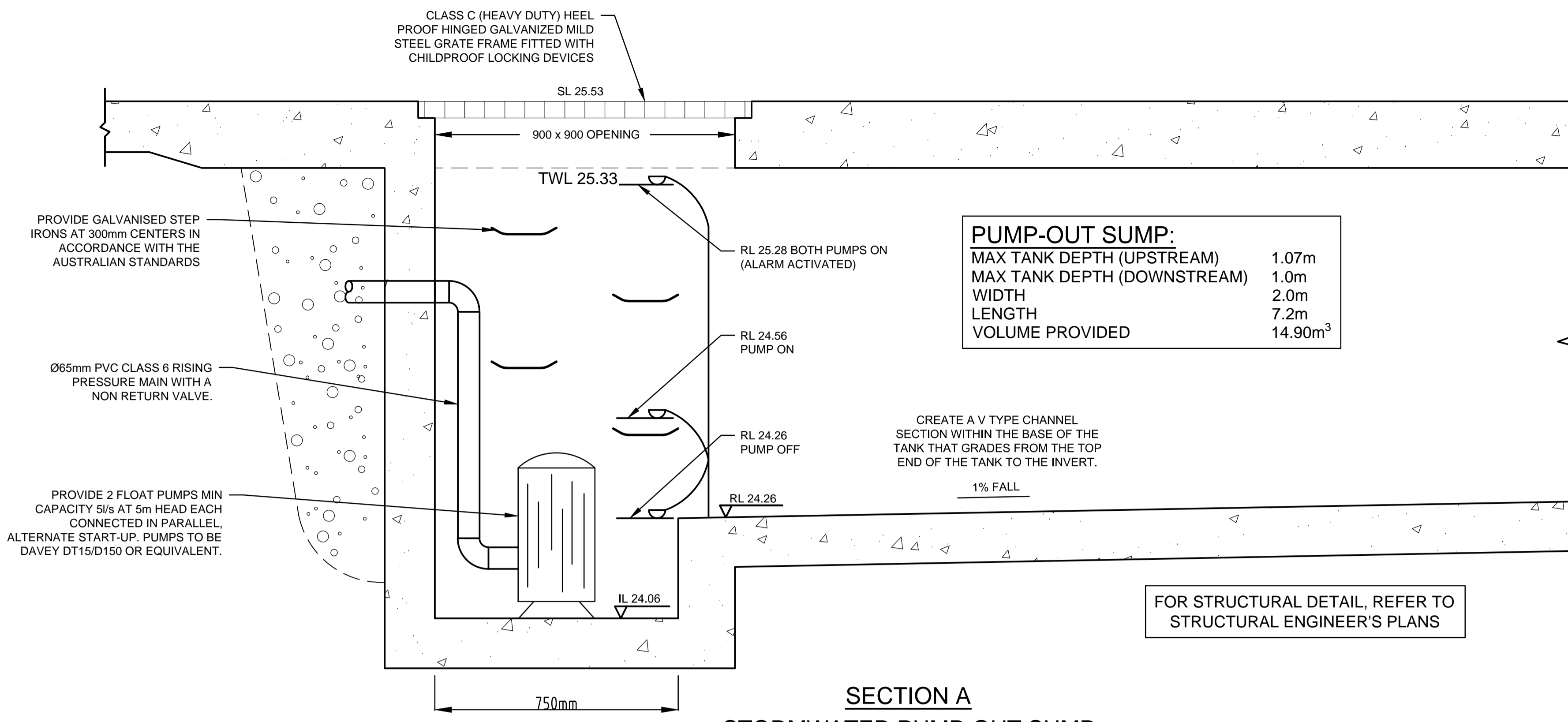
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<table border="1"> <tr> <td>B</td> <td>COUNCIL COMMENTS</td> <td>08/02/2019</td> <td>JMH</td> <td>JAB</td> </tr> <tr> <td>A</td> <td>ISSUE FOR DEVELOPMENT APPLICATION</td> <td>12/07/2018</td> <td>JMH</td> <td>JAB</td> </tr> <tr> <td>Issue</td> <td>Description</td> <td>Date</td> <td>Design</td> <td>Checked</td> </tr> </table>				B	COUNCIL COMMENTS	08/02/2019	JMH	JAB	A	ISSUE FOR DEVELOPMENT APPLICATION	12/07/2018	JMH	JAB	Issue	Description	Date	Design	Checked	Certification By Dr. Anthony Hasham (NPER)  Architect <b>Baini Design</b> Off 2, Level 4, 25-33 Old Northern Road, Baulkham Hills, NSW 2153 EMAIL : info@bainidesign.com.au PHONE : +61 2 9639 1674	Council <b>Cumberland City Council</b>	Scale Project <b>AUSTRALIAN CONSULTING ENGINEERS.</b> PTY LTD - A.C.N. 084 059 941 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2157 PH: (02) 9763 1500 FX: (02) 9763 1515 EMAIL: info@aceeng.com.au	Drawing Title <b>22 AUSTRAL AVENUE, WESTMEAD PROPOSED CHILD CARE CENTRE STORMWATER MANAGEMENT PLANS DEVELOPMENT APPLICATION</b>	Drawing Title <b>COVER SHEET PLAN</b>
B	COUNCIL COMMENTS	08/02/2019	JMH	JAB																			
A	ISSUE FOR DEVELOPMENT APPLICATION	12/07/2018	JMH	JAB																			
Issue	Description	Date	Design	Checked																			
Scale N.T.S.		Project No. 180371	Dwg. No. 000	Issue B																			



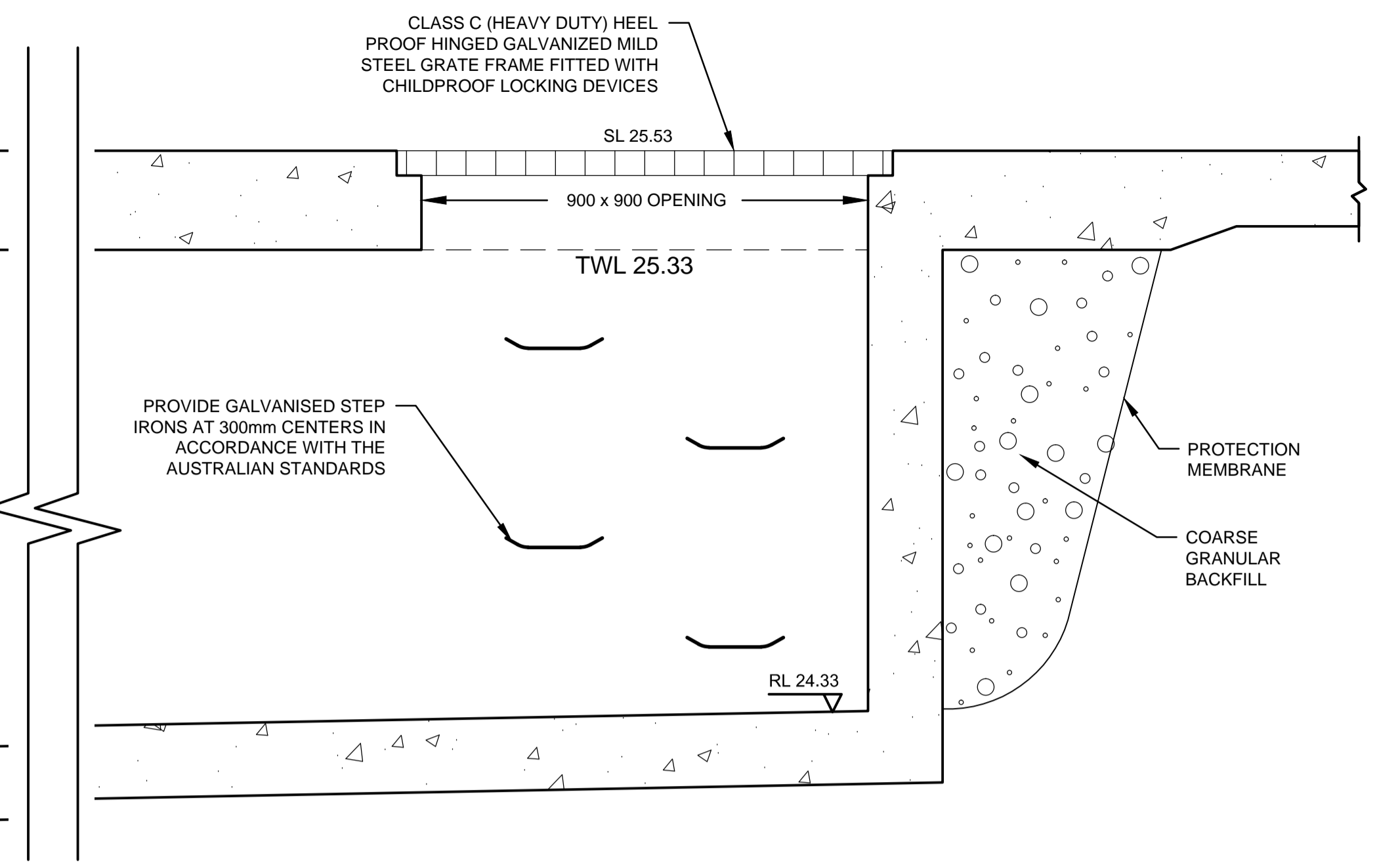






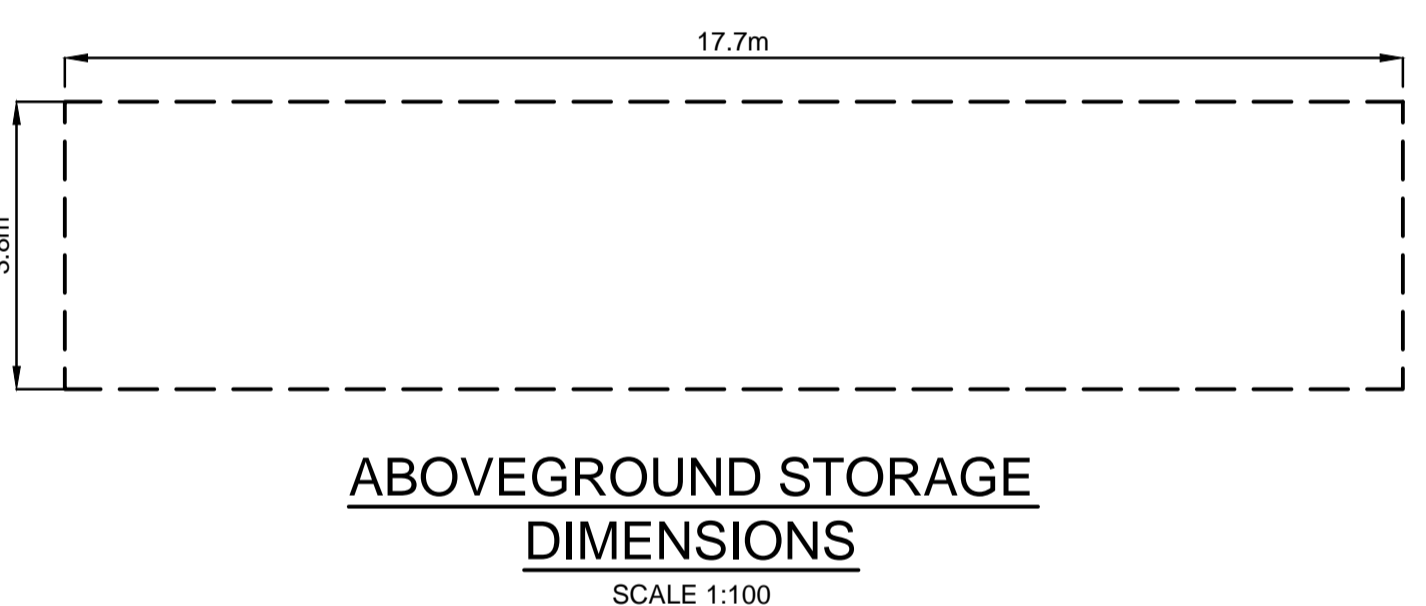
**PUMP-OUT SUMP:**  
 MAX TANK DEPTH (UPSTREAM) 1.07m  
 MAX TANK DEPTH (DOWNSTREAM) 1.0m  
 WIDTH 2.0m  
 LENGTH 7.2m  
 VOLUME PROVIDED 14.90m<sup>3</sup>

**SECTION A**  
**STORMWATER PUMP-OUT SUMP**  
 SCALE 1:10



**PUMP-OUT SUMP DETAIL**  
**PLAN VIEW**  
 SCALE 1:50

**NOTE:**  
 1- FOR ALL THE STRUCTURAL DETAILS, REFER TO STRUCTURAL ENGINEER'S PLAN.  
 2- ALL THE AG LINES BEHIND BASEMENT WALLS TO BE CONNECTED TO PUMP-OUT SUMP.

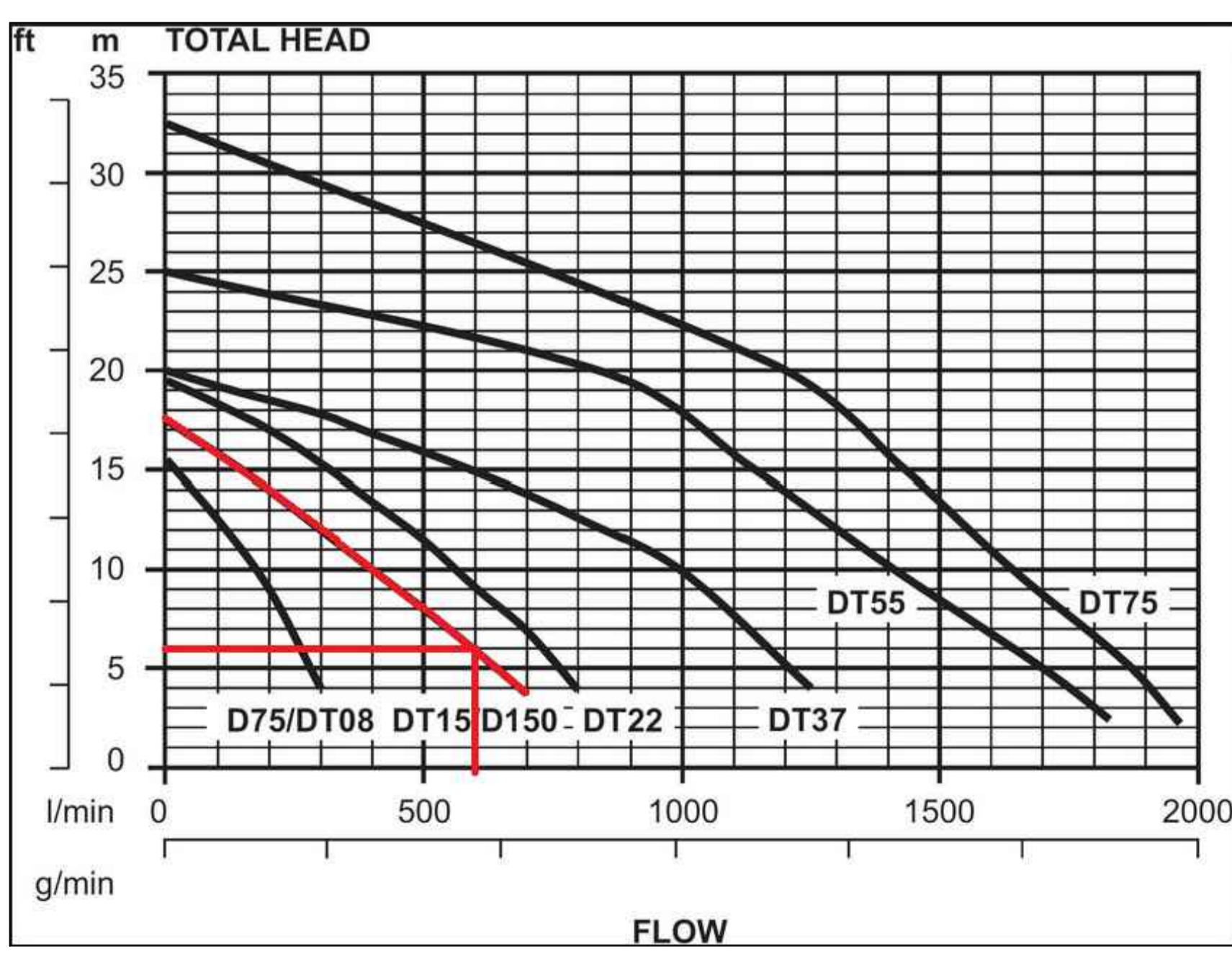


**ABOVEGROUND STORAGE**  
**DIMENSIONS**  
 SCALE 1:100

Volume Calculations				Pump Selection		
Pump Tank				Pumps		
Length	Width	Depth	Volume (cu.m)	<b>2 Of Davey DT15</b>		
7.2	2	1.07	14.9	Rising Main 65mm Diameter Class 12 PVC pipe		
Above Ground				PUMP Storage Summary		
R.L.	Area	Volume (cu.m)	Storage	Required (cu.m)	Provide (cu.m)	
25.53	0.00		Pump Tank	7.75	14.90	
25.65	67.26	4.03	Above Ground	10.07	4.03	
Total = 18.93(cu.m)			Total	17.82	18.93	

**PUMP STORAGE VOLUME CALCULATION**

- $I_{100, 90 \text{ min}} = 57.4 \text{ mm/hour}$
- $I_{100, 12 \text{ hr}} = 16.5 \text{ mm/hour}$
- PUMP STORAGE CATCHMENT AREA:  $A = 90.0 \text{ m}^2 = 0.009 \text{ ha}$
- $Q = C \times I \times A / 360$  WHERE  $C = 1.0$  (REFER TO AS3500.3.5.4.6 (a))  
 $= 1.0 \times 57.4 \times 0.009 / 360$   
 $= 0.001435 \text{ m}^3/\text{s}$   
 $= 1.435 \text{ L/s}$
- THEREFORE, THE PUMP HOLDING TANK VOLUME IS:  
 $V = 1.435 \times 1.5 \times 3600$   
 $= 7.75 \text{ m}^3$
- ABOVE GROUND STORAGE VOLUME:  
 $Q = 1.0 \times 16.5 \times 0.009 / 360$   
 $= 0.4125 \text{ L/s}$   
 $V = 0.4125 \times 12 \times 3600 - 7.75$   
 $= 10.07 \text{ m}^3$
- TOTAL REQUIRED VOLUME IS  $17.82 \text{ m}^3$



PUMP CALCULATIONS												
Project Address: 22 Austral Avenue, Westmead												
$HL = (3.35 \times 10^6 \times Q / (d^{2.63 \times C}))^{1.852}$				$h1 = kv^2 / 2g$				$H(\text{total head}) = Hf + h1 + \text{Elevation Head}(\text{static head})$				
HL(m/100m), Q(L/s), d(mm)				k(cum), v(m/s), g=9.8(m)				Elevation Head(m)= 5 Pipe Length(m)= 10				
d(mm)= 65				v(m/s)= 0.00				Hazen - Williams C= 145 Hazen-Williams Constant				
Bend Losses, Kb= 3.06				Valve Losses, Kv= 2.13				125-140 Commercial steel pipe				
Entry/Exit Losses, Ke= 5.00				Cum Losses, K= 10.19				135-140 Bitumen Lined Cast iron pipe				
Start Flow= 0								140-145 Copper Tube				
Increment= 1								145-150 PVC				
Q(L/s)		0	1	2	3	4	5	6	7	8	9	10
HL(m/100m)		0.00	0.18	0.64	1.36	2.32	3.51	4.92	6.55	8.39	10.44	12.68
Hf(m)	HL x pipe Length/100	0.00	0.02	0.06	0.14	0.23	0.35	0.49	0.66	0.84	1.04	1.27
v(m/s)	Q(L/s) / area of pipe crossing section	0.00	0.30	0.60	0.90	1.21	1.51	1.81	2.11	2.41	2.71	3.01
h1(m)	k(cum) x v(m/s)^2 / 2xg	0.00	0.05	0.19	0.42	0.76	1.18	1.70	2.31	3.02	3.82	4.72
H(m)	=Hf+H1+Elevation Head	5.00	5.07	5.25	5.56	5.99	6.53	7.19	7.97	8.86	9.87	10.99

**UNDERGROUND PUMP - OUT SUMP**  
**STAGED STORAGE CALCULATIONS**

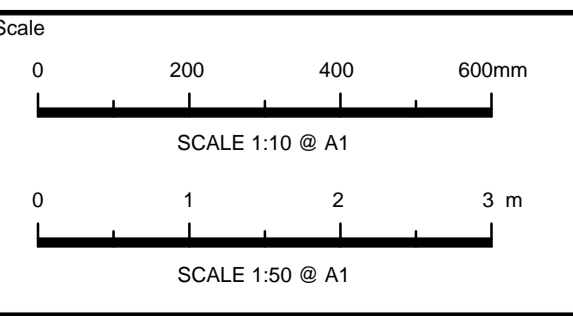
DEPTH (mm)	AREA (m <sup>2</sup> )	CUMULATIVE VOLUME (m <sup>3</sup> )
0	14.4	0
100	14.4	0.936
200	14.4	2.376
300	14.4	3.816
400	14.4	5.256
500	14.4	6.696
600	14.4	8.136
700	14.4	9.576
800	14.4	11.016
900	14.4	12.456
1000	14.4	13.896
1070	14.4	14.904

NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
B	COUNCIL COMMENTS	08/02/2019	JMH	JAB
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Certification By: Dr. Anthony Hasham (NFER)  
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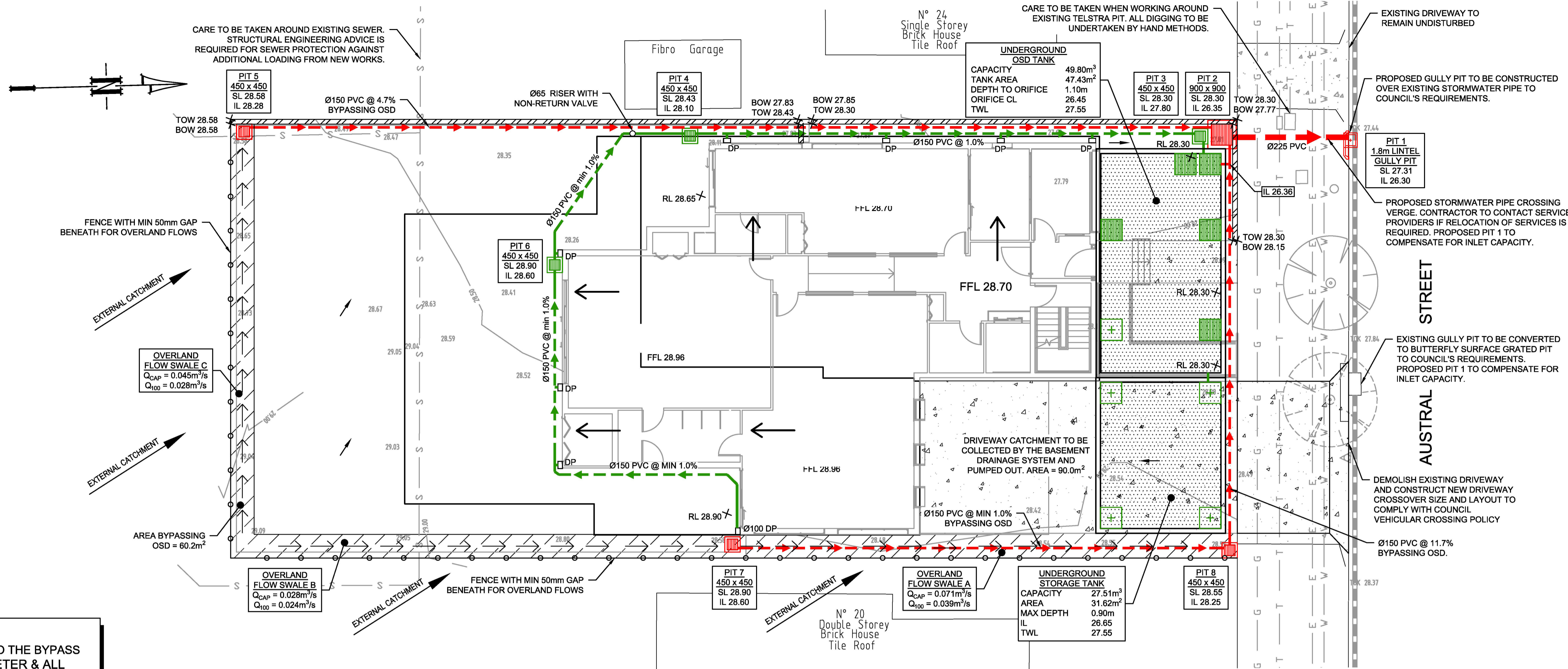


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 EMAIL: info@a8eng.com.au

Project  
**22 AUSTRAL AVENUE, WESTMEAD**  
**PROPOSED CHILD CARE CENTRE**  
**STORMWATER MANAGEMENT PLANS**  
**DEVELOPMENT APPLICATION**

Drawing Title  
**STORMWATER LAYOUT PLAN**  
**BASEMENT LEVEL**  
**SHEET 2 OF 2**  
 Scale As Shown Project No. 180371 Dwg. No. 102 Issue B





**PIPES NOTE:**  
 Ø65 PVC @ MIN 1.0%  
 Ø90 PVC @ MIN 1.0%  
 Ø100 PVC @ MIN 1.0%  
 Ø150 PVC @ MIN 1.0%  
 Ø225 PVC @ MIN 0.5%  
 Ø300 PVC @ MIN 0.4%  
 UNLESS NOTED OTHERWISE

**DOWNPIPE NOTE:**  
 ALL DOWNPIPES ADJACENT TO THE BYPASS AREAS TO BE Ø100mm DIAMETER & ALL RELATIVE GUTTERS TO BE CONSTRUCTED TO ENSURE 100yr ARI CAPACITY.

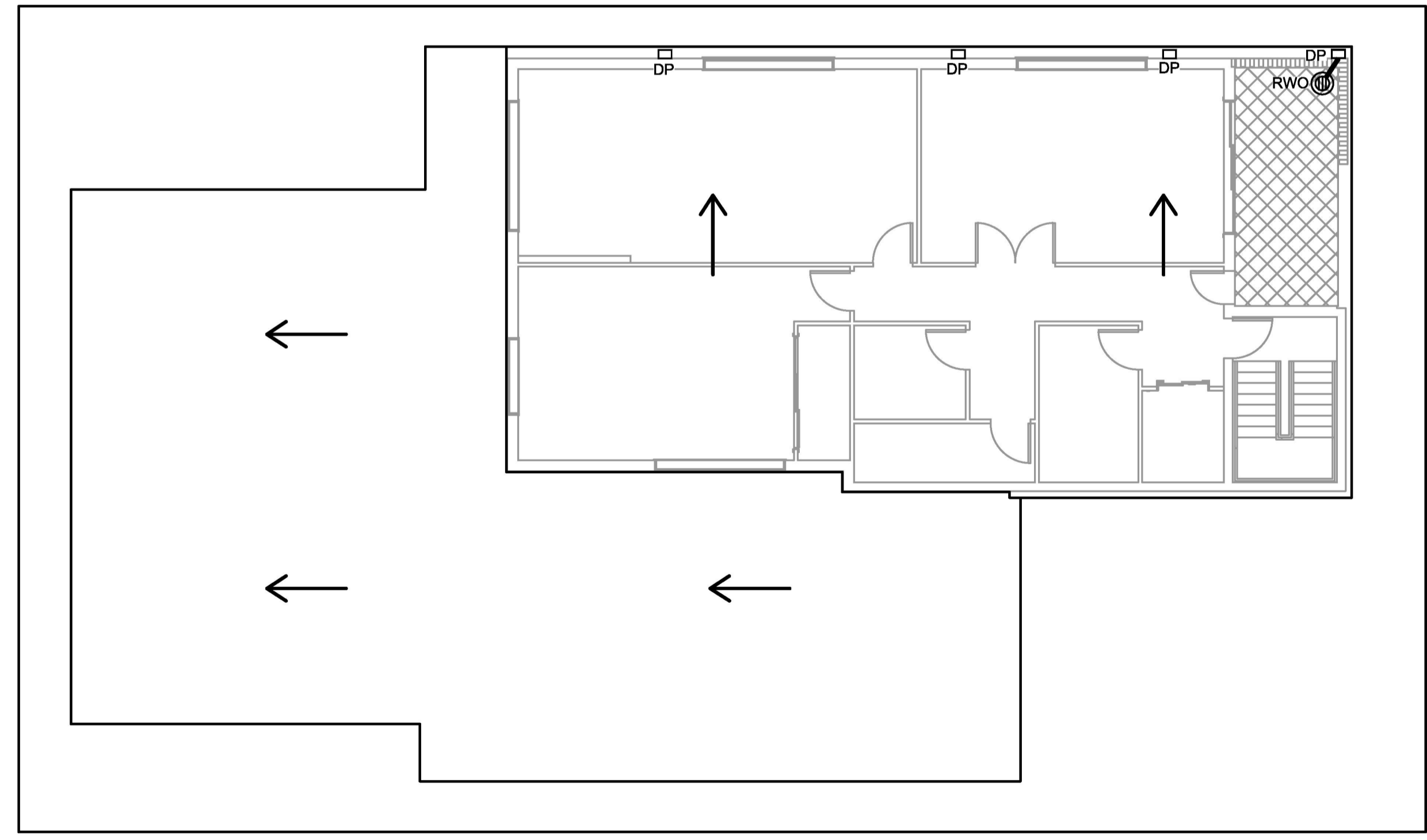
**GROUND FLOOR PLAN**  
 SCALE 1:100

**LEGEND**

	PROPOSED STORMWATER BYPASSING OSD		EXISTING SURFACE LEVEL
	PROPOSED STORMWATER DRAINING TO OSD		INVERT LEVEL OF PIPE JUNCTION
	SUBSOIL DRAINAGE		FENCE WITH 50mm GAP BENEATH FOR OVERLAND FLOWS
	EXISTING STORMWATER		PROPOSED RETAINING WALL TO STRUCTURAL ENGINEER'S DETAILS
	EXISTING SEWER MAIN (FROM RECORDS)		SWALE DRAIN
	EXISTING WATER (FROM RECORDS)		PROPOSED OSD STORAGE
	EXISTING POWER (FROM RECORDS)		AREA BYPASSING OSD
	EXISTING GAS (FROM RECORDS)		TILED AREA
	EXISTING TELSTRA (FROM RECORDS)		TREES TO BE RETAINED
	GUTTER DOWNPIPE		TREES TO BE REMOVED
	ROOF SLOPE		RAISED CONCRETE EDGING
	RAINWATER OUTLET		
	Ø300 CLEANING EYE		
	SURFACE FLOW ARROWS		
	DESIGN SURFACE LEVEL		

**GENERAL NOTES**

- ALL LINES ARE TO BE Ø90 uPVC 1.0% GRADE UNLESS NOTED OTHERWISE. CHARGED LINES TO BE SEWERGRADE & SEALED.
- EXISTING SERVICES LOCATIONS SHOWN INDICATIVE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS.
- ALL PIPES TO HAVE MIN 150mm COVER IF LOCATED WITHIN PROPERTY.
- ALL PITS IN DRIVEWAYS TO BE 450x450 CONCRETE AND ALL PITS IN LANDSCAPED AREAS TO BE 450x450 PLASTIC.
- PITS LESS THAN 600mm DEEP MAY BE BRICK, PRECAST OR CONCRETE.
- ALL BALCONIES AND ROOFS TO BE DRAINED AND TO HAVE SAFETY OVERFLOWS IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
- ALL EXTERNAL SLABS TO BE WATERPROOFED.
- ALL GRATES TO HAVE CHILD PROOF LOCKS.
- ALL DRAINAGE WORKS TO AVOID TREE ROOTS.
- ALL DPs TO HAVE LEAF GUARDS.
- ALL EXISTING LEVELS TO BE CONFIRMED BY BUILDER PRIOR TO CONSTRUCTION.
- ALL WORK WITHIN COUNCIL RESERVE TO BE INSPECTED BY COUNCIL PRIOR TO CONSTRUCTION.
- COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL.
- ALL WORK SHALL BE IN ACCORDANCE WITH B.C.A. AND A.S.3500.3.
- REFER TO LANDSCAPE ARCHITECT'S DRAWINGS FOR LANDSCAPING.
- CARE TO BE TAKEN AROUND EXISTING SEWER. STRUCTURAL ADVICE IS REQUIRED FOR SEWER PROTECTION AGAINST ADDITIONAL LOADING FROM NEW PITS, PIPES, RETAINING WALLS AND OSD BASIN WATER LEVELS.
- ALL PIPES IN BALCONIES TO BE Ø65 uPVC CAST IN CONCRETE SLAB. CONTRACTOR TO PROVIDE A BREAK / OPEN VOID IN RAIL / BALLUSTRADE FOR STORMWATER EMERGENCY OVERFLOW. ALL ENCLOSED AREAS/PLANTER BOXES TO BE FITTED WITH FLOOR WASTES & DRAINED TO OSD DOWNPIPES TO BE CHECKED BY ARCHITECT & PLUMBER PRIOR TO CONSTRUCTION.
- THE OSD BASIN / TANK IS TO BE BUILT TO THE CORRECT LEVELS & SIZE AS PER THIS DESIGN. ANY VARIATIONS ARE TO BE DONE UNDER CONSULTATION FROM OUR OFFICE ONLY. ANY AMENDMENTS WITHOUT OUR APPROVAL WOULD RESULT IN ADDITIONAL FEES FOR REDESIGN AT OC STAGE OR IF A SOLUTION CANNOT BE FOUND, RECONSTRUCTION IS REQUIRED UNDER THE CONTRACTOR'S EXPENSES.



**LEVEL 1 PLAN**  
 SCALE 1:100

NOT FOR CONSTRUCTION

B	COUNCIL COMMENTS	08/02/2019	JMH	JAB
A	ISSUE FOR DEVELOPMENT APPLICATION	12/07/2018	JMH	JAB
Issue	Description	Date	Design	Checked

Certification By Dr. Anthony Hasham (NPER)  
 Architect  
**Baini Design**  
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Council  
**Cumberland City Council**

Scale  
 0 2 4 6 m  
 SCALE 1:100 @ A1

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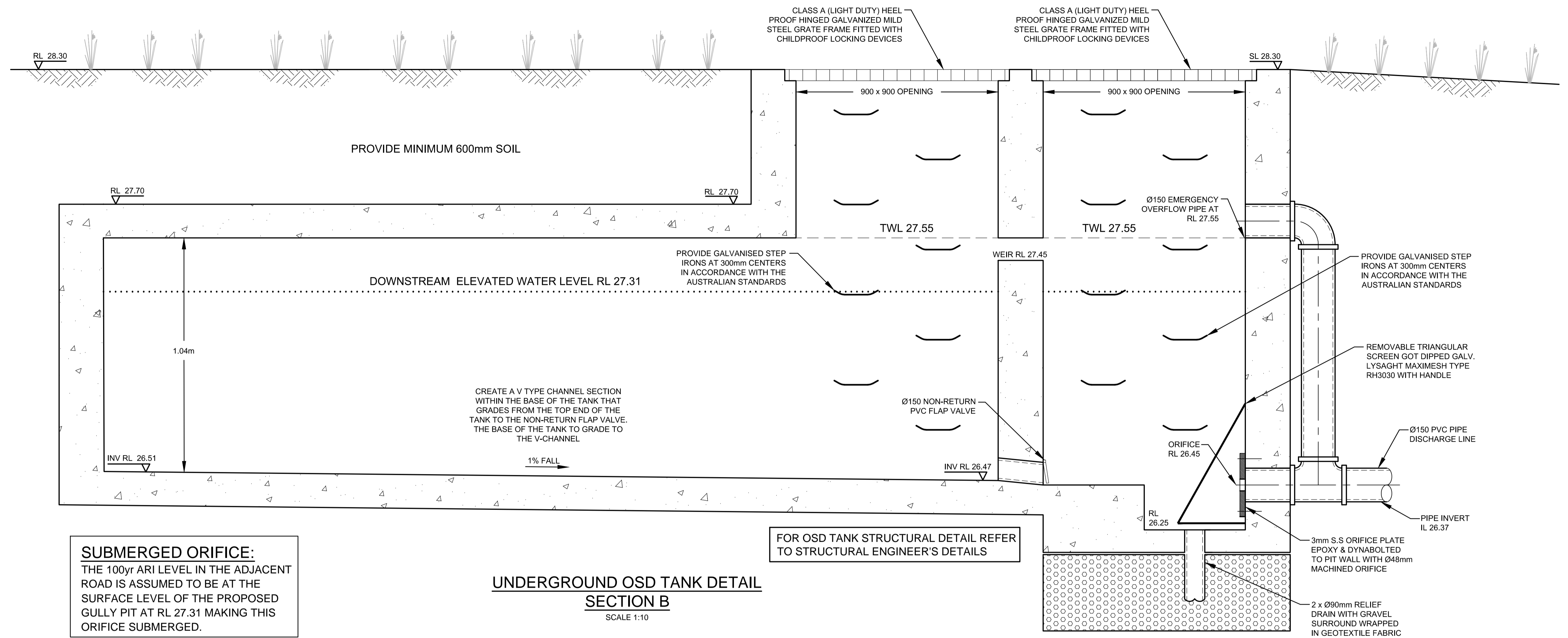
Project  
**22 AUSTRAL AVENUE, WESTMEAD PROPOSED CHILD CARE CENTRE STORMWATER MANAGEMENT PLANS DEVELOPMENT APPLICATION**

Drawing Title  
**STORMWATER LAYOUT PLAN**  
 Scale 1:100 Project No. 180371 Dwg. No. 103 Issue B









**SUBMERGED ORIFICE:**  
 THE 100yr ARI LEVEL IN THE ADJACENT ROAD IS ASSUMED TO BE AT THE SURFACE LEVEL OF THE PROPOSED GULLY PIT AT RL 27.31 MAKING THIS ORIFICE SUBMERGED.

FOR OSD TANK STRUCTURAL DETAIL REFER TO STRUCTURAL ENGINEER'S DETAILS

**UNDERGROUND OSD TANK DETAIL SECTION B**  
 SCALE 1:10

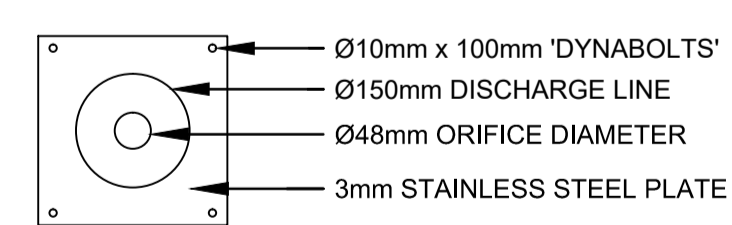
CUMBERLAND CITY COUNCIL On-Site Detention Calculation Sheet			
Project:	ACE180371.SW.DA	Lot No. 2	
Location:	22 Austral Avenue, Westmead	DP No. 35155	
Designer:	Joe Bacha	D.A. No.	
Phone:	02 9763 1500		
OSD Area:	Front Lot	UPRCT	UPRCT
Site Area		0.079	0.079
Basic Storage Volume		37.29	37.29
Basic Discharge		6.35	6.35
Area of Site to Storage		0.073	0.073
Percentage of Site		92%	92%
Storage per ha of contributing area		68.59	508.59
Volume/PSD Adjustment		71.95	71.95
PSD for site		5.27	5.27
Maximum Head to Orifice Centre		1.100	0.240
Calculated Orifice Diameter		0.048	0.048
Maximum discharge		269	2.463
Head for high early discharge		0.000	0.140
High Early Discharge		0.024	95%
Mean Discharge		1.146	2.172
Average Discharge per Hectare		70.188	29.619
Final Site Storage Ratio		621	978
Site Storage Volume		38.17	71.71
Volume Provided		77.31	203%
Checked By:	Joe Bacha		
Date Checked:	07-Feb-19		
OSD Plan Number:	101-108		

**UNDERGROUND OSD TANK STAGED STORAGE CALCULATIONS**

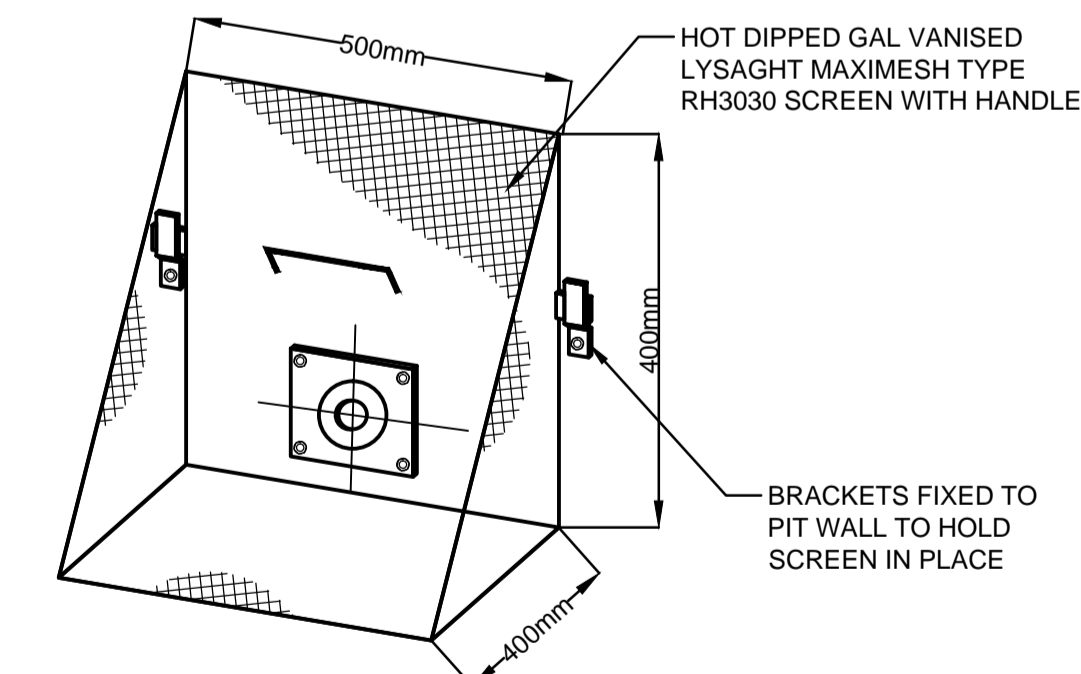
DEPTH (mm)	AREA (m <sup>2</sup> )	CUMULATIVE VOLUME (m <sup>3</sup> )
0	47.43	0
100	47.43	2.3715
200	47.43	7.1145
300	47.43	11.8575
400	47.43	16.6005
500	47.43	21.3435
600	47.43	26.0865
700	47.43	30.8295
800	47.43	35.5725
900	47.43	40.3155
1000	47.43	45.0585
1100	47.43	49.8015

**TOTAL STORAGE CAPACITIES**

UNIT No.	OSD TANK VOLUME (m <sup>3</sup> )	STORAGE TANK VOLUME (m <sup>3</sup> )	TOTAL OSD VOLUME (m <sup>3</sup> )
-	49.80	27.51	77.31



**ORIFICE PLATE DETAIL**  
 N.T.S.



**TRASH SCREEN DETAIL**  
 N.T.S.

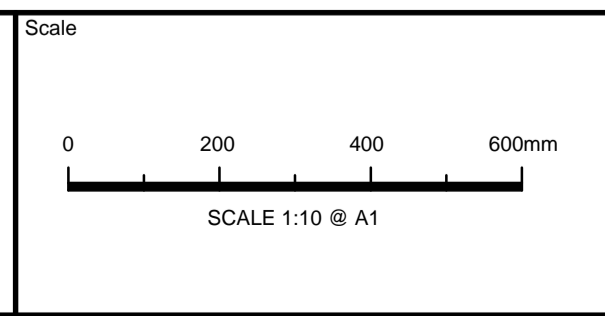
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Issue	Description	Date	Design	Checked
B	COUNCIL COMMENTS	08/02/2019	JMH	JAB
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Certification By: Dr. Anthony Hasham (NFER)

Architect  
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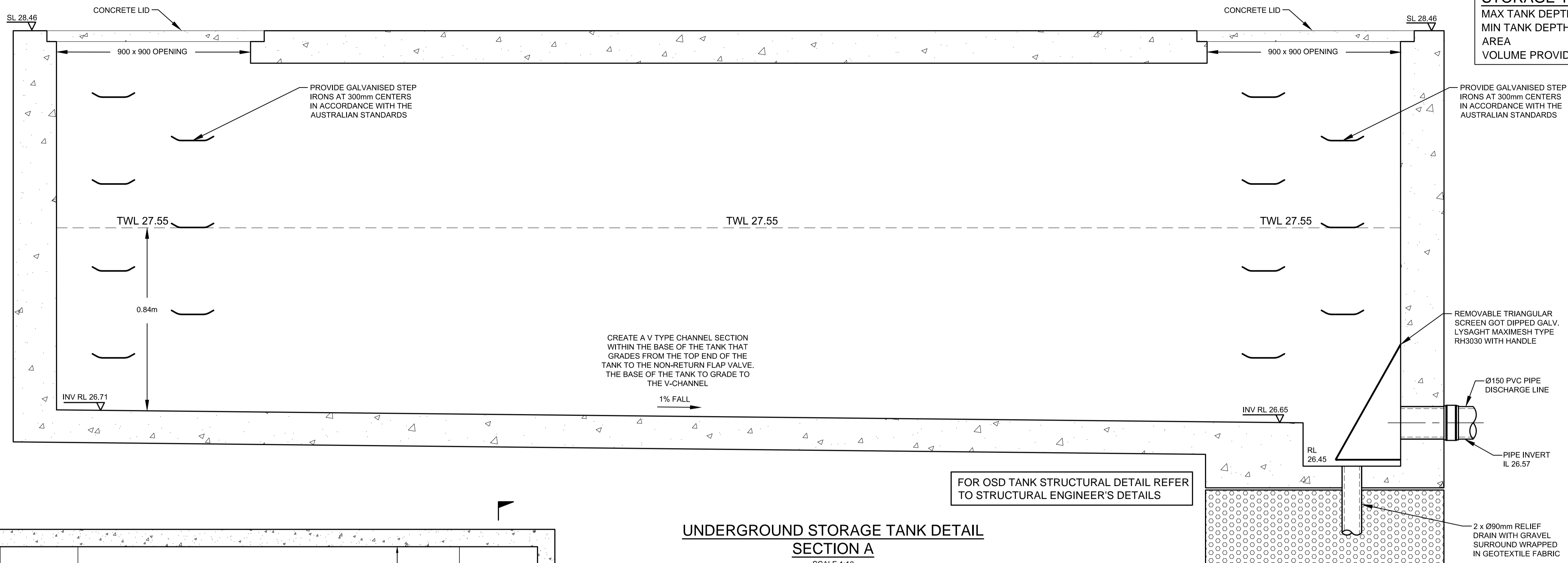
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Project  
**22 AUSTRAL AVENUE, WESTMEAD PROPOSED CHILD CARE CENTRE STORMWATER MANAGEMENT PLANS DEVELOPMENT APPLICATION**

Drawing Title  
**ON-SITE DETENTION DETAILS AND CALCULATION SHEET SHEET 2 OF 4**  
 Scale A1 Project No. 180371 Dwg. No. 105 Issue B

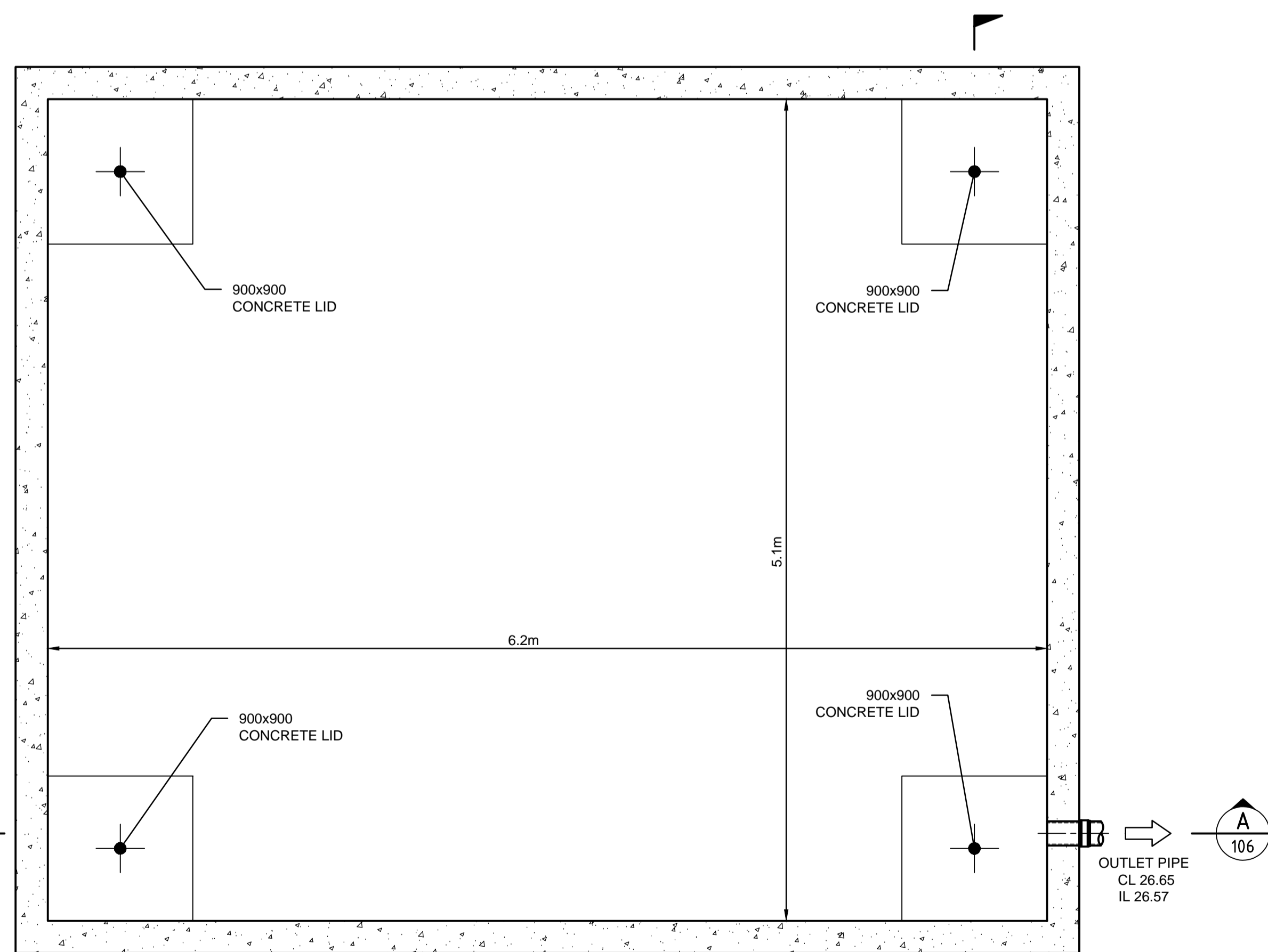


<b>STORAGE TANK:</b>	
MAX TANK DEPTH	1.81m
MIN TANK DEPTH	1.75m
AREA	31.62m <sup>2</sup>
VOLUME PROVIDED	27.51m <sup>3</sup>



FOR OSD TANK STRUCTURAL DETAIL REFER TO STRUCTURAL ENGINEER'S DETAILS

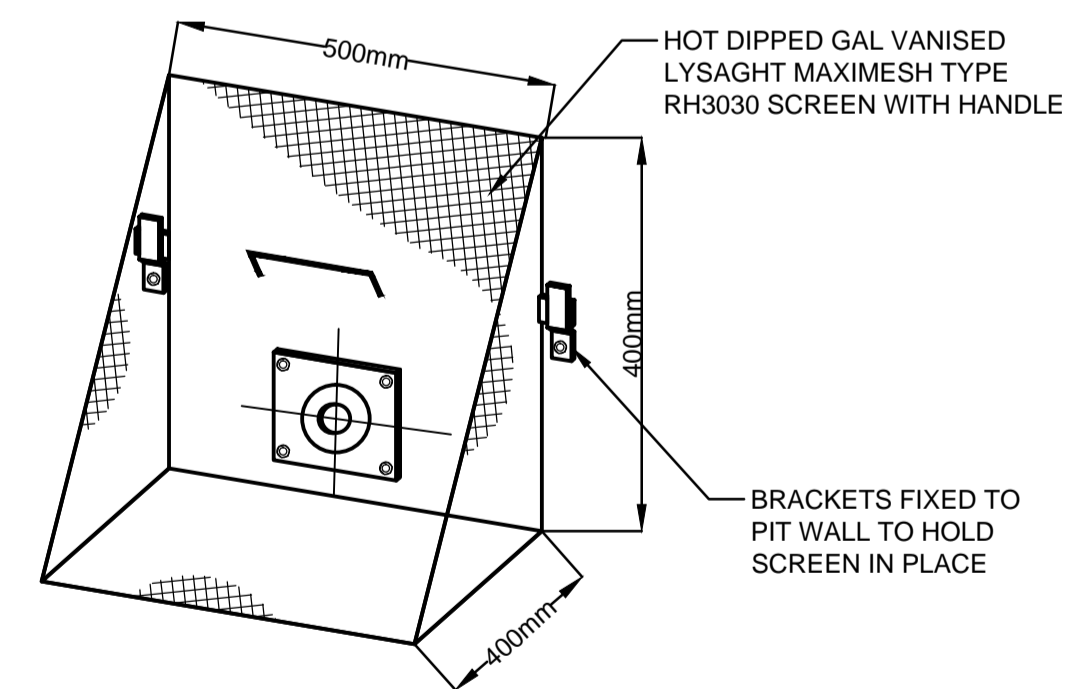
**UNDERGROUND STORAGE TANK DETAIL**  
**SECTION A**  
SCALE 1:10



**UNDERGROUND STORAGE TANK PLAN VIEW**  
SCALE 1:25

**UNDERGROUND STORAGE TANK STAGED STORAGE CALCULATIONS**

DEPTH (mm)	AREA (m <sup>2</sup> )	CUMULATIVE VOLUME (m <sup>3</sup> )
0	31.62	0
100	31.62	2.2134
200	31.62	5.3754
300	31.62	8.5374
400	31.62	11.6994
500	31.62	14.8614
600	31.62	18.0234
700	31.62	21.1854
800	31.62	24.3474
900	31.62	27.5094



**TRASH SCREEN DETAIL**  
N.T.S.

NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
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Certification By Dr. Anthony Hasham (NFER)

*Anthony Hasham*

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Council

**Cumberland City Council**

Scale

0 200 400 600mm

SCALE 1:10 @ A1

0 0.2 0.4 0.6 0.8 1.0 1.2m

SCALE 1:25 @ A1

**AUSTRALIAN CONSULTING ENGINEERS.**

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Project

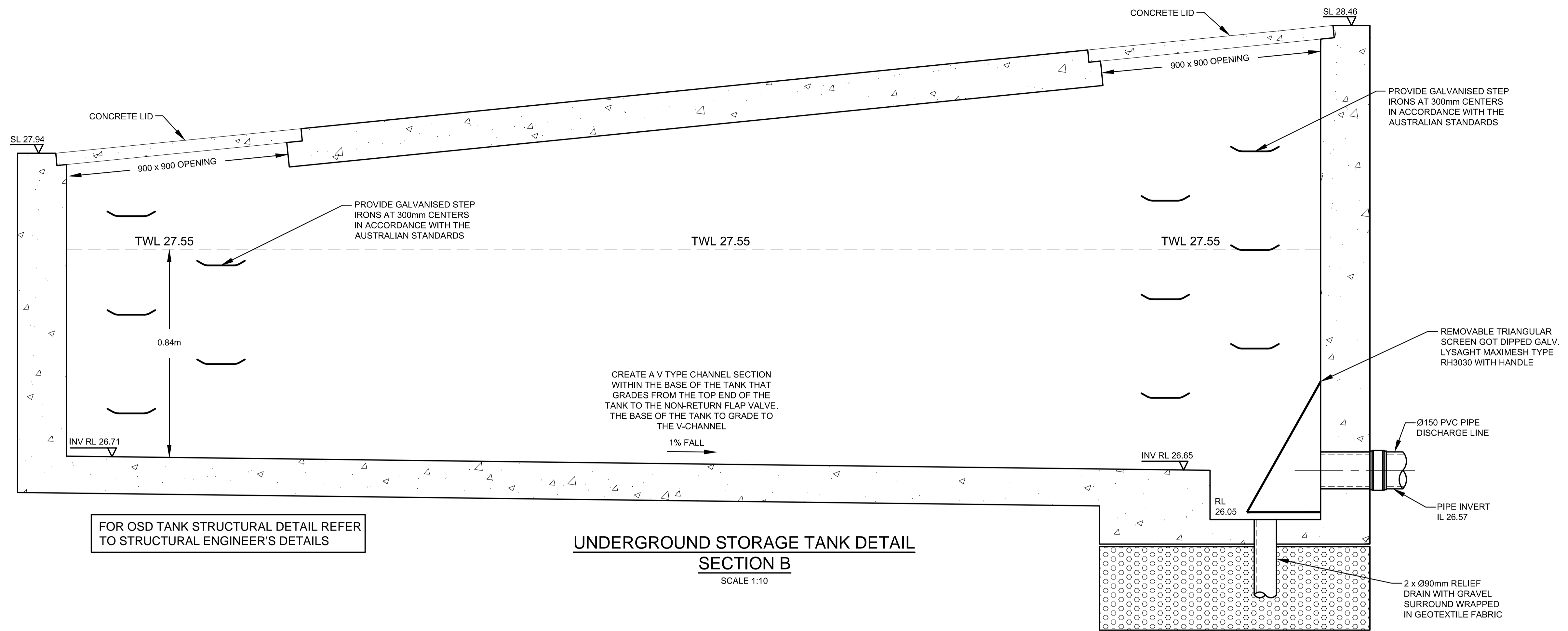
**22 AUSTRAL AVENUE, WESTMEAD PROPOSED CHILD CARE CENTRE STORMWATER MANAGEMENT PLANS DEVELOPMENT APPLICATION**

Drawing Title

**ON-SITE DETENTION DETAILS AND CALCULATION SHEET SHEET 3 OF 4**

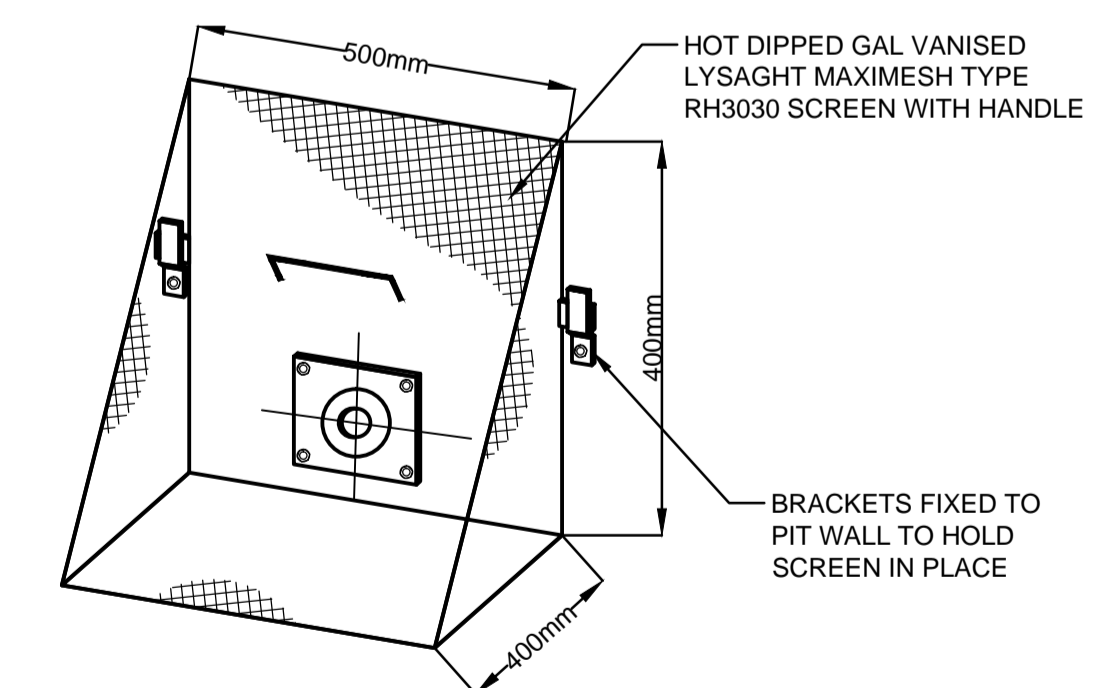
Scale A1 Project No. 180371 Dwg. No. 106 Issue B





FOR OSD TANK STRUCTURAL DETAIL REFER TO STRUCTURAL ENGINEER'S DETAILS

**UNDERGROUND STORAGE TANK DETAIL**  
**SECTION B**  
SCALE 1:10



**TRASH SCREEN DETAIL**  
N.T.S.

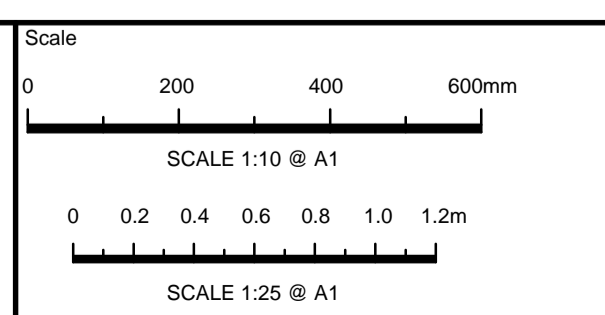
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A	ISSUE FOR DEVELOPMENT APPLICATION	12/07/2018	JMH	JAB

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Project  
**22 AUSTRAL AVENUE, WESTMEAD PROPOSED CHILD CARE CENTRE STORMWATER MANAGEMENT PLANS DEVELOPMENT APPLICATION**

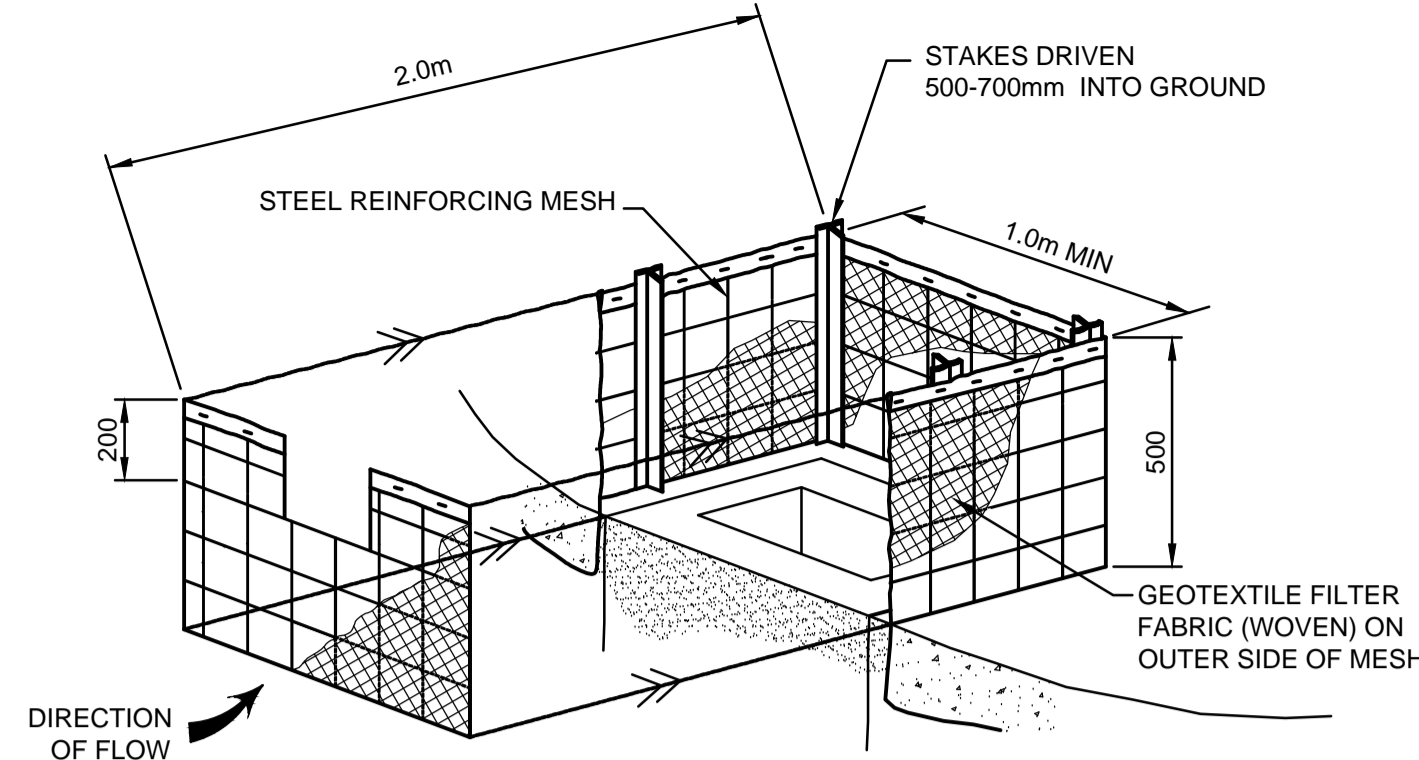
Drawing Title  
**ON-SITE DETENTION DETAILS AND CALCULATION SHEET SHEET 4 OF 4**

Scale	A1	Project No.	Dwg. No.	Issue
As Shown		180371	107	B

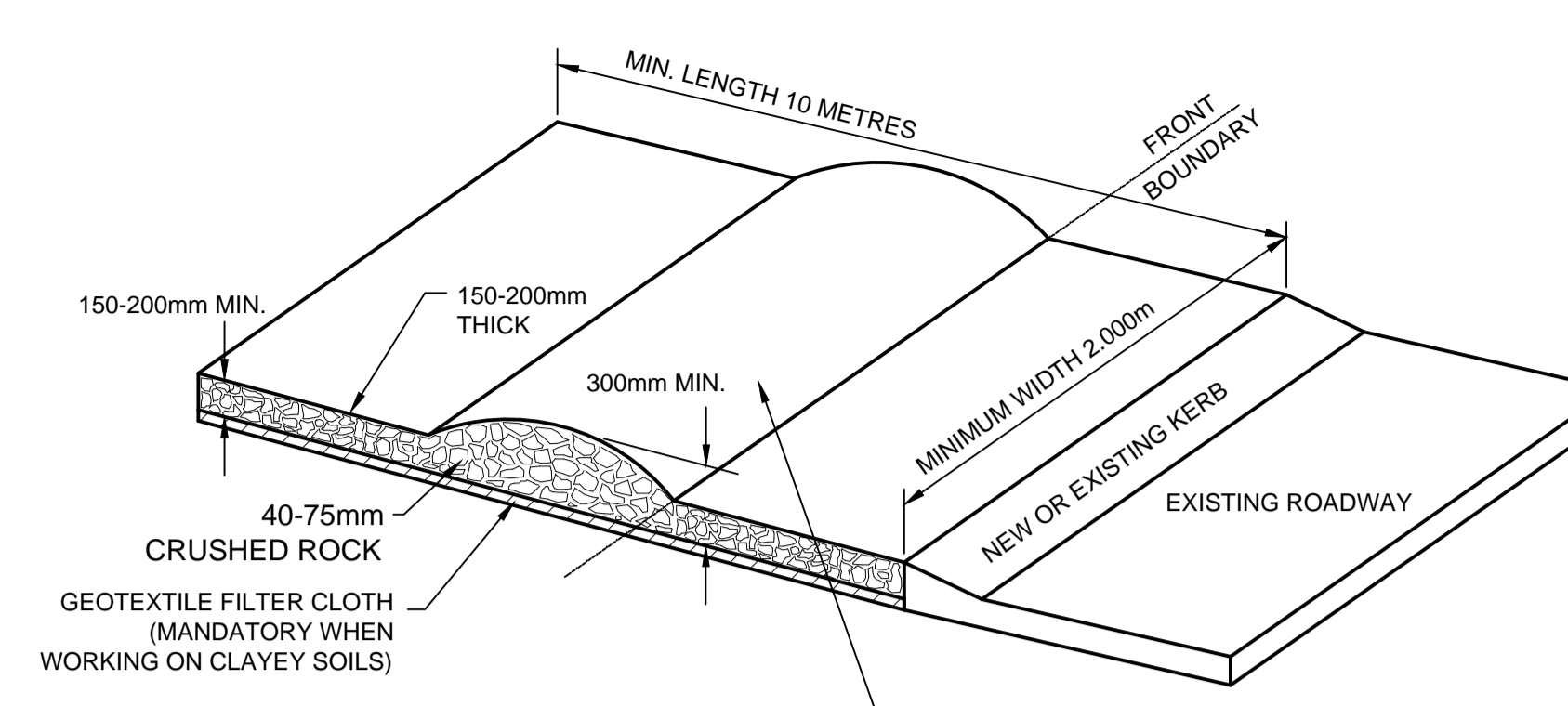


# SEDIMENT & EROSION NOTES

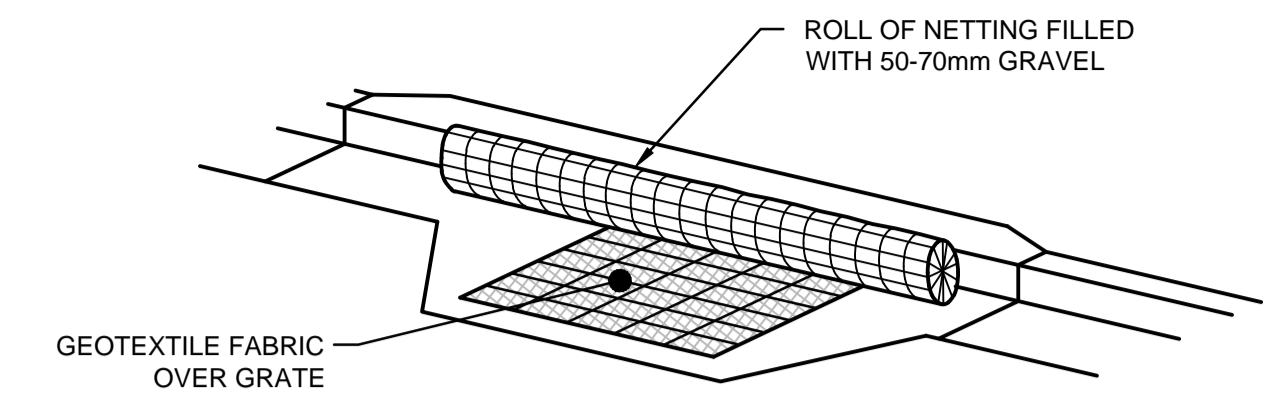
1. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO NOMINATE THE LOCATIONS AND TYPES OF SEDIMENT AND EROSION CONTROL MEASURES TO BE ADOPTED. THESE MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CLEARING OR EARTHWORKS AND MAINTAINED UNTIL THE WORKS ARE COMPLETED AND NO LONGER POSE AN EROSION HAZARD, UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.
2. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO IDENTIFY AND MARK TREES WHICH ARE TO BE PRESERVED. NOTWITHSTANDING THE ABOVE, THE CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO MINIMISE DISTURBANCE TO EXISTING VEGETATION AND GROUND COVER OUTSIDE THE MINIMUM AREAS REQUIRED TO COMPLETE THE WORKS AND SHALL BE RESPONSIBLE FOR RECTIFICATION, AT ITS OWN COST, OF ANY DISTURBANCE BEYOND THOSE AREAS.
3. PROVIDE GULLY GRATE INLET SEDIMENT TRAPS AT ALL GULLY PITS.
4. PROVIDE SILT FENCING ALONG PROPERTY LINE AS DIRECTED BY SUPERINTENDENT.
5. ADDITIONAL CONTROL DEVICES TO BE PLACED WHERE DIRECTED BY THE PRINCIPLE.
6. ALTERNATIVE DESIGNS TO BE APPROVED BY SUPERINTENDENT PRIOR TO CONSTRUCTION.
7. WASH DOWN/RUMBLE AREA TO BE CONSTRUCTED WITH PROVISIONS RESTRICTING ALL SILT AND TRAFFICKED DEBRIS FROM ENTERING THE STORMWATER SYSTEM.
8. NO WORK OR STOCKPILING OF MATERIALS TO BE PLACED OUTSIDE OF SITE WORK BOUNDARY.
9. APPROPRIATE EROSION AND SEDIMENT CONTROLS TO BE USED TO PROTECT STOCKPILES AND MAINTAINED THROUGH OUT CONSTRUCTION.
10. IT IS THE CONTRACTORS RESPONSIBILITY TO TAKE DUE CARE OF NATURAL VEGETATION. NO CLEARING IS TO BE UNDERTAKEN WITHOUT PRIOR APPROVAL FROM THE SUPERINTENDENT.
11. TO AVOID DISTURBANCE TO EXISTING TREES, EARTHWORKS WILL BE MODIFIED AS DIRECTED ON-SITE BY THE SUPERINTENDENT.
12. THE LOCATION OF EROSION AND SEDIMENTATION CONTROLS WILL BE DETERMINED ON SITE BY THE SUPERINTENDENT.
13. ACCESS TRACKS THROUGH THE SITE WILL BE LIMITED TO THOSE DETERMINED BY THE SUPERINTENDENT AND THE CONTRACTOR PRIOR TO ANY WORK COMMENCING.
14. ALL SETTING OUT IS THE RESPONSIBILITY OF THE CONTRACTOR PRIOR TO WORKS COMMENCING ON SITE. THE SUPERINTENDENT'S SURVEYOR SHALL PEG ALL ALLOTMENT BOUNDARIES, PROVIDE COORDINATE INFORMATION TO THESE PEGS AND PLACE BENCH MARKS. THE CONTRACTOR SHALL SET OUT THE WORKS FROM AND MAINTAIN THESE PEGS.
15. PLANS ARE MINIMUM REQUIREMENTS AND ARE TO BE USED AS A GUIDE ONLY. EXACT MEASURES USED SHALL BE DETERMINED ON SITE IN CONJUNCTION WITH PROGRAM OF CONTRACTORS WORKS etc.



**FIELD INLET SEDIMENT TRAP**  
N.T.S.



**SHAKEDOWN DEVICE**  
N.T.S.



**KERB INLET PROTECTION SAG GULLIES**  
N.T.S.

## CALCULATION OF OPEN CHANNEL FLOW CAPACITY

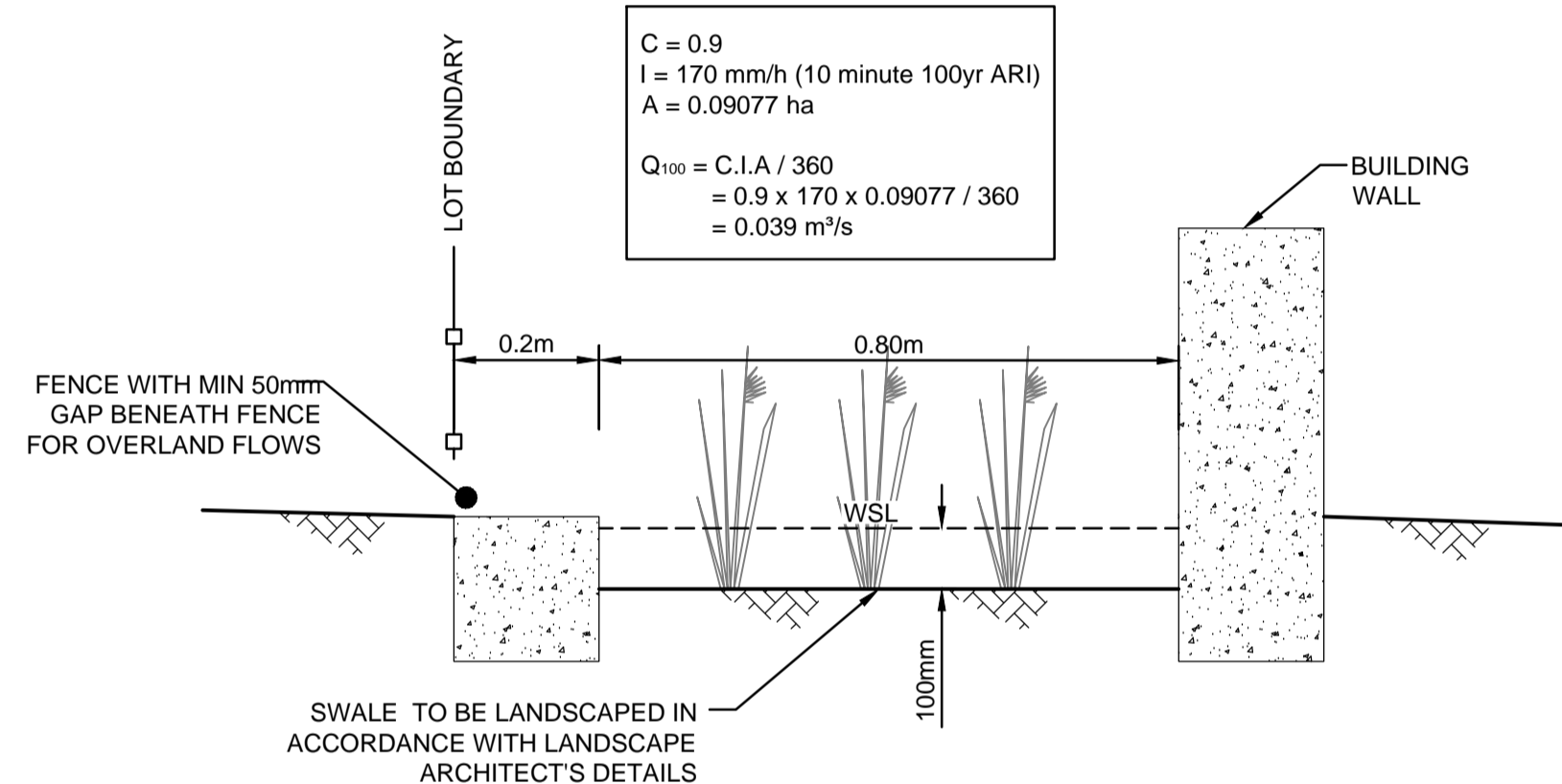
Width (m)	0.8	Velocity (m/s)	0.887
Depth (m)	0.1	Capacity (m3/s)	0.071
Slope (%)	0.50	Capacity (L/s)	71.0
n	0.01	Multi Capacity (m3/s)	0.071
No parallel conduits	1		
X-Sect Area	0.080		

## CALCULATION OF OPEN CHANNEL FLOW CAPACITY

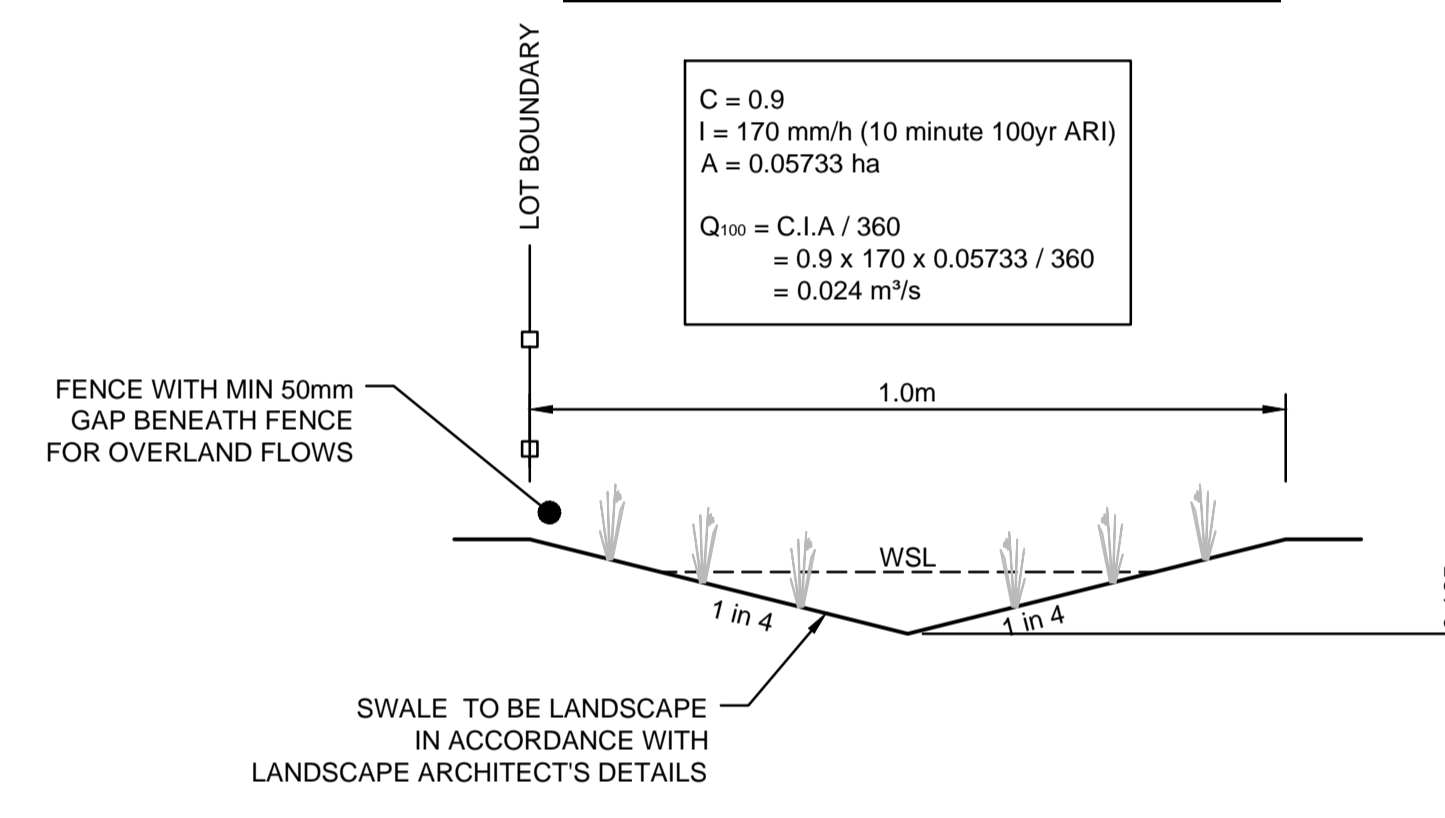
Mannings n=	0.035	Top width (m)=	1.00
channel slope (%) =	1.00	Flow area (m²)=	0.06
base width (m) =	0.00	Perimeter (m) =	1.03
depth (m)=	0.125	Hyd radius (m) =	0.06
side slope (1 in x)=	4.00	Velocity (m/s) =	0.44
		Capacity (cumecs)=	0.028
		Froude No	0.56
		VxD ratio =	0.06

## CALCULATION OF OPEN CHANNEL FLOW CAPACITY

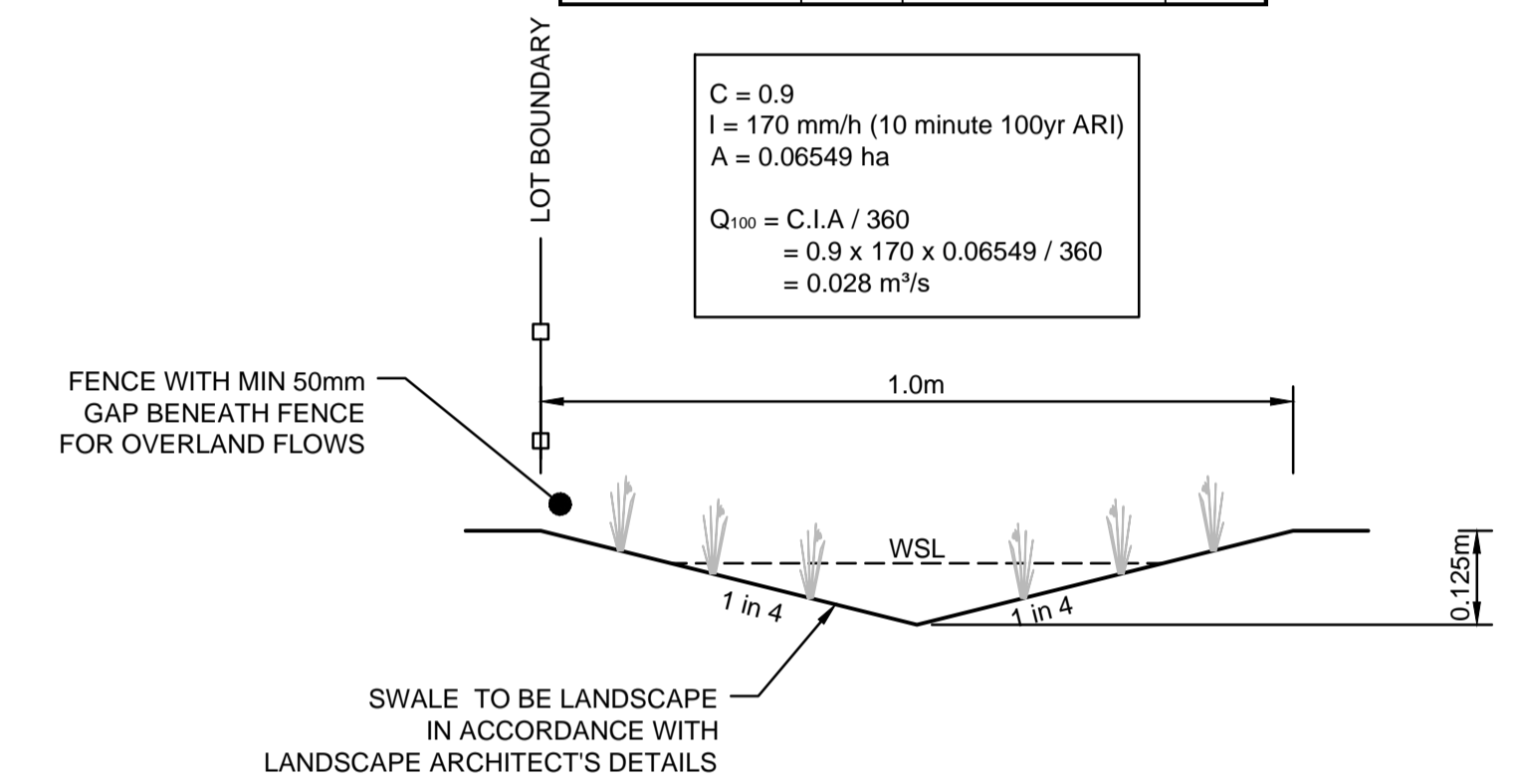
Mannings n=	0.035	Top width (m)=	1.00
channel slope (%) =	2.70	Flow area (m²)=	0.06
base width (m) =	0.00	Perimeter (m) =	1.03
depth (m)=	0.125	Hyd radius (m) =	0.06
side slope (1 in x)=	4.00	Velocity (m/s) =	0.72
		Capacity (cumecs)=	0.045
		Froude No	0.93
		VxD ratio =	0.09



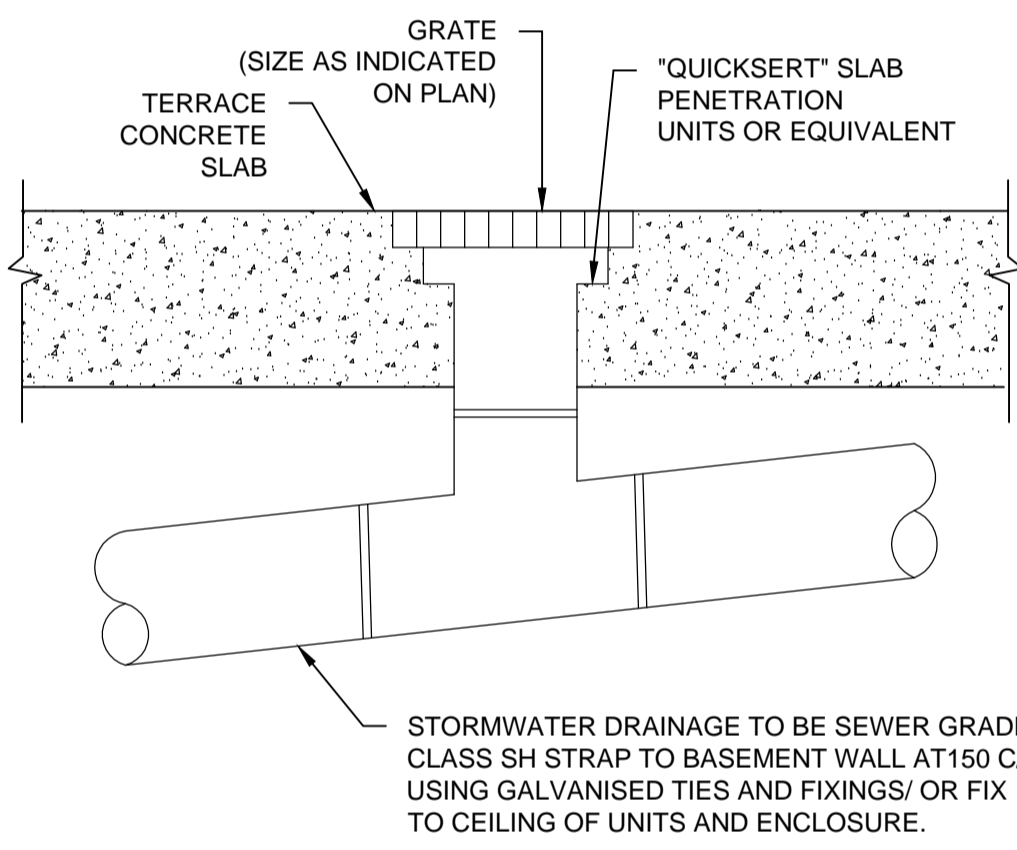
**TYPICAL SWALE DRAIN A DETAIL**  
SCALE 1:10



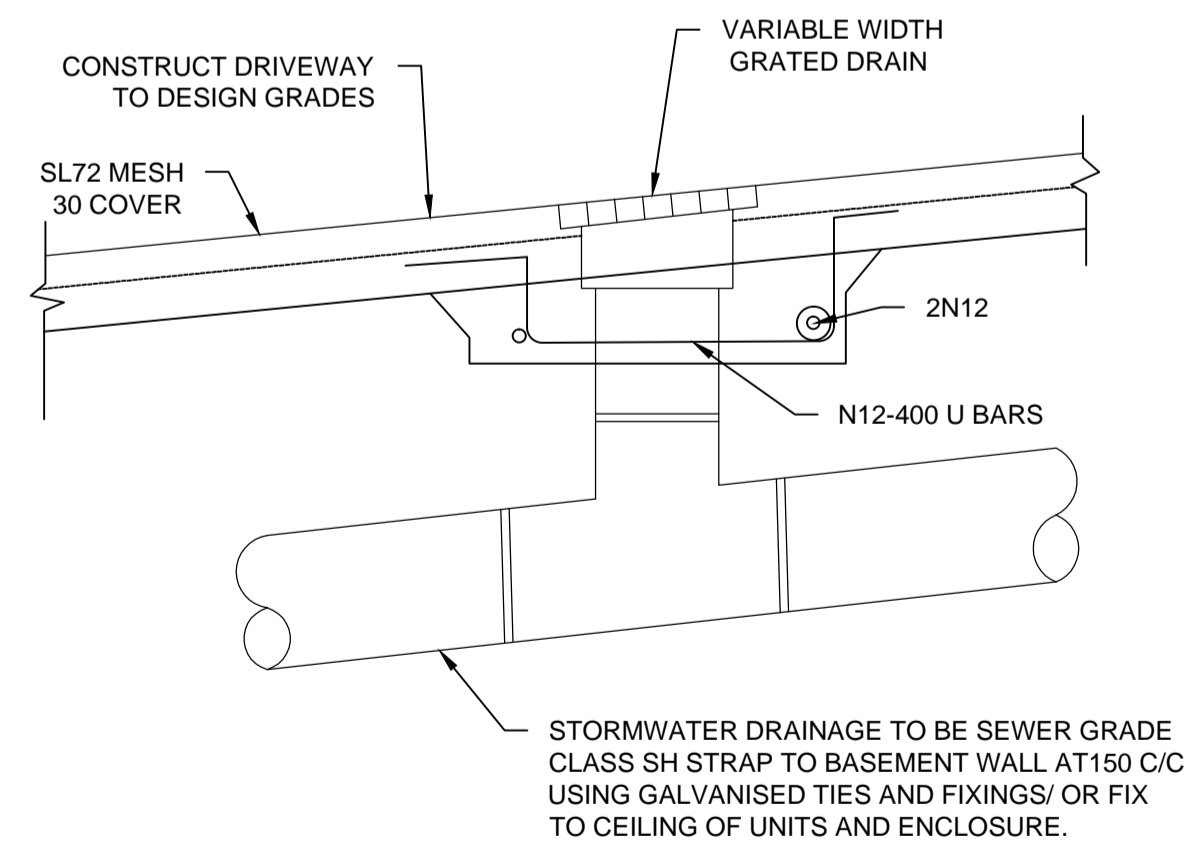
**TYPICAL SWALE DRAIN B DETAIL**  
SCALE 1:10



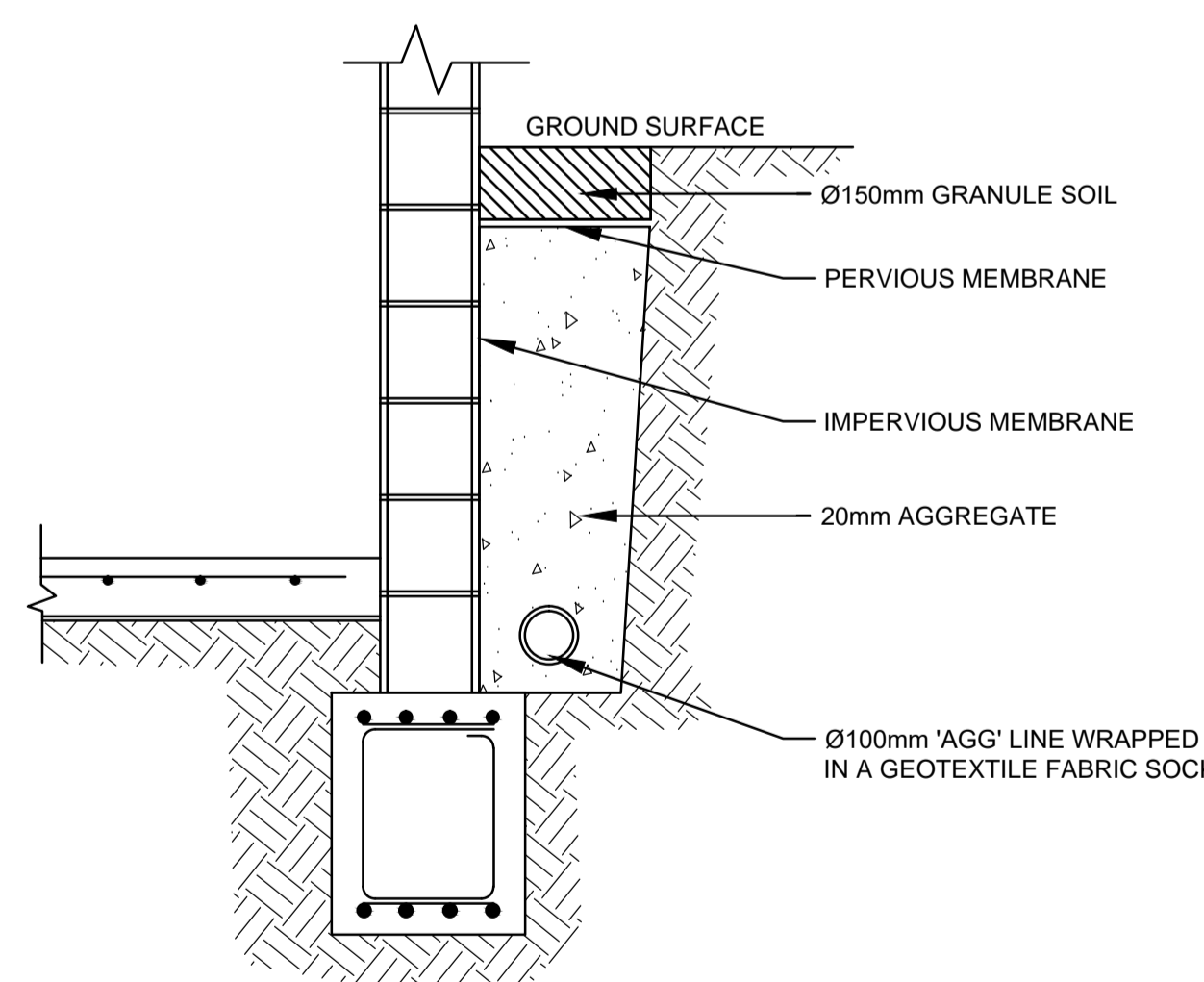
**TYPICAL SWALE DRAIN C DETAIL**  
SCALE 1:10



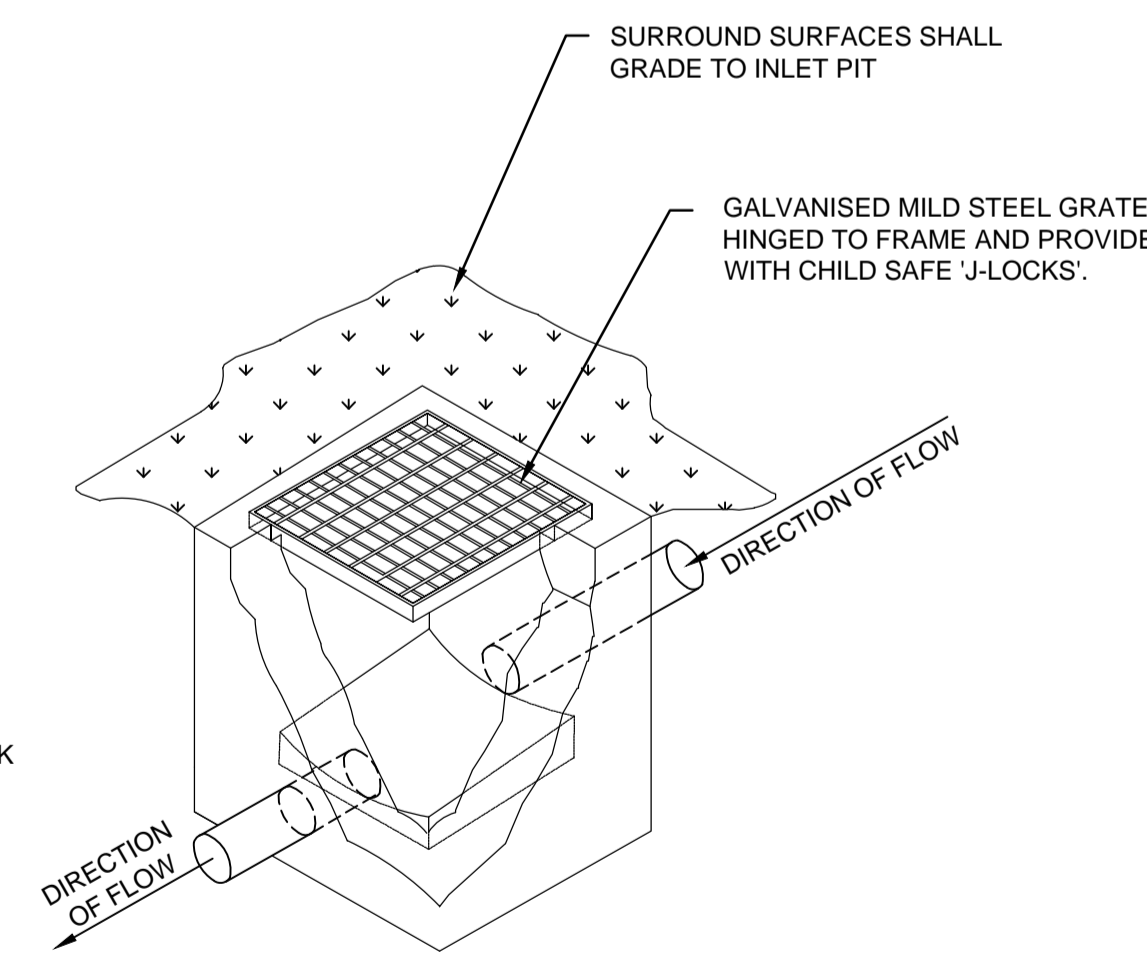
**RAINWATER OUTLET DETAIL**  
N.T.S.



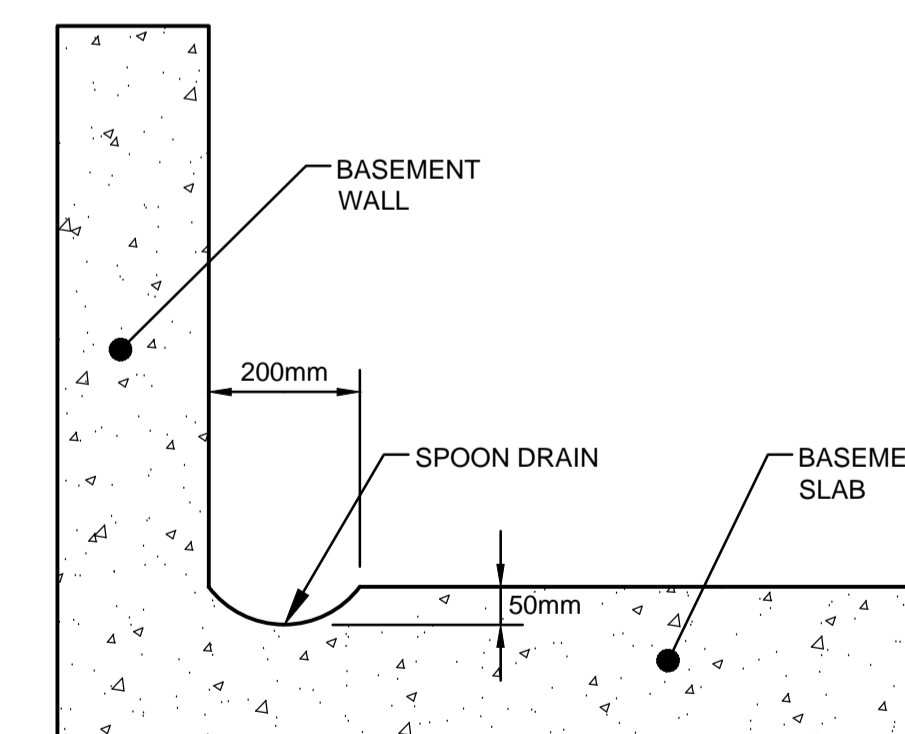
**GRATED DRAIN DETAIL**  
N.T.S.



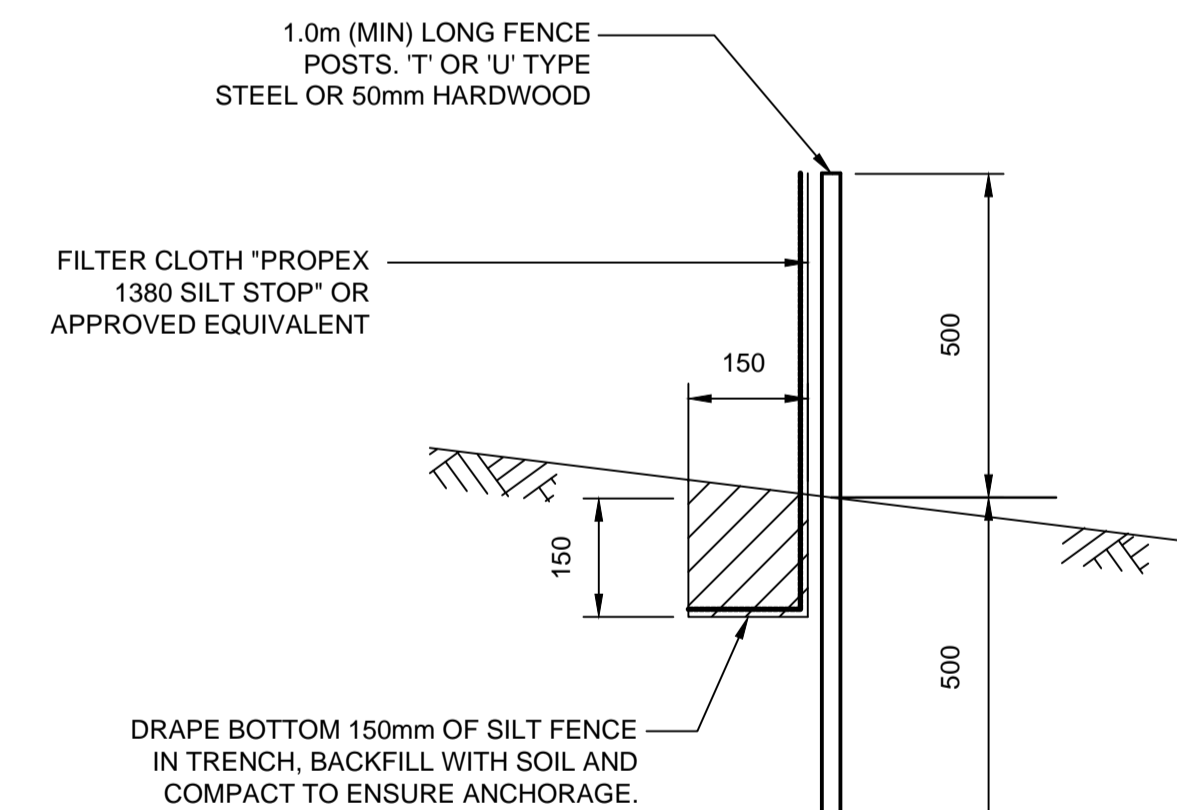
**TYPICAL SUBSOIL DRAIN**  
N.T.S.



**TYPICAL GRATED INLET PIT DETAIL**  
N.T.S.



**SPOON DRAIN SECTION DETAIL**  
SCALE 1:10



**SILT FENCE DETAIL**  
N.T.S.

## SILT FENCE NOTES:

1. FILTER CLOTH TO BE FASTENED SECURELY TO POSTS WITH GALVANISED WIRE TIES, STAPLES OR ATTACHMENT BELTS.
2. POSTS SHOULD NOT BE SPACED MORE THAN 3.0m APART.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 150mm AND FOLDED.
4. FOR EXTRA STRENGTH TO SILT FENCE, WOVEN WIRE (14mm GAUGE, 150mm MESH SPACING) TO BE FASTENED SECURELY BETWEEN FILTER CLOTH AND POSTS BY WIRE TIES OR STAPLES
5. INSPECTIONS SHALL BE PROVIDED ON A REGULAR BASIS, ESPECIALLY AFTER RAINFALL AND EXCESSIVE SILT DEPOSITS REMOVED WHEN 'BULGES' DEVELOP IN SILT FENCE
6. SEDIMENT FENCES SHALL BE CONSTRUCTED WITH SEDIMENT TRAPS AND EMERGENCY SPILLWAYS AT SPACINGS NO GREATER THAN 40m ON FLAT TERRAIN DECREASING TO 20m SPACINGS ON STEEP TERRAIN.

NOT FOR CONSTRUCTION

B	COUNCIL COMMENTS	08/02/2019	JMH	JAB
A	ISSUE FOR DEVELOPMENT APPLICATION	12/07/2018	JMH	JAB
Issue	Description	Date	Design	Checked

Certification By: Dr. Anthony Hasham (NFER)  
 Architect: Baini Design  
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 Baulkham Hills, NSW 2153  
 EMAIL: info@bainidesign.com.au  
 PHONE: +61 2 9639 1674

Council: Cumberland City Council

Scale: 0 200 400 600mm  
 SCALE 1:10 @ A1

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 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2157  
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 EMAIL: info@aaceng.com.au

Project: 22 AUSTRAL AVENUE, WESTMEAD  
 PROPOSED CHILD CARE CENTRE  
 STORMWATER MANAGEMENT PLANS  
 DEVELOPMENT APPLICATION

Drawing Title: MISCELLANEOUS DETAILS SHEET  
 Scale: As Shown  
 Project No: 180371  
 Dwg. No: 108  
 Issue: B