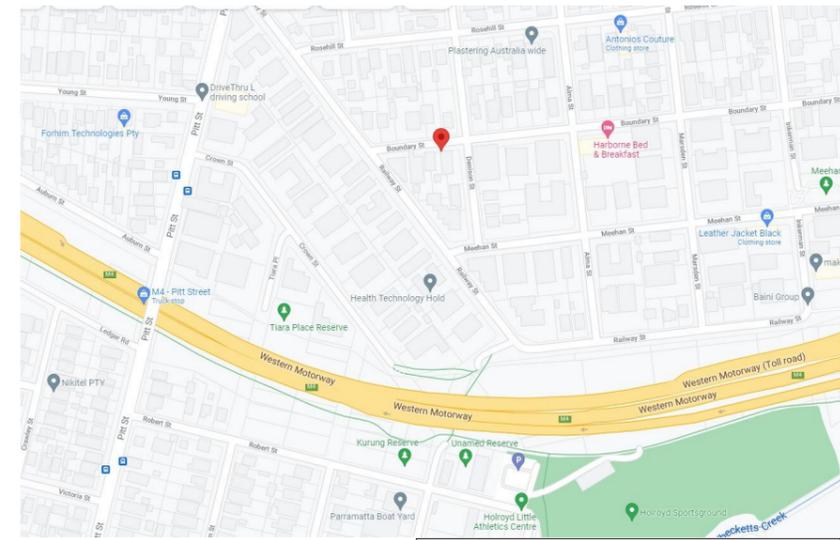


PROPOSED RFB DEVELOPMENT @ 5 BOUNDARY STREET, GRANVILLE FOR MRS NABIHA KHOURI DEVELOPMENT APPROVAL

LOCATION MAP



Issue k:		
Issue j:	12/09/2023	Council's comments
Issue i:	10/07/2023	DEAP changes
Issue h:	05/04/2023	DEAP and RFI
Issue g:	07/11/2022	New DA
Issue f:	21/04/2022	DEAP Amendments
Issue e:	01/11/2021	DA Issue
Issue d:	06/10/2021	Issue for Coordination
Issue c:	09/09/2021	Schematic 8 units
Issue b:	10/08/2021	Schematic 9 units



SHEET SCHEDULE	
SHEET	TITLE
0	COVER PAGE
1	SITE ANALYSIS
2	SITE CONTEXT
3	LOCALITY PLAN
4	SITE PLAN
5	BASEMENT FLOOR PLAN
6	GROUND FLOOR PLAN
7	FIRST FLOOR PLAN
8	SECOND FLOOR PLAN
9	THIRD FLOOR PLAN
10	CALCULATIONS
11	ELEVATIONS
12	SECTIONS
13	SHADOWS - JUN
14	BASIX
15	VIEWS FROM THE SUN
16	MATERIALS & FINISHES
17	3D PERSPECTIVES

Energy Rating Certificate Number: 0006179519

single-dwelling rating **6.0** stars

multi-unit development (attach listing of ratings)
heating **33.2** MJ/m²

cooling **23.0** MJ/m²

Recessed downlights confirmation: Rated with Rated without

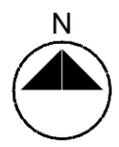
Assessor Name/Number: 10194
Assessor Signature: [Signature] Date: 19/09/2023

drawing: COVER PAGE
project: PROPOSED RFB DEVELOPMENT @ 5 BOUNDARY STREET, GRANVILLE
client: MRS NABIHA KHOURI
drawn: E.K. scale: as shown sheet size: A3 Council
checked: J.E. date: SEPT23 ref: 2021-184 COP



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SITE CONTEXT ANALYSIS

1:3000



➔ T Harris Park Station (approx 1.05 km walk from subject site)

LANDMARKS

- Ⓐ Meehan Street Park
- Ⓑ Harborne Bed & Breakfast
- Ⓒ Holroyd Sportsground
- Ⓓ Kurung Reserve
- Bus Stop

Proposed development

- DA for residential flat buildings
- Sites being developed

ZONING

- RE1 Public Recreation
- RE2 Private Recreation
- W1 Natural Waterways
- B1 Neighbourhood Centre
- E2 Environmental Conservation
- R2 Low Density Residential
- R3 Medium Density Residential
- R4 High Density Residential
- Heritage
- 15m** Max Height of Building

Energy Rating		Certificate Number: 0006179619
<input type="checkbox"/> single-dwelling rating	6.0 stars	
<input checked="" type="checkbox"/> multi-unit development (attach listing of ratings)	heating 33.2 MJ/m ²	
	cooling 23.0 MJ/m ²	
Recessed downlights confirmation: <input type="checkbox"/> Rated with <input checked="" type="checkbox"/> Rated without		
Assessor Name/Number	10194	
Assessor Signature		Date: 19/09/2023



issue k:	12/09/2023
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issue c:	Issue for Coordination
issue b:	Schematic 8 units
issue a:	Schematic 9 units

drawing:	SITE ANALYSIS	scale:	as shown	sheet size:	A3	Council	
project:	PROPOSED RFB DEVELOPMENT @ 5	drawn:	E.K.	checked:	J.E.	date:	2021-184
	BOUNDARY STREET, GRANVILLE	client:	MRS NABIHA KHOURI	ref:	SEPT23	COP	

I1



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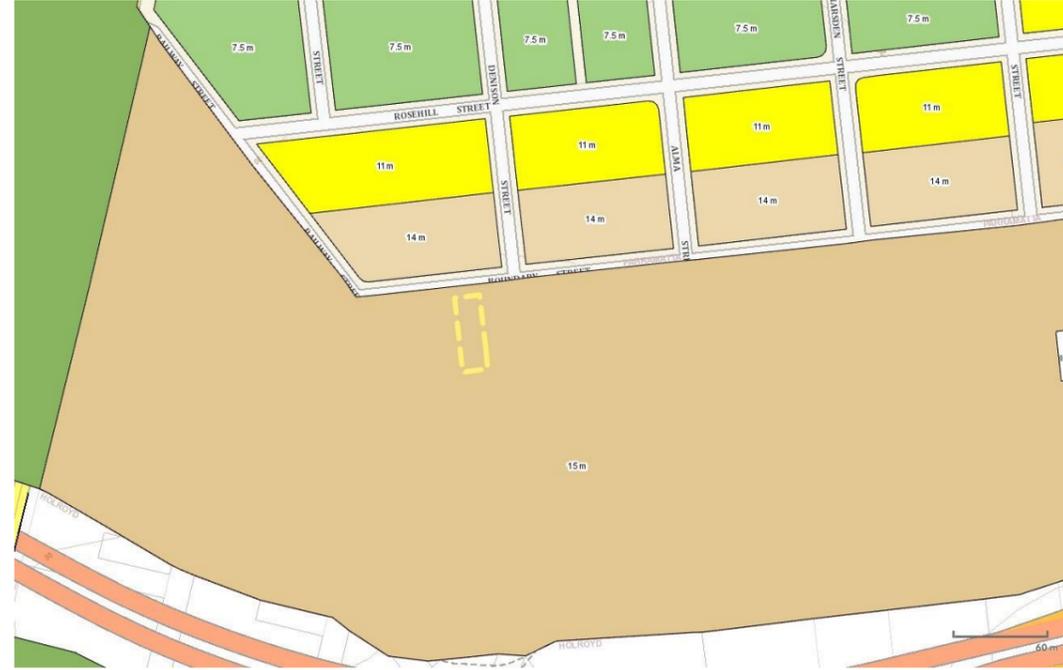
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ZONING - R4



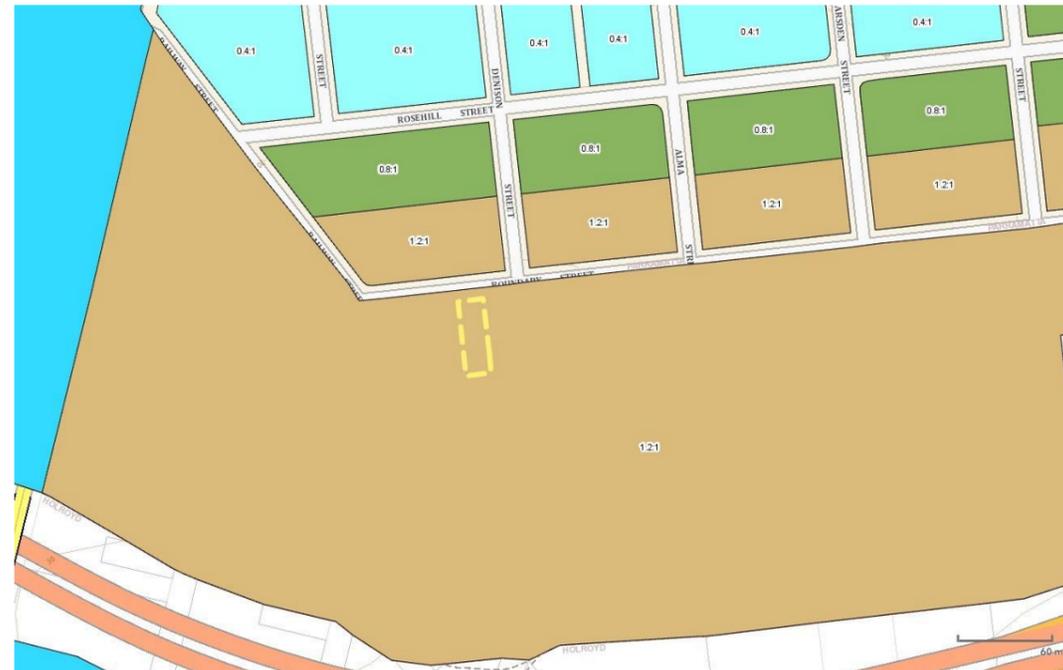
MAX. BUILDING HEIGHT - 15M



HERITAGE - N/A



FSR - 1.2:1



Energy Rating Certificate Number 0006179519

single-dwelling rating **6.0** stars
 multi-unit development (attach listing of ratings)
 heating **33.2** MJ/m²
 cooling **23.0** MJ/m²
 If calculated data provided for the average across the entire development

Recessed downlights confirmation: Rated with Rated without

Assessor Name/Number 10194
 Assessor Signature Date 19/09/2023



issue k:	
issue j:	12/09/2023
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issue d:	DA Issue 06/10/2021
issue c:	Issue for Coordination 09/09/2021
issue b:	Schematic 8 units 10/08/2021
issue a:	Schematic 9 units

drawing: **SITE CONTEXT**

project: **PROPOSED RFB DEVELOPMENT @ 5 BOUNDARY STREET, GRANVILLE**

client: **MRS NABIHA KHOURI**

drawn: **E.K.** scale: as shown sheet size: **A3** Council

checked: **J.E.** date: **SEPT23** ref: **2021-184** COP

I2



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issue b:	Schematic 8 units 10/08/2021
issue a:	Schematic 9 units



- SUBJECT SITE
- EXISTING RFB
- EXISTING DWELLINGS

LOCALITY PLAN

1:2000



- STRUCTURES TO BE DEMOLISHED
- PROPOSED RFB
- EXISTING RFB
- EXISTING DWELLINGS
- AMALGAMATION PATTERN
- POTENTIAL BUILDING FORMS CONSIDERING ADG BUILDING SEPARATION

URBAN BLOCK ANALYSIS

1:2000

Energy Rating Certificate Number 0006179519

single-dwelling rating **6.0** stars

multi-unit development (attach listing of ratings) heating **33.2** MJ/m²

cooling **23.0** MJ/m²

Recessed downlights confirmation: Rated with Rated without

Assessor Name/Number 10194

Assessor Signature Date 19/09/2023

drawing: LOCALITY PLAN

project: PROPOSED RFB DEVELOPMENT @ 5 BOUNDARY STREET, GRANVILLE

client: MRS NABIHA KHOURI

drawn: E.K. scale: as shown sheet size: A3 Council

checked: J.E. date: SEPT23 ref: 2021-184 COP

I 3

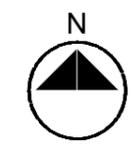


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ISSUE c:	Issue for Coordination
ISSUE b:	Schematic 8 units
ISSUE a:	Schematic 9 units

drawing: SITE PLAN
 project: PROPOSED RFB DEVELOPMENT @ 5 BOUNDARY STREET, GRANVILLE
 client: MRS NABIHA KHOURI
 drawn: E.K. scale: as shown sheet size: A3 Council
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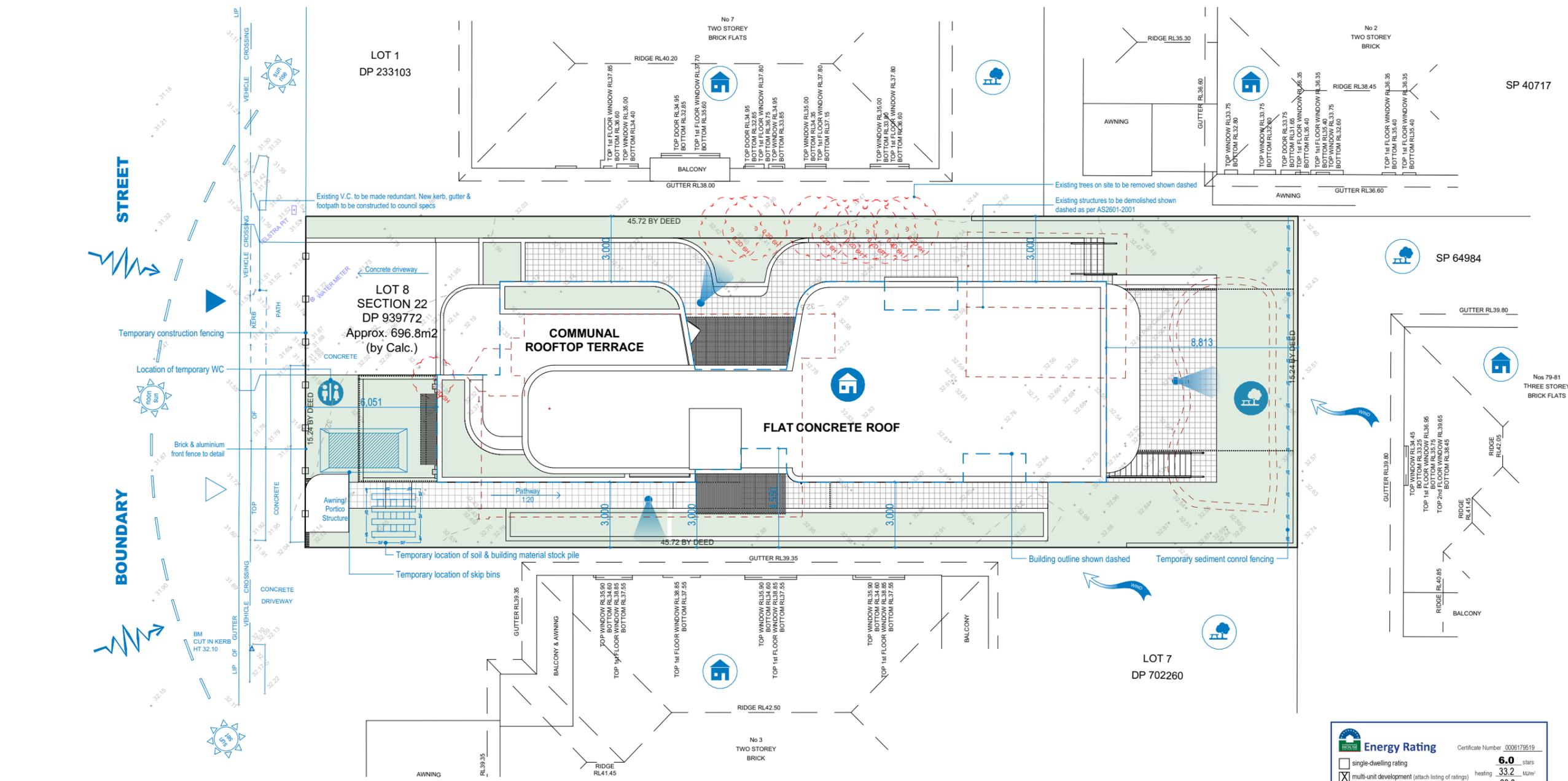


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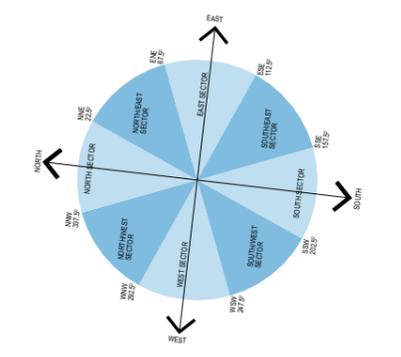
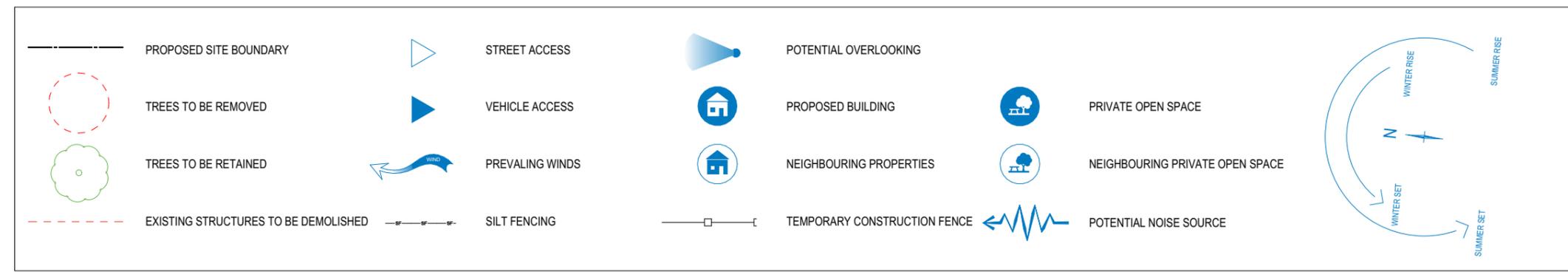
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Energy Rating		Certificate Number 0006179519
<input type="checkbox"/> single-dwelling rating	6.0 stars	
<input checked="" type="checkbox"/> multi-unit development (attach listing of ratings)	heating 33.2 MJ/m ²	
	cooling 23.0 MJ/m ²	
Recessed downlights confirmation:	<input type="checkbox"/> Rated with	<input checked="" type="checkbox"/> Rated without
Assessor Name/Number	10194	
Assessor Signature		Date 19/09/2023

ROOF/SITE ANALYSIS PLAN

1:200



issue k: 12/09/2023
 issue j: Council's comments 10/07/2023
 issue i: DEAP changes 05/04/2023
 issue h: DEAP and RFI 07/11/2022
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 issue e: DA Issue 06/10/2021
 issue d: Issue for Coordination 09/09/2021
 issue c: Schematic 8 units 10/08/2021
 issue b: Schematic 9 units 10/08/2021

COMPLIANCE TABLE

CONTROL	REQUIRED	PROPOSED
Site Area (m ²)	550	696.8
Site Coverage (30%)	209.04	206.14
Site frontage	24m	15.24
Floor Space ratio (1.2:1)	836.16	670.39
Street Frontage Setback	6m	6.074m
Side Setback	3m	min 3m
Rear Setback (20% Length / 6m)	9.14	7.26
Building Height	max 15m	14m
Courtyard Fence	1.8m	1.8
Solar Access	3 hours	3
Min. Landscape (min30%) (2m x 2m)	209.04	134.65
Min. Landscape (min30%)	209.04	243.06
Communal Open Space	209.04	230.12
Private Open Space	min 10m2 per dwelling	Yes

ADG COMPLIANCE TABLE

CONTROL	REQUIRED	PROPOSED
Building Separation	6-12m	3m
Living room width	min dim. 3.6m 1BR; 4m 2+ BR	4
Bedroom size	min 9-10m2, min dimension 3m	9
Communal Open Space (25%, 3x3m)	174.2	230.12
Front Fence (solid fence up to 1m)	1m	1
Solar Access (2h from 9am-3pm)	min 70%	86%
Landscaping (1 medium trees per 50m2 deep soil)	1 medium	6
Deep Soil Zone (min 7%, 3x3m)	48.8	128.16
Private Open Space - Ground Floor	15m ² ; min dimension 3m	22.28 / 20.05
Private Open Space - Balcony	8-12m ² ; min dimension 2-2.4m	10.9
Universal Design (20% Livable Housing Guideline)	1.2	2
Natural cross ventilation	60%	100

	Unit	1bed	2bed	3bed	POS
Ground	1		84.83		15.46
	2			100.92	64.63
First	3		84.83		10.9
	4		89.81		23
Second	5		84.83		10.9
	6		89.81		23
Third	7	0		104.45	23

Solar Access	Cross-ventilated	Storage m3			
		Required	IN	OUT	Total
LIV					
NO	YES	8	4.39	9.38	13.77
YES	YES	10	4.47	9.38	13.85
YES	YES	8	4.39	3.63	8.02
YES	YES	8	4.47	3.63	8.1
YES	YES	8	4.39	9.38	13.77
YES	YES	8	4.47	3.63	8.1
YES	YES	10	4.47	7.41	11.88
100%	100%				

SITE DATA

SITE AREA		696.8 m ²
RFB		
ground floor area		195.91
first floor area		184.57
second floor area		184.57
third floor area		105.34
Total		670.39
FSR	1 =	0.96



NORTH STREETSCAPE

1:200

drawing: CALCULATIONS
 project: PROPOSED RFB DEVELOPMENT @ 5 BOUNDARY STREET, GRANVILLE
 client: MRS NABIHA KHOURI
 drawn: E.K. scale: as shown sheet size: A3 Council
 checked: J.E. date: SEPT23 ref: 2021-184 C0P

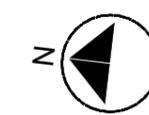


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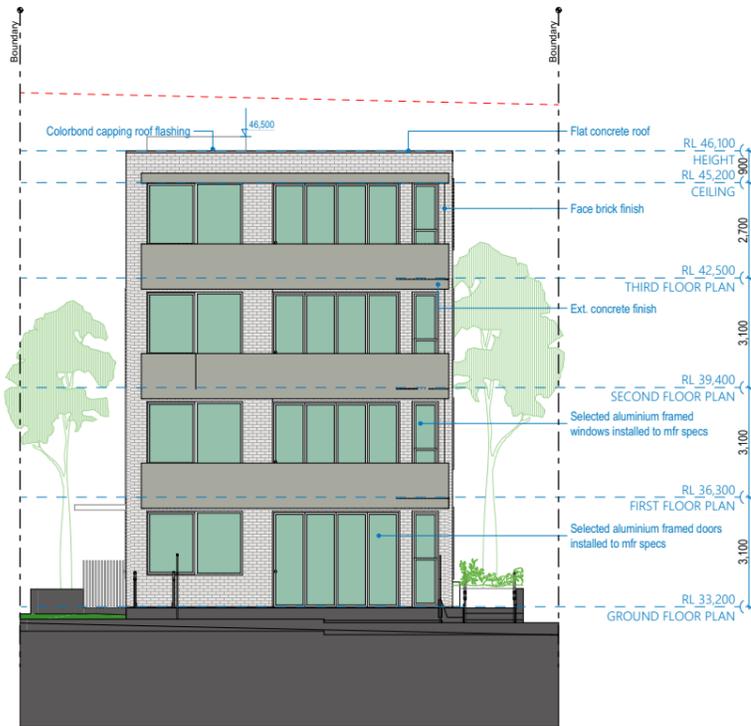
nominated architect - joe el-sabbagh 8707
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NORTH ELEVATION

1:200



SOUTH ELEVATION

1:200



WEST ELEVATION

1:200



EAST ELEVATION

1:200

Energy Rating Certificate Number 0008179519

single-dwelling rating **6.0** stars

multi-unit development (attach listing of ratings) heating **33.2** MJ/m² cooling **23.0** MJ/m²

Recessed downlights confirmation: Rated with Rated without

Assessor Name/Number 10194
Assessor Signature [Signature] Date 19/09/2023



ISSUE k:	12/09/2023
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ISSUE c:	Issue for Coordination
ISSUE b:	Schematic 8 units
ISSUE a:	Schematic 9 units

drawing: ELEVATIONS
 project: PROPOSED RFB DEVELOPMENT @ 5 BOUNDARY STREET, GRANVILLE
 client: MRS NABIHA KHOURI
 drawn: E.K. scale: as shown sheet size: A3 Council
 checked: J.E. date: SEPT23 ref: 2021-184 COP

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VIEWS FROM THE SUN

21st of June



Living rooms and balconies receiving direct solar access on nominated hour

*Note - all surfaces seen receive solar access on nominated hour



9am



10am



11am



12pm



1pm



2pm



3pm



4pm



HEIGHT PLANE



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drawing: VIEWS FROM THE SUN
 project: PROPOSED RFB DEVELOPMENT @ 5 BOUNDARY STREET, GRANVILLE
 client: MRS NABIHA KHOURI
 drawn: E.K. scale: as shown sheet size: A3 Council
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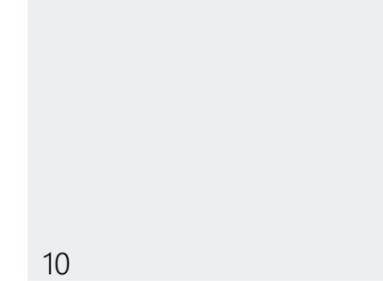
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MATERIALS & FINISHES SCHEDULE @ 5 BOUNDARY STREET, GRANVILLE



SOLAR SHADE/AWNING
ALUMINIUM PAINTED - DULUX WHITE ON WHITE



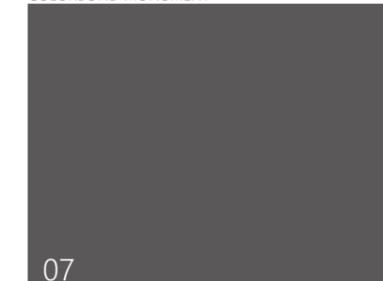
CONC. FINISH 2
CONCRETE - BETON BRUT



DRIVEWAY
CONCRETE



GARAGE DOOR
COLORBOND MONUMENT



Issue k:	12/09/2023
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Issue b:	Issue a: Schematic 9 units

drawing: MATERIALS & FINISHES
project: PROPOSED RFB DEVELOPMENT @ 5 BOUNDARY STREET, GRANVILLE
client: MRS NABIHA KHOURI
drawn: E.K. scale: as shown sheet size: A3 Council
checked: J.E. date: SEPT23 ref: 2021-184 COP

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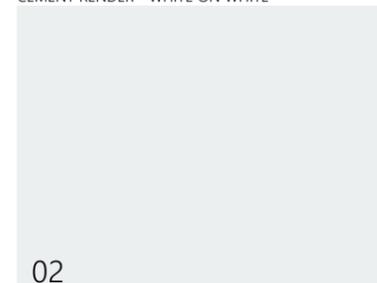
EXTERNAL BRICK 01

FACE BRICK - PGH METALLIC MATTERHORN



EXTERNAL RENDER 01

CEMENT RENDER - WHITE ON WHITE



EXTERNAL RENDER 02

CEMENT RENDER - DULUX RAKU



SOFFIT

CEMENT RENDER - WHITE ON WHITE



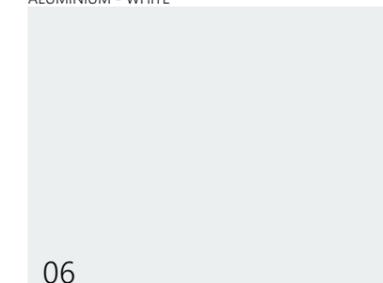
ROOF MATERIAL

FLAT CONCRETE ROOF



FENCE, DOORS & WINDOWS

ALUMINIUM - WHITE



01

02

03

04

05

06



birdseye view



REAR 1



FRONT 2



REAR 2

issue k:	
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issue c: Issue for Coordination	09/09/2021
issue b: Schematic 8 units	
issue a: Schematic 9 units	

drawing: 3D PERSPECTIVES
 project: PROPOSED RFB DEVELOPMENT @ 5
 BOUNDARY STREET, GRANVILLE
 client: MRS NABIHA KHOURI
 drawn: E.K. scale: as shown sheet size: A3 Council
 checked: J.E. date: SEPT23 ref: 2021-184 COP

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Banksia integrifolia



Elaeocarpus reticulatus



Elaeocarpus reticulatus hedging



Banksia spinulosa 'Birthday Candles'



Russelia equisetiformis



Strelitzia juncea



Waterhousia floribunda



Plumeria acutifolia



Syzygium 'Tiny Trev'



Westringia 'Aussie Box'



Philodendron 'Little Phil'



Dichondra repens



Alpinia caerulea 'Red Back'



Lomandra hystrix 'Katie Bells'



Doryanthes excelsa



Syzygium 'Resilience'



Philodendron 'Xanadu'



Myoporum parvifolium 'Yareena'

General Notes:
 Figured dimensions take preference to scale readings. Verify all dimensions on site. PDF'd plans may vary slightly in scale for that indicated on plans. Report any discrepancies to the Landscape Architect before proceeding with the work.
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SCALE:

REV	DATE	NOTATION/AMENDMENT
A	29.7.2022	Issued for DA
B	22.8.2023	Co-ordinated with amended architectural plan & council's comments
C	06.9.2023	Co-ordinated with amended architectural & stormwater plan

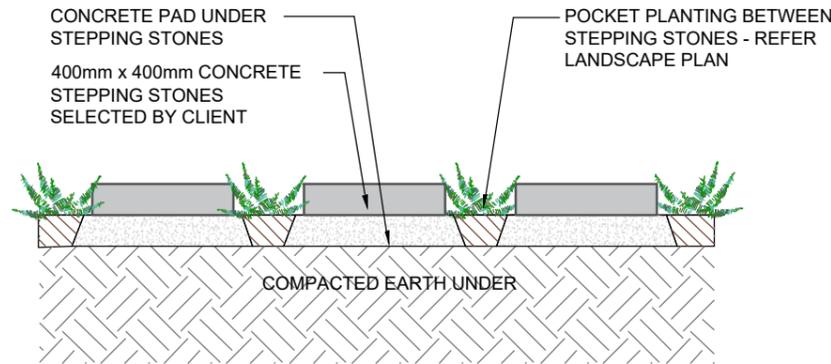
COUNCIL	PARRAMATTA
CLIENT	MRS NABIHA KHOURI
ARCHITECT	DESIGNCORP
STATUS / ISSUE	DA - ISSUE C

www.conzept.net.au
 enquiries@conzept.net.au
 Phone: 9922 6312
 Suite 101, 506 Miller St
 CAMMERAY NSW 2062

TITLE: **PLANTING IMAGES**
 PROPOSED RESIDENTIAL FLAT BUILDING DEVELOPMENT
5 BOUNDARY STREET, GRANVILLE

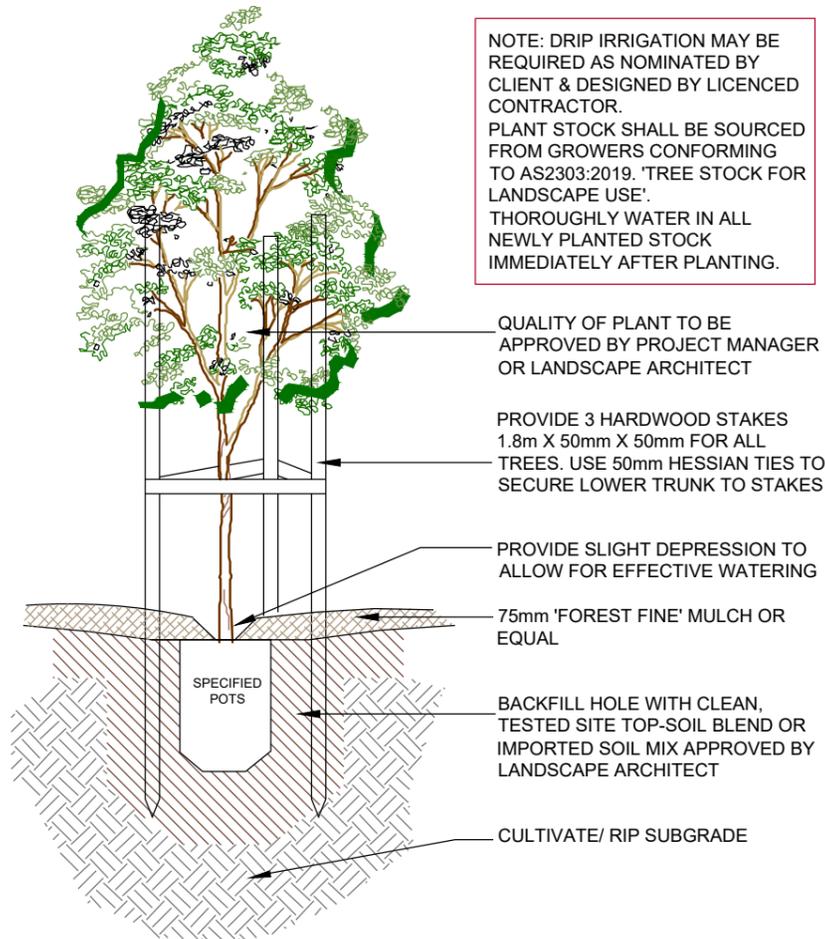
DWG No:	LPDA 22 - 149 / 4
DATE:	SEPTEMBER 2023
DRAWN:	K.Z
CHECKED:	R.F

STEPPING STONES IN NATURAL DEEP- SOIL DESIGNED TO PROVIDE PRACTICAL ACCESS WHILE RETAINING A PERMEABLE ZONE & MINIMIZING STORM WATER RUN-OFF



STEPPING STONES IN GROUNDCOVER PLANTING

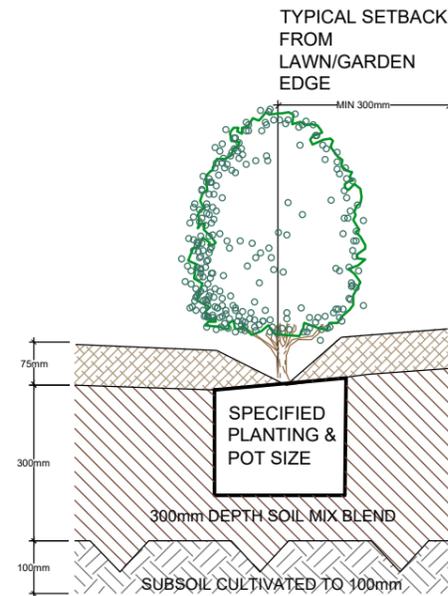
SCALE 1:10



TREE PLANTING DETAIL

SCALE: NTS

(ONLY APPLICABLE FOR PLANTING AREA OUTSIDE TREE PROTECTION ZONE OF TREES TO BE RETAINED. NO CHANGES ARE TO OCCUR TO EXISTING LEVELS, INCLUDING RIPPING/CULTIVATING OF THE SOIL WITHIN THE TPZ OF TREES TO BE RETAINED ON SITE)



TYPICAL GARDEN PREPARATION DETAIL

SCALE 1:10



OVERFLOW (TO SUPPLIER'S SPECIFICATION)

NOTE (BCA COMPLIANCE).

WHERE NO EXTERNAL BALUSTRADE IS PROPOSED. THE INTERNAL PLANTER WALL FACE MUST BE NON-CLIMBABLE TO A HEIGHT TO MEET AS & BCA COMPLIANCE.

NOTE.(DRAINAGE & WATER PROOFING).

DRAINAGE PITS AND LAYOUT TO BE NOMINATED BY HYDRAULIC ENGINEER TO WORK WITH STRUCTURAL DESIGN AND LANDSCAPE.

THE WATERPROOFING, APPROVED DRAINAGE CELL AND SPECIFIED GEOFABRIC LAYER IN THIS DETAIL ARE INDICATIVE ONLY AND SHOULD BE DETAILED BY THE RELEVANT PROFESSIONAL ENGINEER 'FOR CONSTRUCTION'.

UNDER THE CONSTRUCTION PRACTITIONER BILL, STRUCTURAL WATER-PROOFING SHALL BE DOCUMENTED BY A HYDRAULIC ENGINEER

NOTE
THIS DETAIL IS ONLY APPLICABLE FOR PLANTING AREA OUTSIDE TREE PROTECTION ZONE OF TREES TO BE RETAINED. NO CHANGES ARE TO OCCUR TO EXISTING LEVELS, INCLUDING RIPPING/CULTIVATING OF THE SOIL WITHIN THE TPZ OF TREES TO BE RETAINED ON SITE

75mm DEPTH "FOREST FINE" MULCH OR EQUIVALENT

SOIL MIX:

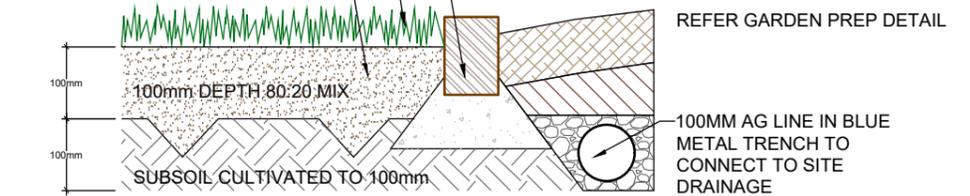
50% OF STOCKPILED SITE TOPSOIL FREE FROM ALL BUILDER'S RUBBISH AND DELETERIOUS MATERIALS. TOPSOIL TO BE MIXED WITH MINIMUM 50% IMPORTED GARDEN MIX OR SOIL CONDITIONER/ COMPOSTED ORGANIC MATTER - SEE SPEC. USE 100% IMPORTED SOIL MIX WHEN SITE TOPSOIL RUNS OUT.

SELECTED BRICK EDGING NOM. BY CLIENT ON MORTAR BASE TO SUIT

SOFTLEAF BUFFALO OR SIMILAR

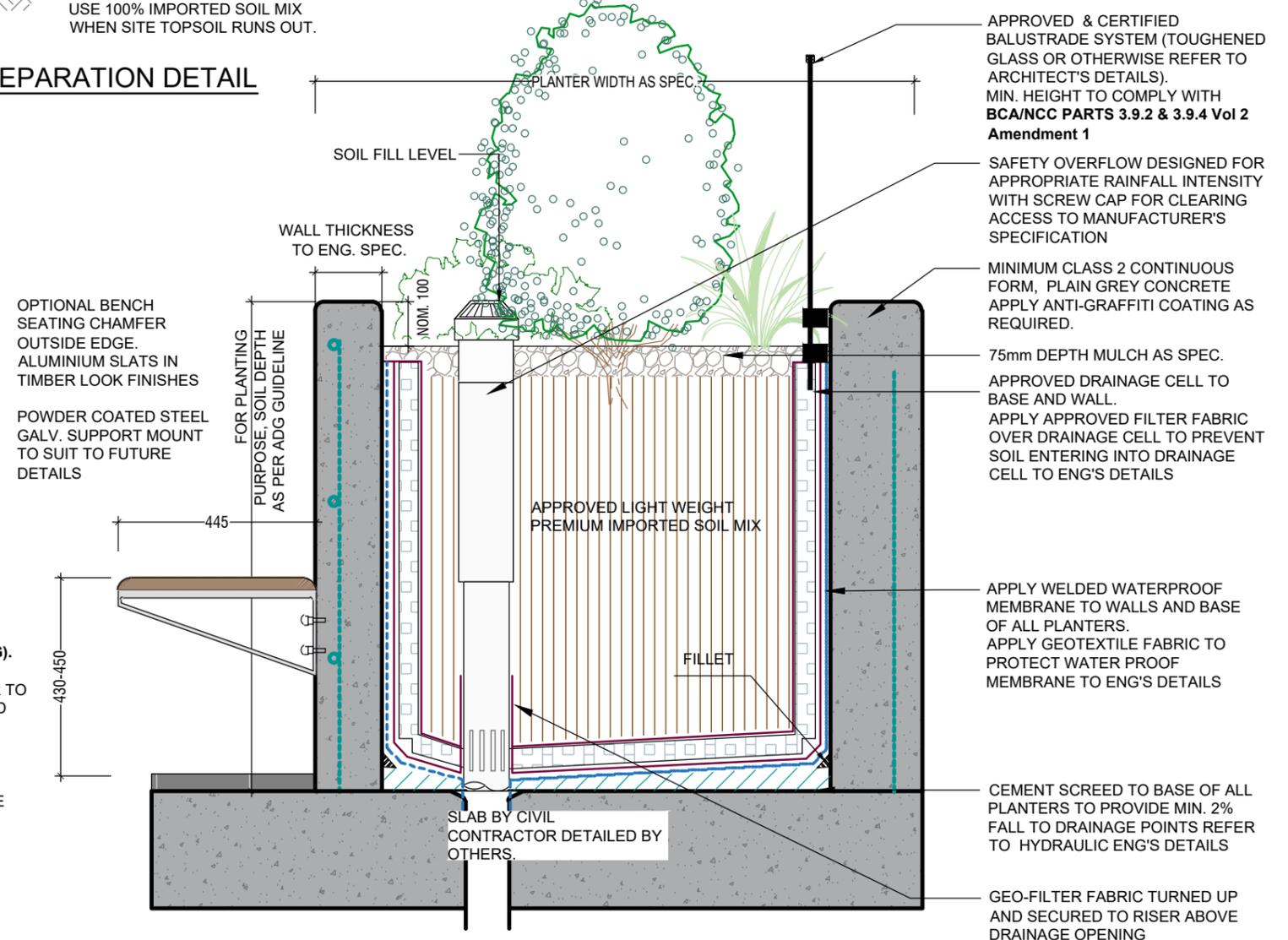
LAY TURF ON MINIMUM 100mm 80 : 20 TOP DRESS SOIL MIX SAND : ORGANIC MATTER

NOTE: TURF AREAS TO FINISH FLUSH WITH SURROUNDS. ROLL AND WATER IMMEDIATELY AFTER LAYING.



TYPICAL TURF AND BRICK EDGE DETAIL

SCALE: 1:10



INSITU CONCRETE PLANTER ON SLAB DETAIL

SCALE: 1:15

General Notes:
Figured dimensions take preference to scale readings. Verify all dimensions on site. PDF'd plans may vary slightly in scale for that indicated on plans. Report any discrepancies to the Landscape Architect before proceeding with the work.
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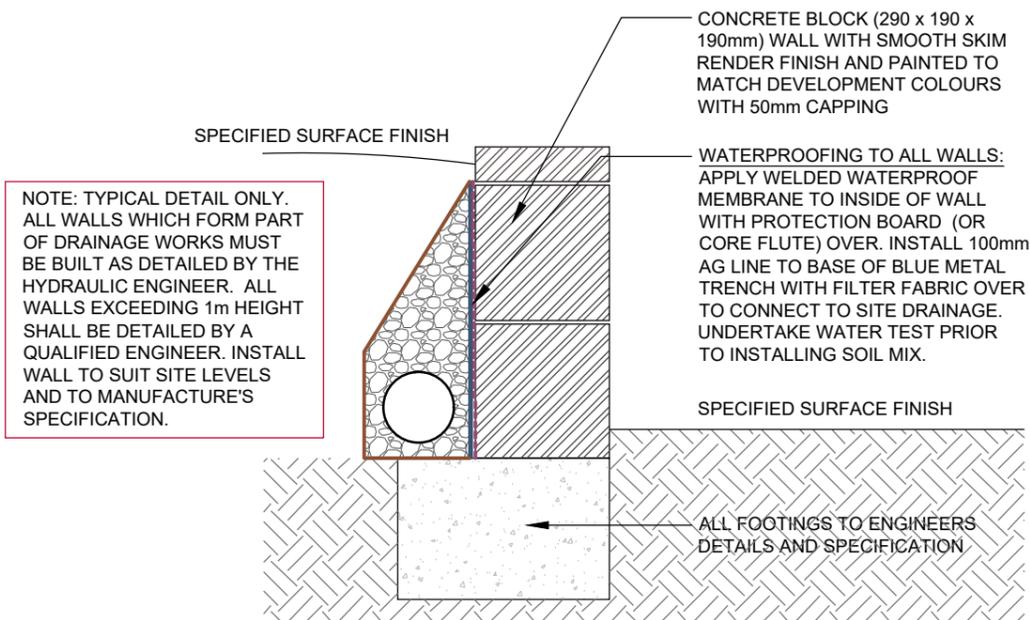
SCALE:

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COUNCIL	PARRAMATTA
CLIENT	MRS NABIHA KHOURI
ARCHITECT	DESIGNCORP
STATUS / ISSUE	DA - ISSUE C

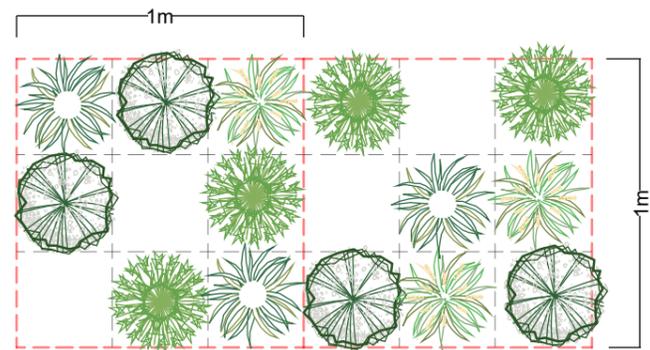


TITLE:	DETAILS	DWG.No:	LPDA 22 - 149 / 5
	PROPOSED RESIDENTIAL FLAT BUILDING DEVELOPMENT 5 BOUNDARY STREET, GRANVILLE	DATE:	SEPTEMBER 2023
		DRAWN:	K.Z
		CHECKED:	R.F



TYPICAL RETAINING WALL DETAIL

SCALE 1:10



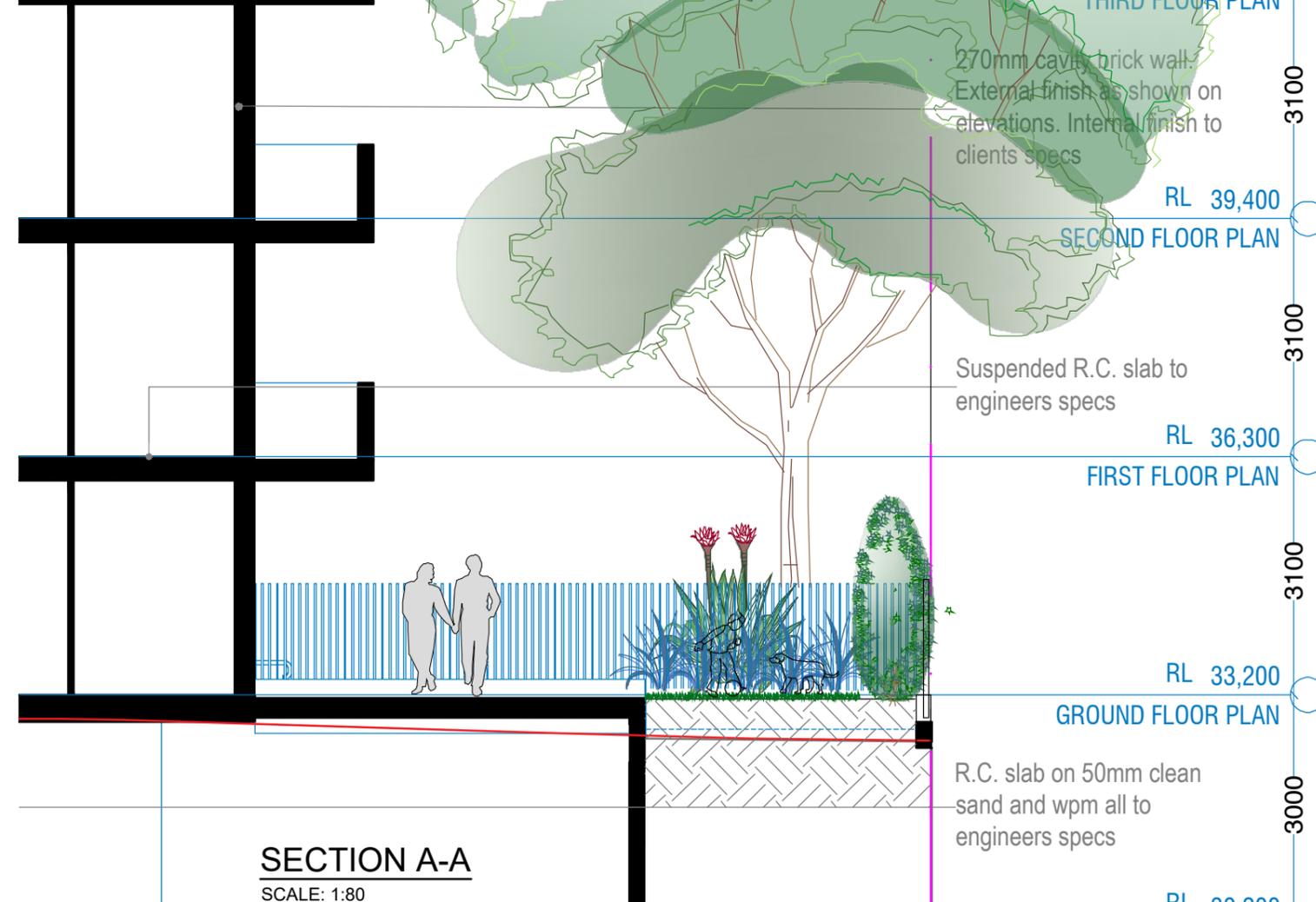
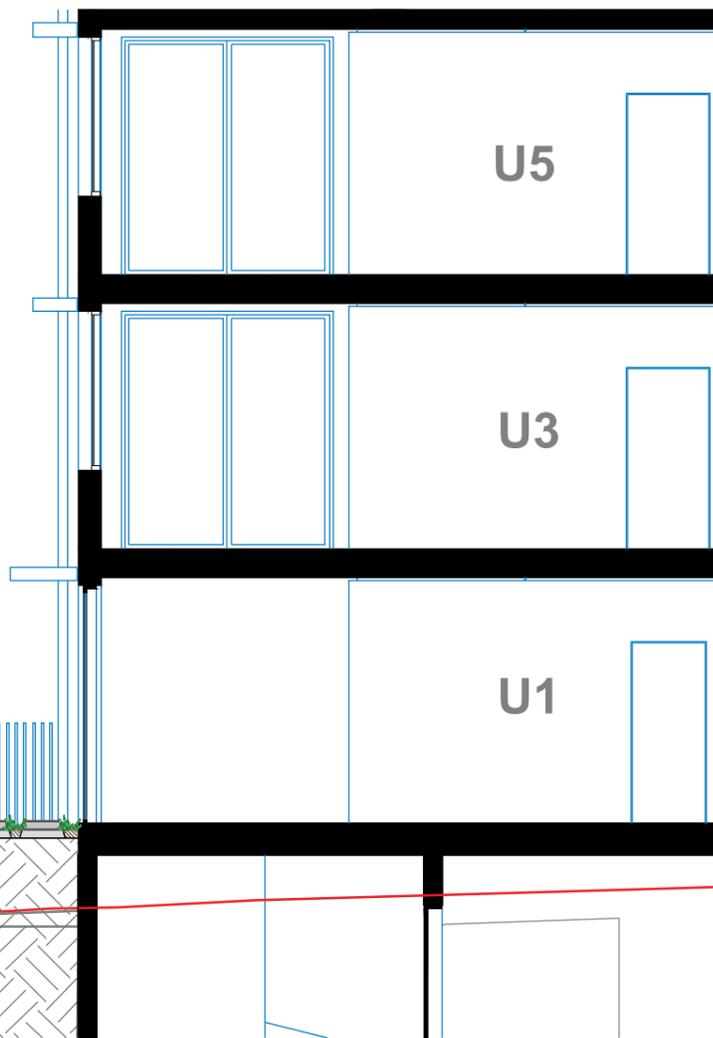
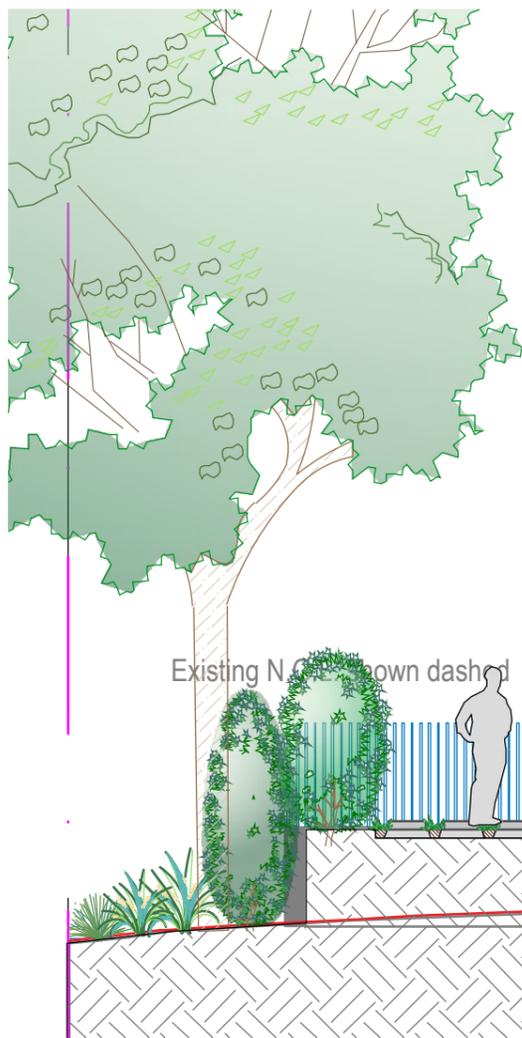
Botanical Name

- Carex appressa*
- Juncus amabilis*
- Lomandra hystrix 'Katie Bells'*
- Ficinia nodosa*



GROUNDCOVER MIX PLANTING MATRIX

SCALE N.T.S



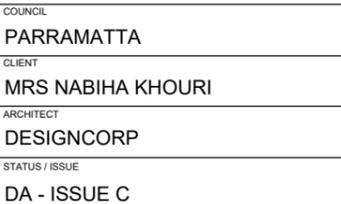
General Notes:
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CLIENT	MRS NABIHA KHOURI
ARCHITECT	DESIGNCORP
STATUS / ISSUE	DA - ISSUE C



TITLE	DETAILS
TITLE	PROPOSED RESIDENTIAL FLAT BUILDING DEVELOPMENT 5 BOUNDARY STREET, GRANVILLE

DWG No:	LPDA 22 - 149 / 6
DATE:	SEPTEMBER 2023
DRAWN:	K.Z
CHECKED:	R.F

LANDSCAPE WORK SPECIFICATION

PRELIMINARIES

1.01 GENERAL

The following general conditions should be considered prior to the commencement of landscape works:

- The landscape plans should be read in conjunction with the architectural plans, hydraulic plans, service plans and survey prepared for the proposed development.
- All services including existing drainage should be accurately located prior to the commencement of landscape installation. Any proposed tree planting which falls close to services will be relocated on site under the instruction of the landscape architect.
- Installation of conduit for required irrigation, electrical and other services shall be completed prior to the commencement of hardscape works and hardstand pours.
- All outdoor lighting specified by architect or client to be installed by qualified electrician
- Anomalies that occur in these plans should be brought to our immediate attention.
- Where an Australian Standard applies for any landscape material testing or installation technique, that standard shall be followed.

1.02 PROTECTION OF ADJACENT FINISHES

The Contractor shall take all precautions to prevent damage to all or any adjacent finishes by providing adequate protection to these areas / surfaces prior to the commencement of the Works

1.03 PROTECTION OF EXISTING TREES

Existing trees identified to be retained shall be done so in accordance with AS 4970-2009 Protection of trees on development sites as well as in accordance with the tree protection measures prepared by project arborist.

Where general works are occurring around such trees, or pruning is required, a qualified Arborist shall be engaged to oversee such works and manage tree health.

Existing trees designated on the drawing for retention shall be protected at all times during the construction period. Any soil within the drip-line of existing trees shall be excavated and removed by hand only. No stockpiling shall occur within the root zone of existing trees to be retained.

Any roots larger in diameter than 50mm shall only be severed under instruction by a qualified arborist. Roots smaller than 50mm diameter shall be cut cleanly with a saw.

Temporary fencing shall be installed around the base of all trees to be retained prior to the commencement of landscape works. Where possible this fencing will be located around the drip line of these trees, or a minimum of 3m from the trunk. The fencing shall be maintained for the full construction period.

1.04 EROSION & POLLUTION CONTROL

The Contractor shall take all proper precautions to prevent the erosion of soil from the subject site. The contractor shall install erosion & sediment control barriers and as required by council, and maintain these barriers throughout the construction period. Note that the sediment control measures adopted should reflect the soil type and erosion characteristics of the site.

Erosion & pollution control measures shall incorporate the following:

- Construction of a sediment trap at the vehicle access point to the subject site.
- Sediment fencing using a geotextile filter fabric in the location indicated on the erosion control plan or as instructed on site by the landscape architect.
- Earth banks to prevent scour of stockpiles
- Sandbag kerb sediment traps
- Straw bale & geotextile sediment filter.
- Exposed banks shall be pegged with an approved Jute matting in preparation for mass planting

Refer to 'Guidelines for Erosion and Sediment Control on Building Sites' by DLWC (2000) for construction techniques

SOIL WORKS

2.01 MATERIALS

Specified Soil Conditioner (Generally to improve site soil)

The specified soil conditioner for site top-soil improvement shall be an organic mix complies with **AS 4454-2012 Composts, soil conditioners and mulches**. Note that for sites where soil testing indicates toxins or extremes in pH, or soils that are extremely poor, allow to excavate and supply 300mm of imported soil mix.

New gardens & proposed Planting

New garden and planting areas shall consist of a 50/50 mix of clean site soil (refer d) below) and imported soil. All mixes are to comply with **AS4419-2003 Soils for Landscaping and garden use**, & AS 4454 Composts, Soil conditioners & mulches.

Specified Soil Mix - Turf

The specified soil mix for all turf areas shall be a min 75mm layer of imported soil mix consisting of 80% washed river sand (reasonably coarse), and 20% composted organic matter equivalent to mushroom compost or soil conditioner, or other approved lawn top dress.

Site Topsoil

Site topsoil is to be clean and free of unwanted matter such as gravel, clay lumps, grass, weeds, tree roots, sticks, rubbish and plastics, and any deleterious materials and materials toxic to plants. The topsoil must have a pH of between 5.5 and 7. Use 100% imported soil mix when site when site topsoil runs out.

2.02 INSTALLATION

Note: No level changes (Cut or Fill), soil ripping within the Tree Protection Zones of trees to be retained

a) Testing

All testing is to be conducted in accordance with AS4419-2003 Soils for Landscaping and garden use Methods for testing soils for engineering purposes. Site soil shall be given a pH test prior to modifying to ensure conditions are appropriate for planting as stated above. Tests shall be taken in several areas where planting is proposed, and the pH shall be adjusted accordingly with sulphur or lime to suit.

Note that a soil test conducted by the Sydney Environmental & Soil Laboratory or approved equal shall be prepared for all commercial, industrial and multi-unit residential sites. The successful landscape contractor shall implement the recommendations of this test.

b) Set Out of Individual Trees & Mass Planting Areas

All individual tree planting positions and areas designated for mass planting shall be set out with stakes or another form of marking, ready for inspection and approval. Locate all services.

c) Establishing Subgrade Levels

Subgrade levels are defined as the finished base levels prior to the placement of the specified material (i.e. soil conditioner). The following subgrade levels shall apply:

- Mass Planting Beds - 300mm below existing levels with specified imported soil mix.
- Turf areas - 100mm below finished surface level.

Note that all subgrades shall consist of a relatively free draining natural material, consisting of site topsoil placed previously by the Civil Contractor. No builders waste material shall be acceptable.

d) Subgrade Cultivation

Cultivate all subgrades to a minimum depth of 100mm in all planting beds and all turf areas, ensuring a thorough breakup of the subgrade into a reasonably coarse tilth. Grade subgrades to provide falls to surface and subsurface drains, prior to the placement of the final specified soil mix.

e) Drainage Works

Install surface and subsurface drainage where required and as detailed on the drawing. Drain subsurface drains to outlets provided, with a minimum fall of 1:100 to outlets and / or service pits.

f) Placement and Preparation of Specified Soil Conditioner & Mixes.

- Trees in turf & beds - Holes shall be twice as wide as root ball and minimum 100mm deeper - backfill hole with 50/50 mix of clean site soil and imported "Organic Garden Mix" as supplied by ANL or approved equal.
 - Mass Planting Beds - Install specified soil conditioner to a compacted depth of 100mm
- Place the specified soil conditioner to the required compacted depth and use a rotary hoe to thoroughly mix the conditioner into the top 300mm of garden bed soil. Ensure thorough mixing and the preparation of a reasonably fine tilth and good growing medium in preparation for planting.
- Turf Areas - Install specified soil mix to a minimum compacted depth of 75mm.
- Place the specified soil mix to the required compacted depth and grade to required finished soil levels, in preparation for planting and turfing.

PLANTING

3.01 MATERIALS

a) Quality and Size of Plant Material

All trees supplied above a 25L container size must be grown and planted in accordance with **AS 2303:2019 Tree stock for landscape use**. Certification that trees have been grown to AS2303:2018 guidelines is to be provided upon request of Council's Tree Management Officer.

Above - Ground Assessment:

The following plant quality assessment criteria should be followed:

Plant true to type, Good vigour and health, free from pest & disease, free from injury, self-supporting, good stem taper, has been pruned correctly, is apically dominant, has even crown symmetry, free from included bark & stem junctions, even trunk position in pot, good stem structure

Below - Ground Assessment:

Good root division & direction, rootball occupancy, rootball depth, height of crown, non-suckering For further explanation and description of these assessment criteria, refer to AS2303:2019.

All Plant material shall be to the type and size specified. No substitutions of plant material shall be permitted without written prior approval by the Landscape Architect. No plant shall be accepted which does not conform to the standards listed above.

b) Stakes and Ties

Provide min. 3 No. Stakes and ties to all plants identified as trees in the plant schedule. Stakes shall be sound, unpainted, straight hardwood, free of knots and pointed at one end. They shall be 2200mm x 50mm x 50mm Hardwood, or approved alternative. Ties shall be 50mm wide hessian webbing material.

c) Fertilisers

Fertilisers shall be approved slow release fertilisers suitable for the proposed planting types. Note that for native plants, specifically Proteaceae family plants including Grevillea species, low phosphorus fertilizers shall be used.

d) Mulch

Mulch shall be an approved equal to "FOREST FINE" as supplied by ANL. Mulch shall be completely free from any soil, weeds, rubbish or other debris.

e) Turf

Turf shall be soft leaf Buffalo or equivalent (unless stated otherwise), free from any weeds and other grasses, and be in a healthy growing condition.

3.02 INSTALLATION

a) Setting Out

All planting set out shall be in strict accordance with the drawings, or as directed. Note that proposed tree planting located near services should be adjusted at this stage. Notify Landscape Architect for inspection for approval prior to planting.

b) Planting

All plant material shall be planted as soon after delivery as possible. Planting holes for trees shall be excavated as detailed and specified. Plant containers shall be removed and discarded, and the outer roots gently teased from the soil mass. Immediately set plant in hole and backfill with specified soil mix, incorporating the approved quantity of fertiliser for each plant type. Ensure that plants are set plumb vertically and root balls set to the consolidated finished grades detailed on the drawings. Compact the backfilled soil and saturate by hand watering to expel any remaining air pockets immediately after planting.

c) Staking and Tying

Staking and tying shall be in strict accordance with the drawings and shall occur immediately following plant placement and soil backfilling. All plants identified as "Trees" on the planting schedule shall be staked with a min. 3 stakes.

d) Mulching

Mulch for general planter bed shall be an approved equal to "FOREST FINE" as supplied by ANL. Mulch shall be completely free from any soil, weeds, rubbish or other debris. Mulch for bio-retention/rain garden area where is required shall be non-floatable materials that could include crushed rock, gravel, coarse river sand, scoria or river pebbles, 4-7mm screenings or similar.

e) Turfing

Moisten soil prior to the turf being laid. Turf shall be neatly butt jointed and true to grade to finish flush with adjacent surfaces. Incorporate a lawn fertilizer and thoroughly water in. Keep turf moist until roots have taken and sods/rolls cannot be lifted. Keep all traffic off turf until this has occurred. Allow for top dressing of all turf areas. All turf shall be rolled immediately following installation.

f) Brick garden edging

Where is required, the Contractor shall install **Brick garden edging** as detailed on the drawings, to all mass planting beds adjoining turf or gravel mulched areas, and where required. The resultant edge shall be true to line and flush with adjacent surfaces. However, no edging shall be used within the Structural Root Zone (SRZ) of trees to be retained.

g) Nature Strip and public domain works

The nature strip (street frontage) for the site is public land, and only authorized works may occur here. Existing Conditions such as street trees, council planting etc shall be retained and protected during construction, unless specific approval has been granted for new work in this area. Where council policy specifies a particular unit paver, material finish, pattern or treatment, it shall be the contractors responsibility to check and verify that this material & treatment is correct and current prior to undertaking construction works'

f) Drainage pit

Drainage pits and drainage lines should be located within garden areas to allow for site drainage while minimising impact on the proposed planting scheme. Where possible, pits and linework should be located at the edge of landscape strips to avoid precluding planting centrally in garden areas. Where pits and linework occur within garden beds, the landscape contractor shall take all precautions to avoid damaging storm water when planting shrubs and trees. landscape contractors shall not alter the form of swales designed to direct overland flow.

HARDSCAPE WORKS

4.01 GENERAL

The Contractor shall undertake the installation of all hardscape works as detailed on the drawing, or where not detailed, by manufacturers specification.

- Paving - refer to typical details provided, and applicable Australian Standards. *Permeable paving may be used as a suitable means of satisfying Council permeable surface requirements, while providing a useable, hardwearing, practical surface.* In most instances, the client shall nominate the appropriate paving material to be used.

Australian Standards shall be adhered to in relation to all concrete, masonry & metal work. Some details are typical and may vary on site. All hardscape works shall be setout as per the drawings, and inspected and approved by the Landscape Architect prior to installation. All workmanship shall be of the highest standard. Any queries or problems that arise from hardscape variations should be brought to the attention of the Landscape Architect. Your attention is directed to any obligations or responsibilities under the Dividing Fences Act, 1991 in respect of adjoining property owner/s which may arise from this application. Any enquiries in this regard may be made to the Crown Lands on 1300 886 235.

IRRIGATION WORKS

5.01 GENERAL (PERFORMANCE SPECIFICATION)

This is a general Irrigation Performance Specification only, as a guide for projects requiring irrigation systems as part of consent requirements or building contractual arrangements. An automated irrigation system is recommended for the effective establishment of new gardens, and to assist with the success of planting areas on terraces, over slabs and in Communal Open Spaces. The inclusion of this general specification is no guarantee that an irrigation system forms part of the landscape scope of works, which will be determined by the building contract.

New irrigation systems to planting areas shall be a Commercial Grade Irrigation System conforming to all relevant Australian standards, including AS 3500 & the Gas and Electricity (Consumer Safety) Act 2017, Workplace Health & Safety Act 2011, & the latest Sydney Water Code

An automated drip-irrigation system is to be installed to all gardens, planters and lawn areas in accordance with the approved Irrigation Design. This system shall be designed and installed by a qualified and licensed irrigation specialist, to the highest industry standards and to maximise the efficient usage of water.

The Installer is required to obtain all approvals necessary for the completion of works in accordance with the Laws of Australia, Laws of the State of NSW, Lake Macquarie Council By-Laws and Ordinances.

Drawings:

- The Landscape Contractor nominated Licensed Irrigation Specialist shall provide irrigation drawings for approval upon engagement.

Design Requirements:

- The irrigation system shall be installed prior to all planting works. It shall incorporate a commercially available irrigation system, with sub-surface dripper lines to irrigate all gardens, planters and lawn areas.
- It shall incorporate a suitable back flow prevention device for the scale of works, an in-line filter, check valves, and suitable high and low density poly hose fittings and PVC piping to achieve flow rates suitable for specified planting.
- The irrigation application rate shall not exceed the infiltration rate of the soil or creates run-off.
- The landscape contractor shall check the existing pressure available from the ring mains and size irrigation piping to suit. Supply shall be from local hose cock where available.
- All piping and fittings shall be buried 50mm below the finished soil levels in garden and lawn areas, and secured in position at 500mm centres with galv wire pins.
- Size of pipes shall be selected to ensure the working pressure at the end of the line does not decrease by more than 5%.

Services Co-ordination:

- Co-ordination required by Landscape Contractor or Project Manager to provide required conduit, pipe work and penetration through slabs and planter walls for water and power provisions.
- The Landscape Contractor shall be engaged with the Irrigation Specialist to co-ordinate with the Project Manager to identify the preferred service and conduit locations.
- Project Manager and Landscape Contractor to establish area suitable for irrigation control system with required area, power provision and water supply.

Testing & Defects:

Upon completion of installation, the system shall be tested, including:

- Main Line Pressure Test: The main line is pressurised to test for leaks. All valves are shut and the pressure is taken over a determined length of time.
- Dripper Pressure Test: Measurement at flushing valves are taken and the pressure gauged to make sure it conforms to the manufacturer recommendations. The inlet pressure is then tested under the same conditions to check it does not exceed 300Kpa.
- All components are to be satisfactorily functional and operational prior to approval. Should any defect develop, or the capacity or efficiency of the system decline during the agreed maintenance system, then these faults shall be immediately rectified.

Warranty :

- A full 12 month warranty shall be included to cover labour and all parts.

Further Documentation:

- On request, a detailed irrigation performance specification report can be issued.

CONSOLIDATION AND MAINTENANCE

6.01 GENERAL

- The consolidation and maintenance period shall be either
 - 6 months beginning from the approved completion of the specified construction work (Practical Completion)
 - as agreed to in the landscape contractors contractual obligations.
 - or as specified by Council in the Determination.

A qualified landscape maintenance contractor shall undertake the required landscape maintenance works. Consolidation and maintenance shall mean the care and maintenance of contracted works by accepted landscaping or horticultural practices, ensuring that all plants are in optimum growing conditions and appearance at all times, as well as rectifying any defects that become apparent in the contracted works.

This shall include, but not be limited to, the following items where and as required:

- Watering all planting and lawn areas / irrigation maintenance.
- Clearing litter and other debris from landscaped areas.
- Removing weeds, pruning and general plant maintenance.
- Replacement of damaged, stolen or unhealthy plants.
- Make good areas of soil subsidence or erosion.
- Topping up of mulched areas.
- Spray / treatment for Insect and disease control.
- Fertilizing with approved fertilizers at correct rates.
- Mowing lawns & trimming edges each 14 days in summer or 18 days in winter
- Adjusting ties to Stakes
- Maintenance of all paving, retaining and hardscape elements.

On the completion of the maintenance period, the landscape works shall be inspected and at the satisfaction of the superintendent or landscape architect, the responsibility will be signed over to the client.

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					STATUS / ISSUE		DRAWN:	CHECKED:	
					DA - ISSUE C		K.Z	R.F	

PUBLIC DOMAIN WORKS CIVIL ENGINEERING PLANS FOR DEVELOPMENT APPLICATION 5 BOUNDARY STREET, GRANVILLE

GENERAL NOTES.

- ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL'S DEVELOPMENT ENGINEERING STANDARD UNLESS OTHERWISE NOTED.
- ALL EROSION AND SEDIMENTATION CONTROL MEASURES ARE TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL'S CODE OF PRACTICE FOR EROSION AND SEDIMENTATION, AND MUST BE IMPLEMENTED PRIOR TO THE COMMENCEMENT OF ANY BUILDING OF CIVIL WORKS. THE DEVELOPER IS RESPONSIBLE FOR ONGOING MAINTENANCE OF EROSION AND SILTATION CONTROL MEASURES.
- ALL PUBLIC UTILITIES ARE TO BE CLEARLY IDENTIFIED IN THE FIELD PRIOR TO ANY CIVIL WORKS. COUNCIL ACCEPTS NO RESPONSIBILITY FOR DAMAGE OR RELOCATION COSTS TO UTILITIES DURING CONSTRUCTION.
- SUPERVISING ENGINEER IS TO BE NOTIFIED PRIOR TO THE COMMENCEMENT OF ANY WORKS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL WORKS ARE CARRIED OUT IN ACCORDANCE WITH WORK HEALTH AND SAFETY ACT 2011.
- PERMISSION TO ENTER, CONSTRUCT WORKS AND DISCHARGE STORMWATER ONTO ADJOINING PROPERTIES IS TO BE OBTAINED AND SUBMITTED TO COUNCIL PRIOR TO COMMENCEMENT OF ANY WORKS.
- ALL WORKS AS A RESULT OF THE SUBMITTED PLANS IS TO BE CARRIED OUT TO THE SUPERVISING ENGINEER'S SATISFACTION.
- ANY DISTURBED LANDSCAPING AREA IS TO BE SHAPED AND TURFED. APPROVED TOP SOIL & TURF IS TO BE REINSTATED TO THE SUPERVISING ENGINEER'S SATISFACTION.
- ALL DRAINAGE GRATES TO BE BIKE SAFE TO LOAD TYPE CLASS "D" AS PER AS3996-2006 (LOAD CLASSIFICATION). GRATES TO BE "DURHAM-MEDIUM TRAFFICABLE" OR SIMILAR.
- RETAINED TREES TO BE FENCED WITH A 1.8m HIGH CHAINWIRE LINK FENCE FULLY SUPPORTED AT GRADE TO MINIMISE THE DISTURBANCE TO EXISTING GROUND CONDITIONS WITHIN THE CANOPY DRIP LINE. "TREE PROTECTION ZONE" SIGNAGE TO BE ATTACHED TO PROTECTIVE FENCING.
- A ROAD-OPENING PERMIT SHALL BE OBTAINED FOR WORKS IN THE ROAD RESERVE PRIOR TO COMMENCEMENT OF WORK IN THE ROAD RESERVE.
- ALL REDUNDANT LINE MARKING SHALL BE GRINDED OFF THE PAVEMENT AND APPROVED LINE MARKING FROM COUNCIL AND/OR TINSW SHALL BE REFLECTIVE WHITE THERMOPLASTIC OR SIMILAR.
- SERVICES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM INFORMATION SUPPLIED FROM THE RELEVANT AUTHORITIES VIA A "BEFORE YOU DIG AUSTRALIA" ENQUIRY DURING DESIGN. THE LOCATION OF SERVICES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED AS ACCURATELY AS POSSIBLE FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES. A NEW "BEFORE YOU DIG AUSTRALIA" ENQUIRY MUST BE CARRIED OUT TO VERIFY SERVICE LOCATIONS JUST PRIOR TO CONSTRUCTION.
- NO CONCRETE SHALL BE POURED PRIOR THE EXCAVATION AND FORMWORK HAVE BEEN INSPECTED FROM A QUALIFIED AND PRACTICING CIVIL ENGINEER.
- CERTIFICATION FROM PRACTICING ENGINEER TO BE SUBMITTED TO COUNCIL.



LOCALITY PLAN
N.T.S.

DRAWING INDEX		
Drawing No.	DESCRIPTION	Rev
C000	GENERAL NOTES, LOCALITY PLAN & DRAWING SCHEDULE	B
C101	CIVIL WORKS LAYOUT PLAN	B
C201	DRIVEWAY PROFILE - LONGITUDINAL SECTIONS	A
C301	BOUNDARY STREET - LONGITUDINAL SECTION	A
C401	BOUNDARY STREET - CROSS SECTIONS	A
C501	TYPICAL CROSS SECTIONS	A
C601	CONSTRUCTION NOTES AND DETAILS SHEET	A

DANGER :
LOCATION OF ALL EXISTING UNDERGROUND SERVICES SHOWN ARE APPROXIMATE AS TAKEN OFF BYDA INFO. EXTREME CAUTION TO BE EXERCISED WHEN WORKING IN THE VICINITY OF AND AROUND THESE SERVICES. PLEASE CALL THE RELEVANT AUTHORITIES TWO DAYS PRIOR TO CONSTRUCTION FOR A MORE EXACT LOCATION OF THE EXISTING SERVICES.

IT IS THE CONTRACTOR RESPONSIBILITY TO CONTACT "BEFORE YOU DIG AUSTRALIA" FOR THE LOCATION OF EXISTING PUBLIC UTILITIES, PRIOR TO EXCAVATION.

DISCLAIMER
ALL INFRASTRUCTURE INFORMATION (MAINS, SEWER, PIPES ETC.) IS DERIVED FROM BEFORE YOU DIG AUSTRALIA.

EVERY EFFORT WAS MADE TO ENSURE ACCURACY OF THESE RECORDS WHEN COMPILED.

NO WARRANTY IS GIVEN TO CURRENCY OF DEPTHS AND LEVELS DUE TO THE POSSIBILITY OF SUBSEQUENT ALTERATION OF LEVELS THROUGH FILLING OR EXCAVATION. USERS OF THE INFORMATION IN THIS DRAWING/DESIGN SHOULD TAKE ALL REASONABLE STEPS TO VERIFY THE RELEVANT INFORMATION BEFORE COMMENCING EXCAVATING OR CONSTRUCTION WORK.

TELFORD CIVIL DESIGN & CONSTRUCTION EXCELLENCE TAKE NO RESPONSIBILITY FOR APPARENT ERRORS OR INACCURACIES IN THE INFORMATION PROVIDED.



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Issue	Description	Date	Design	Checked
B	ISSUE FOR DEVELOPMENT APPLICATION	04/09/2023	J.E.H.	J.A.B.
A	ISSUE FOR DEVELOPMENT APPLICATION	31/08/2023	J.E.H.	J.A.B.

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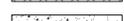
Scale
N.T.S.

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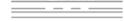
Project
5 BOUNDARY STREET, GRANVILLE PUBLIC DOMAIN WORKS CIVIL ENGINEERING PLANS DEVELOPMENT APPLICATION

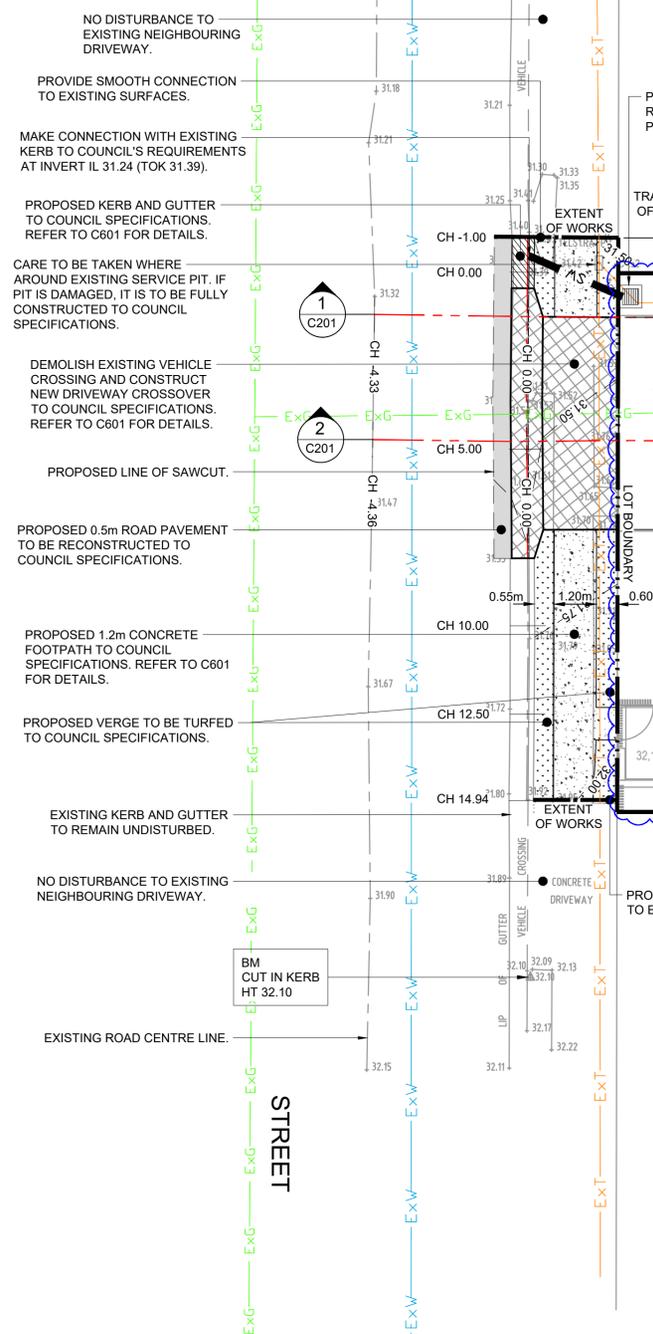
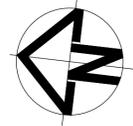
Drawing Title
GENERAL NOTES, LOCALITY PLAN AND DRAWING SCHEDULE
Scale A1 N.T.S. Project No. 2021238 Dwg. No. C000 Issue B

LEGEND

-  LOT BOUNDARY
-  K&G
-  PROPOSED KERB & GUTTER
-  PROPOSED LINE OF SAWCUT
-  PROPOSED CONTROL LINE
-  PROPOSED DESIGN CONTOURS
-  PROPOSED STORMWATER PIPE
-  PROPOSED BOUNDARY PIT
-  PROPOSED VERGE
-  PROPOSED DRIVEWAY
-  PROPOSED CONCRETE FOOTPATH
-  PROPOSED ROAD PAVEMENT

EXISTING SERVICES

-  EXISTING ROAD CENTRE LINE
-  Ex. K&G
-  EXISTING WATER MAIN
-  EXISTING SEWER MAIN
-  EXISTING TELSTRA MAIN
-  EXISTING GAS MAIN



NO DISTURBANCE TO EXISTING NEIGHBOURING DRIVEWAY.

PROVIDE SMOOTH CONNECTION TO EXISTING SURFACES.

MAKE CONNECTION WITH EXISTING KERB TO COUNCIL'S REQUIREMENTS AT INVERT IL 31.24 (TOK 31.39).

PROPOSED KERB AND GUTTER TO COUNCIL SPECIFICATIONS. REFER TO C601 FOR DETAILS.

CARE TO BE TAKEN WHERE AROUND EXISTING SERVICE PIT. IF PIT IS DAMAGED, IT IS TO BE FULLY CONSTRUCTED TO COUNCIL SPECIFICATIONS.

DEMOLISH EXISTING VEHICLE CROSSING AND CONSTRUCT NEW DRIVEWAY CROSSOVER TO COUNCIL SPECIFICATIONS. REFER TO C601 FOR DETAILS.

PROPOSED LINE OF SAWCUT.

PROPOSED 0.5m ROAD PAVEMENT TO BE RECONSTRUCTED TO COUNCIL SPECIFICATIONS.

PROPOSED 1.2m CONCRETE FOOTPATH TO COUNCIL SPECIFICATIONS. REFER TO C601 FOR DETAILS.

PROPOSED VERGE TO BE TURFED TO COUNCIL SPECIFICATIONS.

EXISTING KERB AND GUTTER TO REMAIN UNDISTURBED.

NO DISTURBANCE TO EXISTING NEIGHBOURING DRIVEWAY.

EXISTING ROAD CENTRE LINE.

PROPOSED BOUNDARY PIT. REFER TO STORMWATER PLANS FOR MORE DETAILS.

TRANSITION OF WORKS 1.0m

EXTENT OF WORKS

PROVIDE SMOOTH CONNECTION TO EXISTING SURFACES.

NOTE:
ALL EXISTING SERVICES TO BE ADJUSTED TO MATCH PROPOSED SURFACE LEVELS.



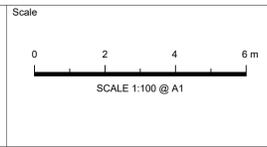
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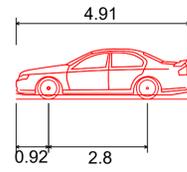
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Project
**5 BOUNDARY STREET, GRANVILLE
PUBLIC DOMAIN WORKS
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

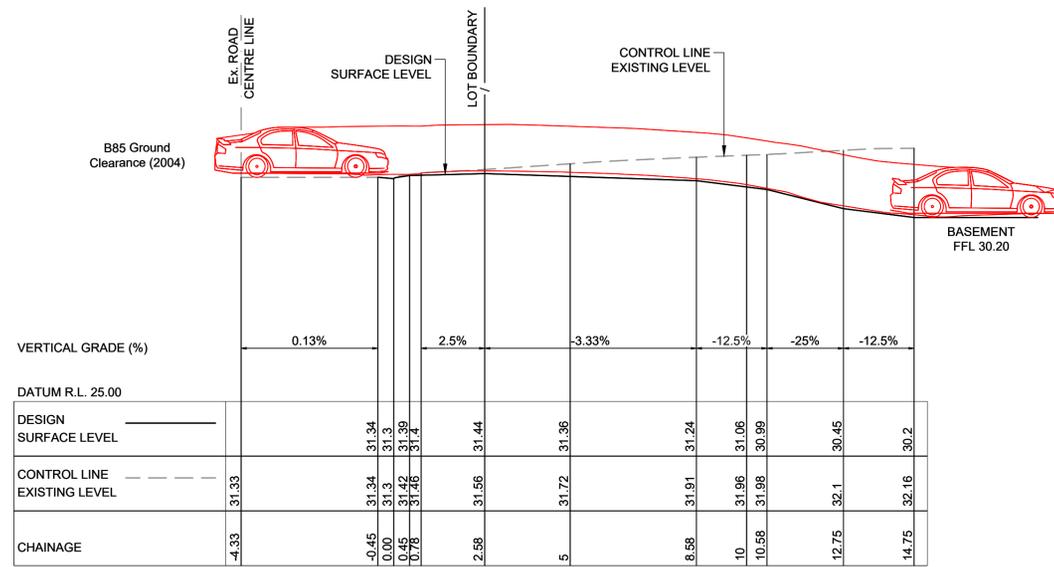
Drawing Title
CIVIL WORKS LAYOUT PLAN

Scale	A1	Project No.	Dwg. No.	Issue
1:100		2021238	C101	B

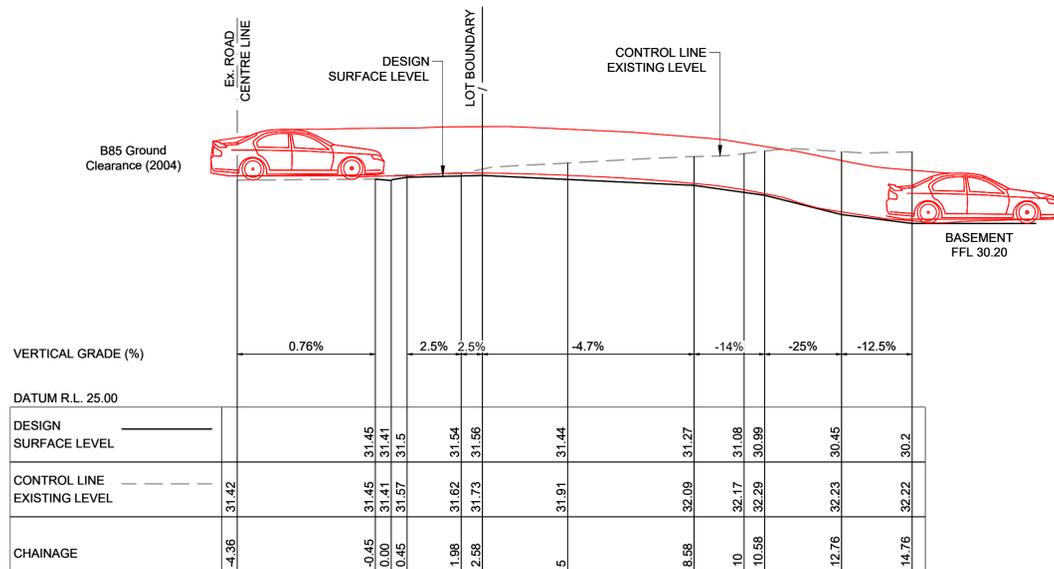
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B85 Ground Clearance (2004)
 Overall Length 4.910m
 Overall Width 1.870m
 Overall Body Height 1.421m
 Min Body Ground Clearance 0.120m
 Track Width 1.770m
 Lock-to-lock time 4.00s
 Curb to Curb Turning Radius 8.000m



DRIVEWAY PROFILE - LONGITUDINAL SECTION 1
 SCALE 1:100 (NATURAL)



DRIVEWAY PROFILE - LONGITUDINAL SECTION 2
 SCALE 1:100 (NATURAL)

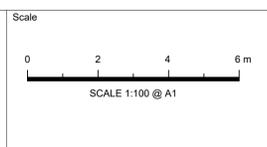
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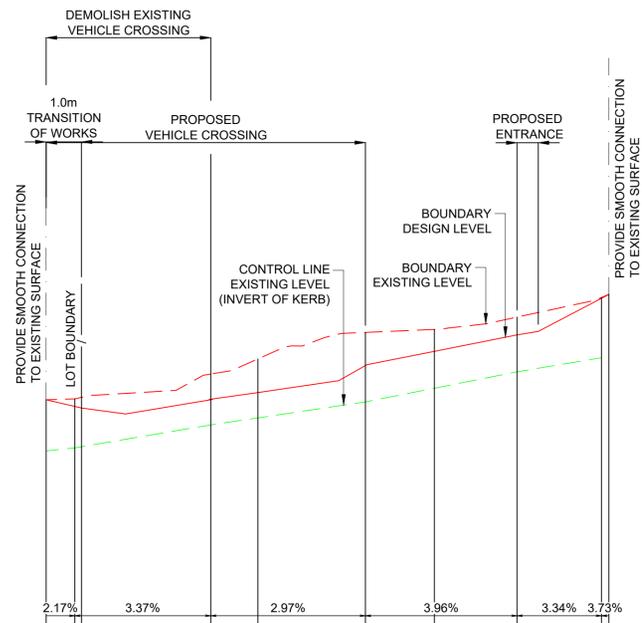
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5 BOUNDARY STREET, GRANVILLE PUBLIC DOMAIN WORKS CIVIL ENGINEERING PLANS DEVELOPMENT APPLICATION

Drawing Title	DRIVEWAY PROFILE LONGITUDINAL SECTIONS		
Scale	A1	Project No.	2021238
Dwg. No.	C201	Issue	A



CONTROL LINE VERTICAL GRADE (%)	2.17%		3.37%		2.97%		3.96%		3.34%		3.73%	
DATUM R.L. 30.00												
BOUNDARY EXISTING LEVEL	31.522	31.527	31.536	31.667	31.753	31.903	31.92	31.99	32.101	32.119		
BOUNDARY DESIGN LEVEL		31.484	31.476	31.522	31.563	31.716	31.796	31.889	32.096			
CONTROL LINE EXISTING LEVEL (INVERT OF KERB)	31.232	31.25	31.256	31.38	31.42	31.51	31.567	31.68	31.76	31.768		
CHAINAGE	-1	-0.19	0	3.67	5	8.05	10	12.34	14.73	14.94		

BOUNDARY STREET - LONGITUDINAL SECTION CONTROL LINE (INVERT OF KERB)
 SCALE (H) 1:100
 (V) 1:20

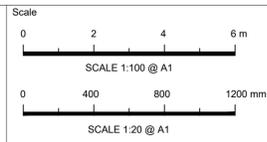
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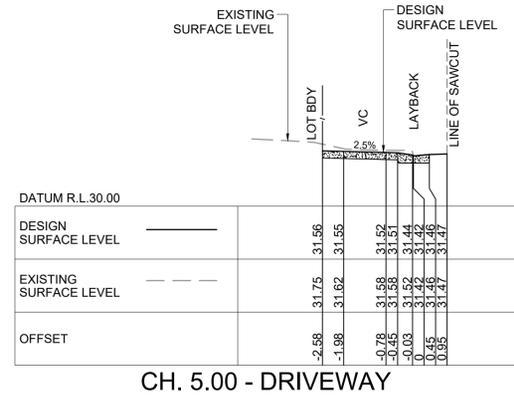
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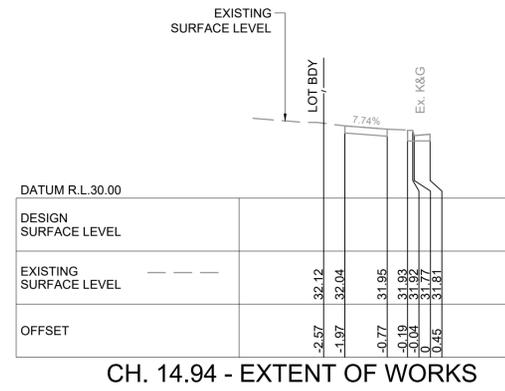
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 PUBLIC DOMAIN WORKS
 CIVIL ENGINEERING PLANS
 DEVELOPMENT APPLICATION**

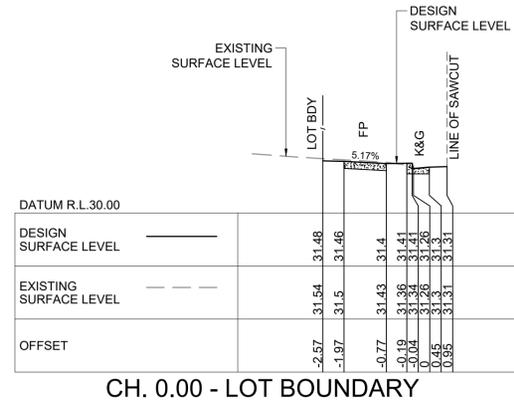
Drawing Title		BOUNDARY STREET LONGITUDINAL SECTION	
Scale	A1 AS SHOWN	Project No.	2021238
Dwg. No.	C301	Issue	A



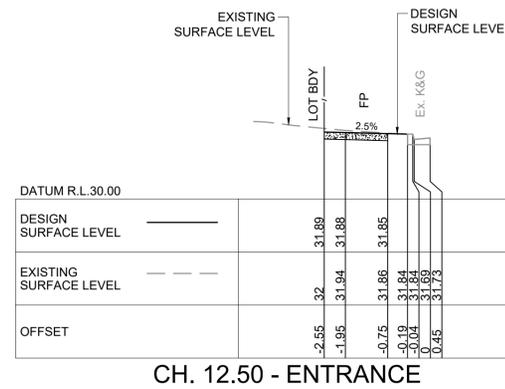
CH. 5.00 - DRIVEWAY



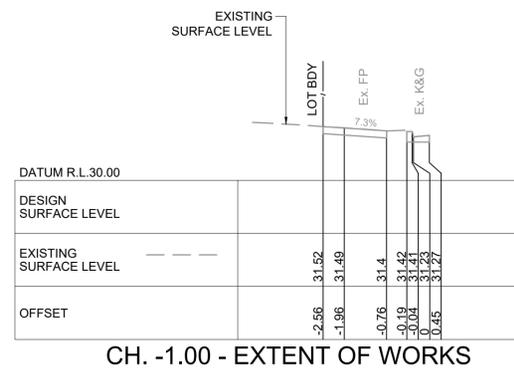
CH. 14.94 - EXTENT OF WORKS



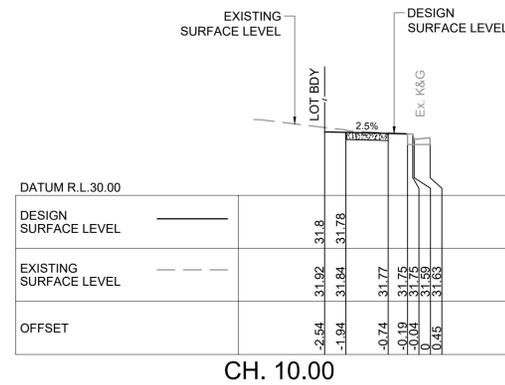
CH. 0.00 - LOT BOUNDARY



CH. 12.50 - ENTRANCE



CH. -1.00 - EXTENT OF WORKS



CH. 10.00

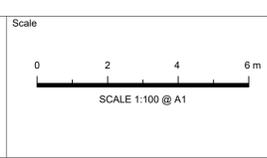
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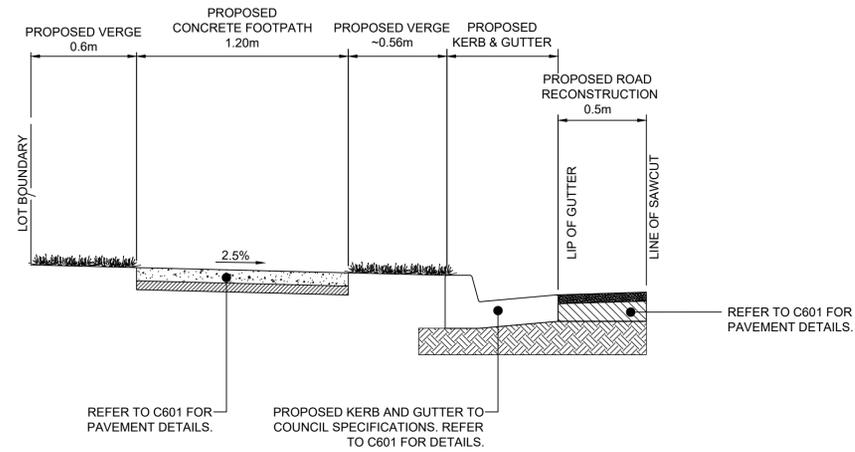
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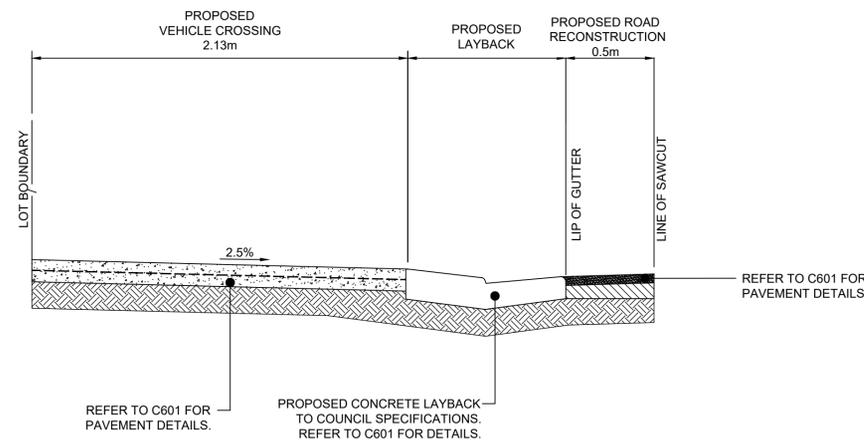
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Project
**5 BOUNDARY STREET, GRANVILLE
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CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

Drawing Title		Scale	A1	Project No.	Dwg. No.	Issue
BOUNDARY STREET CROSS SECTIONS		1:100		2021238	C401	A



BOUNDARY STREET - TYPICAL FOOTPATH CROSS SECTION
SCALE 1:20



BOUNDARY STREET - TYPICAL VEHICLE CROSSING SECTION
SCALE 1:20

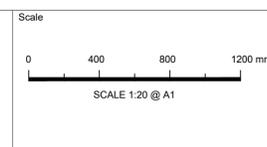
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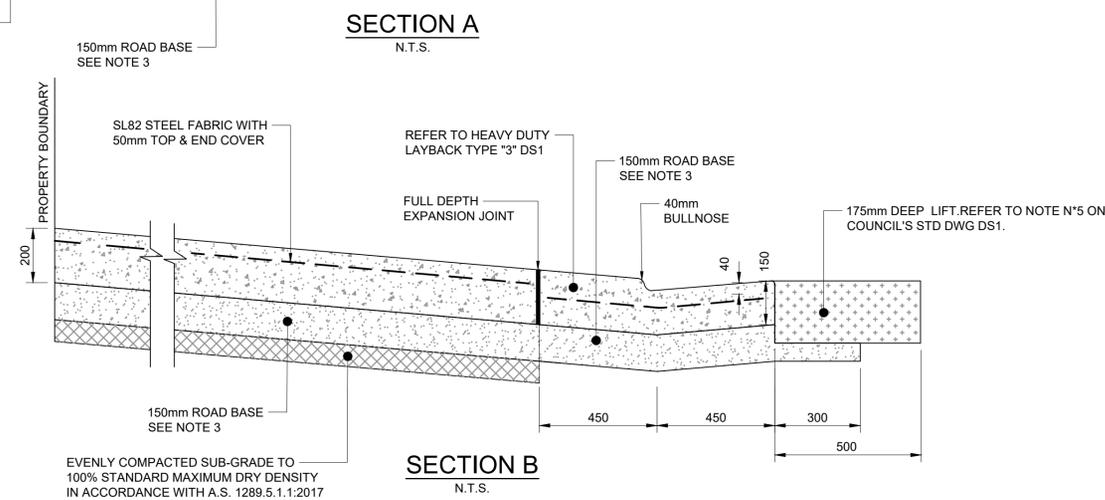
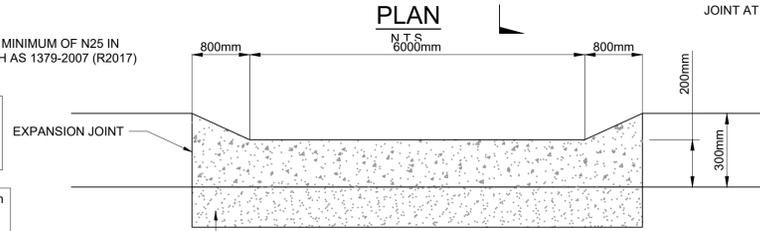
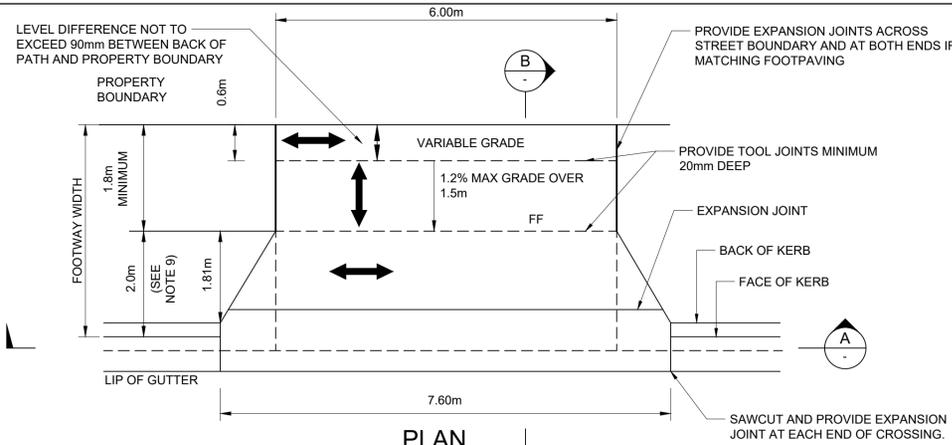
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Drawing Title TYPICAL CROSS SECTIONS				
Scale 1:20	A1	Project No. 2021238	Dwg. No. C501	Issue A

LEGEND

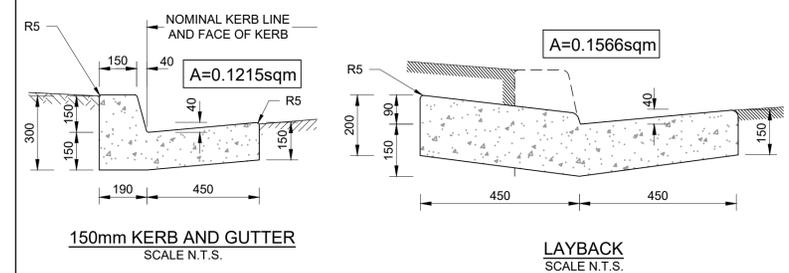
- BF BACK OF FOOTPATH
- FF FRONT OF FOOTPATH
- INV INVERT
- Direction of Broom Finish



HEAVY DUTY VEHICULAR CROSSING

NOTES:

- ALL EXISTING KERB AND GUTTER SHALL BE REMOVED PRIOR TO ANY NEW LAYBACK WORKS UNLESS OTHERWISE DIRECTED BY COUNCIL'S INSPECTOR AT PRE-INSPECTION.
- VEHICULAR CROSSING LEVELS TO BE IN ACCORDANCE WITH COUNCIL'S STD DWG DS10 AND DETAILED DESIGN.
- ROAD BASE MATERIAL IS TO BE DGB20 OR SIMILAR AND COMPACTED TO 100% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH A.S. 1289.5.1.1:2017.
- ALL DISTURBED AREAS TO BE TOPSOILED WITH 50mm OF APPROVED TURF UNDERLAY AND TURFED AS SOON AS PRACTICABLE (PRIOR TO FINAL INSPECTION) TO ENCOURAGE REVEGETATION AND MINIMISE SOIL EROSION FROM SITE. REFER TO COUNCIL'S STD DWG DS42.
- EXISTING CONCRETE FOOTPAVING IS TO BE RECONSTRUCTED AS REQUIRED BY COUNCIL'S INSPECTOR OR PROJECT MANAGER TO MATCH THE CROSSING.
- THE FOOTWAY IS TO BE SHAPED AS REQUIRED BY COUNCIL'S INSPECTOR OR PROJECT MANAGER TO THE CROSSING EVENLY.
- THIS PLAN DOES NOT APPLY FOR FOOTWAY WIDTHS LESS THAN 2.8m.
- ALL SURFACES TO BE BROOM FINISHED.
- USE 2.0m. IF DISTANCE BETWEEN INVERT AND FRONT OF FOOTPATH IS 2.0m OR GREATER. WHERE DISTANCE IS LESS THAN 2.0m WING TO MATCH FRONT OF FOOTPATH.



NOTES:

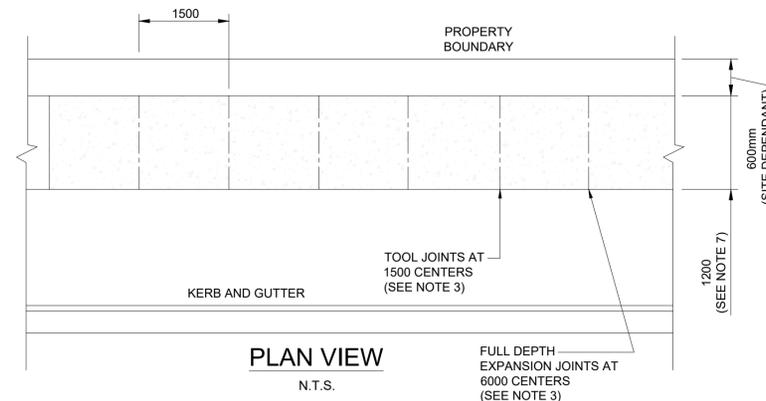
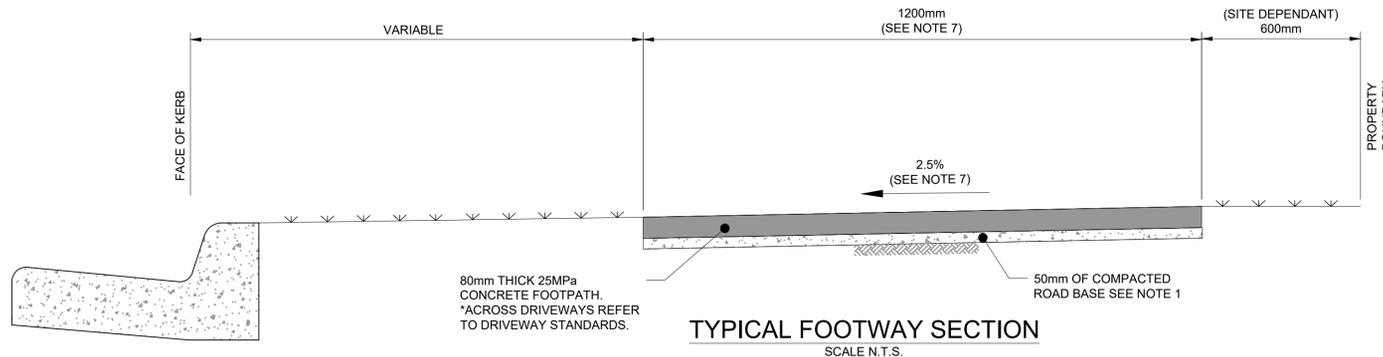
- ROAD BASE MATERIAL IS TO BE DGB20 OR SIMILAR AND COMPACTED TO 100% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289.5.1.1:2017.
- ROAD BASE MATERIAL 150mm THICK TO BE PLACED BENEATH KERB & GUTTER AND 300mm BEYOND THE EXTERNAL EDGES OF KERB & GUTTERS APRONS AND CROSSINGS.
- ALL DISTURBED AREAS TO BE TOPSOILED WITH 50mm MIN OF APPROVED TURF UNDERLAY AND TURFED AS SOON AS PRACTICABLE TO ENCOURAGE REVEGETATION AND MINIMISE SOIL EROSION FROM SITE.
- PROVIDE SAWCUT AND REINSTATE 500mm INTO ROAD PAVEMENT FROM FRONT EDGE OF CONCRETE WORKS UNLESS OTHERWISE INSTRUCTED BY COUNCIL'S INSPECTOR.
- REINSTATE PAVEMENT WITH 175mm DEPTH DEEP LIFT (AC14) COMPACTED TO 95% MODIFIED (97% MAX) TO TNSW SPECIFICATIONS R116 AND R117. CRACK SEAL ALL BITUMEN TO BITUMEN FACES. AC14 TO BE COMPACTED IN LAYERS. EACH LAYER TO BE OF 40-70mm THICKNESS.
- APPROVED FULL DEPTH EXPANSION JOINTS (10mm) TO BE PROVIDED AS FOLLOWS:
 - BETWEEN NEW AND EXISTING WORKS
 - BETWEEN LAYBACK WINGS AND KERB
 - EITHER SIDE OF ANY LINTELS
 - AT EVERY 6m INTERVALS ALONG CONTINUOUS LENGTHS (PROVIDE A DUMMY JOINT AT EVERY 3m INTERVALS UNLESS INSTRUCTED OTHERWISE BY SUPERINTENDENT)
- ALL SURFACES TO BE STEEL TROWEL FINISHED.
- ROOFWATER OUTLETS TO BE APPROVED IN ACCORDANCE WITH STANDARD DRAWING DS2.
- USE CLEAN FILL AS BACKFILL MATERIAL UNLESS INSTRUCTED OTHERWISE.

CONCRETE TO BE A MINIMUM OF N25 IN ACCORDANCE WITH AS 1012.9:2014, AS 1379-2007 (R2017) AND AS 3600:2018. ALL CHAMFER/FILLETS ARE RADIUS 20 UNLESS SHOWN OTHERWISE

TIE IN KERBS TO BE ONLY USED AS A LAST ALTERNATIVE. APPROVAL TO BE GIVEN BY COUNCIL'S SUPERVISING ENGINEER ONLY

NOTES:

- BASE MATERIAL IS TO BE DGB20 OR SIMILAR. COMPACT TO 100% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH A.S. 1289.5.1.1:2017.
- CONCRETE IS TO BE 25MPa IN ACCORDANCE WITH AS 1379-2007(R2017) AND AS 3600:2018.
- PROVIDE FULL DEPTH EXPANSION JOINT 10mm WIDE AT 6m SPACING. PROVIDE TOOLED JOINTS 10mm WIDE BY A MINIMUM OF 20mm DEPTH AT 1.5m SPACING.
- ALL SURFACES TO BE BROOM FINISHED AT 90° TO DIRECTION OF TRAVEL AND EDGES TO BE ROUNDED TO 20 RADIUS USING AN EDGING TOOL. (NO WOOD FLOAT FINISH PERMITTED)
- ADJOINING NATURAL FOOTWAY IS TO BE CUT OR FILLED WITH TOPSOIL AS REQUIRED TO GRADE EVENLY TO THE FOOTPATH. ALL DISTURBED AREAS TO BE TOPSOILED WITH 50mm MIN APPROVED TURF UNDERLAY AND TURFED AS SOON AS PRACTICABLE TO ENCOURAGE REVEGETATION AND MINIMIZE SOIL EROSION FROM SITE, OR REINSTATED AS DIRECTED BY COUNCIL'S INSPECTOR OR PROJECT MANAGER. REFER TO COUNCIL'S STANDARD DRAWING DS42.
- LONGITUDINAL TRANSITIONS IN GRADE TO MATCH EXISTING VEHICULAR FOOTWAY CROSSING ARE NOT TO EXCEED A GRADE OF 1 IN 14 COMPLY WITH AS 1428.1-2009.
- FOOTPATH WIDTH AND CROSS FALL AS SHOWN ABOVE UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT / PROJECT MANAGER.
- PROVIDE ARTICULATED JOINT IF FOOTPATH IS ADJACENT TO TRESS AND WHERE DIFFERENTIAL SOIL MOVEMENT IS EXPECTED.
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



FOOTPATH
N.T.S.

NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
A	ISSUE FOR DEVELOPMENT APPLICATION	31/08/2023	J.E.H.	J.A.B.

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Scale

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PO BOX 3579 Parramatta 2124
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Project
5 BOUNDARY STREET, GRANVILLE PUBLIC DOMAIN WORKS CIVIL ENGINEERING PLANS DEVELOPMENT APPLICATION

Drawing Title
CONSTRUCTION NOTES AND DETAILS SHEET

Scale: A1 N.T.S. Project No: 2021238 Dwg. No: C601 Issue: A

5 BOUNDARY STREET, GRANVILLE PROPOSED RESIDENTIAL DEVELOPMENT

STORMWATER CONCEPT PLANS



LOCALITY PLAN
N.T.S

DRAWING INDEX

Drawing No.	DESCRIPTION
000	COVER SHEET PLAN
101	STORMWATER CONCEPT PLAN BASEMENT LEVEL SHEET 1 OF 2
102	STORMWATER CONCEPT PLAN BASEMENT LEVEL SHEET 2 OF 2
103	STORMWATER CONCEPT PLAN GROUND LEVEL
104	ON-SITE DETENTION DETAILS AND CALCULATION SHEETS
105	MISCELLANEOUS DETAILS SHEET

NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
B	COUNCIL COMMENTS	05/09/2023	AGN	JSF
A	ISSUE FOR DEVELOPMENT APPLICATION	26/07/2022	AGN	JSF

Certification By Dr. Michel Chayya
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Scale

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DESIGN & CONSTRUCTION EXCELLENCE

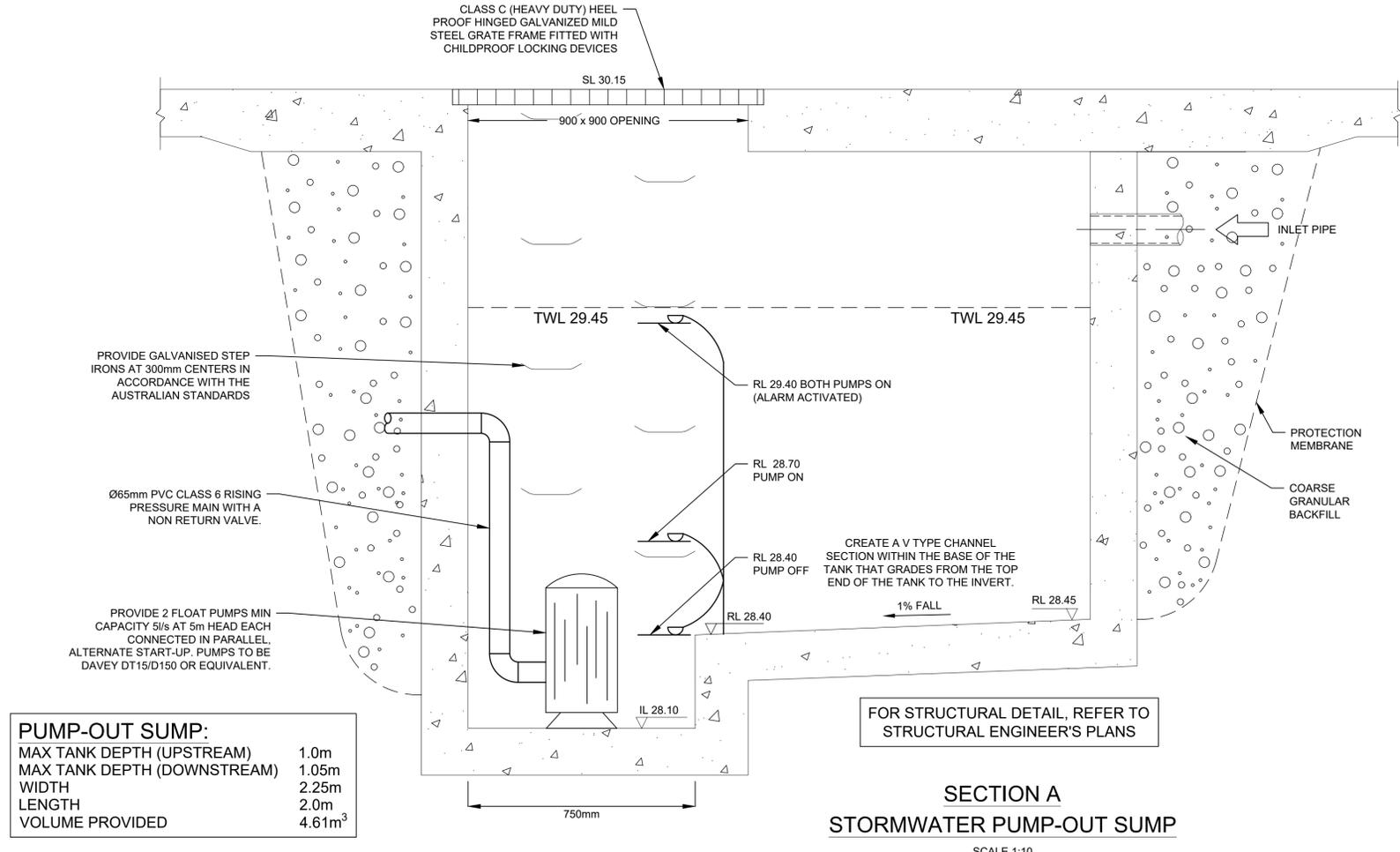
Level 14, 32 Smith Street,
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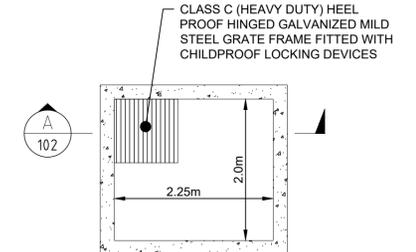
Project
**5 BOUNDARY STREET, GRANVILLE
PROPOSED RESIDENTIAL DEVELOPMENT
STORMWATER CONCEPT PLANS
DEVELOPMENT APPLICATION**

Drawing Title
COVER SHEET PLAN

Scale	A1	Project No.	Dwg. No.	Issue
N.T.S.		2021238	000	B



PUMP-OUT SUMP:
 MAX TANK DEPTH (UPSTREAM) 1.0m
 MAX TANK DEPTH (DOWNSTREAM) 1.05m
 WIDTH 2.25m
 LENGTH 2.0m
 VOLUME PROVIDED 4.61m³

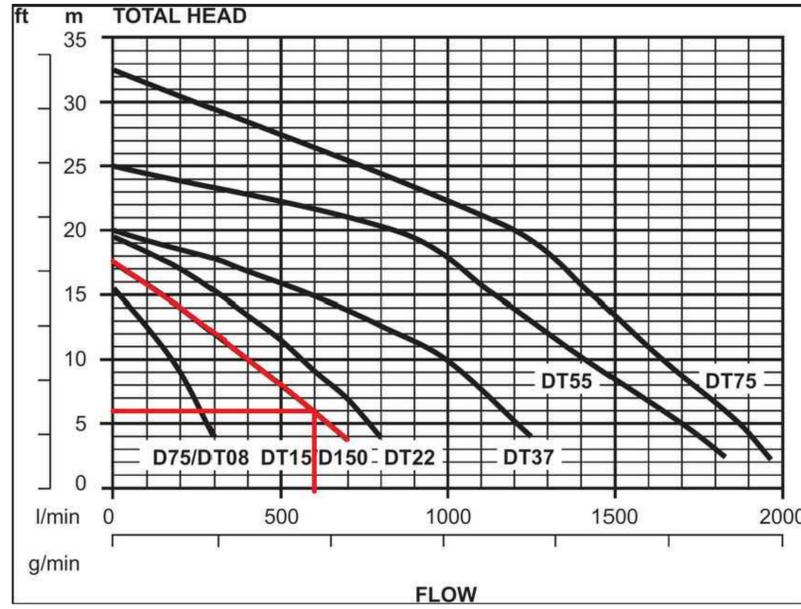


NOTE:
 1- FOR ALL THE STRUCTURAL DETAILS, REFER TO STRUCTURAL ENGINEER'S PLAN.
 2- ALL THE AG LINES BEHIND BASEMENT WALLS TO BE CONNECTED TO PUMP-OUT SUMP.

PUMP-OUT SUMP DETAIL PLAN VIEW
 SCALE 1:50

PUMP STORAGE VOLUME CALCULATION (TYP)

- $I_{100,90min} = 58.55 \text{ mm/hour}$
- PUMP STORAGE CATCHMENT AREA: $A = 39.0 \text{ m}^2 = 0.00466 \text{ ha}$
- $Q = C \times I \times A / 360$ WHERE $C = 1.0$ (REFER TO AS3500.3.5.4.6 (a))
 $= 1.0 \times 58.55 \times 0.00466 / 360$
 $= 0.000758 \text{ m}^3/\text{s}$
 $= 0.758 \text{ L/s}$
- THEREFORE, THE PUMP HOLDING TANK VOLUME IS:
 $V = 0.000758 \times 1.5 \times 3600$
 $= 4.09 \text{ m}^3$
- TOTAL REQUIRED VOLUME IS 4.09 m^3
 TOTAL PROVIDED VOLUME IS 4.61 m^3



PUMP CALCULATIONS											
Project Address:		5 Boundary Street, Granville									
$HL = (3.35 \times 10 \times 6 \times Q) / (d^{2.63 \times C})^{1.852}$				$h1 = kv^2 / 2g$				$H(\text{total head}) = Hf + h1 + \text{Elevation Head}(\text{static head})$			
HL(m/100m), Q(L/s), d(mm)				k(cum), v(m/s), g=9.8(m/s ²)							
d(mm) = 65				v(m/s) = 0.00				Elevation Head(m) = 5		Pipe Length(m) = 10	
				Bend Losses, Kb = 3.06							
				Valve Losses, Kv = 2.13							
				Entry/Exit Losses, Ke = 5.00							
				Cum Losses, K = 10.19							
Start Flow = 0											
Increment = 1											
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
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
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
H(m)	=Hf+H1+Elevation Head	5.00	5.07	5.25	5.56	5.99	6.53	7.19	7.97	8.86	10.99

UNDERGROUND PUMP - OUT SUMP STAGED STORAGE CALCULATIONS

DEPTH (mm)	AREA (m ²)	CUMULATIVE VOLUME (m ³)
0	4.5	0
100	4.5	0.34
200	4.5	0.79
300	4.5	1.24
400	4.5	1.69
500	4.5	2.14
600	4.5	2.59
700	4.5	3.04
800	4.5	3.49
900	4.5	3.94
1000	4.5	4.39
1050	4.5	4.61

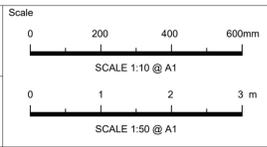
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B	COUNCIL COMMENTS	05/09/2023	AGN	JSF
A	ISSUE FOR DEVELOPMENT APPLICATION	26/07/2022	AGN	JSF

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 Council
City Of Parramatta Council



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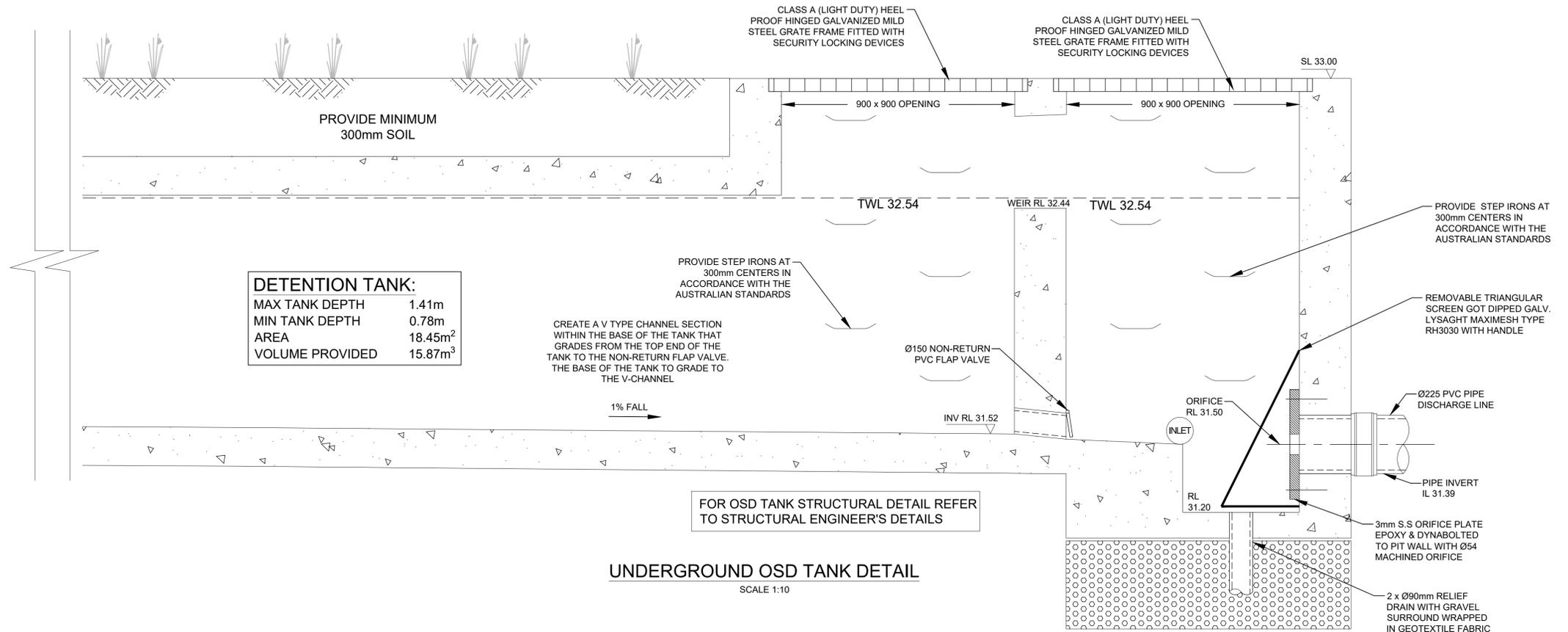
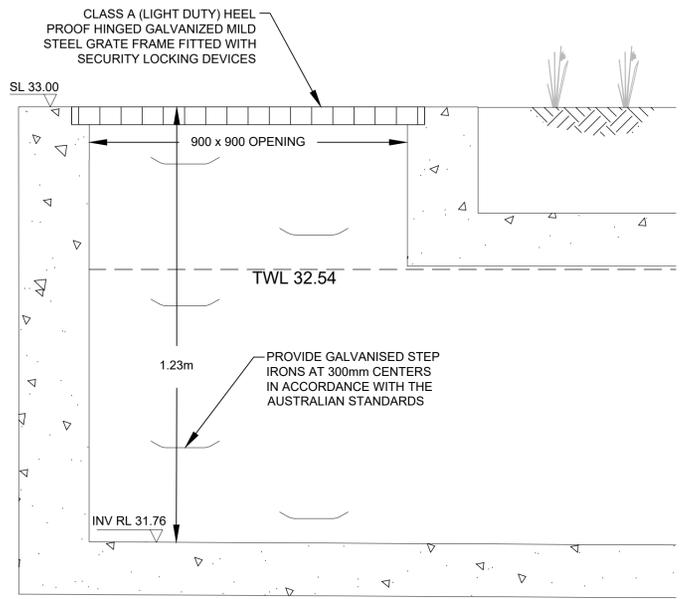
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Project
5 BOUNDARY STREET, GRANVILLE PROPOSED RESIDENTIAL DEVELOPMENT STORMWATER CONCEPT PLANS DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN BASEMENT LEVEL SHEET 2 OF 2

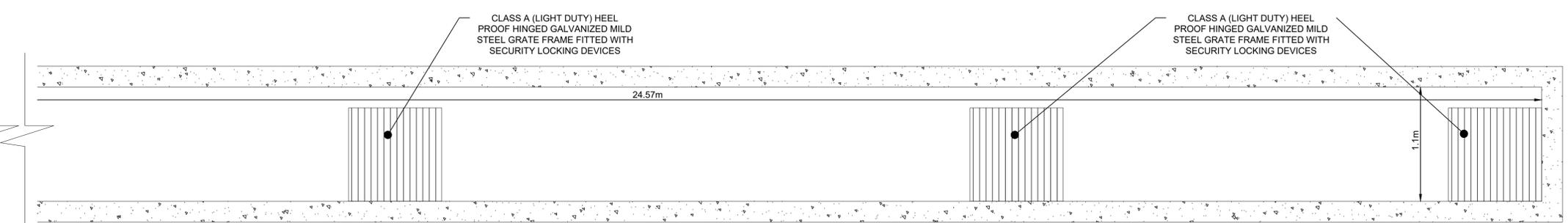
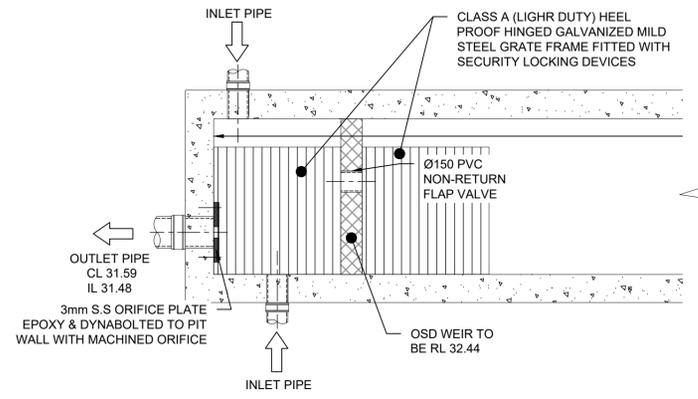
Scale A1 Project No. 2021238 Dwg. No. 102 Issue B



DETENTION TANK:
 MAX TANK DEPTH 1.41m
 MIN TANK DEPTH 0.78m
 AREA 18.45m²
 VOLUME PROVIDED 15.87m³

SUBMERGED ORIFICE:
 THE 100yr ARI LEVEL IN THE ADJACENT ROAD IS ASSUMED TO BE AT THE TOP OF THE KERB AT RL 31.45 MAKING THIS ORIFICE NON-SUBMERGED.

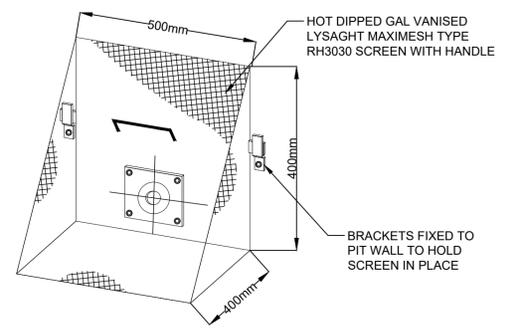
UNDERGROUND OSD TANK DETAIL
 SCALE 1:10



UNDERGROUND OSD TANK PLAN VIEW
 SCALE 1:25

UNDERGROUND OSD TANK STAGED STORAGE CALCULATIONS

DEPTH (mm)	AREA (m ²)	CUMULATIVE VOLUME (m ³)
0	27.03	0
100	27.03	1.3515
200	27.03	2.703
300	27.03	4.0545
400	27.03	5.406
500	27.03	6.7575
600	27.03	8.109
700	27.03	9.4605
800	27.03	10.812
900	27.03	12.1635
1000	27.03	13.515
1040	27.03	14.8665



TRASH SCREEN DETAIL
 N.T.S.



ORIFICE PLATE DETAIL
 N.T.S.

CITY OF PARRAMATTA COUNCIL On-Site Detention Calculation Sheet			
Project:	TEL2021238.SW.DA	Lot No. 8	
Location:	5 Boundary Street, Granville	DP No. 939772	
Designer:	Albert Nasseh	D.A. No.	
Phone:	02 7809 4931		
OSD Area:	Front Lot	UPRCT	UPRCT
Site Area	0.070	0.070	0.070
Basic Storage Volume	22.99	32.74	
Basic Discharge	9.75	5.57	
Area of Site to Storage	0.060	87%	0.060 87%
Percentage of Site	86.79		86.79
Storage per ha of contributing area	380.21		341.51
Volume/PSD Adjustment	107.15		65.95
PSD for site	6.48		3.99
Maximum Head to Orifice Centre	1.040		1.040
Calculated Orifice Diameter	0.054		0.054
Maximum discharge	6.478		5.482
Head for high early discharge	0.940		0.940
High Early Discharge	6.158	95%	1.62 155%
Mean Discharge	6.318		322
Average Discharge per Hectare	104.482		104.546
Final Site Storage Ratio	389		389
Site Storage Volume	23.53		21.52
Volume Provided	24.59	104%	21.59 105%
Checked By:	Joe Frangie		
Date Checked:	04-Sep-23		
OSD Plan Number:	101-105		

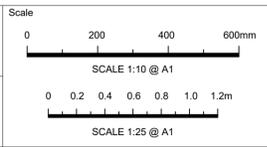
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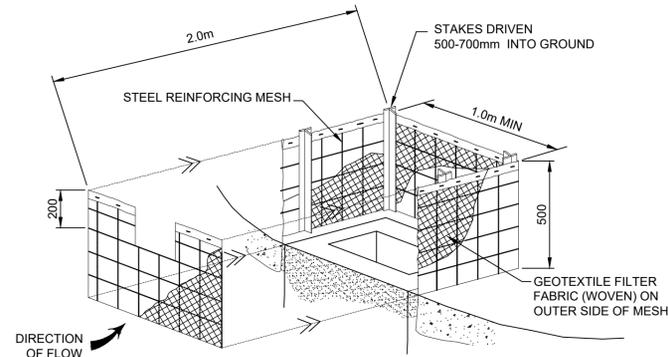
Project
**5 BOUNDARY STREET, GRANVILLE
 PROPOSED RESIDENTIAL DEVELOPMENT
 STORMWATER CONCEPT PLANS
 DEVELOPMENT APPLICATION**

Drawing Title
**ON-SITE DETENTION DETAILS
 AND CALCULATION SHEETS**

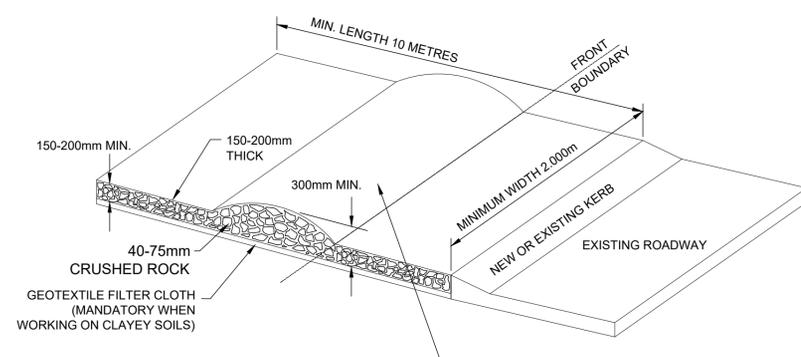
Scale As Shown A1 Project No. 2021238 Dwg. No. 104 Issue B

SEDIMENT & EROSION NOTES

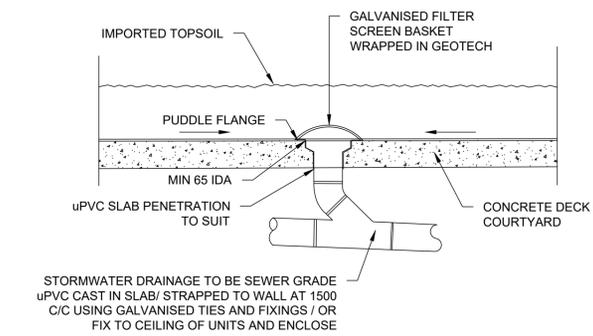
1. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO NOMINATE THE LOCATIONS AND TYPES OF SEDIMENT AND EROSION CONTROL MEASURES TO BE ADOPTED. THESE MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY 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.



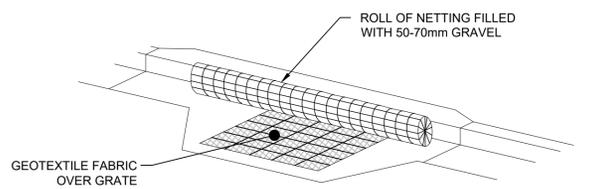
FIELD INLET SEDIMENT TRAP
N.T.S.



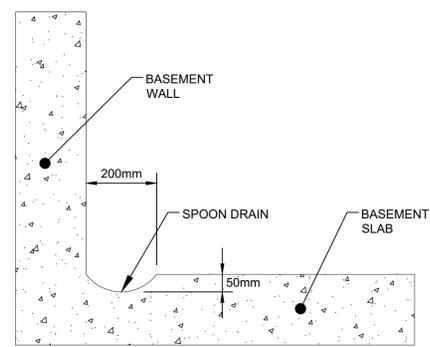
SHAKEDOWN DEVICE
N.T.S.



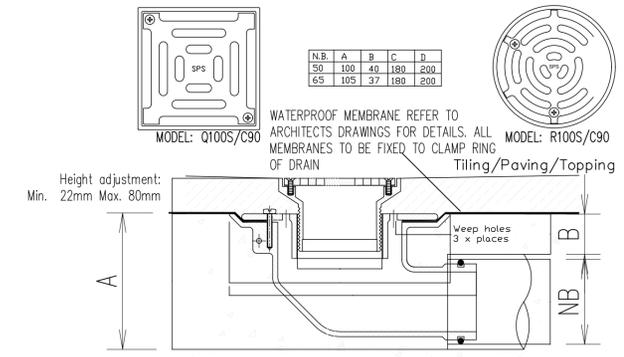
PLANTER GRATE DETAIL
N.T.S.



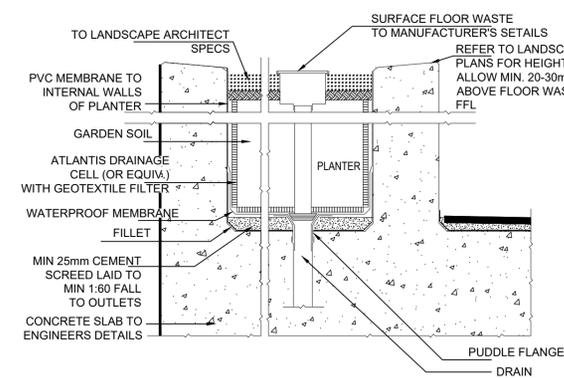
KERB INLET PROTECTION SAG GULLIES
N.T.S.



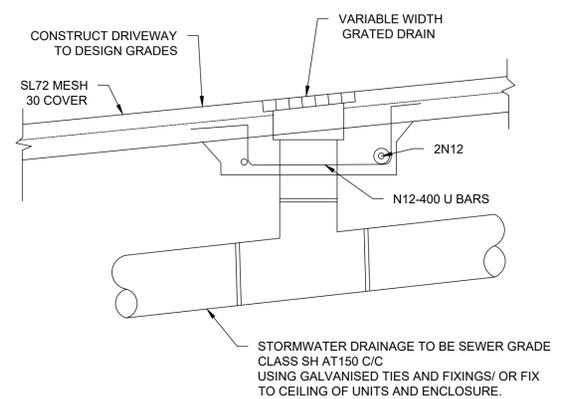
SPOON DRAIN SECTION DETAIL
SCALE 1:10



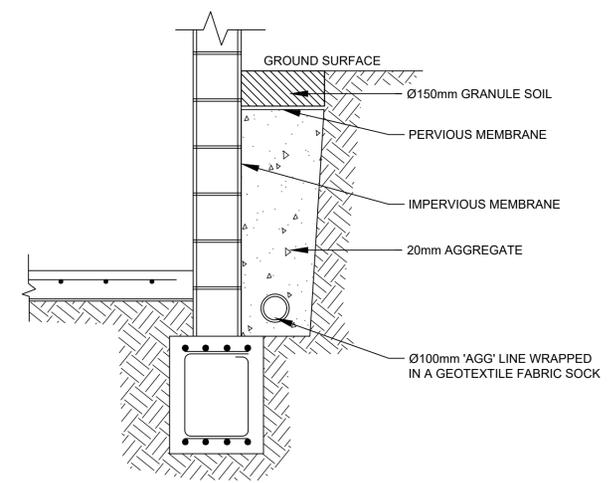
TYPICAL CAST IN FLOOR WASTE/RAINWATER OUTLET



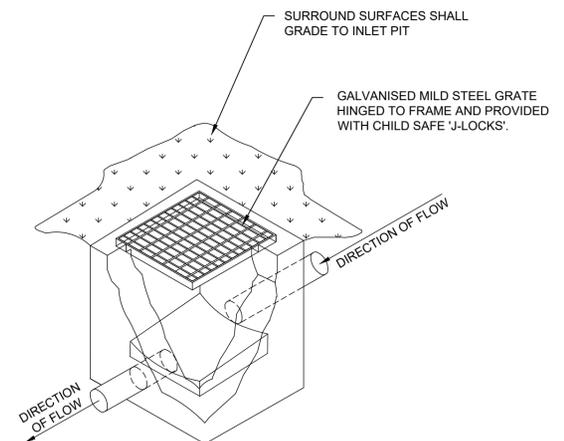
TYPICAL SUSPENDED PLANTER BOX FLOOR WASTE DETAIL
N.T.S.



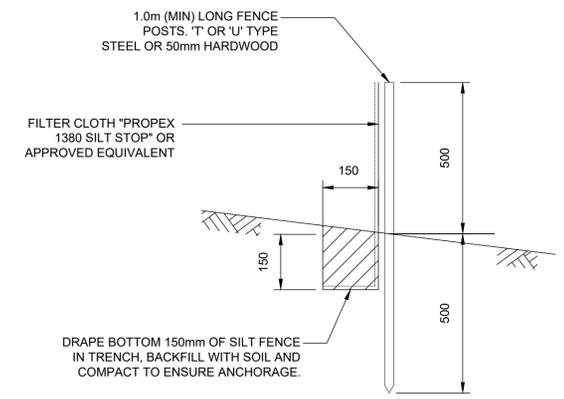
GRATED DRAIN DETAIL
N.T.S.



TYPICAL SUBSOIL DRAIN
N.T.S.



TYPICAL GRATED INLET PIT DETAIL
N.T.S.



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.

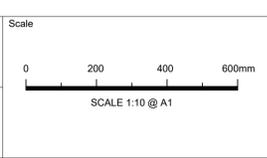
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Project
5 BOUNDARY STREET, GRANVILLE PROPOSED RESIDENTIAL DEVELOPMENT STORMWATER CONCEPT PLANS DEVELOPMENT APPLICATION

Scale	A1	Project No.	Dwg. No.	Issue
N.T.S.		2021238	5	B