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APPENDIX D Preliminary Civil Engineering Designs



Civil Design Documentation

Proposed Child Care Centre

Lot 111 in D.P.1272283

2 Premiers Street, Nemingha, NSW, 2340

SCHEDULE OF DRAWINGS

SHEET No.	DESCRIPTION
43564-C00	COVER SHEET AND DRAWING SCHEDULE
43564-C01 43564-C02	EXISTING SITE PLAN PROPOSED SITE PLAN & WATER/FIRE SERVICES CONCEPT PLAN
43564-C10 43564-C11 43564-C12	PROPOSED STORMWATER MANAGEMENT PLAN PROPOSED ROOF DRAINAGE PLAN STORMWATER SPECIFICATION



LOCALITY PLAN NOT TO REDUCTION RATIO

ISSUED FOR APPROVAL



BARNSON PTY LTD

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CONSULTANTS DRAWINGS APPLICABLE TO THIS PROJECT. ALL DIMENSIONS IN MILLIMETRES. DO NOT SCALE. DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK. REPORT DISCREPANCIES TO BARNSON PTY LTD. NO PART

Description 0 11-12-2024 ISSUED FOR APPROVAL 1 11-02-2025 REVISE ROOF DRAINAGE DESIGN

PROPOSED CHILD CARE CENTRE Site Address

Lot 11 in D.P.1272283

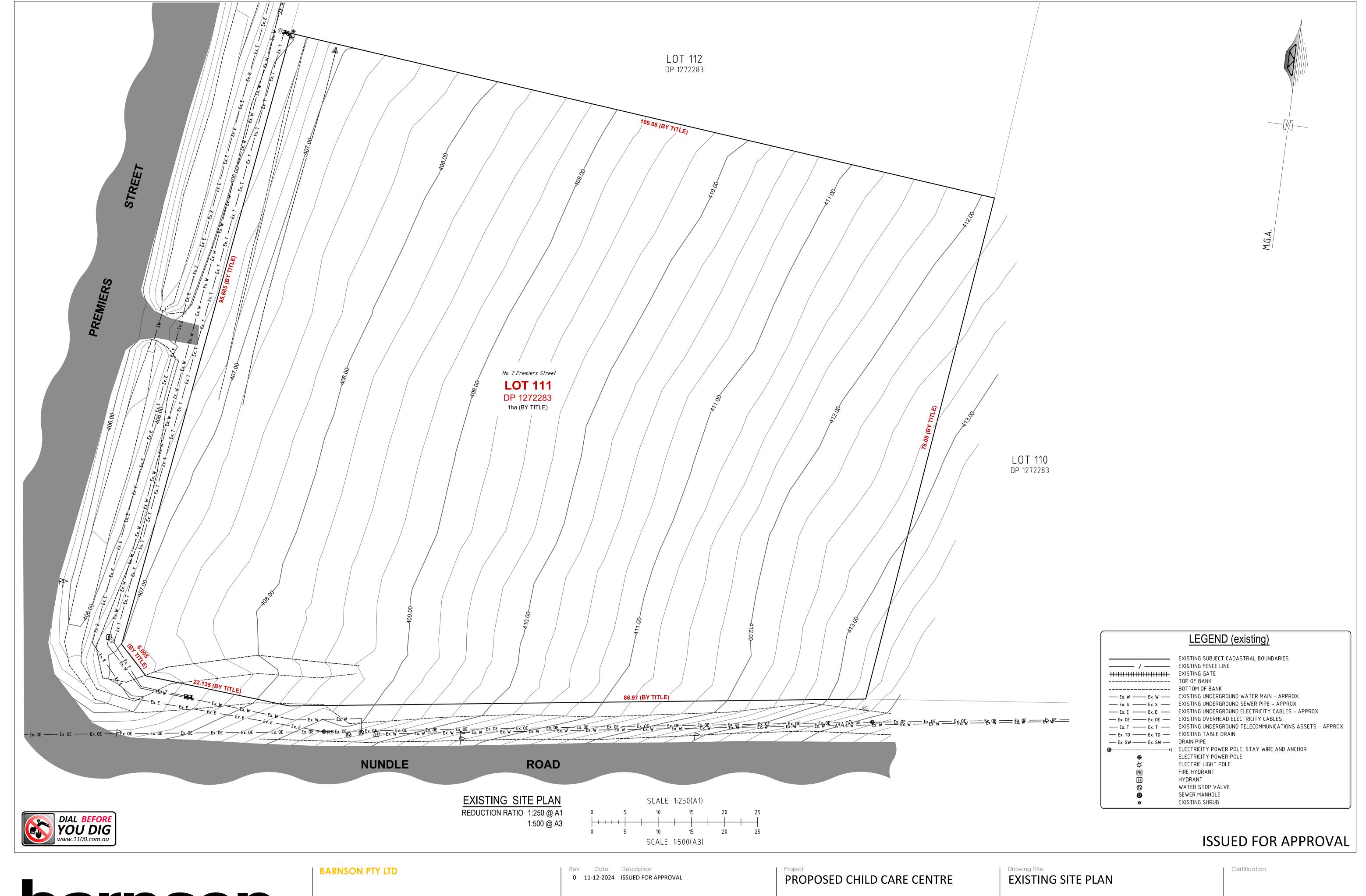
2 PREMIERS STREET, NEMINGHA, NSW, 2340

Check

COVER SHEET & NOTES Original Sheet Size

Certification **A1** Project No

43564





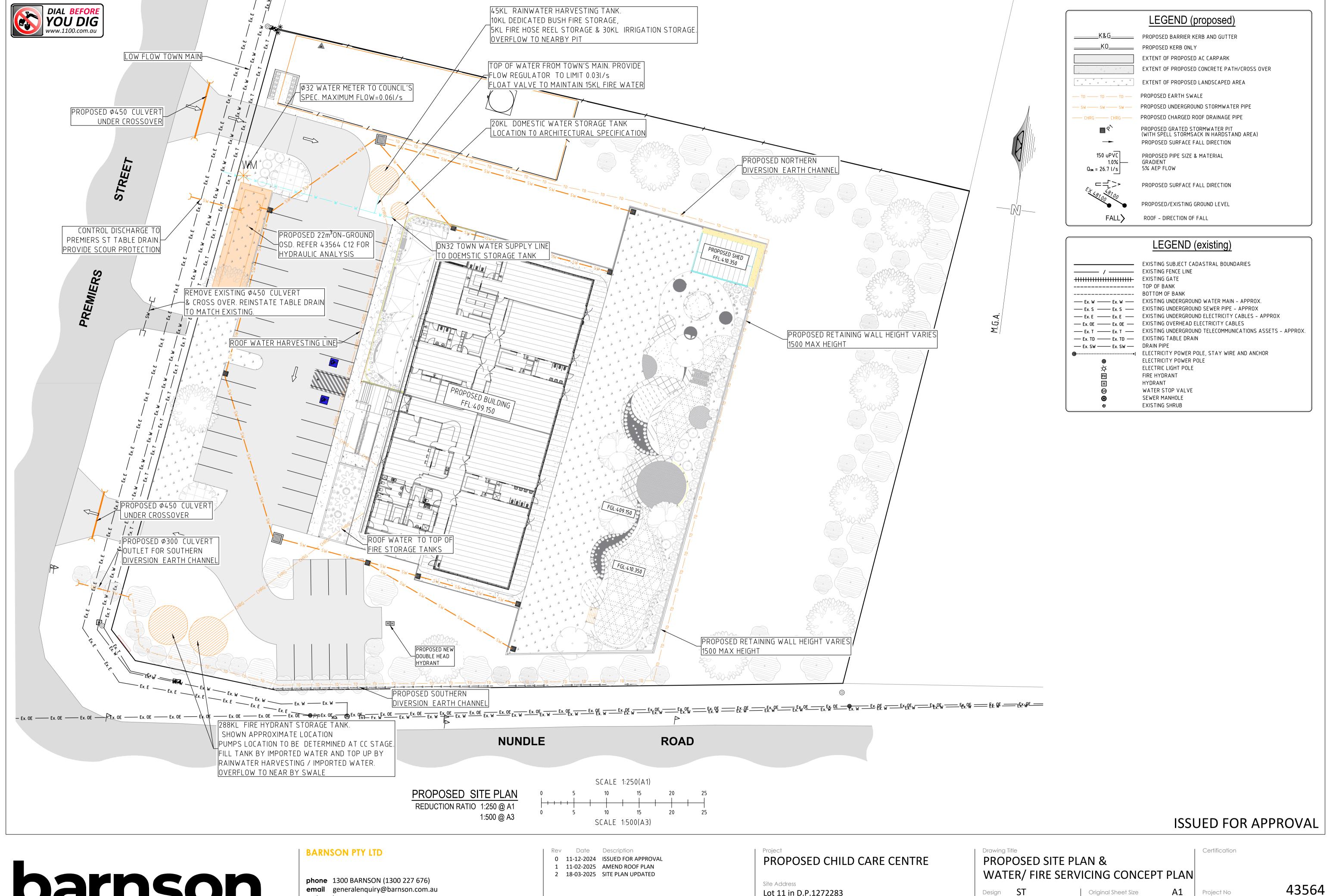
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Site Address Lot 11 in D.P.1272283 2 PREMIERS STREET, NEMINGHA, NSW, 2340 Original Sheet Size

Check

43564 Project No



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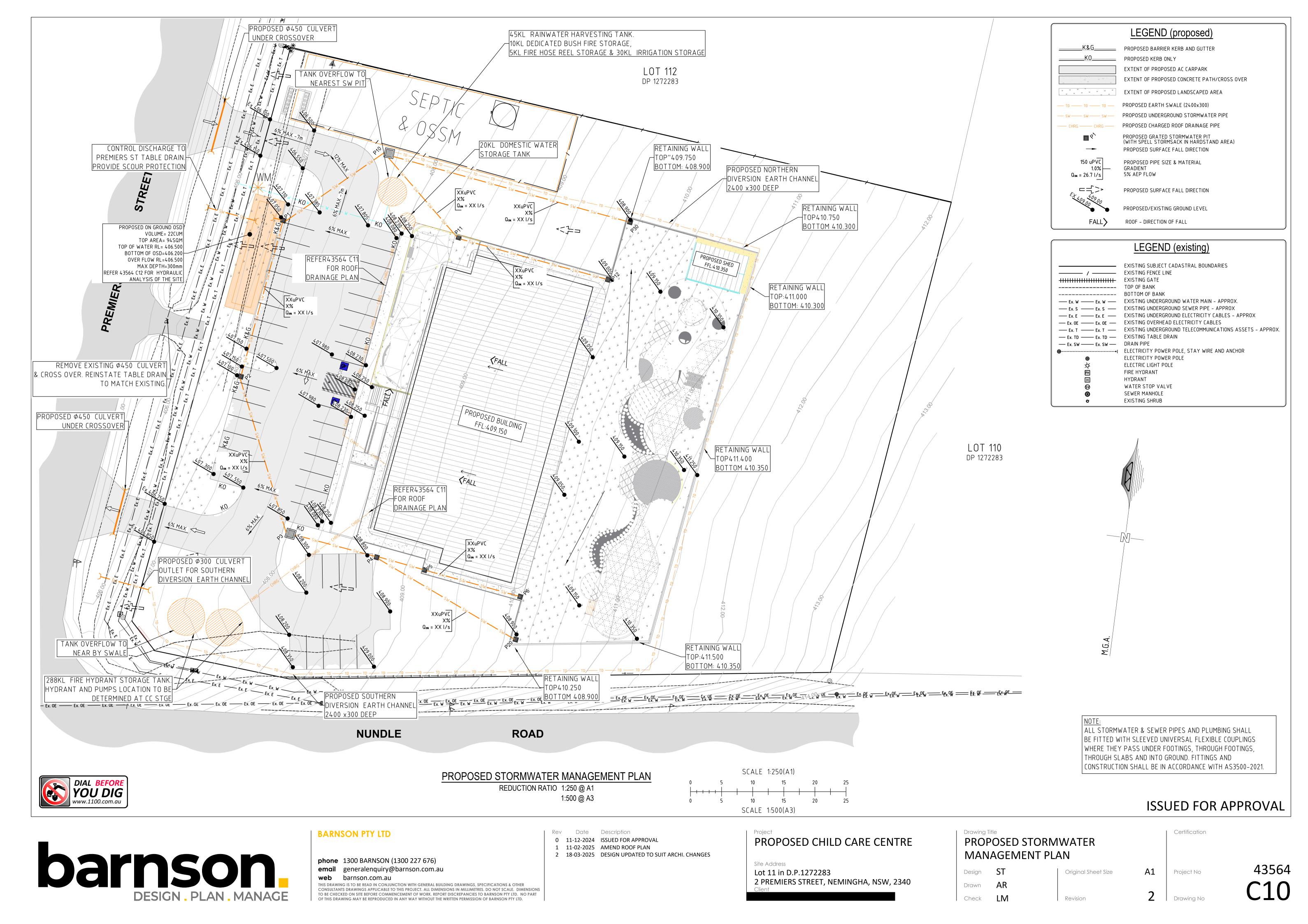
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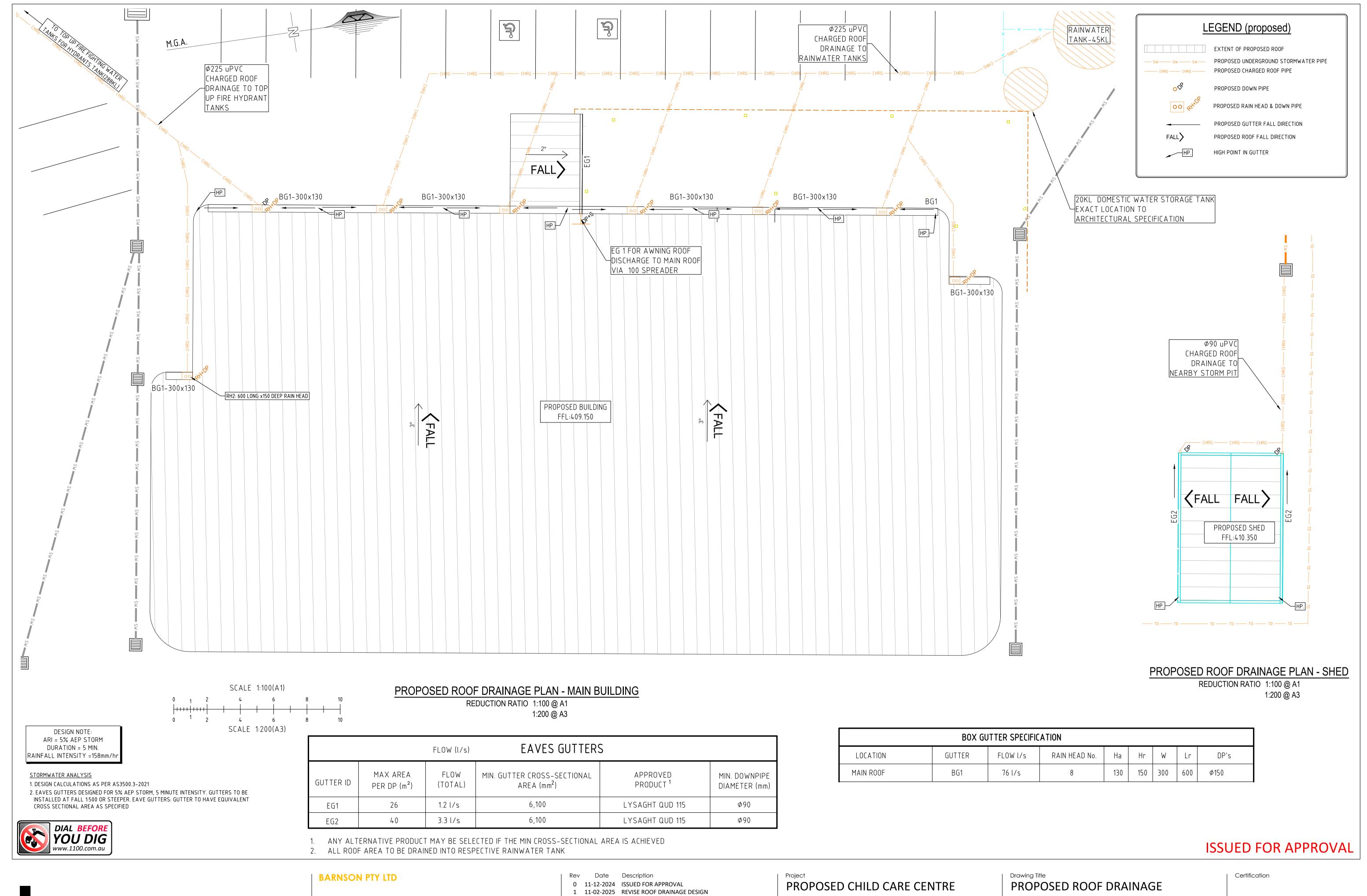
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Site Address
Lot 11 in D.P.1272283
2 PREMIERS STREET, NEMINGHA, NSW, 2340
Client

ROBJIE SUPERANNUATION PTY LTD

PROPOSED ROOF DRAINAGE PLAN Design ST Original Sheet Size A1 Project No Drawn AR

Revision

Check

43564 **C11**

SITEWORKS NOTES

- 1. ORIGIN OF LEVELS :- AHD
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK.
- ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS, THE SPECIFICATIONS AND THE DIRECTIONS OF THE SUPERINTENDENT.
- EXISTING SERVICES HAVE BEEN OBTAINED FROM SURFACE INSPECTION ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
- 6. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A QUALIFIED SURVEYOR.
- CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
- ON COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS.
- MAKE SMOOTH TRANSITION TO EXISTING AREAS.
- 10. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY DIVERSION DRAINS AND MOUNDS TO ENSURE THAT AT ALL TIMES EXPOSED SURFACES ARE FREE DRAINING AND WHERE NECESSARY EXCAVATE SUMPS AND PROVIDE PUMPING EQUIPMENT TO DRAIN EXPOSED AREAS. ALL WORK TO BE UNDERTAKEN WITH ADHERENCE TO THE REQUIREMENTS OF THE SOIL AND WATER MANAGEMENT PLAN.
- 11. THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL STRUCTURAL, HYDRAULIC AND MECHANICAL DRAWINGS AND SPECIFICATIONS.

SURVEY NOTES

- CONTOURS SHOWN DEPICT THE TOPOGRAPHY. EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT
- SERVICES SHOWN HEREON HAVE BEEN DETERMINED FROM VISUAL EVIDENCE AND ARE INDICATIVE ONLY. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE THE RELEVANT AUTHORITY SHOULD BE CONTACTED TO ESTABLISH DETAILED LOCATION AND DEPTH.

PIPE TRENCH - FILL NOTES

BEDDING SAND

BEDDING SAND SHALL BE GRANULAR MATERIAL HAVING A LOW PERMEABILITY AND HIGH STABILITY WHEN SATURATED, CONFORMING TO THE GRADING LIMITS FOR BEDDING SAND AS INDICATED IN THE CONTRACT DOCUMENTS. BEDDING SAND SHALL BE COMPACTED TO A DENSITY INDEX OF 95% AS DETERMINED IN ACCORDANCE WITH AS1289.

APPROVED IMPORTED GRANULAR FILL

ONLY IMPORTED GRANULAR FILL MATERIAL APPROVED BY THE SUPERINTENDENT SHALL BE USED. THIS FILL MATERIAL SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 300mm THICK TO A DRY DENSITY OF 100% OF THE STANDARD MAXIMUM DRY DENSITY OF THE MATERIAL AND WITH A MOISTURE CONTENT NO MORE THAN 1% ABOVE OPTIMUM MOISTURE CONTENT AS DETERMINED IN ACCORDANCE WITH AS1289.

ORDINARY EXCAVATED FILL MATERIAL

ORDINARY EXCAVATED FILL MATERIAL IS EXCAVATED TRENCH MATERIAL THAT IS FREE OF VEGETABLE MATTER, HUMUS, LARGE CLAY LUMPS AND ROCK BOULDERS. THIS FILL MATERIAL SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 300mm THICK. TO A DENSITY OF 95% OF THE STANDARD MAXIMUM DRY DENSITY OF THE MATERIAL WITH A MOISTURE CONTENT OF NOT MORE THAN 1% ABOVE THE OPTIMUM MOISTURE CONTENT AS DETERMINED IN ACCORDANCE WITH AS1289.

STORMWATER NOTES

- 1. ALL DOWNPIPE LINES SHALL BE SEWER GRADE uPVC WITH SOLVENT WELD JOINTS (U.N.O)
- EQUIVALENT STRENGTH VCP OR FCP PIPES MAY BE USED.
- 3. MINIMUM GRADE TO STORMWATER LINES TO BE 0.5% MINIMUM (U.N.O)
- CONTRACTORS TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
- 5. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
- APPROVED PRECAST PITS MAY BE USED.
- 7. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50mm CONCRETE BED (75mm THICK BED OF 12mm BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR THE ROCK. IN OTHER THAN ROCK, PIPES SHALL BE LAID ON A 75mm THICK SAND BED. IN ALL CASES, BACKFILL THE TRENCH WITH THE SAND TO 200mm ABOVE THE PIPE .WHERE THE PIPE IS UNDER PAVEMENTS, BACKFILL REMAINDER OF TRENCH WITH SAND OR APPROVED GRANULAR BACKFILL COMPACTED IN 150mm LAYERS TO 98% MAX. DRY DENSITY.
- WHERE STORMWATER LINES PASS UNDER FLOOR SLABS, SEWER GRADE RUBBER RING JOINTS ARE TO BE USED.
- 9. ALL PIPES IN THE ROADWAY AND FOOTPATH AREAS, WHERE THE DEPTH OF PIPE IS LESS THAN 500mm FROM THE FINISHED SURFACE LEVEL ARE TO BE CONCRETE ENCASED.

STORMWATER ANALYSIS

DESIGN CALCULATIONS AS PER AS3500.3-2021

PRE-DEVELOPED:

- -TOTAL APPLICABLE CATCHMENT AREA (A) = $10,000 \text{m}^2$ -RAINFALL INTENSITY (I1) = 158 mm/hr (5min-5% AEP
- -RAINFALL INTENSITY (I) = 208 mm/hr (5min- 1% AEP) -Cr = RUNOFF COEFFICIENT FOR ROOFED AREA = 1.0
- -Ar = TOTAL ROOFED AREA = 0 m²
- -Ci = RUNOFF COEFFICIENT FOR UNROOFED IMPERVIOUS AREA = 0.9
- -Ai = TOTAL UNROOFED IMPERVIOUS AREA = 0 m² -Cp = RUNOFF COEFFICIENT FOR PERVIOUS AREA = 0.3
- -Ap = TOTAL PERVIOUS GRASS AREA = 10,000m²
- -TOTAL FLOW QPRE-5% AEP = (Cr Ar +Ci Ai + Cp Ap). 11 / 3600 = 131.6 l/s -TOTAL FLOW QPRE-1% AEP = (Cr Ar +Ci Ai + Cp Ap). 11 / 3600 = 173.3 l/s

POST-DEVELOPED:

- -TOTAL APPLICABLE CATCHMENT AREA (A) = 10,000m² -RAINFALL INTENSITY (I1) = 158 mm/hr (5min -5% AEP) -RAINFALL INTENSITY (I1) = 208 mm/hr (5min- 1% AEP)
- -Cr = RUNOFF COEFFICIENT FOR ROOFED AREA = 1.0 -Ar = TOTAL ROOFED AREA/SHADES SAIL=1,460m²
- -Ci = RUNOFF COEFFICIENT FOR UNROOFED IMPERVIOUS AREA = 0.9
- -Ai = TOTAL UNROOFED IMPERVIOUS AREA = 2,510 m² -Cp = RUNOFF COEFFICIENT FOR PERVIOUS AREA = 0.3
- -Ap = TOTAL PERVIOUS AREA = 6,030 m²
- -TOTAL FLOW QPOST = (Cr Ar +Ci Ai + Cp Ap). 11 / 3600 = 242.6 l/s
- -TOTAL FLOW QPRE-1% AEP = (Cr Ar +Ci Ai + Cp Ap). 11 / 3600 = 319.41/s

PERMISSIBLE PEAK DISCHARGE FOR R5 INTENSITY DEVELOPEMNT

-MAXIMUM IMPERVIOUSNESS OF SITE=25% OF IMPERVIOUSNESS OF THE SITE -PERMISSIBLE FLOW-5%AEP= (25% OF 10,000 x1.0 +75% OF10,000x0.3)×\frac{158}{3600}=208.5 l/s -PERMISSIBLE FLOW-1%AEP= (25% OF 10,000 x1.0 +75% OF10,000x0.3) $\times \frac{208}{3600}$ =274.4 l/s

DOWNPIPE

SPREADER DETAIL

SCALE = 1:10

ØAS SPECIFIED

Ø25 HOLES

_@ 100 SPACING.

OSD CALCULATION

- REQUIRED OSD VOLUME FOR 5% AEP = (242.6-208.5)x5x60/1000=10.3 CUM
- REQUIRED OSD VOLUME FOR 1% AEP = (319.4-274.4)x5x60/1000 = 13.5 CUM
- PROPOSED ON GROUND OSD = 22 CUM
- OSD-BY-PASS =X L/s(Xm2 OF PERVIOUS AREA) - REQUIRED CONTROL FLOW FROM OSD = (X-X)=XI/s

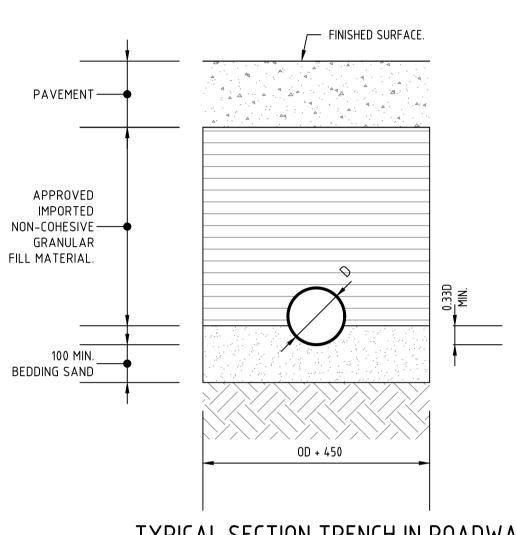
ORIFICE CALCULATION (ONGROUND)

- HEAD ABOVE THE CENTRELINE.D = Xm
- ORIFICE COEFFICIENT, C = 0.8 ORIFICE DIAMETER,D = XXmm
- CONTROL FLOW=Xl/s

— FINISHED SURFACE PAVEMENT — APPROVED **IMPORTED** NON-COHESIVE GRANULAR FILL MATERIAL.

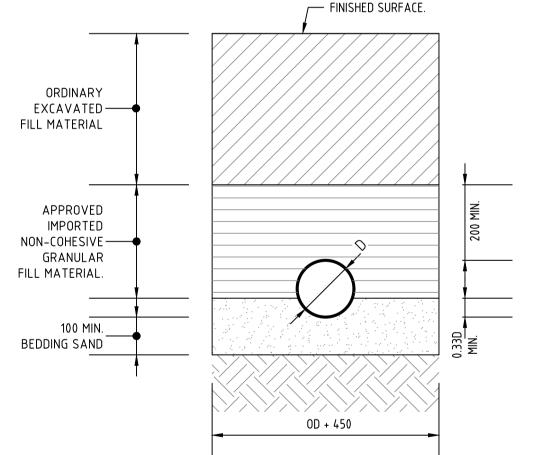
TYPICAL PIPE ENCASEMENT SCALE 1:10

NOTE: PIPE COLLAR IS NOT TO REST ON ORIGINAL MATERIAL



TYPICAL SECTION TRENCH IN ROADWAY

SCALE 1:10 NOTE: PIPE COLLAR IS NOT TO REST ON ORIGINAL MATERIAL



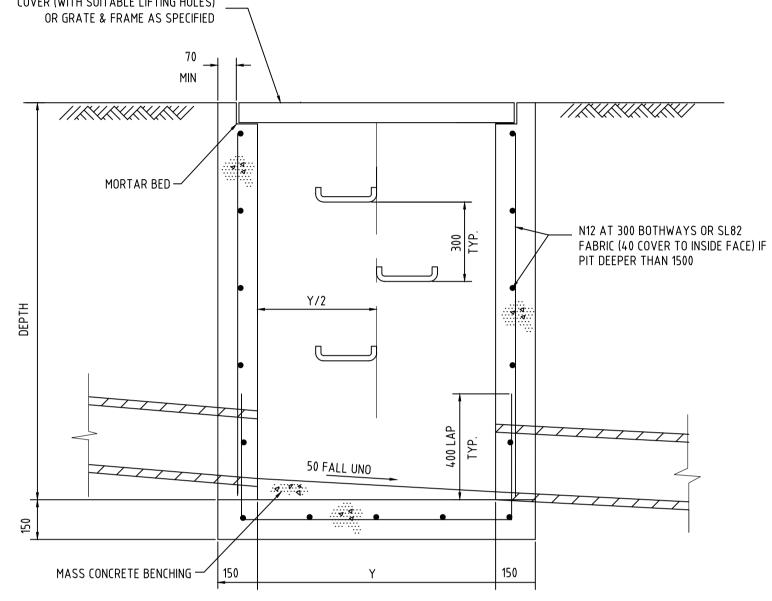
TYPICAL SECTION EARTH FOUNDATION TRENCH

NOTE: PIPE COLLAR IS NOT TO REST ON ORIGINAL MATERIAL

SAME SIZE AS DOWN PIPE & OPEN ENDS.

N.T.S. COVER (WITH SUITABLE LIFTING HOLES)

FLOW



PLAN

GRATED INLET PIT

INSPECTION HOLD POINTS

- INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.
- 2. WATER & SEWER LINE INSTALLATION PRIOR TO BACKFILL.
- 3. ESTABLISHMENT OF LINE & LEVEL FOR KERB & GUTTER PLACEMENT.
- ROAD PAVEMENT CONSTRUCTION.
- ROAD PAVEMENT SURFACING.
- 6. PRACTICAL COMPLETION.

- PROVIDE STEP IRONS IF PIT DEEPER THAN

PIT DIMENSIONS

1500<D<2400 | 900 | 900

| X | Y

450 450

600 | 600

600 900

| 750 | 1200

DEPTH

D<600

D<1000

D<1500

D>2400

SERVICES INSTALLATION

1. INSTALLATION OF ALL UNDERGROUND PIPES BE INSTALLED PRIOR TO INSTALLATION OF ROAD PAVEMENT.

ISSUED FOR APPROVAL

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Date Description

0 11-12-2024 ISSUED FOR APPROVAL 1 11-02-2025 UPDATED HYDRAULIC ANALYSIS

PROPOSED CHILD CARE CENTRE

Site Address Lot 11 in D.P.1272283

2 PREMIERS STREET, NEMINGHA, NSW, 2340

STORMWATER SPECIFICATIONS

Certification Project No

43564

ST Α1 Design Original Sheet Size Drawn ROBJIE SUPERANNUATION PTY LTD Check Revision Drawing No