

10 December 2021

General Manager  
Manly Council  
PO Box 82  
MANLY NSW 1655

Dear Sir/Madam,

**Re: Stormwater Drainage Details – 29 Dobroyd Road, Balgowlah Heights**

With reference to the development application for the above property, please find enclosed a copy of the site Stormwater Management Plan & Details, STORM-1, STORM-2 & STORM-3, for your perusal.

The plan shows the collected flows from the proposed roofed area discharging to an existing council pit in Commerce Lane.

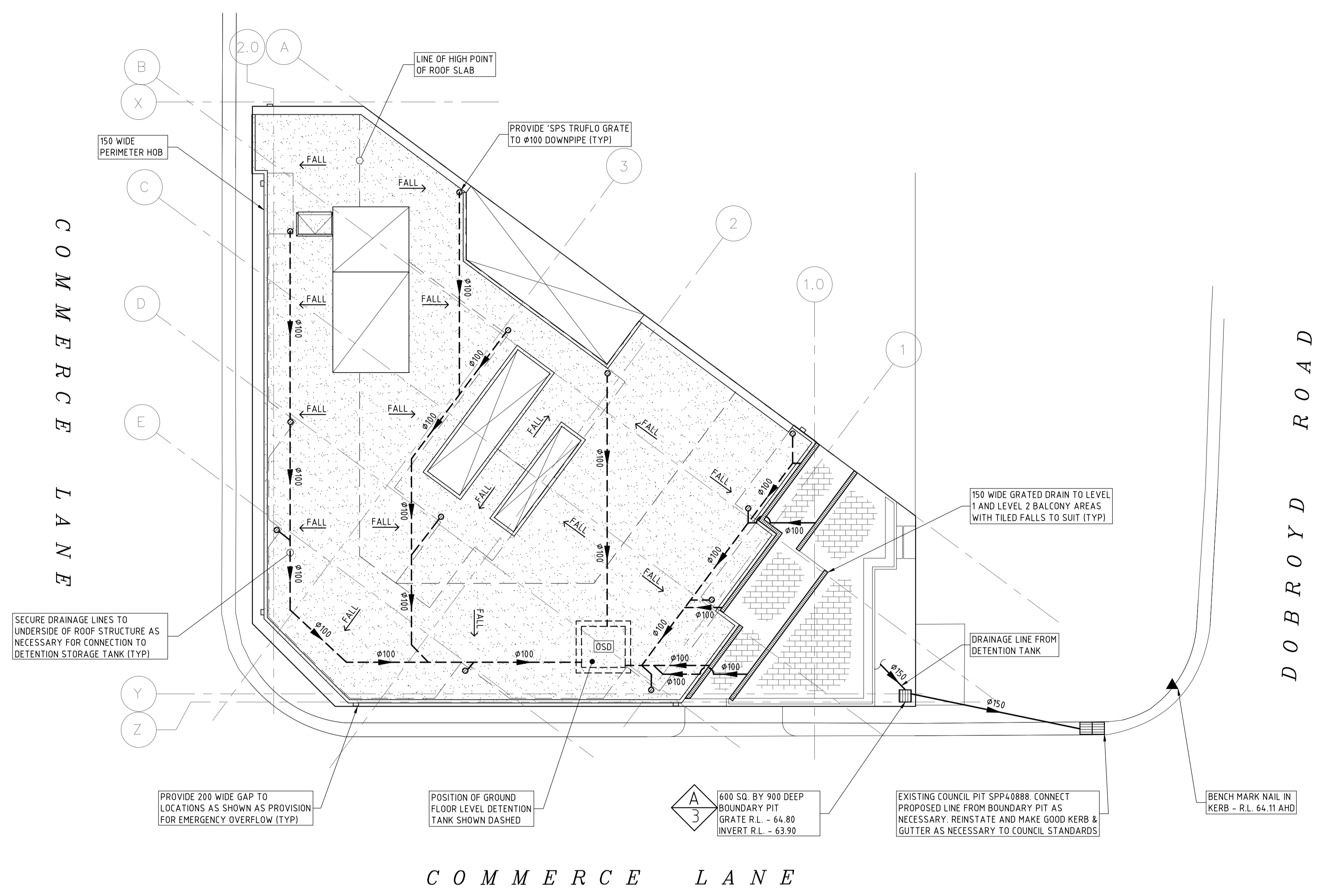
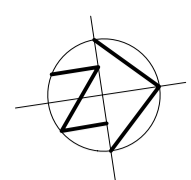
Note that it is proposed to provide a 8600 litre on-site detention tank on the carpark level in accordance with Council requirements.

Should you require any further information please contact the undersigned.

Yours faithfully  
TAYLOR CONSULTING

D M SCHAEFER - Director  
B.E. Civil (Hons) M.I.E. Aust N.E.R.





COMMERCE LANE

ROOF & UPPER LEVEL DRAINAGE PLAN

SCALE 1:100  
SHOWING DRAINAGE ELEMENTS CONNECTING TO DETENTION TANK ON CARPARK LEVEL

- DRAINAGE NOTES**
- + DENOTES EXISTING GROUND LEVEL
  - FALL STORMWATER PIPES AT 1% MIN. UNLESS OTHERWISE NOTED.
  - SUB-SOIL DRAINAGE TO BE CONNECTED TO THE SITE DRAINAGE SYSTEM AS NECESSARY.
  - SURFACE GRATES 300 SQ. UNLESS OTHERWISE NOTED
  - ALL STORMWATER PIPES TO HAVE SOLVENT CEMENT WATERTIGHT JOINTS.
  - CHECK & LOCATE DEPTH OF EXISTING MAINS & SERVICES PRIOR TO CONSTRUCTION OF STORMWATER SYSTEM AS VARIATIONS IN POSITION OF MAINS COULD AFFECT DRAINAGE CONSTRUCTION DETAILS.
  - INSPECTIONS MUST BE UNDERTAKEN BY THIS OFFICE (BY PRIOR ARRANGEMENT WITH ENGINEER) DURING CONSTRUCTION TO ENABLE FULL CERTIFICATION UPON COMPLETION OF WORKS.
  - ALL CONSTRUCTION OF COUNCIL DRAINAGE WORKS TO COMPLY WITH COUNCIL STANDARD.
  - REMOVE REDUNDANT DRAINAGE PITS AND SEAL PIPES.
  - PIT BENCHING TO BE HALF THE OUTGOING PIPE DIAMETER. CONCRETE FOR BENCHING TO BE 20 MPa MASS CONCRETE.
  - APPROVED PRE-CAST PITS MAY BE USED.
  - ALL PIPES TO BE LAID ON COMPACTED FINE CRUSHED ROCK OR SAND BEDDING 75mm THICK & PIPES BACKFILLED WITH COMPACTED SAND TO 300mm ABOVE TOP OF PIPE. ELSE ATTACHED TO UNDERSIDE OF STRUCTURE AT 600mm c/c AS NECESSARY
  - PIPE ROUTES SHOWN ARE INDICATIVE ONLY AND SHOULD BE AS NECESSARY ACCORDING TO SITE CONDITIONS, TREE POSITIONS ETC. CONFIRM SIGNIFICANT CHANGES IN PIPES SYSTEM DETAILS WITH SUPERVISING ENGINEER PRIOR TO COMMENCEMENT OF DRAINAGE CONSTRUCTION WORKS.
  - CONTRACTOR SHALL ENSURE THAT SERVICES TO BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED. CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS WHERE REQUIRED. ONCE WORKS ARE COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL TEMPORARY SERVICES AND MAKE GOOD ALL DISTURBED AREAS.
  - STORMWATER SYSTEM REQUIRES SIGNIFICANT MAINTENANCE DUE TO POTENTIAL HIGH POLLUTANT LOAD. FILTERS AND POLLUTANT TRAPS SHOULD BE CHECKED AFTER LARGE STORM EVENTS AND CLEANED EVERY 6 MONTHS.
  - PLUMBING AND DRAINAGE WORKS TO COMPLY WITH AS-3500, THE NATIONAL DRAINAGE & PLUMBING CODE.
  - WHERE POSSIBLE DRAINAGE LINES SHALL BE LAID IN AREAS PREVIOUSLY DISTURBED BY OTHER SITE WORKS AND FOLLOW TOPOGRAPHICAL FEATURES TO REDUCE IMPACT AND AVOID TREE ROOTS.
  - THIS STORMWATER MANAGEMENT PLAN HAS BEEN PREPARED FOR D.A. SUBMISSION TO COUNCIL AND DOES NOT NECESSARILY CONTAIN ALL APPROPRIATE INFORMATION TO ENABLE FOR ISSUE TO PLUMBER/BUILDER FOR CONSTRUCTION. CONTACT TAYLOR CONSULTING FOR MORE INFORMATION.
- RAINWATER RE-USE NOTES AND SPECIFICATIONS**
- ROOF WATER ONLY TO BE DRAINED TO THE RAINWATER STORAGE TANK.
  - THE RAINWATER STORAGE TANK NEEDS TO BE CONNECTED FOR RE-USE AS REQUIRED BY THE OWNER.
  - RAINWATER STORAGE TANK TO BE CONFIGURED IN ACCORDANCE WITH SYDNEY WATER SPECIFICATIONS 'GUIDELINES FOR RAINWATER TANK ON RESIDENTIAL PROPERTIES'.
  - PROVIDE MAINS 'TOP-UP' SUPPLY TO RAINWATER TANK. MAINS TOP-UP ZONE TO BE BASED ON THE DAILY NON-POTABLE USAGE THAT MAY BE EXPECTED FROM THE TANK.
  - PROVIDE A MECHANICAL PUMPING ARRANGEMENT (IN SOUND-PROOF HOUSING) TO PUMP SUPPLIER'S SPECIFICATION TO SUIT INTENDED USAGE OF RAINWATER STORAGE. PUMPING ARRANGEMENTS MUST COMPLY WITH EPA GUIDELINES.
  - INLETS TO RAINWATER TANK MUST BE SCREENED TO PREVENT THE ENTRY OF FOREIGN MATTER, ANIMALS OR INSECTS.
  - A SIGN MUST BE AFFIXED TO THE RAINWATER TANK CLEARLY STATING THAT THE WATER IN THE TANK IS RAINWATER AND IS NOT TO BE USED FOR HUMAN CONSUMPTION.
  - RAINWATER TANK TO BE PLACED ON A STRUCTURALLY ADEQUATE BASE IN ACCORDANCE WITH THE MANUFACTURER'S OR STRUCTURAL ENGINEER'S DETAILS.
  - THE TANK MUST NOT BE INSTALLED OVER ANY MAINTENANCE STRUCTURE OR FITTINGS USED BY A PUBLIC AUTHORITY.
  - RAINWATER TANK AND ASSOCIATED PLUMBING WORKS TO BE INSTALLED AND CONFIGURED BY A LICENSED PLUMBER. PUMP TO BE INSTALLED BY A LICENSED ELECTRICIAN.
- OSD SYSTEM DESIGN DATA**
- SITE DATA**
- SITE AREA = 94.5 m<sup>2</sup>  
 PROPOSED IMPERVIOUS AREA = 354.6 m<sup>2</sup> (93%)  
 PROPOSED LANDSCAPED AREA = 27.1 m<sup>2</sup> (7%)
- EXISTING SITE FLOWS (PERMISSIBLE SITE DISCHARGE FOR PAVED PROPORTION = 35%)**
- 5 YR ARI = 9 l/s  
 DEVELOPED SITE FLOWS (FOR CATCHMENT = 354.6 m<sup>2</sup>)  
 100 YR ARI = 9 l/s
- DETENTION SYSTEM DATA**
- AREA DRAINING TO THE TANK = 354.6 m<sup>2</sup>  
 ORIFICE DIAM = 50 mm  
 SSR = 8.7 m<sup>3</sup>

**STORMWATER SYSTEM DESIGN DATA**

**SITE DATA**

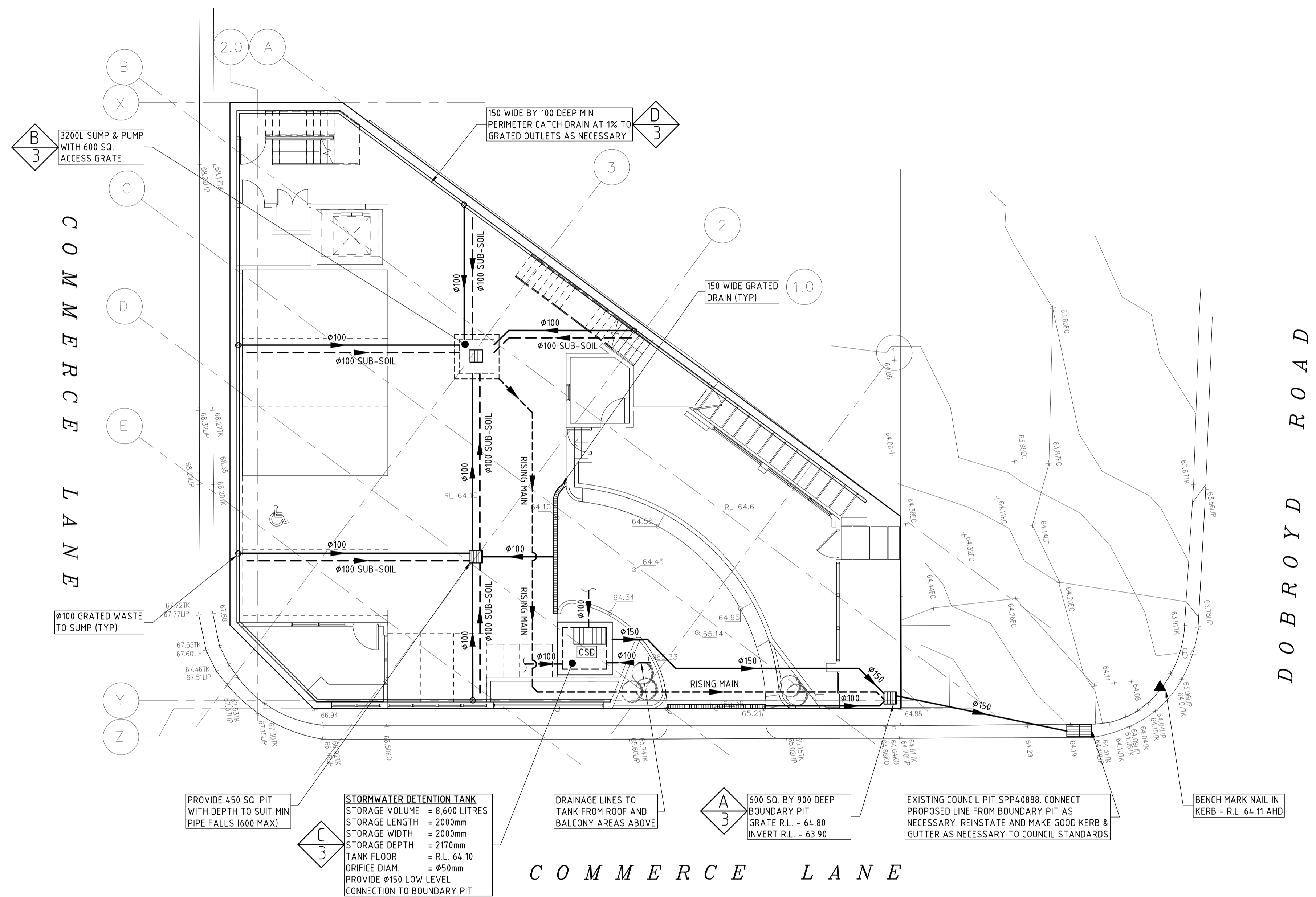
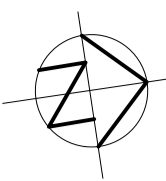
SITE AREA = 381.7m<sup>2</sup> (100%)  
 PROPOSED IMPERVIOUS AREA = 354.6m<sup>2</sup> (93%)  
 PROPOSED LANDSCAPED AREA = 27.1m<sup>2</sup> (7%)  
 EXISTING IMPERVIOUS AREA = 333 m<sup>2</sup> (50%)  
 EXISTING LANDSCAPED AREA = 333 m<sup>2</sup> (50%)

ISSUE DATE	REVISION

TITLE <b>STORMWATER MANAGEMENT PLAN – ROOF 29 DOBROYD ROAD, BALGOWLAH HEIGHTS</b>			
DRAWN CJM	DATE 10 DECEMBER 2021	CHECKED <i>[Signature]</i> BE Civil (Hons) MIE Aust.	SCALE @ A1 1:100

**TAYLOR CONSULTING**  
CIVIL & STRUCTURAL ENGINEERS

STORM-1



COMMERCE LANE

**GROUND FLOOR DRAINAGE PLAN**

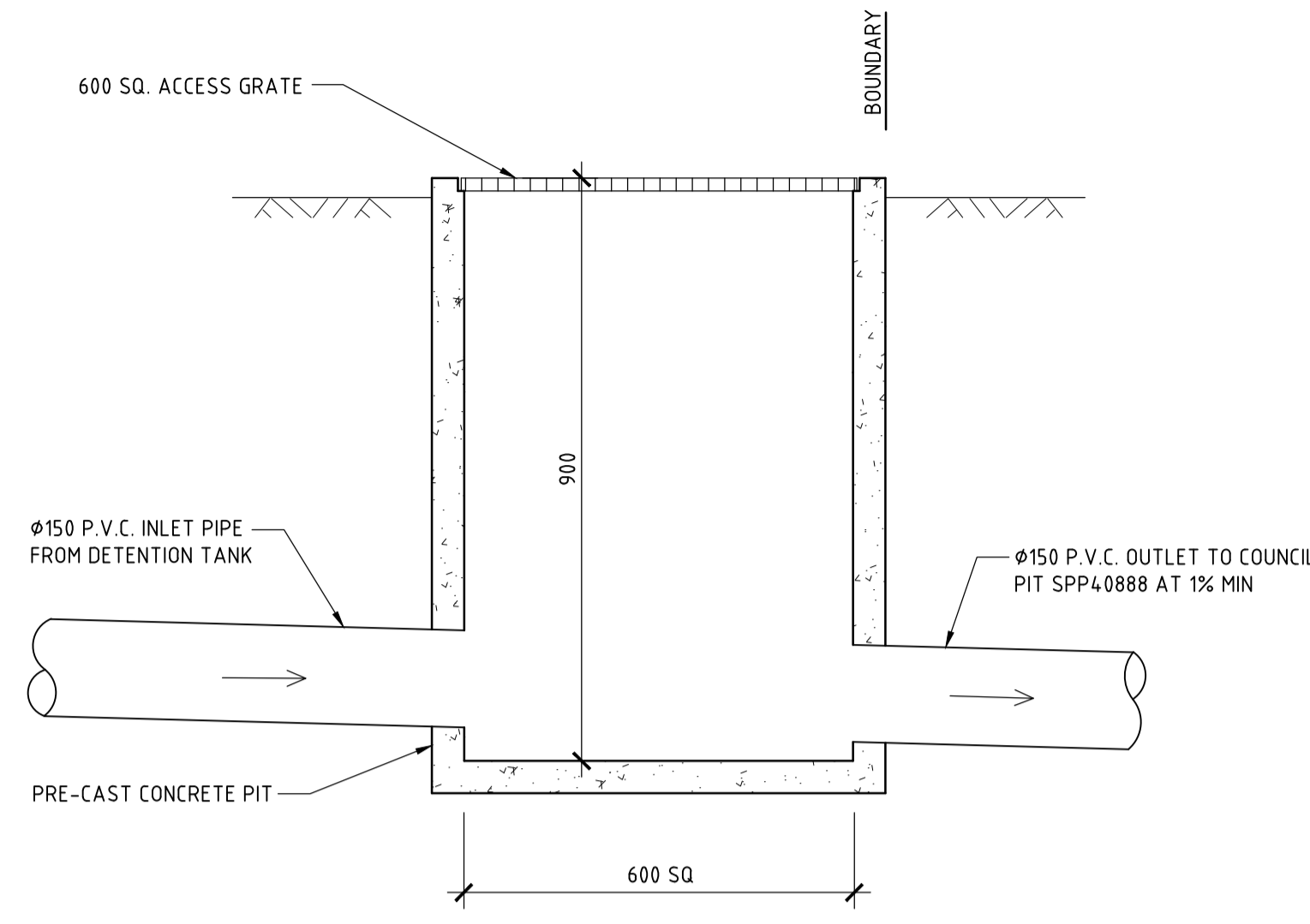
SCALE 1:100  
SHOWING CARPARK LEVEL DRAINAGE ELEMENTS AND CONNECTION TO DETENTION TANK

ISSUE DATE	REVISION

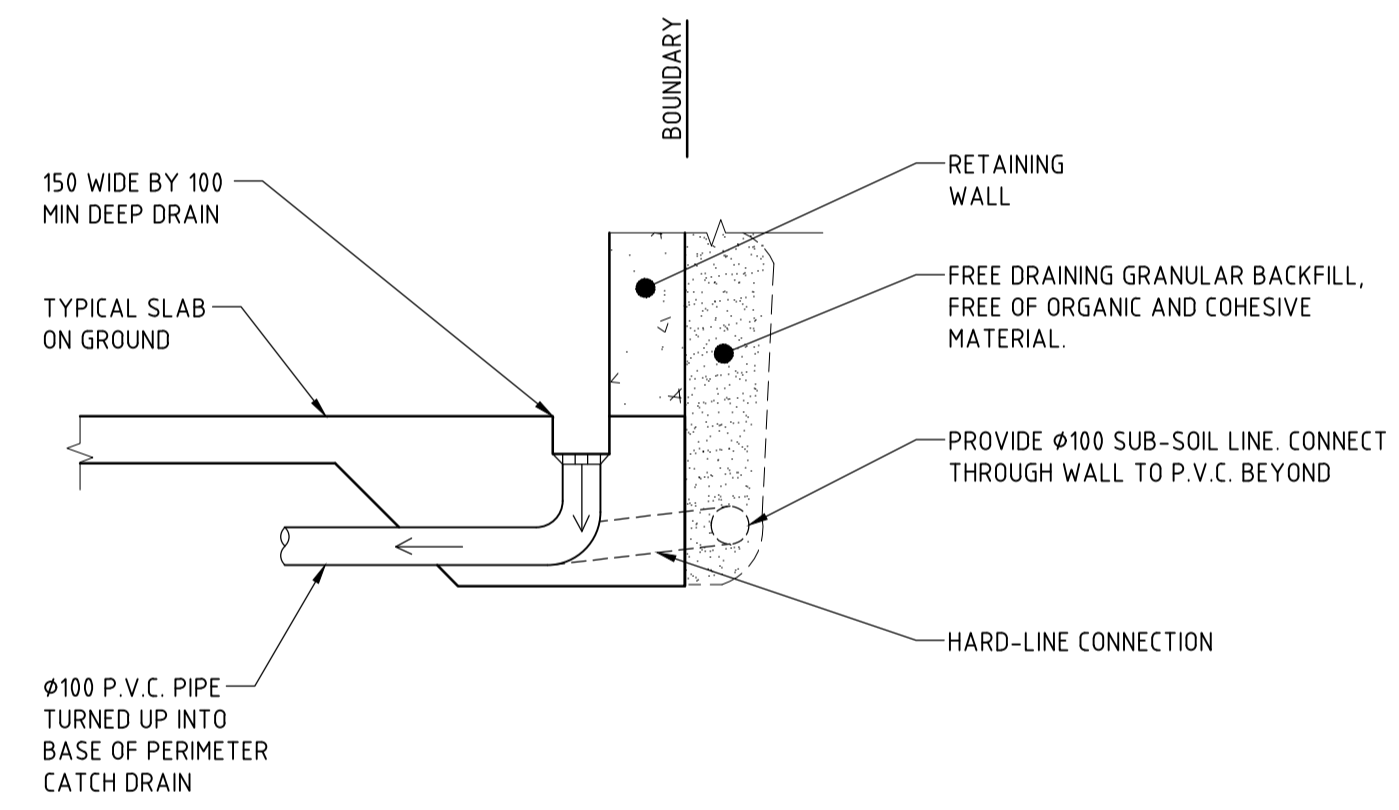
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DRAWN CJM	DATE 10 DECEMBER 2021	CHECKED <i>[Signature]</i> BE Civil (Hons) MIE Aust.	SCALE @ A1 1:100



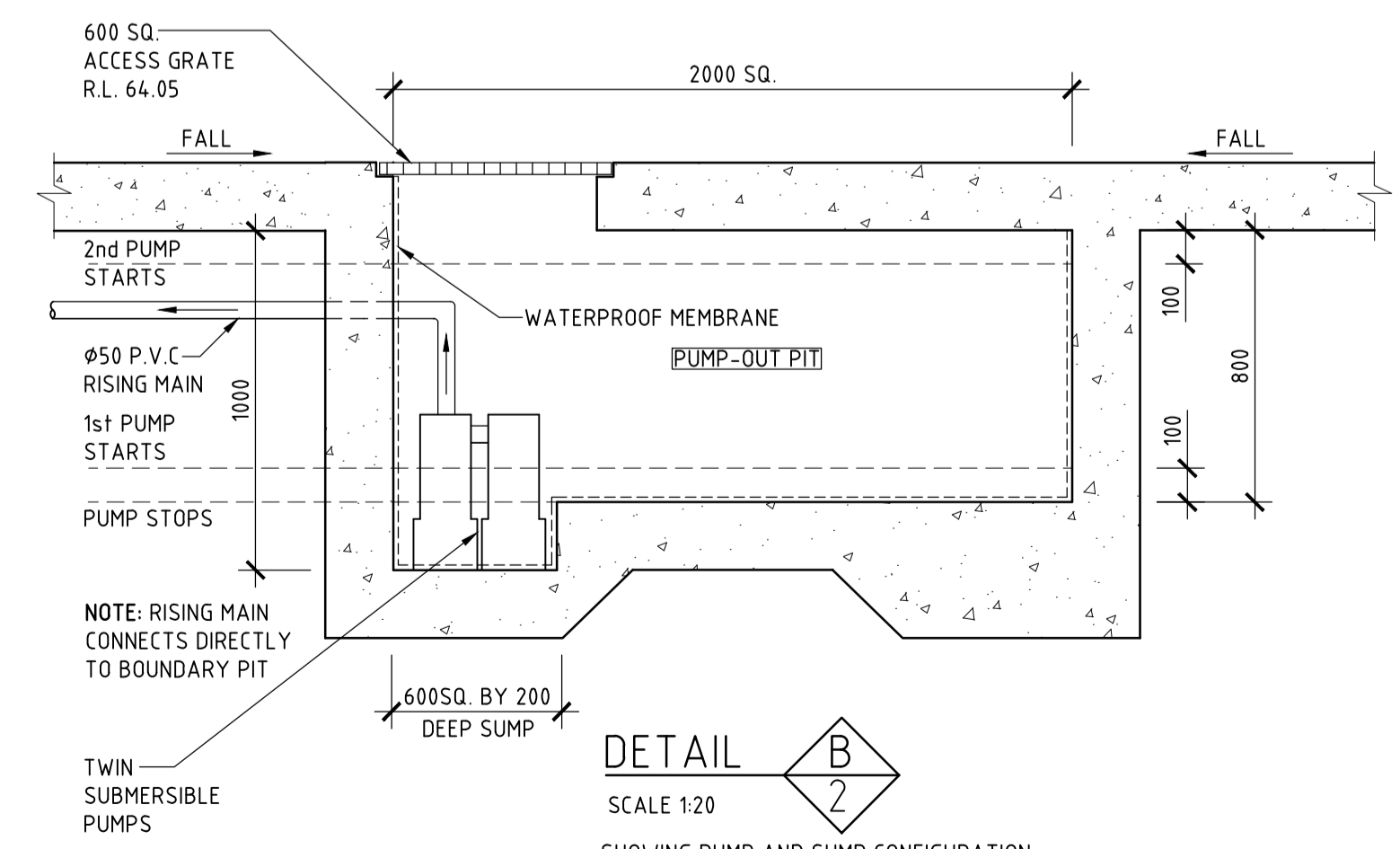
DRAWING NO.  
**STORM-2**



**DETAIL A**  
SCALE 1:10  
TYPICAL BOUNDARY PIT DETAIL



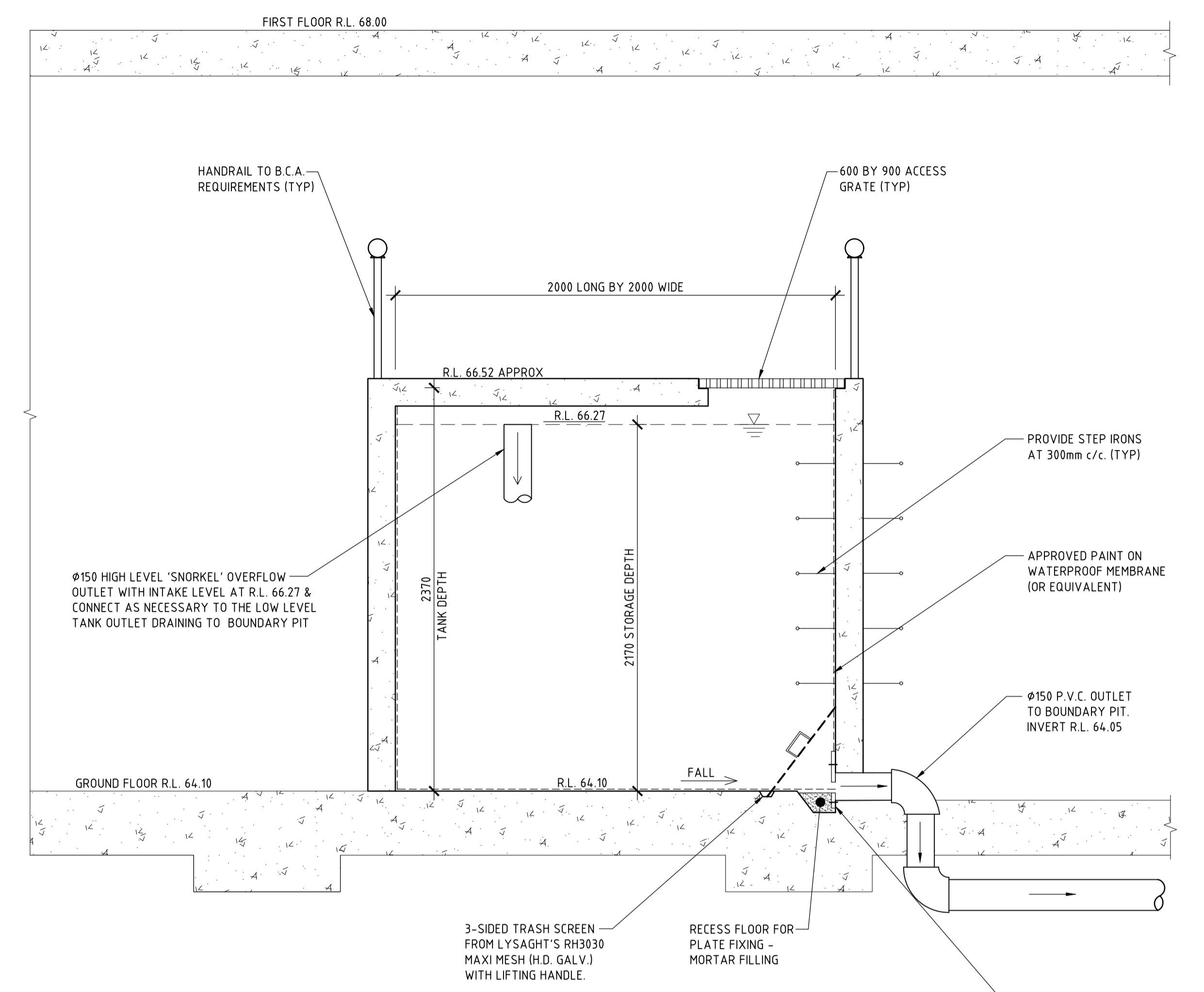
**DETAIL D**  
SCALE 1:20  
SHOWING PERIMETER CATCH DRAIN FOR SLAB ON GROUND



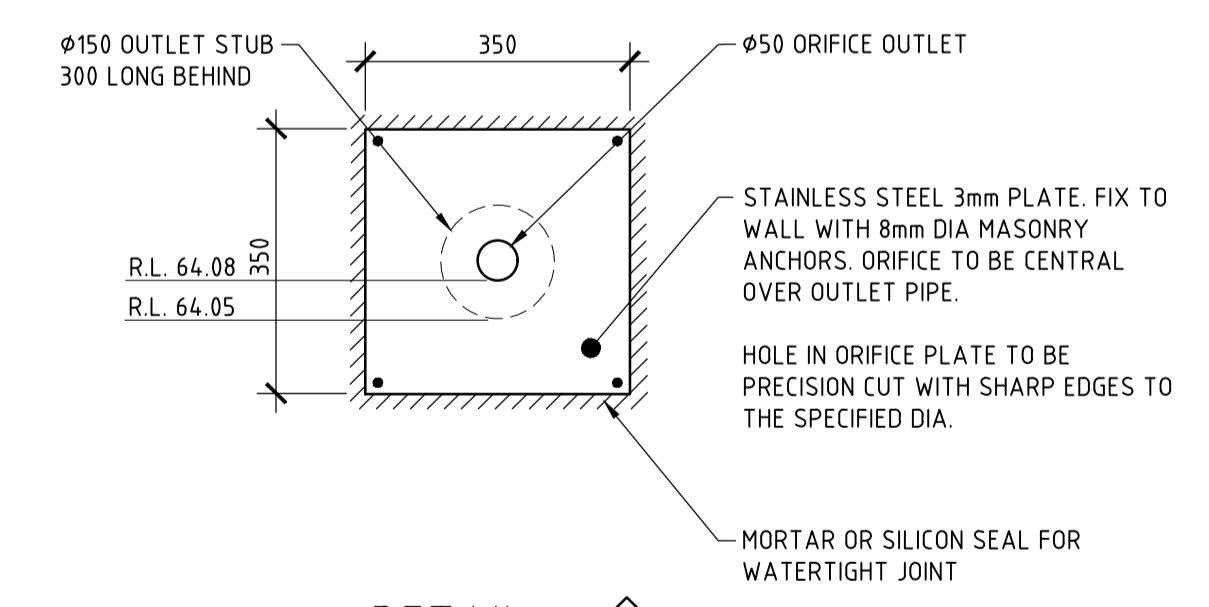
**DETAIL B**  
SCALE 1:20  
SHOWING PUMP AND SUMP CONFIGURATION

**PUMP NOTES**

1. TWIN SUBMERSIBLE PUMPS TO BE PROVIDED IN PUMP PIT.
2. PUMPS TO OPERATE ALTERNATELY AT LOW INLET FLOWRATE & CONCURRENTLY AT HIGH INLET FLOWRATE.
3. PUMP CAPACITY TO BE 2.0 l/s EACH FOR STATIC OF HEAD = 2.0m (EXCLUDES OUTLET PIPE LOSSES).
4. PROVIDE EXTERNAL CONTROL PANEL WITH AUDIO & VISUAL ALARMS & BATTERY POWER BACK-UP.
5. INLET PIPE TO BE LOCATED CLEAR OF THE HIGH LEVEL FLOAT SWITCH TO PREVENT FALSE ALARMS.



**DETAIL C**  
SCALE 1:20  
SHOWING SCHEMATIC LAYOUT OF DETENTION STORAGE TANK



**DETAIL E**  
SCALE 1:10  
ORIFICE PLATE DETAIL

ISSUE DATE	REVISION

TITLE <b>STORMWATER MANAGEMENT PLAN DETAILS</b> 29 DOBROYD ROAD, BALGOWLAH HEIGHTS			
DRAWN CJM	DATE 10 DECEMBER 2021	CHECKED <i>[Signature]</i> BE Civil (Hons) MIE Aust.	SCALE @ A1 1:20 1:10

**TAYLOR CONSULTING**  
CIVIL & STRUCTURAL ENGINEERS

**STORM-3**