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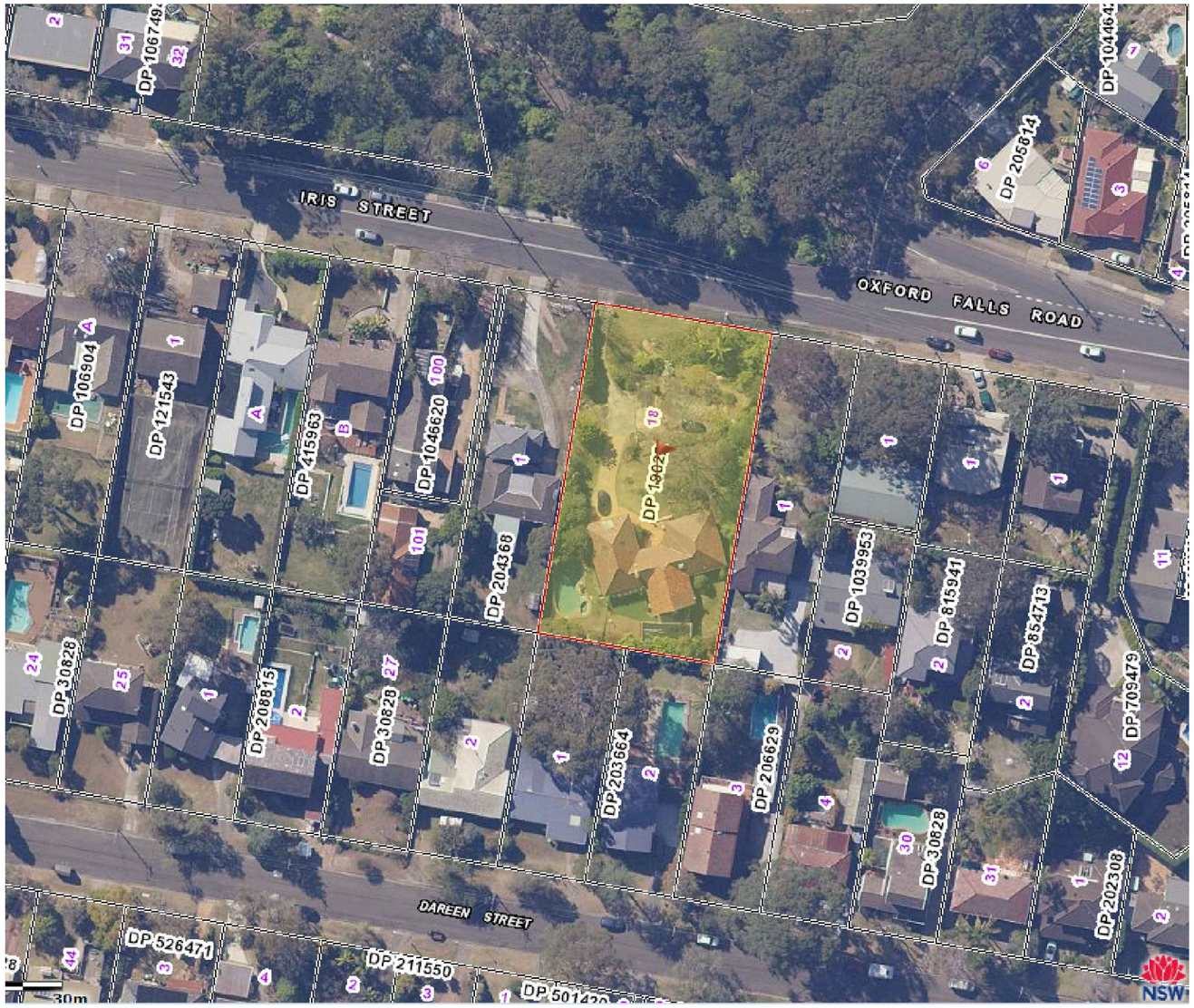
STORMWATER MANAGEMENT PLAN

FOR PROPOSED SUBDIVISION

107 IRIS STREET, BEACON HILL, NSW

FOR: **Maree Jaloussis Hayes**



JOB NO: SW -152-2307 F

DATE: 28/11/2024 **ISSUE: F**

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1	COVERPAGE
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ISSUED FOR: DA

N CONJUCTION WITH ALL JLTANTS' DRAWINGS AND SPECIFICATIONS. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT AND ENGINEER FOR DECISION BEFORE PROCEEDING WITH THE WORK

- DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THESE DRAWINGS. REFER TO ARCHITECT'S FINAL DRAWINGS.
- THE BUILDER SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING AND NEW SERVICES, AND SHALL BE RESPONSIBLE FOR DAMAGE TO THE SAME.
- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE SSA CODES, AND THE BY-LAWS AND ORDINANCES OF THE COUNCIL EPA AND WORKCOVER AS 3500 PART 2 & 3
- PREPARE PROGRESSIVELY AND FURNISH TO THE ENGINEER WORK AS EXECUTED DRAWINGS OF THE SAME SIZE AND QUALITY AS THIS DRAWING BUT ACCORDANCE WITH DA CONDITIONS AND CC REQUIREMENTS.
- GIVE SUFFICIENT NOTICE SO THAT INSPECTION MAY BE CARRIED OUT AT THE FOLLOWING STAGES: WORK READY FOR SPECIFIED TESTING, WORK READY TO BE COVERED OR CONCEALED.
- OBTAIN APPROVAL BEFORE INTERRUPTING AN EXISTING SERVICE. KEEP THE NUMBER OF INTERRUPTIONS TO A MINIMUM.
- LAY PIPES TO THE LEVELS SHOWN ON THE DRAWINGS AND IN ANY CASE NOT LESS THAN THE FOLLOWING:

  DIA. 100 MM @ 1.0%, DIA 150 MM @ 1.0%, DIA 225 MM @ 0.5%, DIA 300 MM @ 0.5%
- ENDS OF PIPES AND STUB CONNECTIONS TO BE SEALED WITH AN APPROVED SEALED DISC.
- MILD STEEL STAR PICKET 1200 mm LONG WITH 300 mm PAINTED GREEN EXTENDED ABOVE GROUND LEVEL TO BE PLACED AT EACH INTERLOTMENT DRAINAGE CONNECTION POINT.
- GEOTEXTILE FABRIC TO BE PLACED UNDER RIP RAP SCOUR PROTECTION

STORMWATER DRAINAGE NOTES:

- CONTRACTOR IS TO VERIFY THE LEVEL AND LOCATION OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF EXCAVATION.
- THE CONTRACTOR IS TO VERIFY ANY CONFLICT OF SERVICES IN THE ROAD RESERVE OR SUBJECT PROPERTY AND THE ENGINEER IS TO BE NOTIFIED AT THE EARLIEST POSSIBLE CONVENIENCE
- THE CONTRACTOR TO VERIFY THE INVERT LEVELS AT POINT OF CONNECTION TO EXISTING STORMWATER SYSTEM AND REPORT ANY CONFLICT OF LEVELS
- ALL BUILDINGS HAVE RAISED SO THERE IS AT LEAST 150 mm STEP UP INTO THE BUILDING TO ALLOW SUFFICIENT FREEBOARD FOR OVERLAND FLOWS IN THE CASE OF PIPE BLOCKAGE
- DOWNPIPES AND PITS LOCATIONS AND LEVELS MAY BE VARIED TO SUIT THE SITE CONDITIONS, AFTER ENGINEERING APPROVAL
- DOWNPIPES SHOWN ARE INDICATIVE ONLY. ALL ROOF GUTTERING AND DOWNPIPES TO THE CURRENT AUSTRALIAN STANDARDS
- DRAINAGE PIPES TO BE CONCRETE ENCASED WHERE LOCATED UNDER DRIVEWAY OR BUILDING
- ALL PIPES TO BE FULLY HOUSED INTO PIT WALLS AND JOINED / SEAL IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
- GRADE ALL PAVED AND GRASSED AREAS AWAY FROM THE BUILDING.
- TOP OF GRATE TO BE POSITIONED TO CATCH ALL UPSTREAM SURFACE FLOWS AS INDICATED BY PLANS.
- ALL PIPES WITHIN THE PROPERTY TO BE MIN. OF 150 DIA, @ 1% MIN. GRADE, UNO.
- ANY PIPES OVER 16% GRADE SHALL HAVE CONCRETE BULHEADS AT ALL JOINTS.
- ALL PITS WITHIN THE PROPERTY AREA TO BE FITTED WITH WELDOK OR APPROVED EQUIVALENT GRATES TO AS3996:
  - LIGHT DUTY FOR LANDSCAPE AREAS
  - HEAVY DUTY WHERE SUBJECTED TO VEHICULAR CROSSING
- ANY PIPES BENEATH RELEVANT LOCAL AUTHORITY ROAD TO BE RUBBER RING JOINTED RCP, UNO.
- ALL PITS IN ROADWAYS ARE TO BE FITTED WITH HEAVY DUTY GRATES WITH LOCKING BOLTS AND CONTINEOUS HINGE
- ALL COURTYARD AND LANDSCAPE PITS TO BE 400 SQUARE, UNO
- ALL PLANTER BOXES AND BALCONIES TO BE CONNECTED TO THE PROPOSED STORMWATER DRAINAGE LINE.
- PROVIDE STEP IRONS TO STORMWATER PITS GREATER THAN 1200 IN DEPTH.
- COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS TO BE MIN. 25 MPa
- PROVIDE CONCRETE BENCHING ACROSS PIT TO SUIT INLET AND OUTLET PIPES AS DETAILED
- DIA 100 SUBSOIL DRAINAGE PIPE 3.0 M LONG WRAPPED IN FABRIC SOCK TO BE PLACED ADJACENT TO INLET PIPES ON BOTH SIDES AND 100 MM MIN. ABOVE PIT FLOOR
- SUB SOIL DRAINAGE SHALL BE PROVIDED TO ALL RETAINING WALLS AND EMBANKMENTS WITH THE LINES FEEDING INTO THE STORMWATER DRAINAGE SYSTEM, UNO.
- SELECTED GRANULAR BACKFILL IS TO BE PLACES AGAINST THE FULL HEIGHT OF THE PIT VERTICAL FACES AND FOR A HORIZOONTAL DISTANCE EQUAL TO ONE-THIRD THE HEIGHT OF THE STRUCTURE.
- MORTAT BASES TO BE SHAPED TO GIVE MIN 20 mm FALL ACROSS PITS
- MORTAR BASES TO BE DISHED TO SUIT ADJOINING PIPE SIZES TO GICE SELF CLEAINSING PITS.
- WHERE PIT DEPTH EXCEEDS STANDARD DEPTH, CONCRETE SHALL BE USED AS PIT BASE, AND ALSO TO GAIN REQUIRED INLET/ OUTLET LEVELS.
- THE INLET PIPE OBVERT IS TO BE HIGHER THAT THE OUTLET PIPE OBVERT
- ALL SWAYLES SHALL HAVE A TURFED INVERT EXTENDING 0.5 m UP THE SIDE SLOPES
- HAND EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS
- FOOTHPATH CROSSING LEVELS SHOWN ARE TO BE ADJUSTED TO FINAL COUNCIL'S ISSUED LEVELS
- ALL FENCES MUST BE RAISED 150 mm FROM THE FINISHED GROUND LEVELS SO THAT OVERLAND FLOWS FROM UPSTREAM PROPERTIES ARE NOT RESTRICTED OR BLOCKED.

RAINWATER TANK NOTES:

- THE SYSTEM TO BE INSTALLED WITH THE FOLLOWING CONSIDERATIONS:
- A 'FIRST FLUSH' DIVERSION TO REMOVE ROOF CONTAMINANTS
- ADEQUATE SCREENING TO PROVIDE MOSQUITO BREEDING AND ENTRY OF ANIMAL OR FLOATING MATTER
- TANKS TO BE PLUMBED TO TOP-UP FROM THE POTABLE WATER SUPPLY DURING DRY PERIOD WHEN THE TANK IS 80% EMPTY.
- NO DIRECT CROSS-CONNECTION WITH THE POTABLE WATER SUPPLY AND AN AIR GAP MAINTAINED ABOVE THE OVERFLOW IN THE TANK.
- RAINWATER TANK TO BE CONNECTED TO ALL TOILETS, LAUNDRY AND AT LEAST ONE (1) OUTDOOR TAP.

DESIGN NOTES

- ALL EVE GUTTERS AND DOWNPIPES ARE DESIGNED FOR 10 YEAR ARI STORM EVENT.
- BOX GUTTER AND RAINWATER HEADS ARE DESIGNED FOR 100 YEAR ARI STORM EVENT
- INTENSITY FREQUENCY DURATION (IFD) DESIGN CHART OBTAINED FROM BUREAU OF METEOROLOGY HAS BEEN USED TO DESIGN ON SITE DETENTION SYSTEM.
- O**SEDIMENT FENCE**
- SEDIMENT CONTROL DEVICES ARE TO BE IN PLACE PRIOR TO ANY DEMOLITION OR CONSTRUCTION.
- CONSTRUCT A SILT BARRIER FENCE AS SHOWN ON PLAN AND TO DETAILS AS ABOVE.
- SEDIMENT CONTROL DEVICES ARE TO BE MAINTAINED IN GOOD WORKING ORDER UNTIL COMPLETION OF ALL SITE WORKS OR TO THE SATISFACTION OF THE COUNCIL SUPERVISING OFFICER.
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

SEDIMENT BARRIER AROUND PIT:

- FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE.
- SUPPORT GEOTEXTILE WITH MESH TIED TO THE POSTS AT 1000 MM CENTERS.
- DONOT COVER INLET WITH GEOTEXTILE

STANDARD PIPE TRENCH

- SAND FREE FROM ROCK OR OTHER HARD AND SHARP OBJECTS THAT WOULD RETAINED ON 13.2 SEIVE
- CRISHED ROCK OR GRAVEL OF APPROVED GRADING UP TO MAX SIZE OF 14 mm
- THE EXCAVATED MATERIAL MAY BE USED IF IT IS FREE FROM ROCK OR HARD MATTER AND BROKEN UP SO STHAT IT CONTAINS NO SOIL LUMPS HAVING ANY DIMENSION GREATER THAN 75 mm WHICH WOULD PREVENT ADEQUATE COMPACTION OF THE BEDDING
- MATERIAL FOR PIPE SIDE SUPPORT SHOULD BE ADEQUATELY TAMPED IN LAYERS OF NOT MORE THAN 150 mm.
- PIPE OVERLAY MATERIAL SHOULD BE LEVELLED AND TAMPED IN LAYERS TO A MINIMUM HEIGHT OF 150 mm ABOVE THE CROWN OF THE PIPE
- FOR MIN COVER REFER TO AS3500

Rev	Description	By	Date
E	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	06/09/2024
D	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	13/05/2024
C	ISSUED FOR DA, REVISION FOR COUNCIL'S COMMENT	CS	10/11/2023
B	ISSUED FOR DA, REVISION FOR STAGE 1 DEVELOPMENT	CS	18/10/2023
A	ISSUED FOR DA	CS	10/09/2023

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 IRIS STREET, BEACON HILL, NSW

Title: GENERAL NOTES SH2

Designed By: Chij Shrestha MIEAust, CPEng, NER

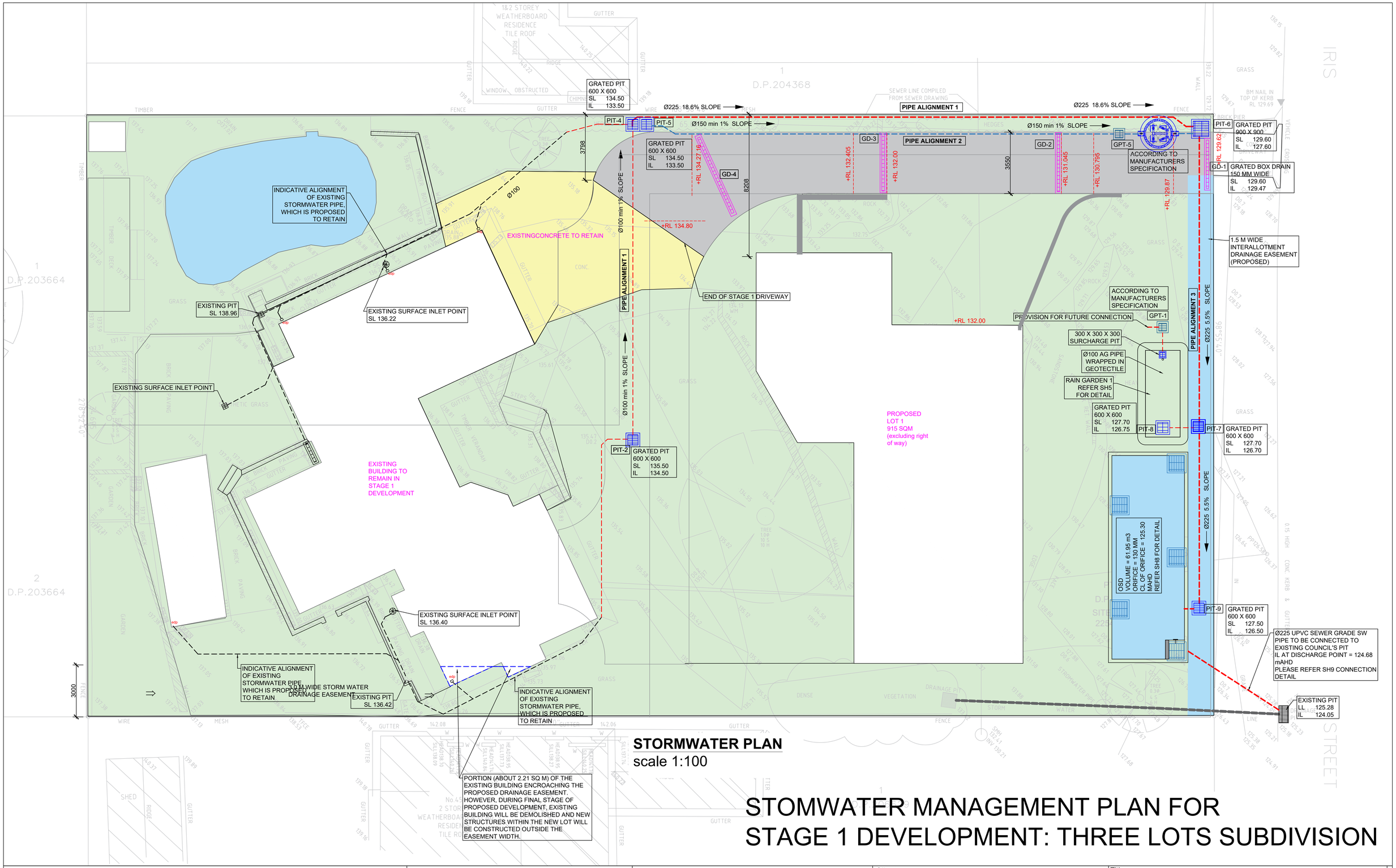
Date: 06/09/2024

Issue: E

Reviewed By: C.L.A

Job No: SW –152–2307 F

Scale: as shown (A3)



STORMWATER PLAN
scale 1:100

STOMWATER MANAGEMENT PLAN FOR STAGE 1 DEVELOPMENT: THREE LOTS SUBDIVISION

Rev	Description	By	Date
F	ISSUED FOR DA, REVISION FOR CHANGE DRIVEWAY DESIGN	CS	28/11/2024
E	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	06/09/2024
D	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	13/05/2024
C	ISSUED FOR DA, REVISION FOR COUNCIL'S COMMENT	CS	10/11/2023
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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 Iris Street, Beacon Hill NSW

Title: STAGE 1 SW PLAN SH 3

Designed By: Chij Shrestha MIEAust, CPEng, NER

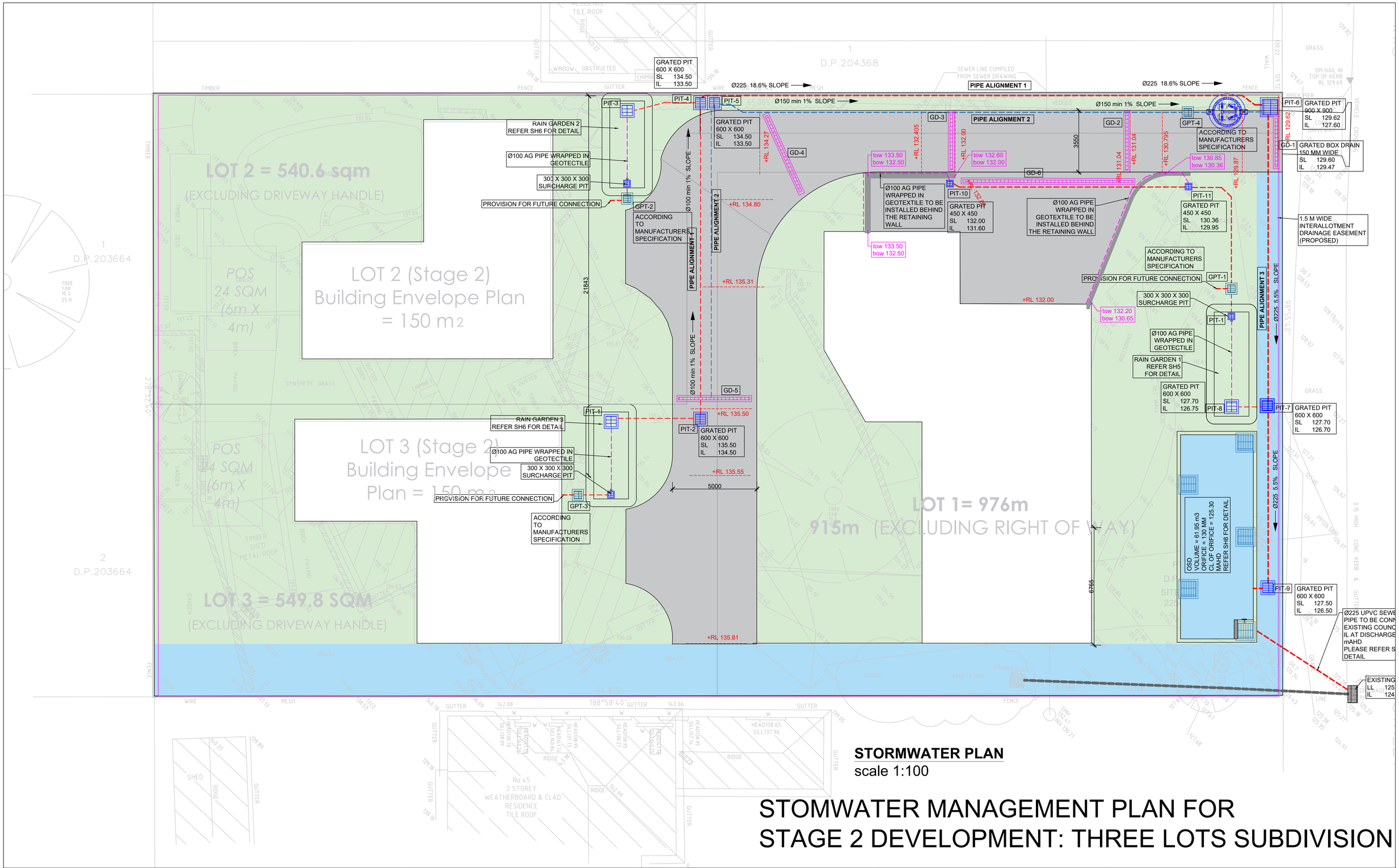
Date: 28/11/2024

Issue: F

Reviewed By: C.L.A

Job No: SW -152-2307 F

Scale: as shown (A1)



STORMWATER PLAN

scale 1:100

STOMWATER MANAGEMENT PLAN FOR STAGE 2 DEVELOPMENT: THREE LOTS SUBDIVISION

Rev	Description	By	Date
F	ISSUED FOR DA, REVISION FOR CHANGE DRIVEWAY DESIGN	CS	28/11/2024
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D	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	13/05/2024
C	ISSUED FOR DA, REVISION FOR COUNCIL'S COMMENT	CS	10/11/2023
B	ISSUED FOR DA, REVISION FOR STAGE 1 DEVELOPMENT	CS	18/10/2023
A	ISSUE FOR DA	CS	10/09/2023

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 Iris Street, Beacon Hill NSW

Title: STAGE 2 SW PLAN SH4

Designed By: Chij Shrestha MIEAust, CPEng, NER

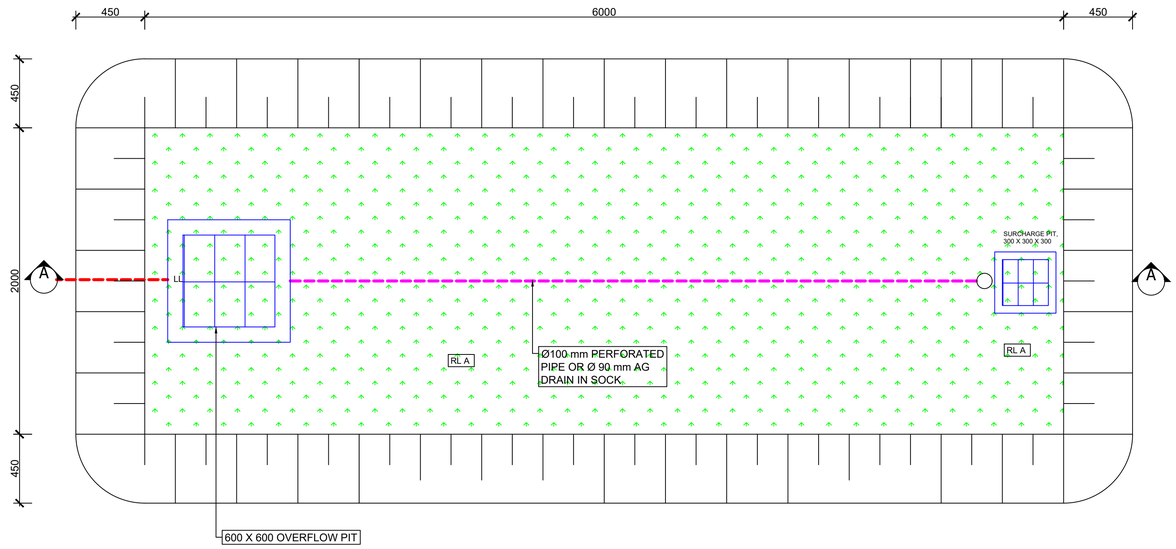
Date: 28/11/2024

Issue: F

Reviewed By: C.L.A

Job No: SW –152–2307 F

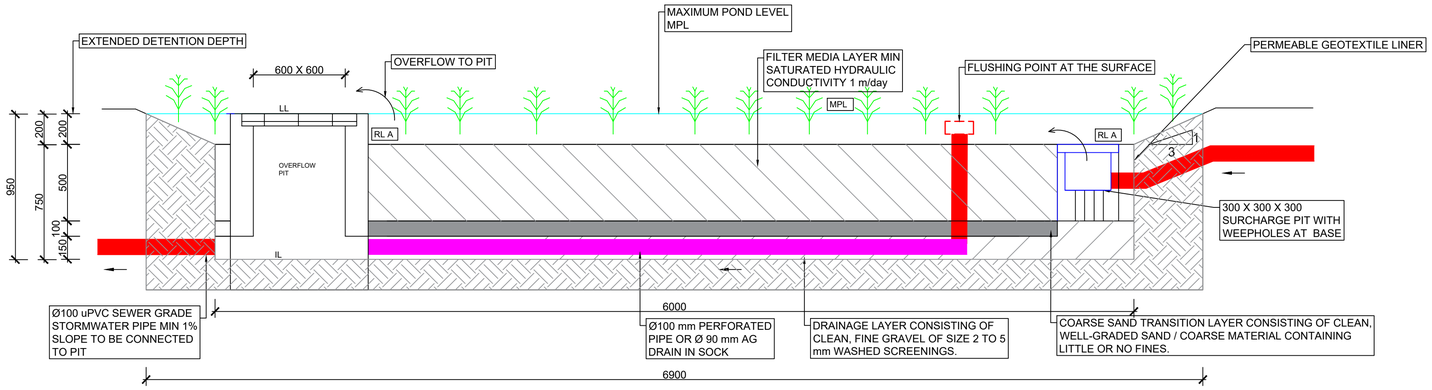
Scale: as shown (A1)



NOTES:

- THE RAIN GARDEN MUST BE LOCATED AT THE LOWEST PART OF THE SITE, CLEAR OF DRIVEWAY, SERVICES AND OTHER CONSTRAINTS.
- THE FILTER MEDIA TO BE SETBACK 450 mm FROM THE BOUNDARY.
- GEOTEXTILE FABRIC LINING MUST BE PROVIDED AT THE BASE OF THE RAIN GARDEN.
- GEOTEXTILE FABRIC LINING MUST NOT BE PROVIDED BETWEEN LAYERS.
- WHERE INFILTRATION FROM THE RAIN GARDEN IN TO THE SURROUNDING SOIL IS INDESIRABLE, AN IMPERBEABLE LINER MUST ALSO BE PROVIDED IN THE BASE OF THE RAIN GARDEN AT ALL SIDES.
- THE BASE OF RAIN GARDEN MUST FALL TOWARDS THE SUB-SOIL DRAIN

TYPICAL RAINGARDEN PLAN (LOT1)
scale 1:20



SECTION AT AA
scale 1:20

LOT	LID LEVEL	INVERT LEVEL	MAXIMUM POND LEVEL	REDUCED LEVEL
	LL	IL	MPL	RL-A
1	127.7	126.75	127.7	127.5
2	134.8	133.85	134.8	134.6
3	135.6	134.65	135.6	135.4

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 Iris Street, Beacon Hill NSW

Title: RAINGARDEN DETAIL SH5

Designed By: Chij Shrestha MIEAust, CPEng, NER

Date: 28/11/2024

Issue: F

Reviewed By: C.L.A

Job No: SW -152-2307 F

Scale: as shown (A1)

RAINGARDENS:

ONE RAINGARDEN IS PROPOSED AT THE LOWEST POSSIBLE LOCATION OF THE EACH LOTS. THE SURFACE AREA REQUIRED FOR THE RAINGARDEN IS EQUAL TO 10 m^2 PER LOT. 1:3 BATTER SLOPE IS PROPOSED AROUND THE RAINGARDENS FOR DETAIL, PLEASE REFER THE SECTION AND PLAN OF RAIN GARDEN. FOLLOWING AREA THE DETAIL SPECIFICATION OF EACH RAINGARDEN.

GENERAL REQUIREMENTS

1. THE RAIN GARDEN SHOULD BE CONSTRUCTED AS LATE AS POSSIBLE IN THE PROJECT OTHERWISE SEDIMENT AND GROSS POLLUTANTS GENERATED BY BUILDING WORKS WILL DAMAGE THE RAIN GARDEN.

2. THE RAIN GARDEN MUST BE LOCATED AT THE LOWEST PART OF THE SITE, CLEAR OF DRIVEWAYS, SERVICES AND OTHER CONSTRAINTS.

3. FOR LOTS THAT FALL TO THE STREET THE RAIN GARDEN MUST BE PROVIDED IN THE FRONT SETBACK.

4. FOR LOTS THAT FALL TO THE REAR THE RAIN GARDEN MUST BE PROVIDED IN THE REAR YARD.

5. THE MINIMUM RAIN GARDEN WIDTH IS 1.1M. OTHERWISE, THE RAIN GARDEN CAN BE ANY SHAPE PROVIDED THE SURFACE AREA MATCHES THAT REQUIRED FOR THE SITE, AS REFERRED TO IN THE RESTRICTION THAT APPEARS ON THE PROPERTY TITLE.

6. THE SURFACE AREA REQUIRED FOR THE SITE, AS REFERRED TO IN THE RESTRICTION THAT APPEARS ON THE PROPERTY TITLE, REFERS TO THE AREA OF THE RAIN GARDEN MEASURED FROM THE TOP OF THE BATTER (THE AREA WHERE PONDING WILL OCCUR).

7. THE DEPTH OF THE RAIN GARDEN EXCAVATION SHOULD BE 800MM (MINIMUM). THIS DEPTH IS COMPOSED OF A "DRAINAGE LAYER", "TRANSITION LAYER", "FILTER MEDIA" AND "EXTENDED DETENTION AREA", WHICH ARE DESCRIBED IN MORE DETAIL BELOW.

8. THE STORAGE VOLUME REQUIRED FOR THE SITE, AS REFERRED TO IN THE RESTRICTION THAT APPEARS ON THE PROPERTY TITLE, REFERS TO THE AREA ABOVE THE SURFACE (WHERE PONDING WILL OCCUR). IMPORTANTLY, THE AREA BELOW THE SURFACE DOES NOT COUNT TOWARDS THIS VOLUME. FOR EXAMPLE, WHERE THE RESTRICTION CALLS FOR A RAIN GARDEN WITH A SURFACE AREA OF 10M2 AND A STORAGE VOLUME OF 1.5M3, 150MM OF PONDING OVER THE 10M2 FOOTPRINT WILL PROVIDE THE 1.5M3 OF REQUIRED STORAGE VOLUME.

9. BOTH THE SURFACE AREA AND STORAGE VOLUME ARE IMPORTANT. HENCE WHY THEY ARE BOTH CITED IN THE RESTRICTION THAT APPEARS ON THE PROPERTY TITLE. A RAIN GARDEN WITH THE CORRECT SURFACE AREA BUT NO DEPRESSION/ PONDING ABOVE THE SURFACE WILL NOT COMPLY/ DETAIN STORMWATER, WHILST A RAIN GARDEN WITH THE CORRECT VOLUME (VIA DEEPER PONDING) BUT WITH A SMALLER SURFACE AREA WILL NOT COMPLY/ TREAT STORMWATER QUALITY.

10. NOTING THAT THE SYSTEM IS DESIGNED TO HOLD WATER, THE RAIN GARDEN FOOTPRINT NEEDS TO BE SETBACK FROM THE DWELLING AND ANY PROPERTY BOUNDARY. THE TYPICAL BATTER CALLED FOR IN THE STANDARD DRAWING IS 450MM WHICH MEANS IF THE TOP OF THE BATTER IS LOCATED ON THE PROPERTY BOUNDARY, THE TREATMENT AREA/ FILTER MEDIA WOULD THEN BE SETBACK 450MM FROM THE BOUNDARY, COMPLYING WITH THIS REQUIREMENT.

LINING

11. GEOTEXTILE FABRIC LINING MUST BE PROVIDED IN THE BASE OF THE RAIN GARDEN AND ALL SIDES.

12. GEOTEXTILE FABRIC LINING MUST NOT BE PROVIDED BETWEEN LAYERS AS IT INCREASES THE RISK OF CLOGGING, STOPPING THE SYSTEM FROM FUNCTIONING PROPERLY.

13. WHERE INFILTRATION FROM THE RAIN GARDEN INTO THE SURROUNDING SOIL IS UNDESIRABLE (SALINITY, GROUNDWATER LEVELS ETC.) AN IMPERMEABLE (WATERPROOF) LINER MUST ALSO BE PROVIDED IN THE BASE OF THE RAIN GARDEN AND ALL SIDES.

DRAINAGE

14. A SUB-SOIL DRAIN IN THE BASE OF THE RAIN GARDEN AND ONE FLUSHING POINT (MINIMUM) MUST BE PROVIDED.

15. DEPENDING ON THE SIZE AND SHAPE OF THE RAIN GARDEN, A SINGLE SUB-SOIL DRAIN MUST BE LOCATED CENTRALLY IN THE BASE OF THE RAIN GARDEN OR TWO PARALLEL SUB-SOIL DRAINS PROVIDED ON EITHER SIDE OF THE BASE OF THE RAIN GARDEN.

16. THE SUB-SOIL DRAIN CAN BE EITHER 90MM DIAMETER FLEXIBLE AGRICULTURAL PIPE DRAIN (AG-DRAIN) IN A SOCK OR A 100MM DIAMETER PERFORATED PIPE WITH NO SOCK. A PERFORATED PIPE IS PREFERRED AS IT IS EASIER TO CLEAN WHILST RIBBED PIPES RETAIN MOISTURE WHICH MAY ATTRACT PLANT ROOTS INTO THE PIPES.

17. THE BASE OF THE RAIN GARDEN MUST FALL TOWARDS THE SUB-SOIL DRAIN.

18. THE SUB-SOIL DRAIN MUST CONNECT TO THE "INTER-ALLOTMENT DRAINAGE PIT" THAT EXISTS IN THE LOW POINT OF THE SITE.

19. WHERE THE RAIN GARDEN IS LOCATED FURTHER THAN 2M FROM THE EXISTING "INTER-ALLOTMENT DRAINAGE PIT", A NEW 300MM SQUARE PLASTIC (OR SIMILAR) "OUTLET PIT" WILL BE REQUIRED BETWEEN THE RAIN GARDEN AND THE "INTER-ALLOTMENT DRAINAGE PIT". THIS IMPORTANT DESIGN DETAIL IS SHOWN ON THE STANDARD DRAWING, WHICH INCLUDES AN EXAMPLE OF A RAIN GARDEN LOCATED AWAY FROM THE EXISTING "INTER-ALLOTMENT DRAINAGE PIT".

20. SIMILARLY, AN "OUTLET PIT" MUST BE USED WHERE THE SURFACE LEVEL OF THE EXISTING "INTER-ALLOTMENT DRAINAGE PIT" DOES NOT MATCH THE PROPOSED PONDING/ TOP WATER LEVEL OF THE RAIN GARDEN.

21. ONCE THE DEPTH OF PONDING IN THE RAIN GARDEN HAS EXCEEDED 150MM STORMWATER WILL OVERFLOW INTO THE "INTER-ALLOTMENT DRAINAGE PIT" (OR NEW "OUTLET PIT" AS ABOVE). THE AREA BETWEEN THE RAIN GARDEN AND THE "OUTLET PIT" MUST REMAIN CLEAR OF OBSTRUCTIONS.

22. THE SURFACE LEVEL OF THE "INTER-ALLOTMENT DRAINAGE PIT" (OR NEW "OUTLET PIT" AS ABOVE) MUST BE 150MM HIGHER THAN THE SURFACE LEVEL WITHIN THE RAIN GARDEN, TO ALLOW FOR EXTENDED DETENTION.

23. ALL SURFACE AREAS, DOWNPIPES, OVERFLOW FROM THE RAINWATER TANK MUST BE DIRECTED TOWARDS THE RAIN GARDEN.

24. ANY PIPED DRAINAGE FROM THE SITE MUST BE CONNECTED TO A NEW 300MM SQUARE PLASTIC (OR SIMILAR) "SURCHARGE PIT" WITHIN THE RAIN GARDEN.

25. THE PURPOSE OF THIS "SURCHARGE PIT" IS TO TRANSFER INFLOW TO THE SURFACE, SO THAT IT MAY PASS THROUGH THE RAIN GARDEN.

26. THE SURFACE LEVEL OF THE "SURCHARGE PIT" MUST BE 150MM LOWER THAN THE SURFACE LEVEL OF THE "INTER-ALLOTMENT DRAINAGE PIT" (OR NEW "OUTLET PIT" AS ABOVE) AND THE SURROUNDING FINISHED GROUND LEVEL TO PROVIDE FOR "EXTENDED DETENTION" ABOVE THE RAIN GARDEN.

27. THE SURFACE LEVEL OF ANY OTHER DRAINAGE PITS ON SITE DIRECTED TO THIS "SURCHARGE PIT" MUST BE HIGHER THAN THE SURFACE LEVEL OF THE "SURCHARGE PIT".

28. WEEP HOLES MUST BE DRILLED IN THE BASE OF THE "SURCHARGE PIT" TO AVOID STAGNANT WATER IN THE BASE. THESE WEEP HOLES MUST STILL ALLOW STORMWATER TO SURCHARGE INTO THE "EXTENDED DETENTION" AREA.

9. THE AREA UNDERNEATH THE "SURCHARGE PIT" MUST BE FILLED USING CLEAN, FINE GRAVEL SIMILAR TO THAT USED IN THE "DRAINAGE LAYER" (SEE BELOW).

30. A WELL DESIGNED AND LOCATED RAIN GARDEN WILL LIMIT THE AMOUNT OF ADDITIONAL DRAINAGE PIPES/ REQUIRED TO BE PROVIDED.

DRAINAGE (BOTTOM) LAYER

31. THIS LAYER IS 150MM DEEP (MINIMUM).

32. THIS LAYER MUST CONSIST OF CLEAN, FINE GRAVEL SUCH AS A 2MM TO 5MM WASHED SCREENINGS.

33. THIS LAYER WILL PROVIDE 50MM OF COVER OVER THE SUB-SOIL DRAIN.

34. THE PURPOSE OF THIS LAYER IS TO COLLECT AND DRAIN THE TREATED STORMWATER THAT HAS PASSED THROUGH THE "FILTER MEDIA" AND "TRANSITION LAYER".

TRANSITION (MIDDLE) LAYER

35. THIS LAYER IS 100MM DEEP (MINIMUM).

36. THIS LAYER MUST BE PLACED ON TOP OF THE "DRAINAGE LAYER".

37. THIS LAYER MUST CONSIST OF CLEAN, WELL-GRADED SAND/ COARSE SAND MATERIAL CONTAINING LITTLE OR NO FINES.

38. THE PURPOSE OF THE TRANSITION LAYER IS TO STOP THE DOWNWARD MIGRATION OF SMALLER PARTICLES BETWEEN THE "FILTER MEDIA" AND "DRAINAGE LAYER".

FILTER MEDIA (TOP LAYER)

39. THIS LAYER IS WHERE THE MAJORITY OF THE WATER QUALITY TREATMENT OCCURS AND SO THE SOURCING AND PLACEMENT OF THIS MATERIAL IS CRITICAL TO THE EFFECTIVE OPERATION OF THE SYSTEM.

40. THIS LAYER IS 400MM DEEP (MINIMUM).

41. THIS LAYER MUST BE PLACED ON TOP OF THE "TRANSITION LAYER".

42. THE MATERIAL USED MUST COMPLY WITH THE FOLLOWING REQUIREMENTS:

- THIS LAYER MUST HAVE A LOAMY SAND TEXTURE.

- THE FILTER MEDIA MUST BE FREE OF RUBBISH, DELETERIOUS MATERIAL AND TOXICANTS AND IS NOT HYDROPHOBIC.

- SATURATED HYDRAULIC CONDUCTIVITY (PERMEABILITY) OF 100MM/HR.

- PARTICLE SIZE DISTRIBUTION:

CLAY AND SILT (<3%) (<0.05MM)
VERY FINE SAND (5% TO 30%) (0.05MM TO 0.15MM)
FINE SAND (10% TO 30%) (0.15MM TO 0.25MM)
MEDIUM TO COARSE SAND (40% TO 60%) (0.25MM TO 1.0MM)
COARSE SAND (7% TO 10%) (1.0MM TO 2.0MM)
FINE GRAVEL (<3%) (2.0MM TO 3.4MM)

- THE ORGANIC MATTER CONTENT MUST BE LESS THAN 5% (WEIGHT TO WEIGHT).

- PH AS FOR "NATURAL SOILS AND SOIL BLENDS" OF 5.5 TO 75 (PH OF 1:5 IN WATER).

- ELECTRICAL CONDUCTIVITY (EC) AS FOR "NATURAL SOILS AND SOIL BLENDS" < 1.2DS/M

- PHOSPHOROUS CONCENTRATION < 100MG/KG (REDUCING TO 20MG/KG WHERE MODERATELY PHOSPHORUS SENSITIVE PLANTS ARE USED).

43. ONCE PLACED THIS LAYER MUST BE LIGHTLY COMPACTED TO PREVENT THE MIGRATION OF FINE PARTICLES (90% STANDARD COMPACTION).

EARTHWORKS

44. THE SURFACE LEVEL OF THE "SURCHARGE PIT" MUST MATCH THE LEVEL WITHIN THE RAIN GARDEN.

45. THE SURFACE LEVEL OF THE "INTER-ALLOTMENT DRAINAGE PIT" (OR NEW "OUTLET PIT") MUST MATCH THE LEVEL SURROUNDING THE RAIN GARDEN, 150MM HIGHER THAN THE LEVEL WITHIN THE RAIN GARDEN (NAMELY, THE LEVEL OF THE SURCHARGE PIT).

46. THE SIDES OF THE RAIN GARDEN MUST BE BATTERED AT 1(V):3(H). THIS BATTER MUST NOT EXTEND OVER THE "FILTER MEDIA".

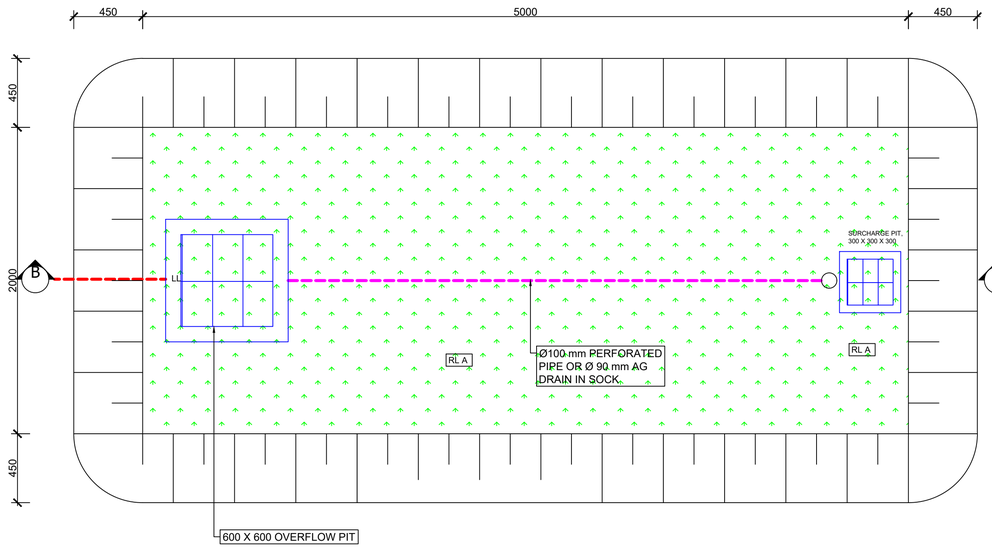
47. WHERE LOW LEVEL RETAINING WALLS ARE PROPOSED IN PLACE OF THE BATTER, WHICH FOR SLOPING SITES IS TYPICALLY NECESSARY, THE SAME SURFACE AREA AND STORAGE VOLUME MUST STILL BE PROVIDED.

48. THE AREA BETWEEN THE RAIN GARDEN AND THE "INTER-ALLOTMENT DRAINAGE PIT" (OR NEW "OUTLET PIT") MUST BE SHAPED TO DIRECT OVERFLOW TOWARDS THE "INTER-ALLOTMENT DRAINAGE PIT" (OR NEW "OUTLET PIT").

THIS IS THE MINIMUM LEVEL TO WHICH THE RAIN GARDEN CAN BE CONSTRUCTED BEFORE A BUILDER IS ABLE TO ISSUE PRACTICAL COMPLETION. THIS ONLY APPLIES WHERE THE LANDOWNER IS RESPONSIBLE FOR LANDSCAPING. WHERE THE BUILDER IS RESPONSIBLE FOR LANDSCAPING, THIS MUST OCCUR BEFORE PRACTICAL COMPLETION OF THE PROJECT. THE PCA CANNOT ISSUE ANY OCCUPATION CERTIFICATE UNTIL THE RAINGARDEN HAS BEEN CONSTRUCTED AND CERTIFIED (COMPLETED CHECKLIST) AS ACHIEVING THIS MINIMUM LEVEL OF COMPLETION.

50. WHERE THERE IS TO BE A DELAY BETWEEN THE MINIMUM LEVEL OF COMPLETION (ABOVE) AND THE LANDSCAPING (BELOW), AN ADDITIONAL LAYER OF GEOTEXTILE FABRIC LINING MUST BE PROVIDED OVER THE RAIN GARDEN EXTENDING TO THE TOP OF THE BATTER TO PROTECT THE "FILTER MEDIA" FROM SEDIMENT AND GROSS POLLUTANTS.

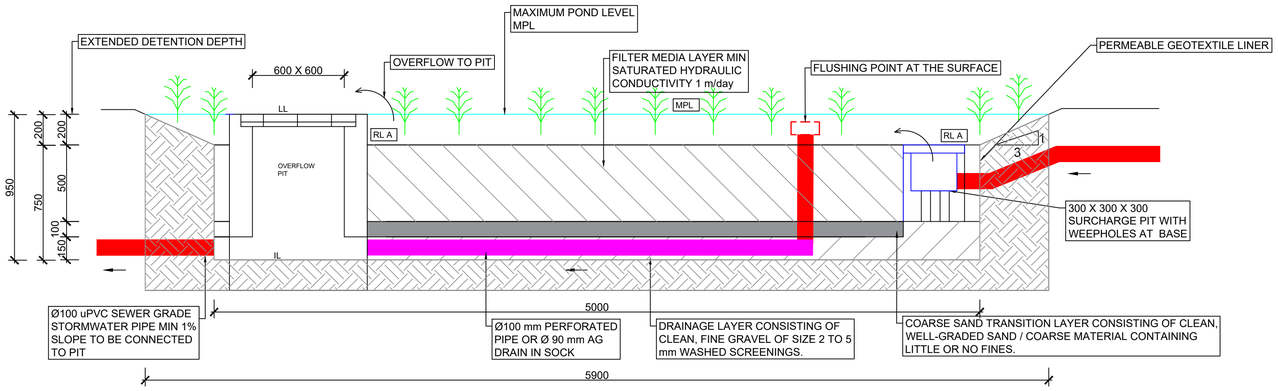
51. THE SHAPING OF THE SURFACE OF THE RAIN GARDEN CARRIED OUT AT THIS STAGE MUST ENSURE THE AREA FOR PONDING (150MM) IS ALLOWED FOR. AS NOTED EARLIER, A RAIN GARDEN WITH THE CORRECT SURFACE AREA BUT NO DEPRESSION/ PONDING ABOVE THE SURFACE WILL NOT COMPLY/ DETAIN STORMWATER.



TYPICAL RAINGARDEN PLAN
(LOT 2 and 3)
scale 1:20

NOTES:

- THE RAIN GARDEN MUST BE LOCATED AT THE LOWEST PART OF THE SITE, CLEAR OF DRIVEWAY, SERVICES AND OTHER CONSTRAINTS.
- THE FILTER MEDIA TO BE SETBACK 450 mm FROM THE BOUNDARY.
- GEOTEXTILE FABRIC LINING MUST BE PROVIDED AT THE BASE OF THE RAIN GARDEN.
- GEOTEXTILE FABRIC LINING MUST NOT BE PROVIDED BETWEEN LAYERS.
- WHERE INFILTRATION FROM THE RAIN GARDEN IN TO THE SURROUNDING SOIL IS INDESIRABLE, AN IMPERBEABLE LINER MUST ALSO BE PROVIDED IN THE BASE OF THE RAIN GARDEN AT ALL SIDES.
- THE BASE OF RAIN GARDEN MUST FALL TOWARDS THE SUB-SOIL DRAIN



SECTION AT BB
scale 1:20

LOT	LID LEVEL	INVERT LEVEL	MAXIMUM POND LEVEL	REDUCED LEVEL
	LL	IL	MPL	RL-A
1	127.7	126.75	127.7	127.5
2	134.8	133.85	134.8	134.6
3	135.6	134.65	135.6	135.4

Rev	Description	By	Date
F	ISSUED FOR DA, REVISION FOR CHANGE DRIVEWAY DESIGN	CS	28/11/2024
E	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	06/09/2024
D	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	13/05/2024
C	ISSUED FOR DA, REVISION FOR COUNCIL'S COMMENT	CS	10/11/2023
B	ISSUED FOR DA, REVISION FOR STAGE 1 DEVELOPMENT	CS	18/10/2023
A	ISSUE FOR DA	CS	10/09/2023

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 Iris Street, Beacon Hill NSW

Title: RAINGARDEN DETAIL SH6

Designed By: Chij Shrestha MIEAust, CPEng, NER

Date: 28/11/2024

Issue: F

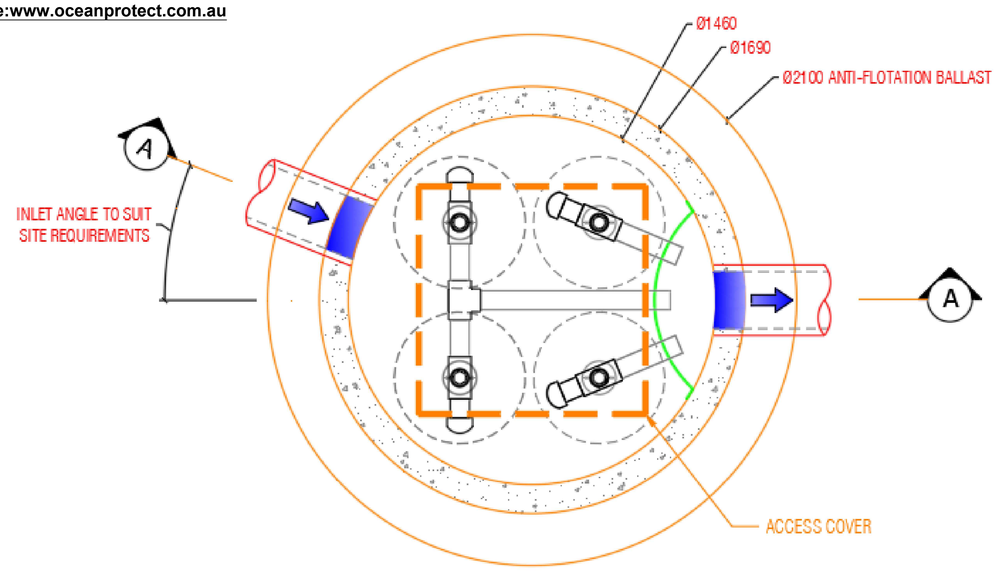
Reviewed By: C.L.A

Job No: SW –152–2307 F

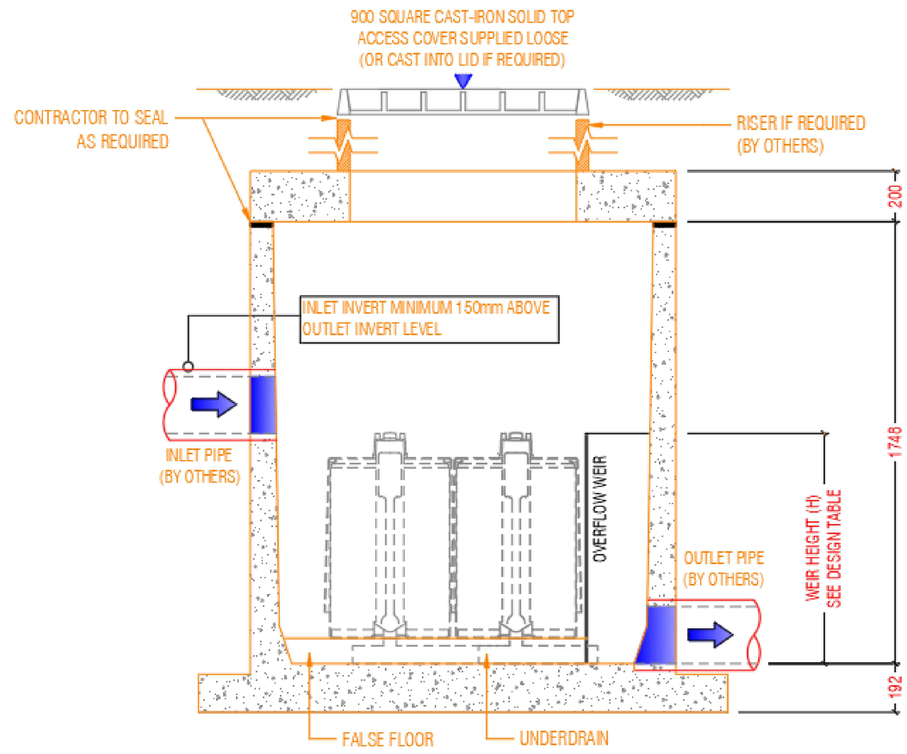
Scale: as shown (A1)

source:www.oceanprotect.com.au

NOT FOR CONSTRUCTION



PLAN



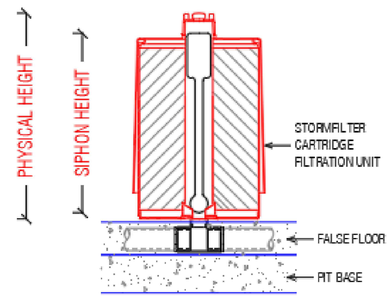
SECTION A-A

LAST MODIFIED: 09-11-18

STORMFILTER DESIGN TABLE

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CERTIFYING ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 178mm.

CARTRIDGE NAME / SIPHON HEIGHT (mm)	690	460	310
CARTRIDGE PHYSICAL HEIGHT (mm)	840	600	600
TYPICAL WEIR HEIGHT [H] (mm)	920	690	540
CARTRIDGE FLOW RATE FOR ZPG MEDIA (L/s)	1.6	1.1	0.7
CARTRIDGE FLOW RATE FOR PSORB MEDIA (L/s)	0.9	0.46	0.39



STORMFILTER CARTRIDGE DETAIL

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	[ ]
NUMBER OF CARTRIDGES REQ'D	4
SIPHON HEIGHT (310 / 460 / 690)	[460]
MEDIA TYPE (ZPG / PSORB)	[PSORB
WATER QUALITY FLOW RATE (L/S)	[0.46]
HYDRAULIC CAPACITY (L/S)	90

PIPE DATA:	I.L.	MATERIAL	DIAMETER
INLET PIPE #1	[ ]	[ ]	[ ]
INLET PIPE #2	[ ]	[ ]	[ ]
INLET PIPE #3	[ ]	[ ]	[ ]
OUTLET PIPE	[ ]	[ ]	[ ]

PRECAST MANHOLE WEIGHT	4100kg
PRECAST LID WEIGHT	1100kg

GENERAL NOTES

1. PRECAST STRUCTURE SUPPLIED WITH CORE HOLES TO SUIT OUTER DIAMETER OF NOMINATED PIPE SIZE / MATERIAL
2. PRECAST STRUCTURE SHALL MEET W80 WHEEL LOAD RATING ASSUMING A MAXIMUM EARTH COVER OF 2.0m AND A GROUND WATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. CERTIFYING ENGINEER TO CONFIRM ACTUAL GROUNDWATER ELEVATION. PRECAST STRUCTURE SHALL BE IN ACCORDANCE WITH AS3600.
3. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CERTIFYING ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE SYSTEM, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.
4. ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE. REFER TO OPERATION AND MAINTENANCE MANUAL FOR GUIDELINES AND ACCESS REQUIREMENTS.
5. SITE SPECIFIC PRODUCTION DRAWING WILL BE PROVIDED ON PLACEMENT OF ORDER.
6. DRAWING NOT TO SCALE.

INSTALLATION NOTES

1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY CERTIFYING ENGINEER.
2. CONTRACTOR TO PROVIDE ALL EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING DETAIL PROVIDED SEPARATELY).
3. CONTRACTOR TO APPLY SEALANT TO ALL JOINTS AND TO PROVIDE, INSTALL AND GROUT INLET AND OUTLET PIPES.

OCEAN PROTECT

PHONE: 1300 364 722 www.oceanprotect.com.au

OCEAN PROTECT
4 CARTRIDGE STORMFILTER SYSTEM
DN1460 MANHOLE
SPECIFICATION DRAWING

Rev	Description	By	Date
F	ISSUED FOR DA, REVISION FOR CHANGE DRIVEWAY DESIGN	CS	28/11/2024
E	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	06/09/2024
D	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	13/05/2024
C	ISSUED FOR DA, REVISION FOR COUNCIL'S COMMENT	CS	10/11/2023
B	ISSUED FOR DA, REVISION FOR STAGE 1 DEVELOPMENT	CS	18/10/2023
A	ISSUE FOR DA	CS	10/09/2023

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 Iris Street, Beacon Hill NSW

Title: STORM FILTER DETAIL SH 7

Designed By: Chij Shrestha MIEAust, CPEng, NER

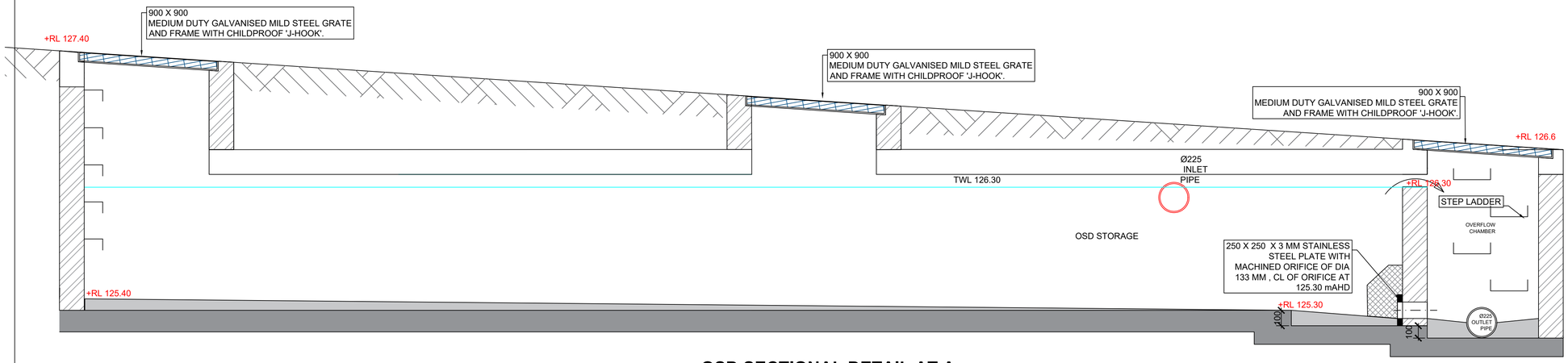
Date: 28/11/2024

Issue: F

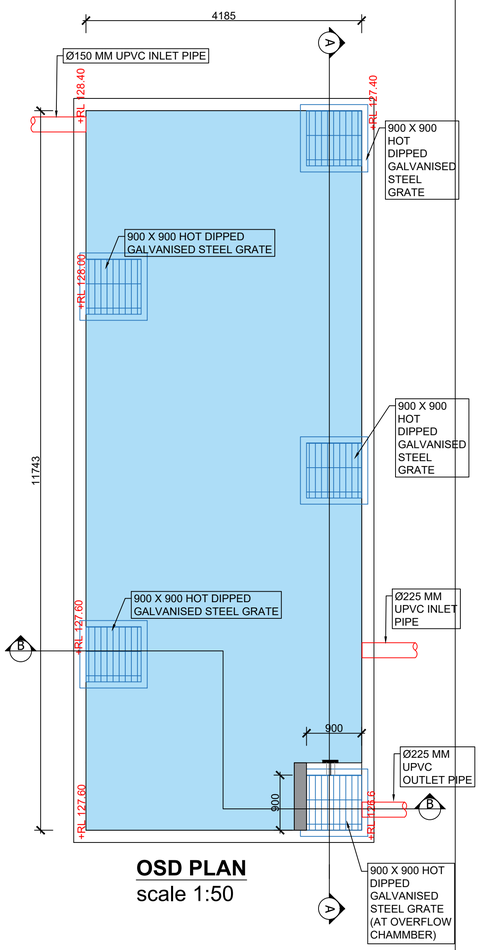
Reviewed By: C.L.A

Job No: SW -152-2307 F

Scale: as shown (A1)



OSD SECTIONAL DETAIL AT A
scale 1:20



OSD PLAN
scale 1:50

Colours:

"DANGER" and background	White
Elliptical area	Red
Rectangle containing elipse	Black
Other lettering and border	Black

CONFINED SPACE WARNING SIGN
not to scale

OSD DESIGN NOTES AND RESULT:

- ACCORDING TO WATER MANAGEMENT FOR THE DEVELOPMENT POLICY, NORTHERN BEACHES COUNCIL, THE PROPOSED DEVELOPMENT SITE LIES IN REGION 2.
- ONSITE DETENTION SYSTEM IS DESIGNED USING FULL COMPUTATIONAL METHOD FOR PRE AND POST DEVELOPMENT RUNOFF
- DRAINS ILSAX MODEL HAS BEEN USED FOR THE OSD MODELLING
- TOTAL SITE AREA 2254 SQM

PRE DEVELOPMENT CASE:

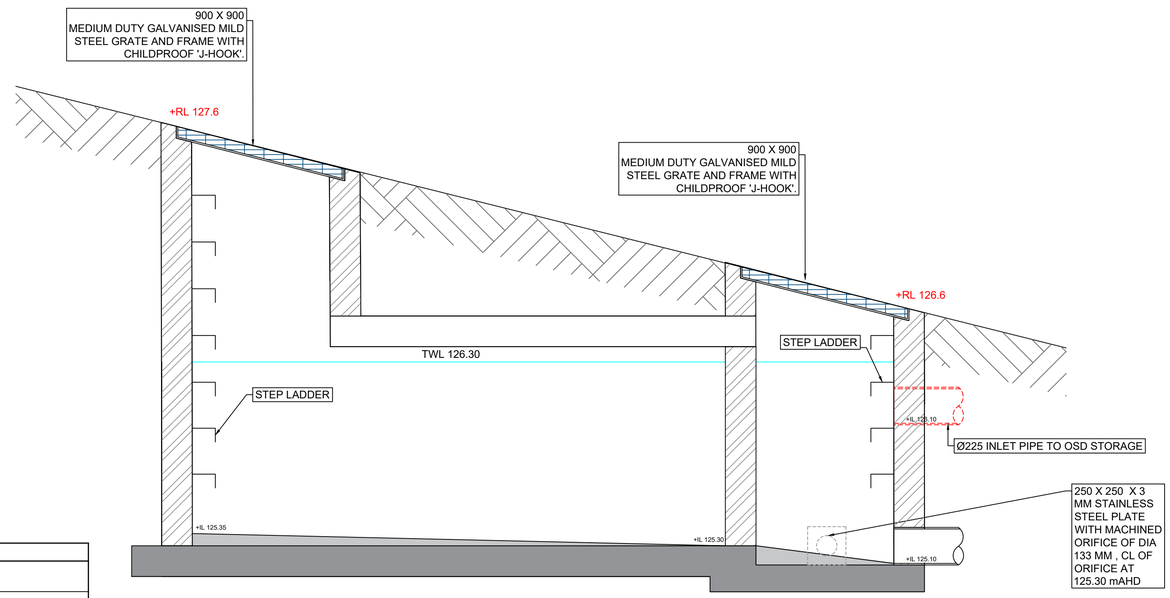
- %OF IMPERVIOUS AREA 39.4% OF TOTAL SITE AREA
- %OF IMPERVIOUS AREA TAKEN TO CONFIRM PERMISSIBLE SITE DISCHARGE (PSD) = 0%

POST DEVELOPMENT CASE:

- % OF IMPERVIOUS CALCULATED = 41.6% OF TOTAL SITE AREA
- % OF IMPERVIOUS AREA TAKEN TO CALCULATE SITE STORAGE REQUIREMENT = 60%
- % OF OSD BYPASS = 8.6% OF TOTAL SITE

DRAINS MODEL RESULT FOR OSD:

Rainfall events	Pre Development flow	Post Development Flow				
		Without OSD	With OSD			OSD Volume
			Orifice flow	Bypass Flow	Total Flow Post Development	
% AEP	L/s	L/s	L/s	L/s	L/s	m^3
20% AEP	41	60	23	4	27	26.76
5% AEP	71	85	31	6	37	41.56
1% AEP	104	119	39	9	48	61.95



OSD SECTIONAL DETAIL AT B
scale 1:20

Rev	Description	By	Date
F	ISSUED FOR DA, REVISION FOR CHANGE DRIVEWAY DESIGN	CS	28/11/2024
E	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	06/09/2024
D	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	13/05/2024
C	ISSUED FOR DA, REVISION FOR COUNCIL'S COMMENT	CS	10/11/2023
B	ISSUED FOR DA, REVISION FOR STAGE 1 DEVELOPMENT	CS	18/10/2023
A	ISSUE FOR DA	CS	10/09/2023

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 Iris Street, Beacon Hill NSW

Title: OSD DETAIL SH8

Designed By: Chij Shrestha MIEAust, CPEng, NER

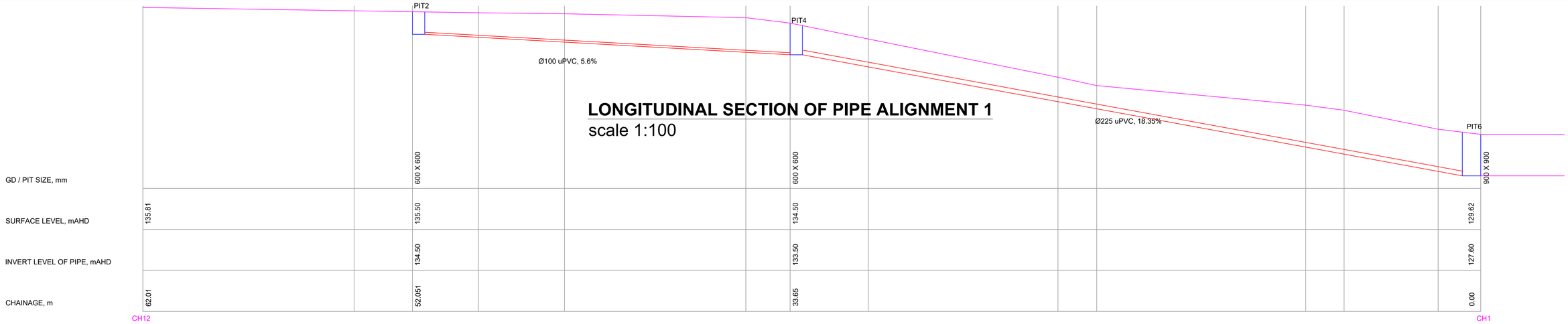
Date: 28/11/2024

Issue: F

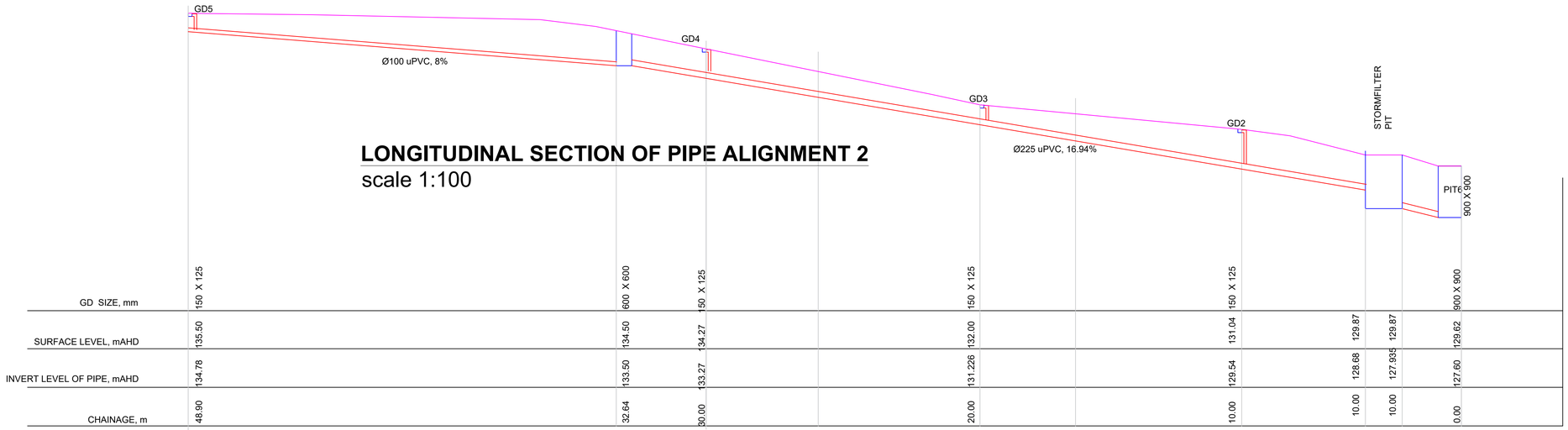
Reviewed By: C.L.A

Job No: SW –152–2307 F

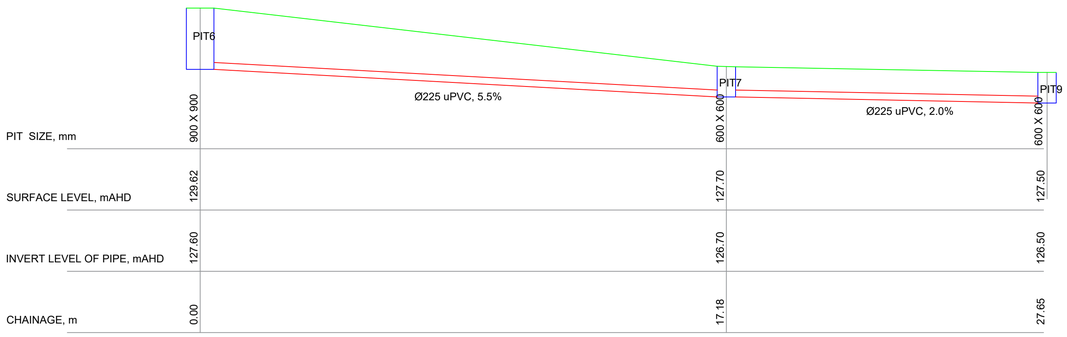
Scale: as shown (A1)



LONGITUDINAL SECTION OF PIPE ALIGNMENT 1
scale 1:100



LONGITUDINAL SECTION OF PIPE ALIGNMENT 2
scale 1:100



LONGITUDINAL SECTION OF PIPE ALIGNMENT 3
scale 1:100

Rev	Description	By	Date
F	ISSUED FOR DA, REVISION FOR CHANGE DRIVEWAY DESIGN	CS	28/11/2024
E	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	06/09/2024
D	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	13/05/2024
C	ISSUED FOR DA, REVISION FOR COUNCIL'S COMMENT	CS	10/11/2023
B	ISSUED FOR DA, REVISION FOR STAGE 1 DEVELOPMENT	CS	18/10/2023
A	ISSUE FOR DA	CS	10/09/2023

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 Iris Street, Beacon Hill NSW

Title: PIPE LONG SECTION SH9

Designed By: Chij Shrestha MIEAust, CPEng, NER

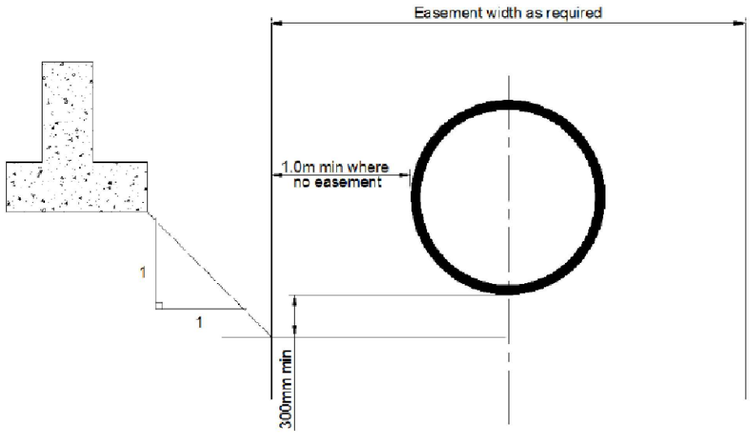
Date: 28/11/2024

Issue: F

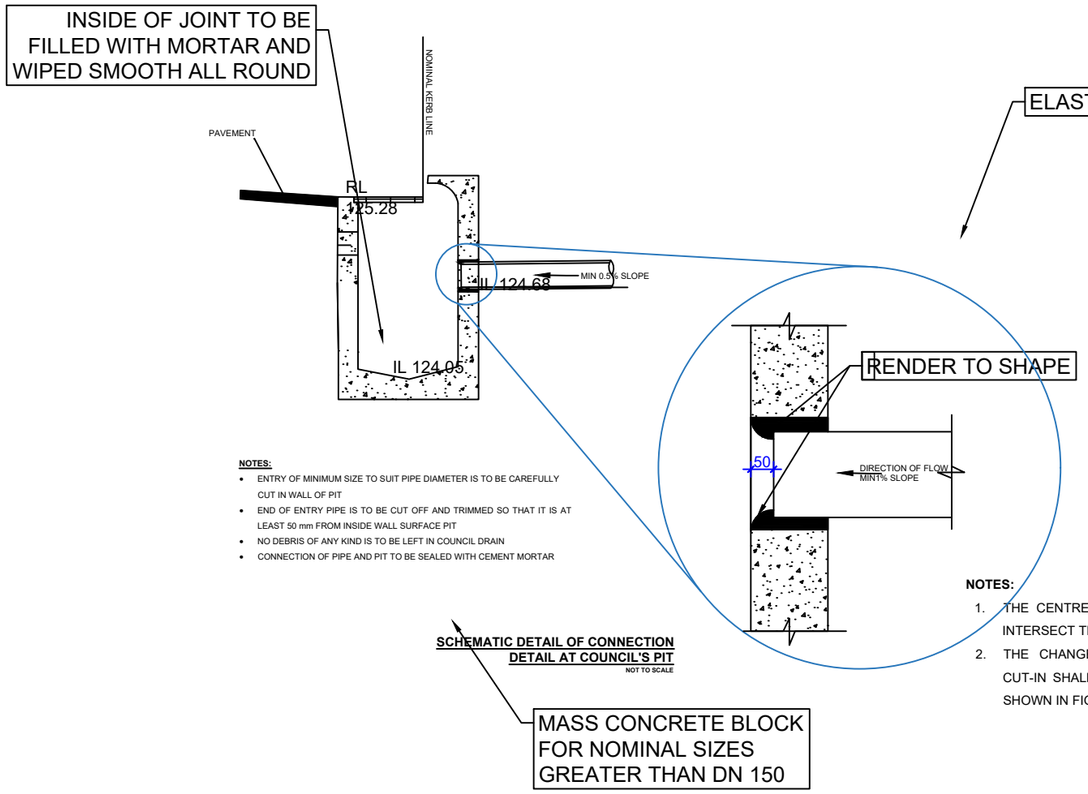
Reviewed By: C.L.A

Job No: SW -152-2307 F

Scale: as shown (A1)



Note: Concrete encasing of Council's drainage system will not be permitted



NOTES:

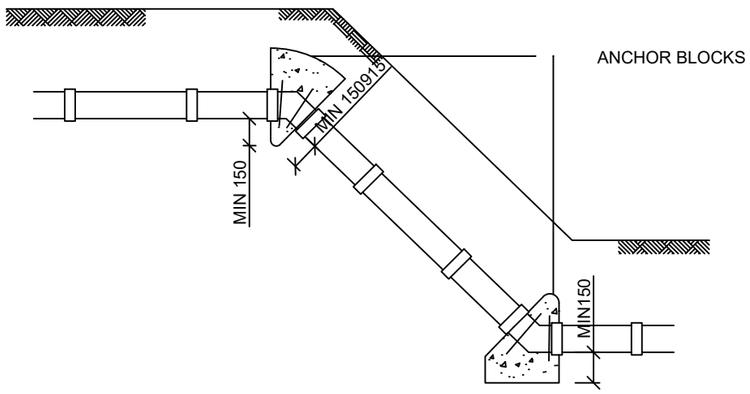
- ENTRY OF MINIMUM SIZE TO SUIT PIPE DIAMETER IS TO BE CAREFULLY CUT IN WALL OF PIT
- END OF ENTRY PIPE IS TO BE CUT OFF AND TRIMMED SO THAT IT IS AT LEAST 50 mm FROM INSIDE WALL SURFACE PIT
- NO DEBRIS OF ANY KIND IS TO BE LEFT IN COUNCIL DRAIN
- CONNECTION OF PIPE AND PIT TO BE SEALED WITH CEMENT MORTAR

SCHEMATIC DETAIL OF CONNECTION DETAIL AT COUNCIL'S PIT
NOT TO SCALE

NOTES:

1. THE CENTRE- LINE OF EACH BRACH SHALL INTERSECT THE INTER-LINE OF THE MAIN LINE
2. THE CHANGE OF DIRECTION OF FLOW A CUT-IN SHALL BE BETWEEN 45° AND 90°, AS SHOWN IN FIGURE

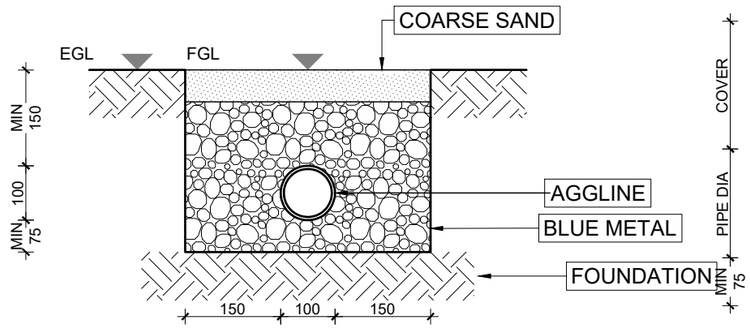
JUNCTION CONNECTION DETAIL
not to scale



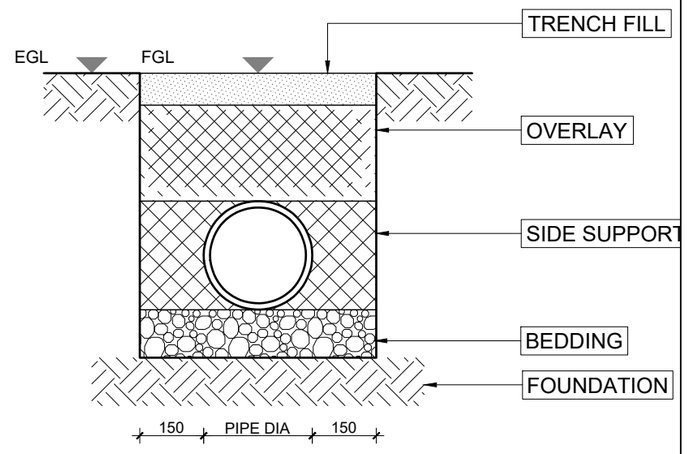
TYPICAL ANCHOR BLOCK DETAIL FOR SLOPE GREATER THAN 1:5
not to scale

NOTE:
WHERE THE GRADIENT OF A SITE OF STORMWATER DRAIN EXCEEDS 1:5, ANCHOR BLOCKS SHALL BE INSTALLED:

a) AT THE BEND OR JUNCTION AT THE TOP AND BOTTOM OF THE STORMWATER DRAIN
b) AT INTERVAL NOT EXCEEDING 3.0 m
c) THICKNESS OF ANCHOR BLOCKS SHOULD NOT BE LESS THAN 150 mm
d) TWO STEEL REINFORCEMENT BAR BARS NOT LESS THAN 10 mm DIA BENT TO A RADIUS ABOUT 200 mm SHALL BE PROVIDED TO ANCHOT BLOCKS
e) ANCHOR BLOCKS SHOULD NOT COVER ANY FLEXIBLE JOINTS



AGGLINE TRENCH DETAIL
scale 1:10



STANDARD PIPE TRENCH DETAIL
scale 1:10

Rev	Description	By	Date
E	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	06/09/2024
D	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	13/05/2024
C	ISSUED FOR DA, REVISION FOR COUNCIL'S COMMENT	CS	10/11/2023
B	ISSUED FOR DA, REVISION FOR STAGE 1 DEVELOPMENT	CS	18/10/2023
A	ISSUED FOR DA	CS	10/09/2023

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 IRIS STREET, BEACON HILL, NSW

Title: PIPE CONNECTION AND TRENCH DETAIL SH10

Designed By: Chij Shrestha MIEAust, CPEng, NER

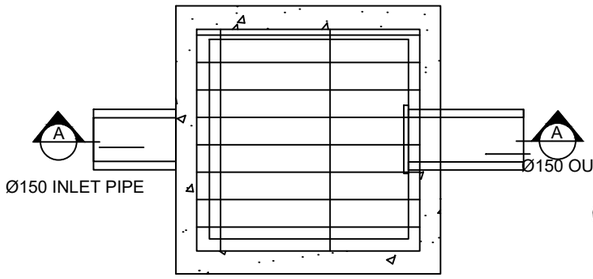
Date: 06/09/2024

Issue: E

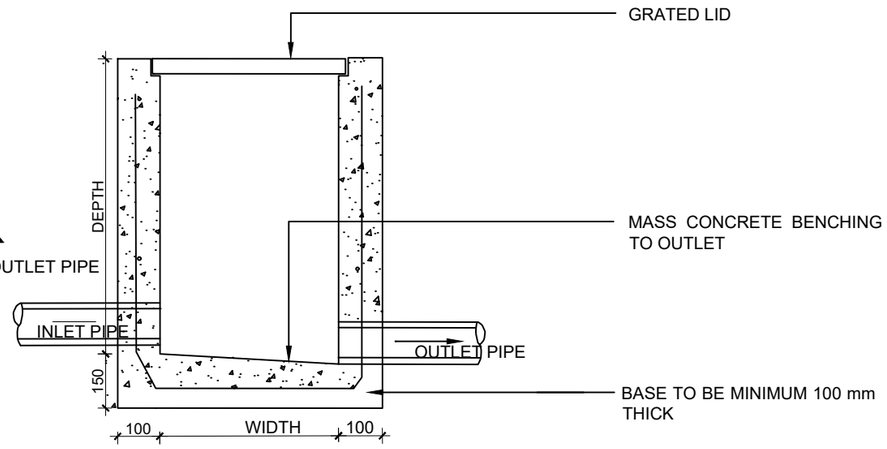
Reviewed By: C.L.A

Job No: SW -152-2307 F

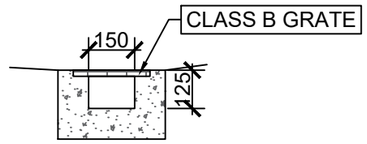
Scale: as shown (A3)



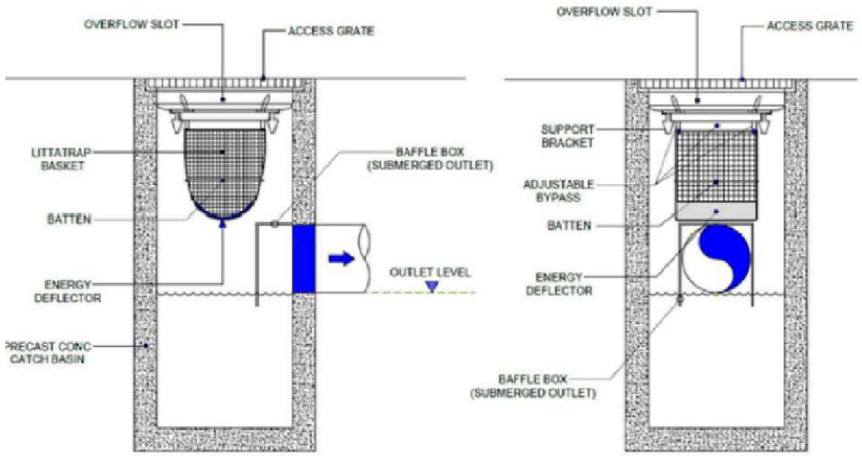
TYPICAL PIT PLAN
not to scale



TYPICAL PIT DETAIL
not to scale



TYPICAL GRATED DRAIN
not to scale



TYPICAL GPT DETAIL
not to scale

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 IRIS STREET, BEACON HILL, NSW

Title: PIT DETAIL SH11

Designed By: Chij Shrestha MIEAust, CPEng, NER

Date: 06/09/2024

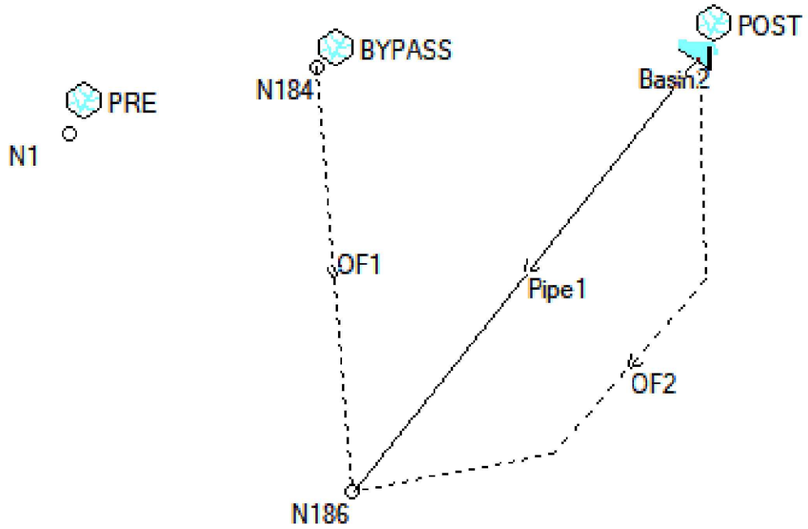
Issue: E

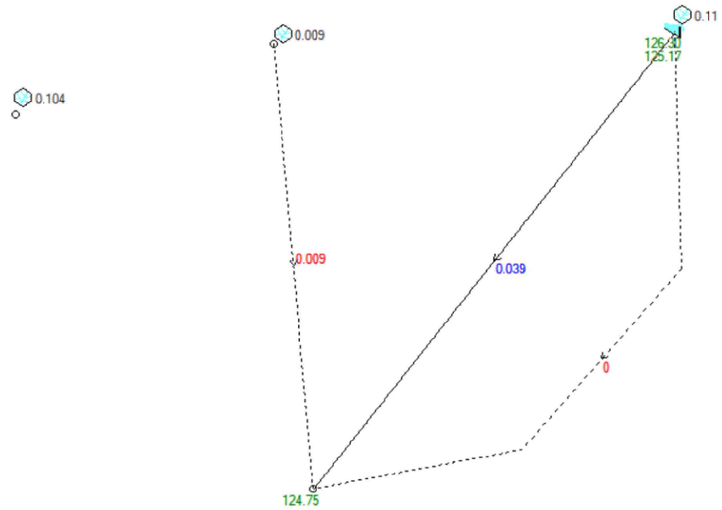
Reviewed By: C.L.A

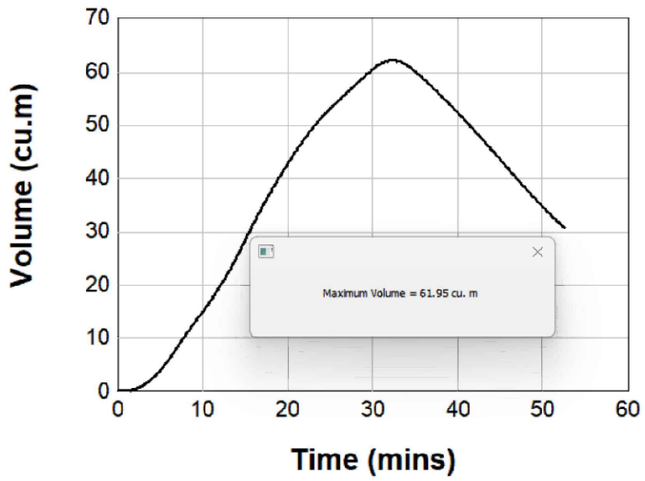
Job No: SW –152–2307 F

Scale: as shown (A3)

DRAINS MODEL FOR OSD AND RESULTS







Rainfall events	Pre Development flow	Post Development Flow				
		Without OSD	With OSD			OSD Volume
% AEP	L/s		Orifice flow	Bypass Flow	Total Flow Post Development	
		L/s	L/s	L/s	L/s	m^3
20% AEP	41	60	23	4	27	26.76
5% AEP	71	85	31	6	37	41.56
1% AEP	104	119	39	9	48	61.95

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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 IRIS STREET, BEACON HILL, NSW

Title: DRAINS MODEL SH12

Designed By: Chij Shrestha MIEAust, CPEng, NER

Date: 06/09/2024

Issue: E

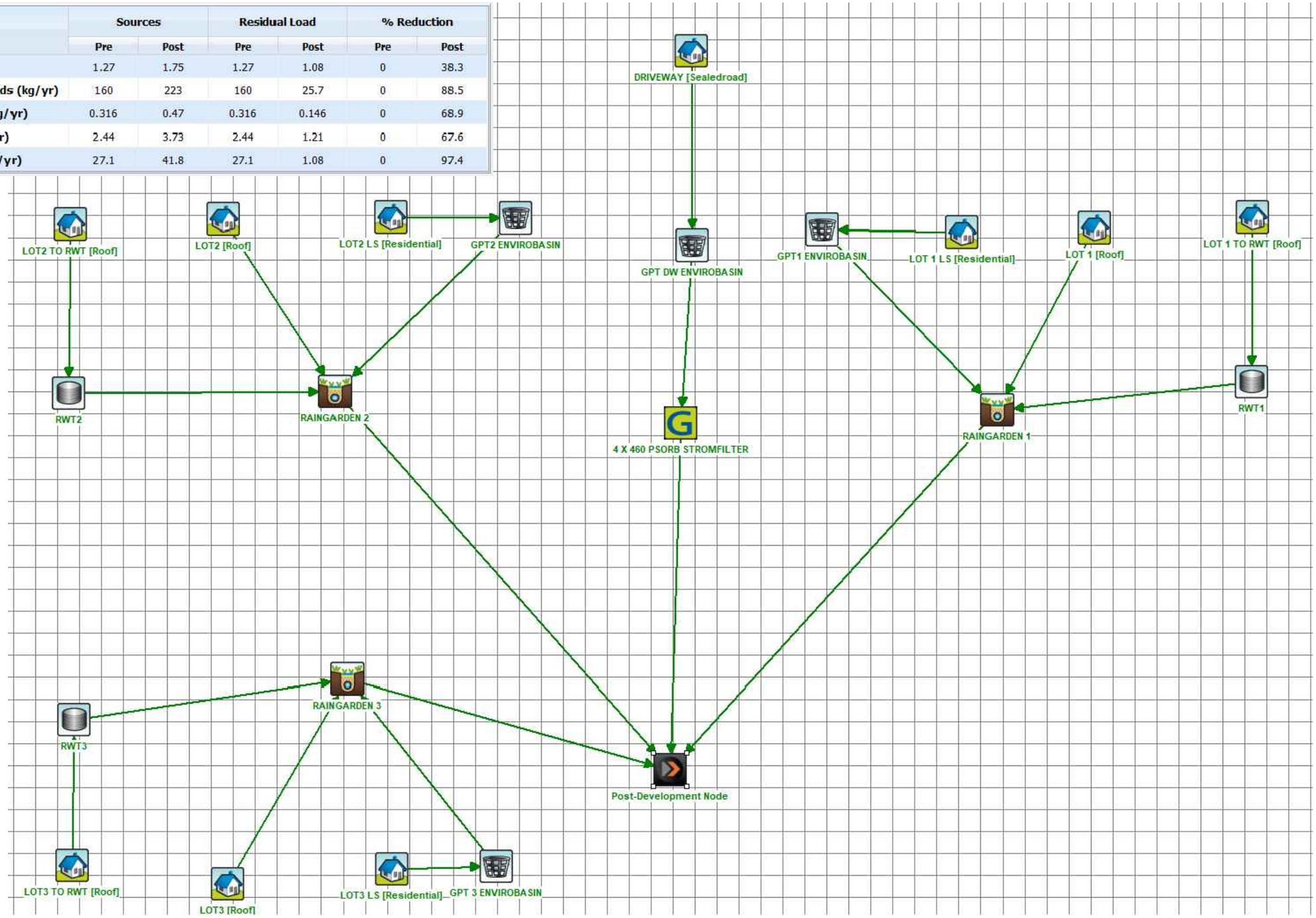
Reviewed By: C.L.A

Job No: SW –152–2307 F

Scale: as shown (A3)

MUSIC MODEL LAYOUT PLAN

	Sources		Residual Load		% Reduction	
	Pre	Post	Pre	Post	Pre	Post
Flow (ML/yr)	1.27	1.75	1.27	1.08	0	38.3
Total Suspended Solids (kg/yr)	160	223	160	25.7	0	88.5
Total Phosphorus (kg/yr)	0.316	0.47	0.316	0.146	0	68.9
Total Nitrogen (kg/yr)	2.44	3.73	2.44	1.21	0	67.6
Gross Pollutants (kg/yr)	27.1	41.8	27.1	1.08	0	97.4



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D	ISSUED FOR DA, REVISION FOR CHANGE IN PLAN	CS	13/05/2024
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Client: Maree Jaloussis Hayes

Project: Proposed Development at 107 IRIS STREET, BEACON HILL, NSW

Title: MUSIC MODEL PLAN SH 13

Designed By: Chij Shrestha MIEAust, CPEng, NER

Date: 06/09/2024

Issue: E

Reviewed By: C.L.A

Job No: SW –152–2307 F

Scale: as shown (A3)