

Hyecorp Property Group
Heritage House
Suite 1, 256 Victoria Ave
Chatswood NSW 2067

Wednesday, 7 October 2020

DA-2019/247 Engineering Referral Comments

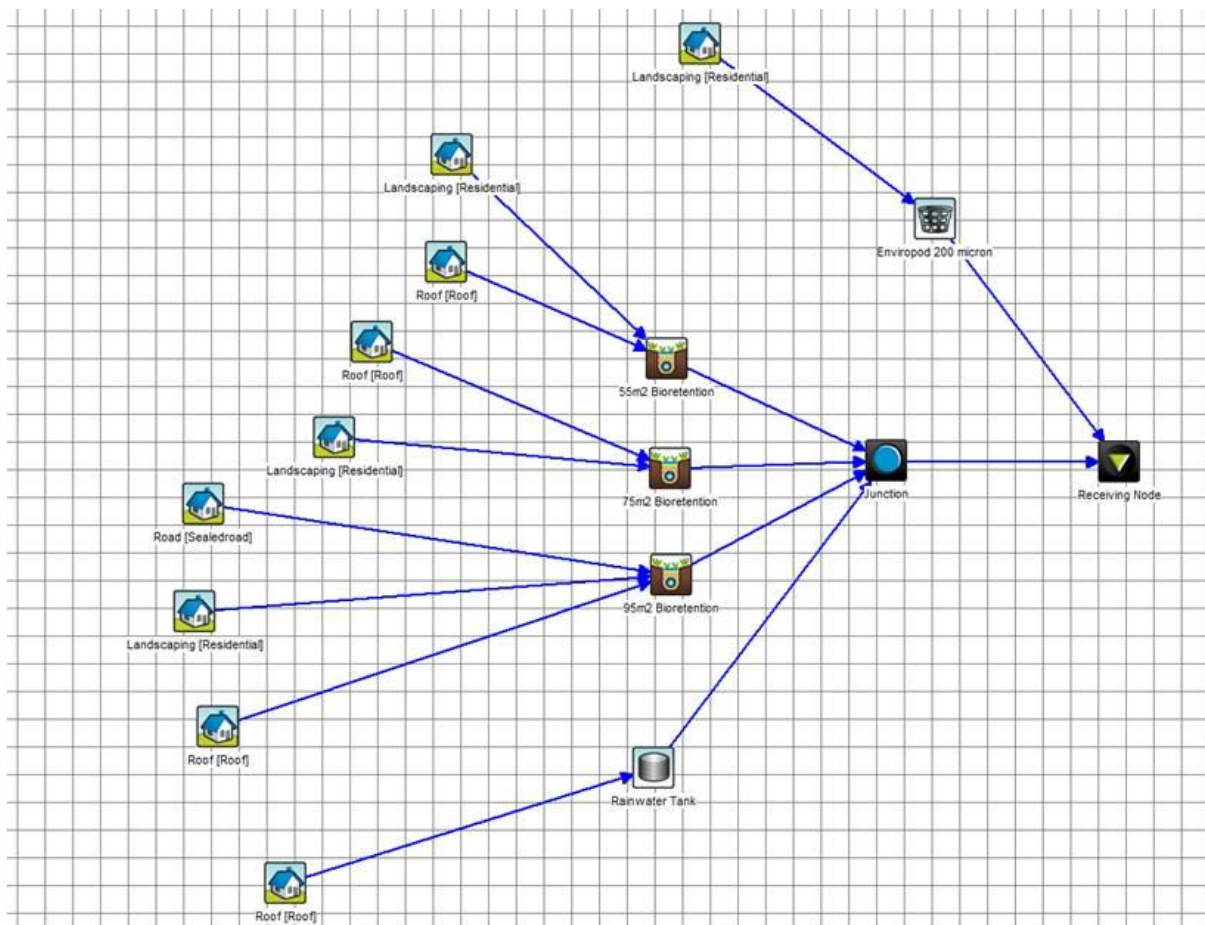
We are pleased to offer the following responses to Council's questions. This response is laid out with Council's comment and then our response to each point. We would be pleased to discuss this further if required.

A summary of the MUSIC analysis is required. Council is not able to use the model provided, and we require:

- *The model layout*

See below for the updated model layout

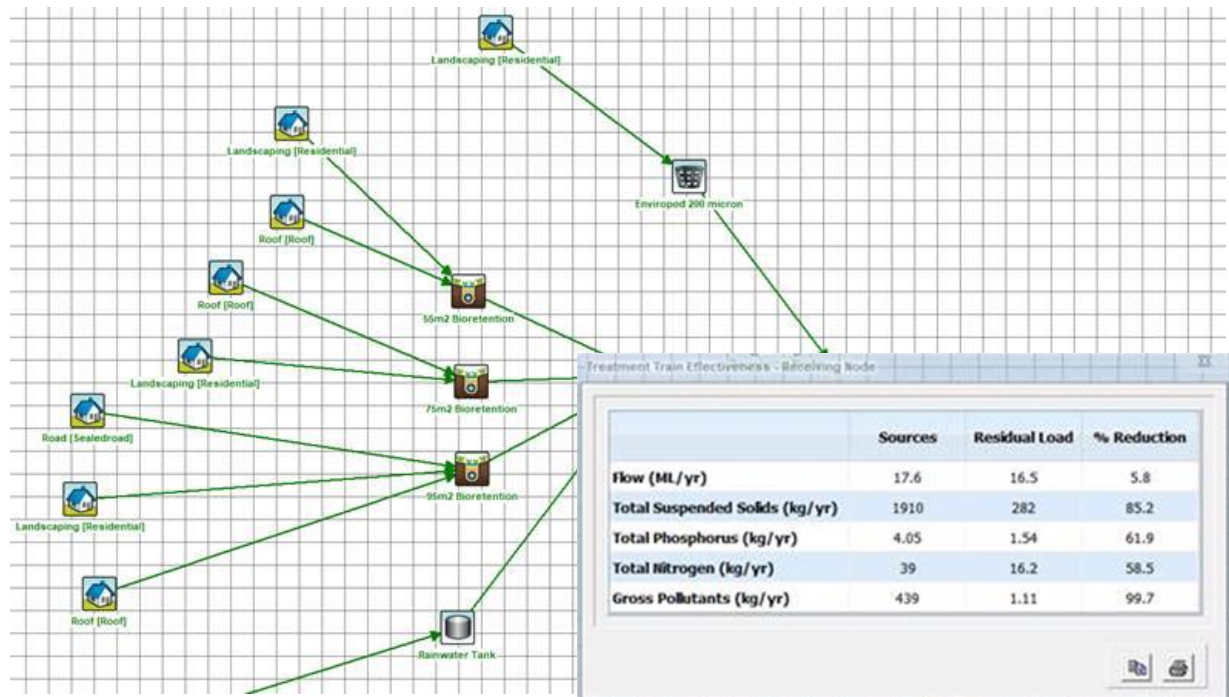
Figure 1 – Model Layout



- *A summary of the results*

See below for a copy of the results output table

Figure 2 – Model Results



- *Details of what internal non-potable uses are proposed for the rainwater tank, to support the usage rate used in the model for the rainwater tank*

For the purposes of the MUSIC model, the re-use rate was conservatively modelled as a minimum of 2.5kL per day for the proposed non-potable internal use (toilet flushing only). For developments of this type, typically a daily re-use rate of 0.1kL/day/dwelling for toilet flushing is considered acceptable in accordance with the recommendations of the Sydney Catchment Authorities MUSIC Modelling Guidelines. As such, this means that a minimum of 25 apartments will need to be serviced by the tank to achieve the water quality targets. We note that the modelled rainwater tank volume / daily re-use used in the MUSIC model have been specified to determine the minimum base line targets needed to achieve the water quality requirements for the site – this will allow for different options to be explored during the subsequent detailed design phase (including potential larger storage volumes to service more apartments, external uses such as landscape irrigation etc) to achieve higher standards where feasible.

- *Details of the treatment rate assumed for the enviropod inserts*

The removal rates adopted for the enviropod were based on manufacturers specifications as follows with a treatable flow rate of 20L/s:

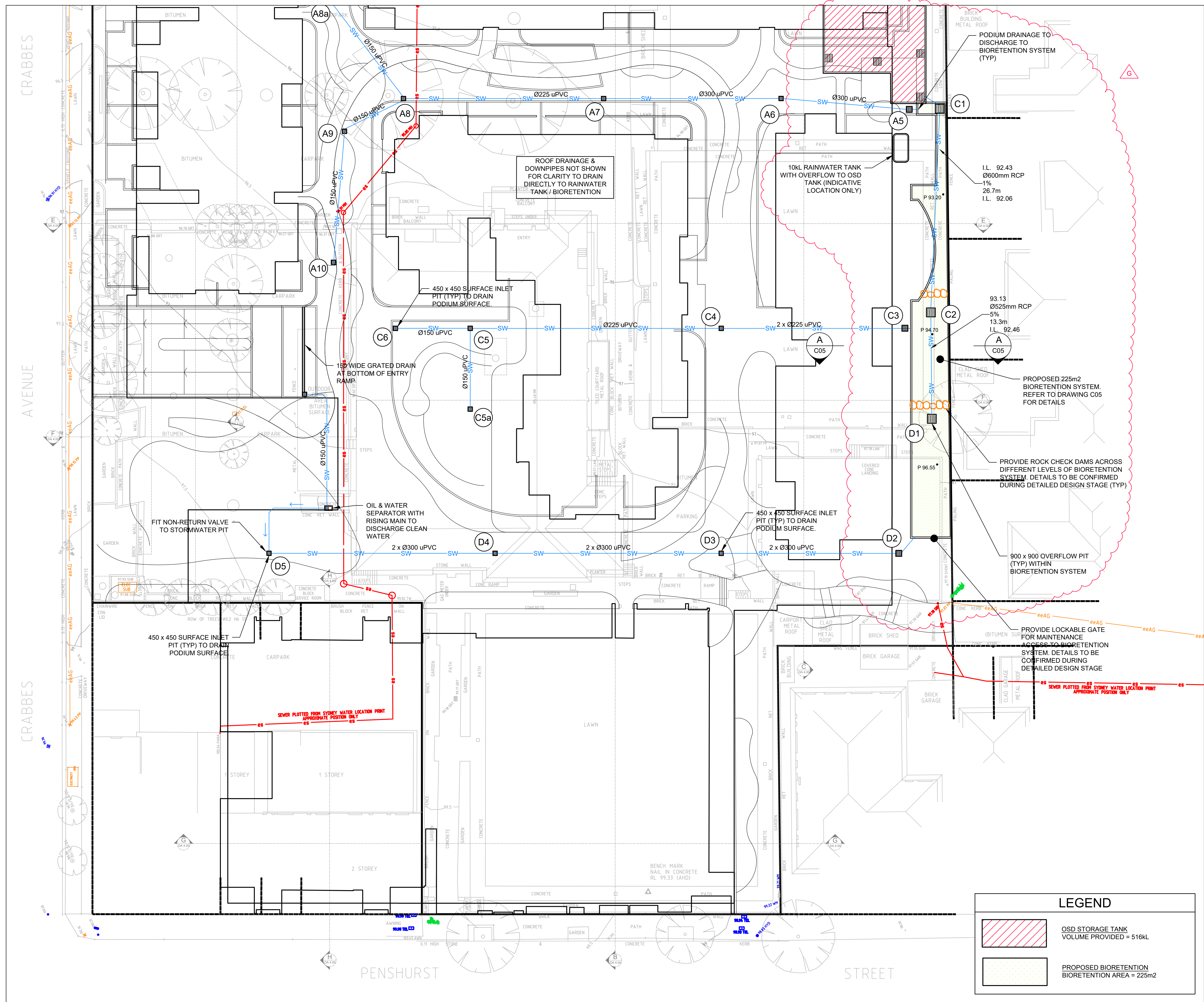
- TSS = 54%
- TP = 30%
- TN = 21%
- GP = 95%

We trust you find the above responses acceptable at this concept design phase for Development Application.

Yours Sincerely,

infrastructure & development consulting

Dean Reilly
Senior Civil Engineer



Legend

STORMWATER NOTES

SUSPENDED PIPE NETWORK SYSTEM

- FOR THE SUSPENDED PIPE SYSTEM, ONLY THE TRUNK DRAINAGE NETWORK HAS BEEN SHOWN ON THESE PLANS. DETAILS OF BRANCH CONNECTIONS TO THE TRUNK NETWORK FOR MINOR DRAINAGE ELEMENTS WITHIN THE PODIUM AREAS (SUCH AS ADDITIONAL GRATED TRENCH DRAINS, RAINWATER OUTLETS AND THE LIKE) TO BE CONFIRMED DURING THE SUBSEQUENT DETAILED DESIGN STAGE;
- STORMWATER DRAINAGE DESIGN CRITERIA:
 - PIPE SYSTEM = 100yr ARI
- THE SUSPENDED PIPE NETWORK NOMINATED TO SERVICE THE PODIUM AREAS SHALL BE UPVC (DWV S8N) OR APPROVED EQUIVALENT AT MIN 1% LONGITUDINAL GRADE (U.N.O.);
- THE PIPES ARE TO BE EITHER SUSPENDED OFF WALL OR UNDER CEILING WITHIN THE BASEMENT CARPARK AREAS VIA 'SWIFT' GALVANISED STEEL SERVICES HANGAR SYSTEM OR APPROVED EQUIVALENT AT MIN 1.5m INTERVALS;
- THE SUSPENDED PIPE SYSTEM IS TO BE FITTED WITH APPROPRIATE FITTINGS, ADAPTORS AND SADDLES TO ENSURE WATER TIGHTNESS IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS;
- PROVIDE WATER TIGHT MAINTENANCE INSPECTION OPENINGS AT REGULAR INTERVALS ALONG THE NETWORK;
- ROOFWATER FROM THE NEW BUILDINGS TO DISCHARGE DIRECTLY TO EITHER THE BELOW GROUND RAINWATER HARVESTING TANK OR THE BIORETENTION SYSTEM VIA A SEPARATE CONVENTIONAL OR SIPHONIC DRAINAGE NETWORK. DETAILS TO BE CONFIRMED BY THE HYDRAULIC ENGINEER DURING THE SUBSEQUENT DETAILED DESIGN STAGE.

IN-GROUND PIPE NETWORK SYSTEM

- ALL STORMWATER PIPES Ø375 TO Ø600 SHALL BE CLASS 2 APPROVED SIGPOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINT (UNO);
- ALL STORMWATER PIPES Ø675 OR LARGER SHALL BE CLASS 3 APPROVED SIGPOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINT (UNO);
- ALL UPVC STORMWATER PIPES TO BE DWV CLASS GRADE S8N IN ACCORDANCE WITH AS 1260 (UNO);
- IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THAT THE STORMWATER PIPE CLASSES SUIT THEIR CONSTRUCTION EQUIPMENT AND METHODOLOGY AND TO CHECK ALL CONSTRUCTION LOADINGS ON THE PIPES. THE CONTRACTOR MUST ENSURE THAT THE MINIMUM COVER ABOVE EACH PIPE IS MAINTAINED AT ALL TIMES;
- ALL STORMWATER PIPES TO BE LAID AT A MINIMUM GRADE OF 1% (UNO);
- PIPE BEDDING TO BE TYPE H2 (UNO) FOR PIPES NOT UNDER PAVEMENTS AND TYPE HS2 FOR PIPES UNDER PAVEMENTS AS PER AS 3725. IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE (UNO), WHERE PIPE IS UNDER PAVEMENT BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 S 2.1;
- ALL CONNECTIONS TO EXISTING DRAINAGE PITS TO BE MADE IN A TRADESMAN LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY TO BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH WITH NO PROTRUSIONS;
- ALL CAST-IN-SITU CONCRETE STORMWATER PITS TO BE MINIMUM 32MPa AT 28 DAYS (UNO);
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- STORMWATER PITS DEEPER THAN 1m TO HAVE STEP IRONS INSTALLED IN ACCORDANCE WITH THE LOCAL OR STATUTORY AUTHORITY REQUIREMENTS;
- 3m LENGTH OF SUBSOIL DRAIN WRAPPED IN APPROVED FILTER SOCK TO BE PROVIDED AT THE INVERT OF EACH INCOMING UPSTREAM PIPE ON EACH PIT;
- DRAINAGE LINES ON PLAN ARE DIAGRAMMATIC ONLY AND PIPE CENTRELINES ARE TO ENTER AND EXIT PITS AT THE CENTRE OF THE RESPECTIVE PIT WALLS (UNO);
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Rev	Date	Description	Drawn	Appr



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CLUB WILLOUGHBY
26 CRABBES AVENUE
NORTH WILLOUGHBY



Drawing Title

STORMWATER MANAGEMENT PLAN
SHEET 1 of 2

Scale:

1:250 @ A1

Status

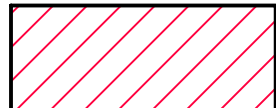
FOR DA APPROVAL

19013 - DA - C01

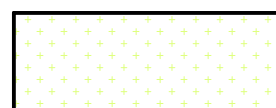
Revision

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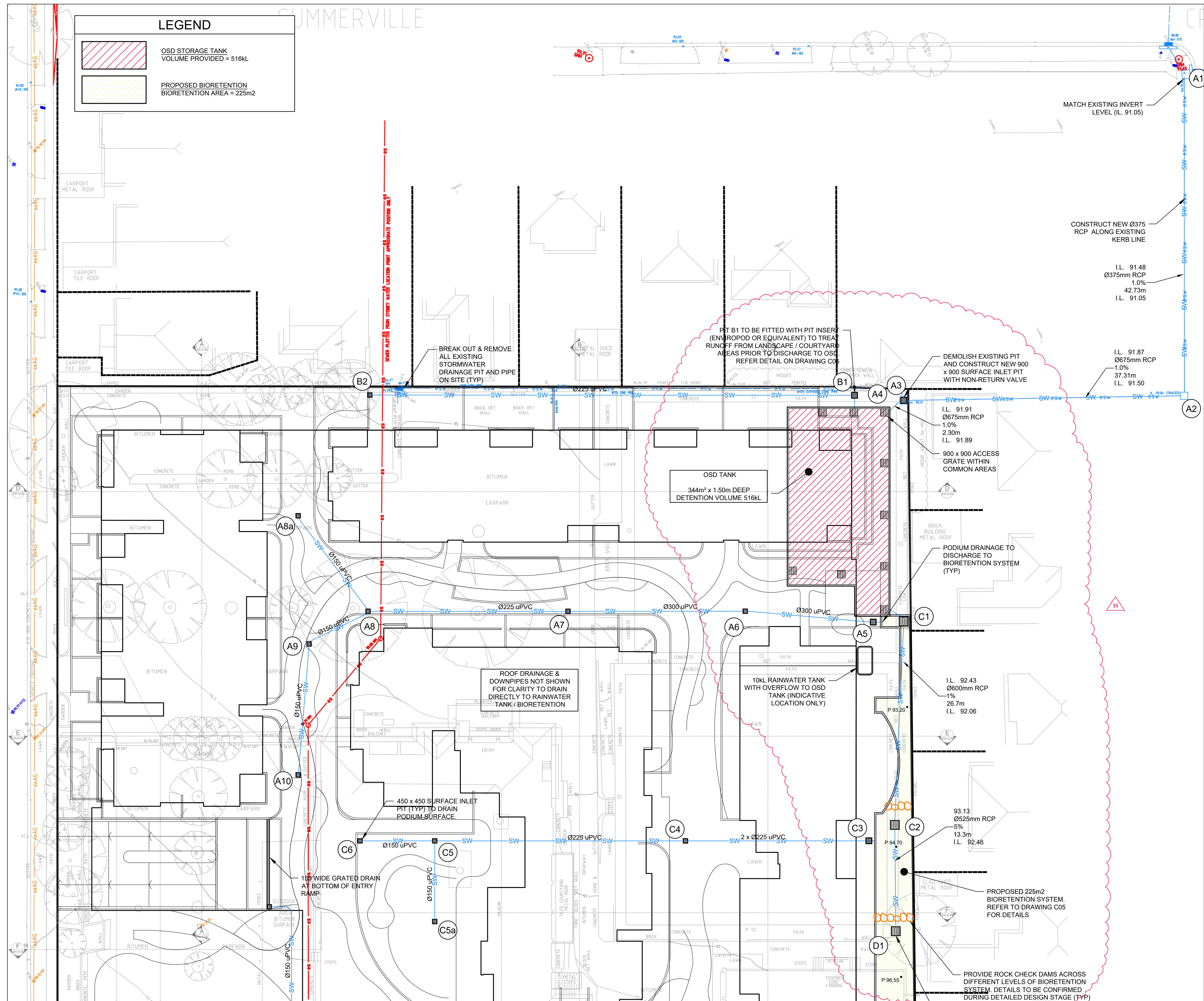
LEGEND



OSD STORAGE TANK
VOLUME PROVIDED = 516kL



PROPOSED BIORETENTION
BIORETENTION AREA = 225m2



- ### STORMWATER NOTES
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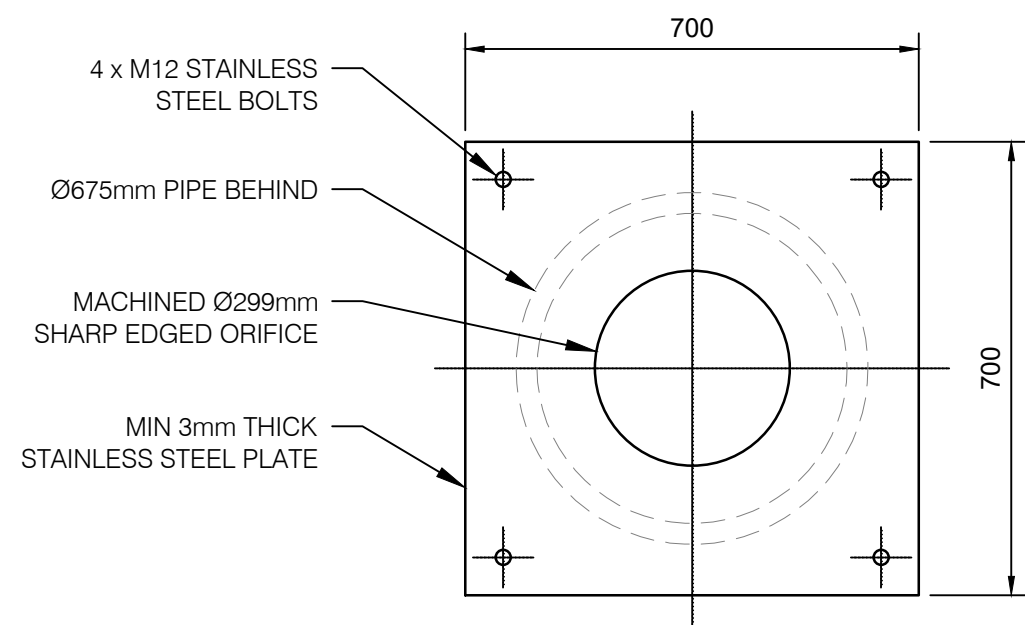
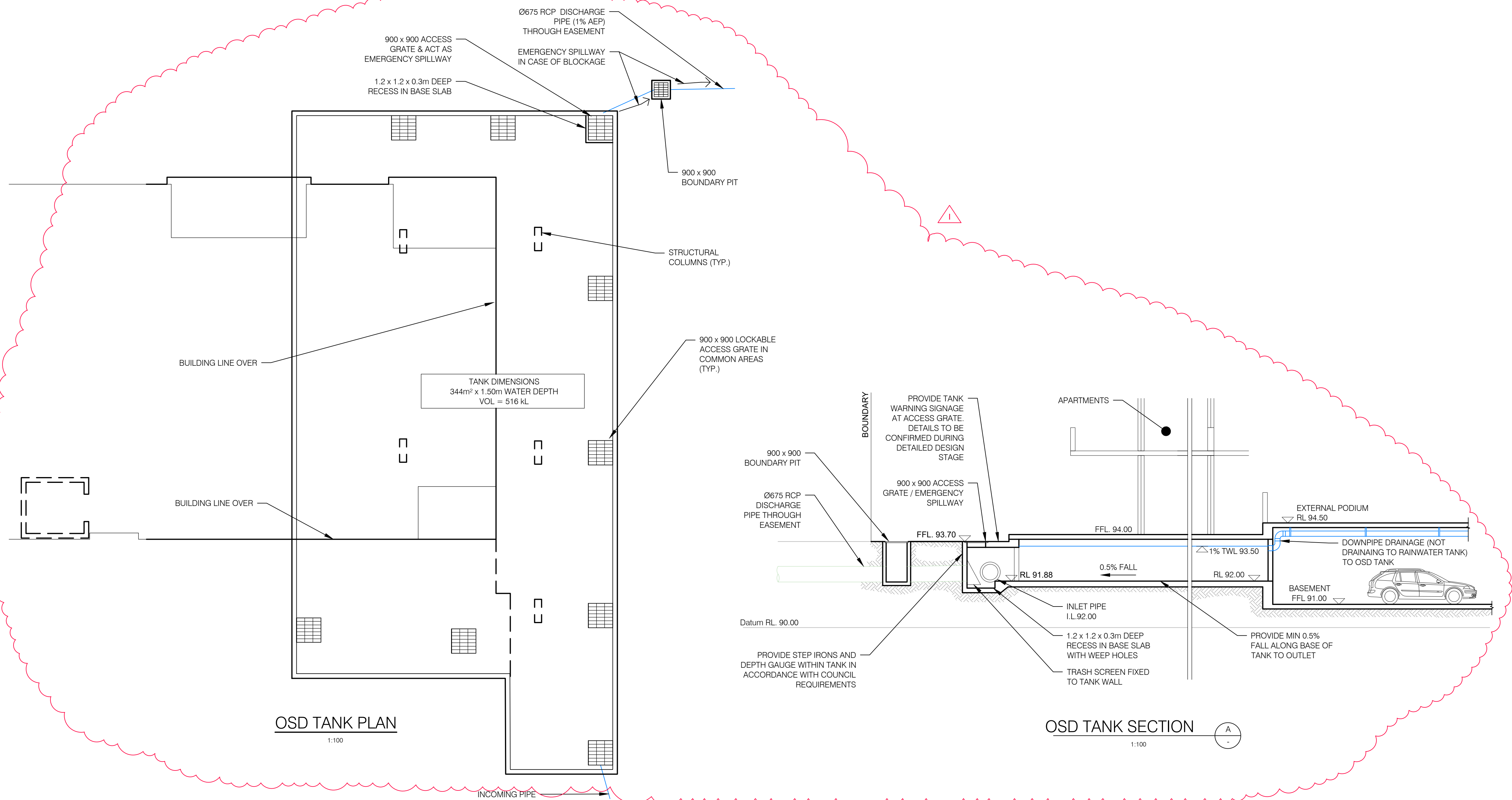


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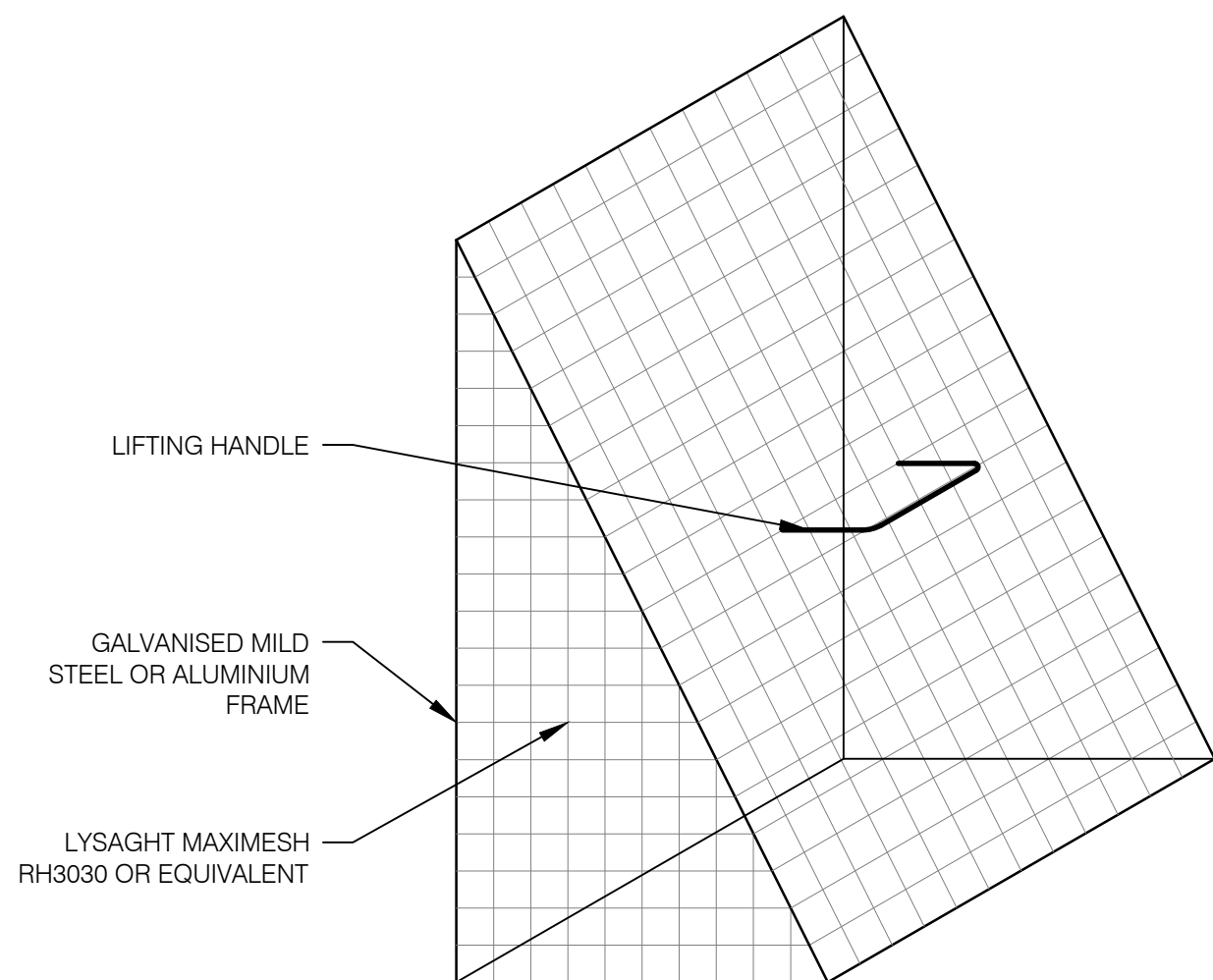
STORMWATER MANAGEMENT PLAN
SHEET 2 of 2

Scale: 1:250 @ A1 Status: FOR DA APPROVAL

19013 - DA - C02 Revision: H



ORIFICE PLATE DETAIL
NOT TO SCALE



TRASH SCREEN DETAIL
NOT TO SCALE

Legend

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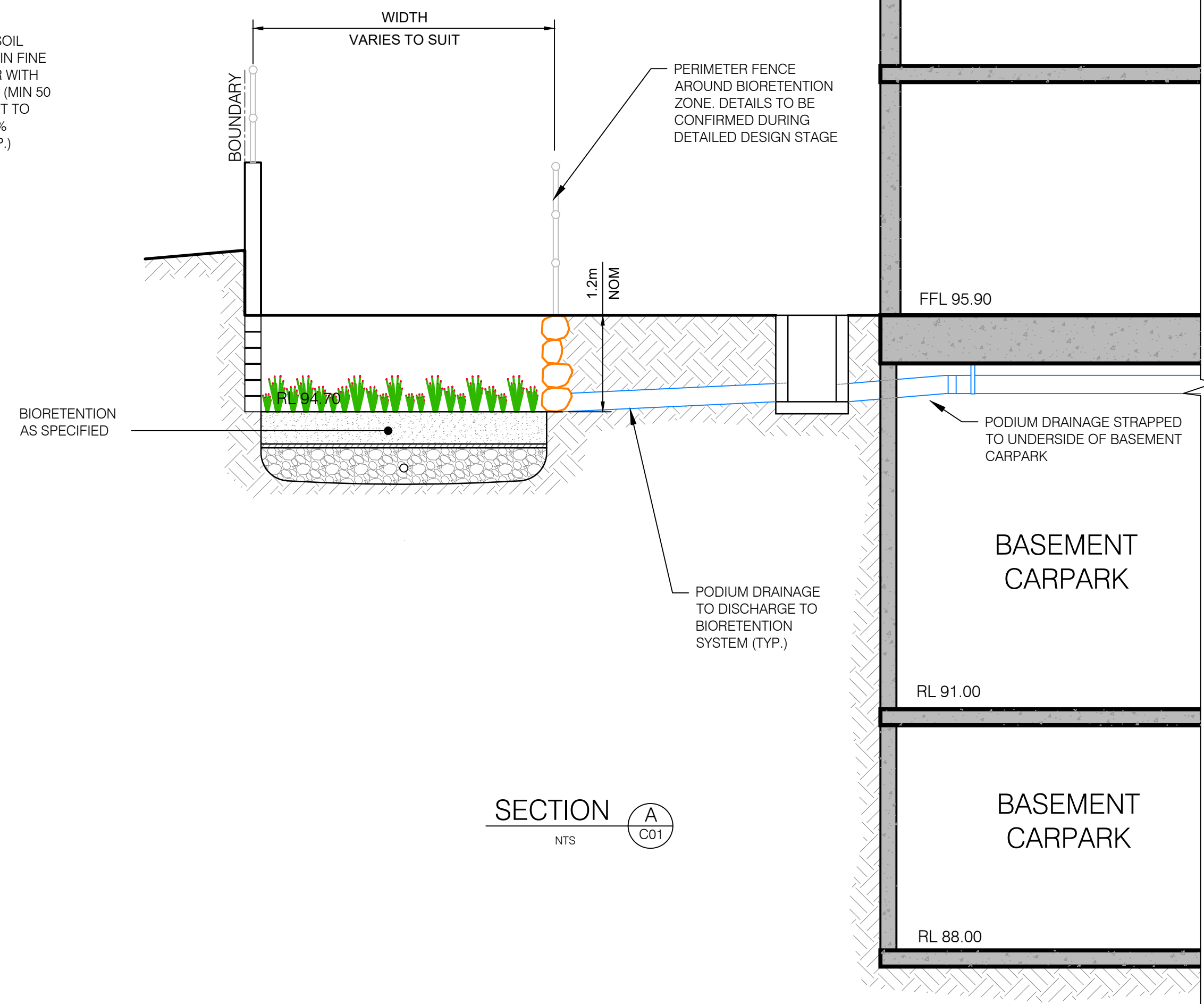
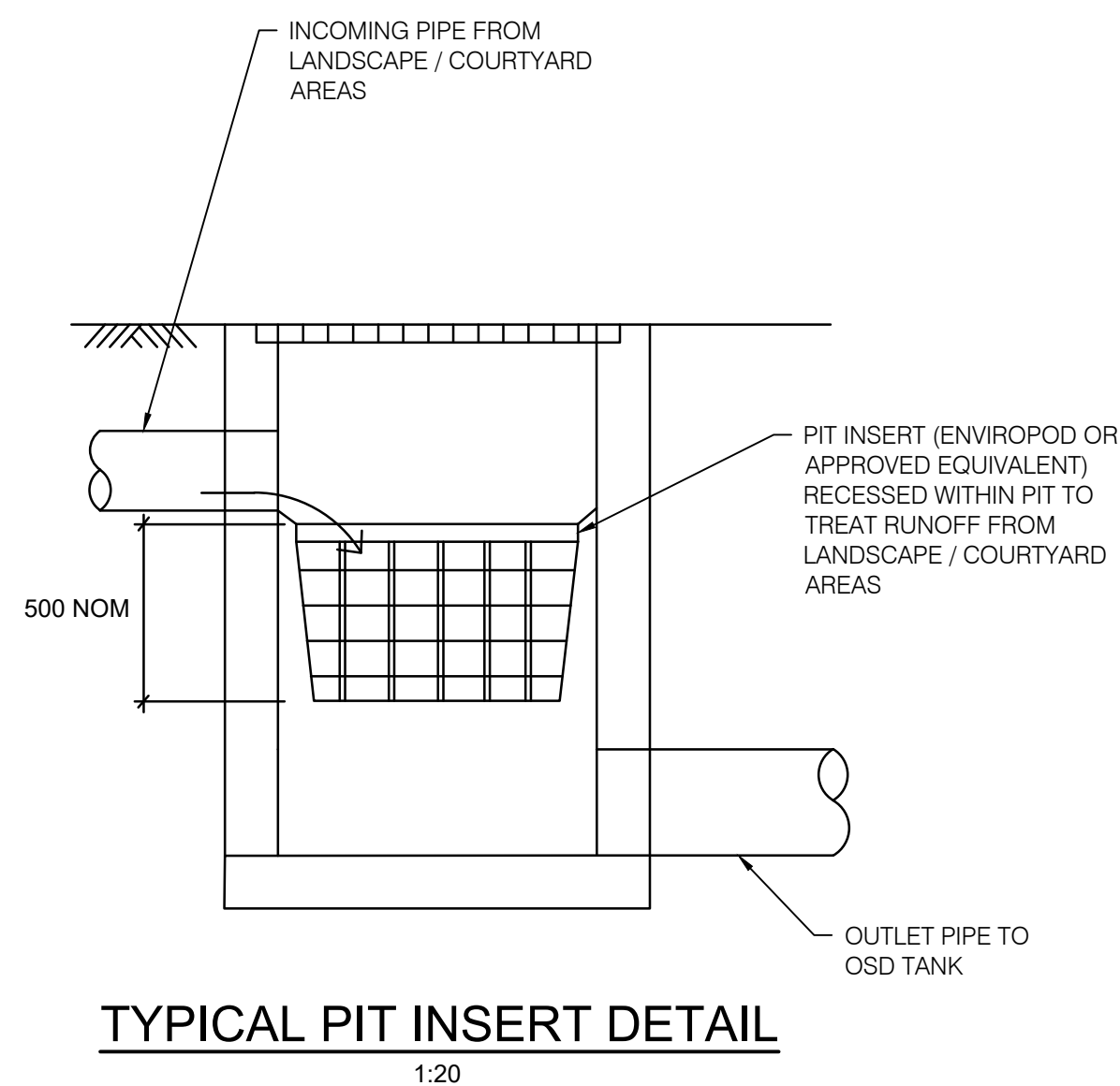
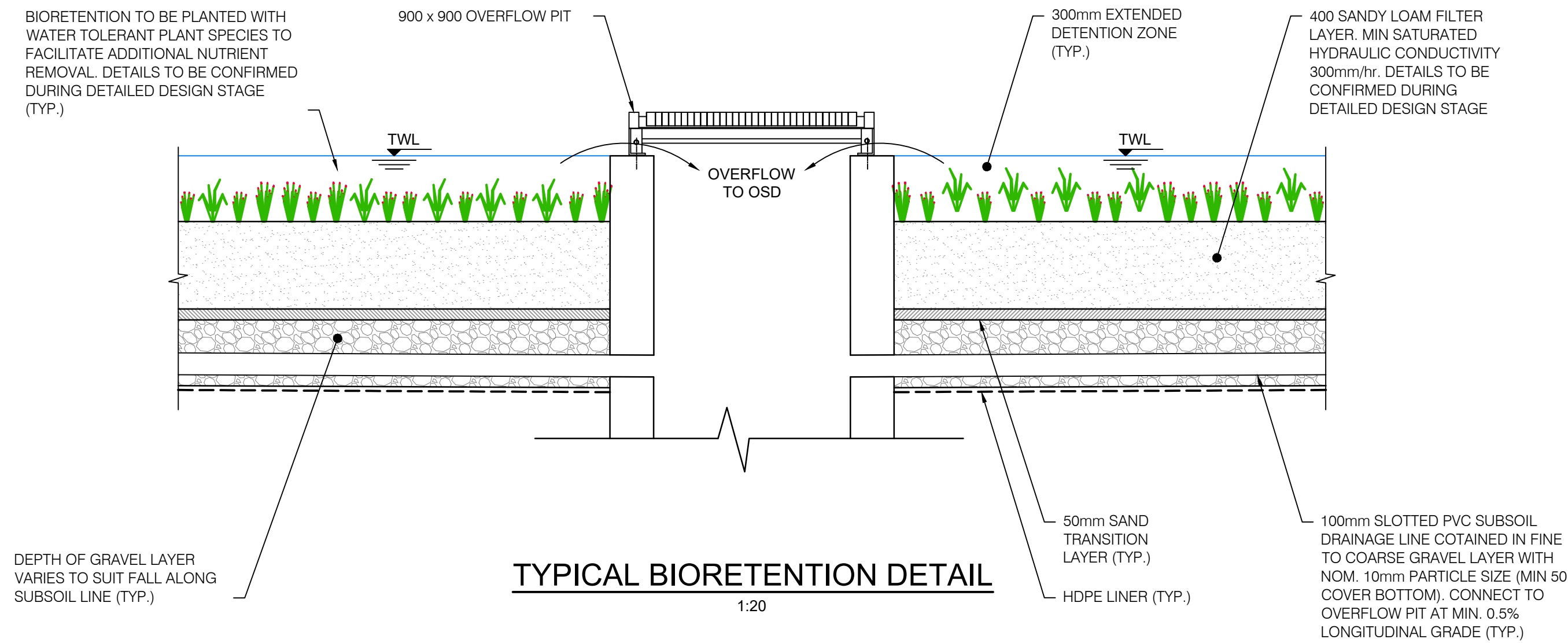
ON-SITE DETENTION TANK DETAILS
SHEET 1 of 1

Scale: 1:100 @ A1

Status: FOR DA APPROVAL

19013 - DA - C04

Revision
1



Legend

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Drawing Title

STORMWATER BASIN DETAILS

Scale: 1:20 @ A1

Status: FOR DA APPROVAL

Drawing Number: 19013 - DA - C05

Revision: E