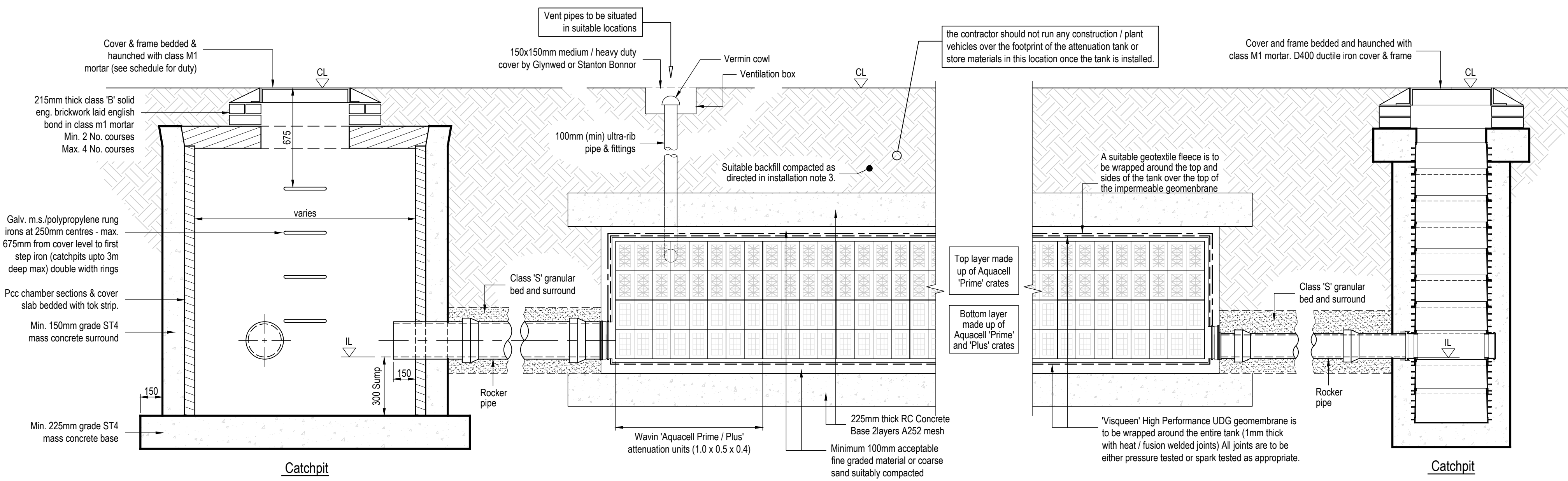
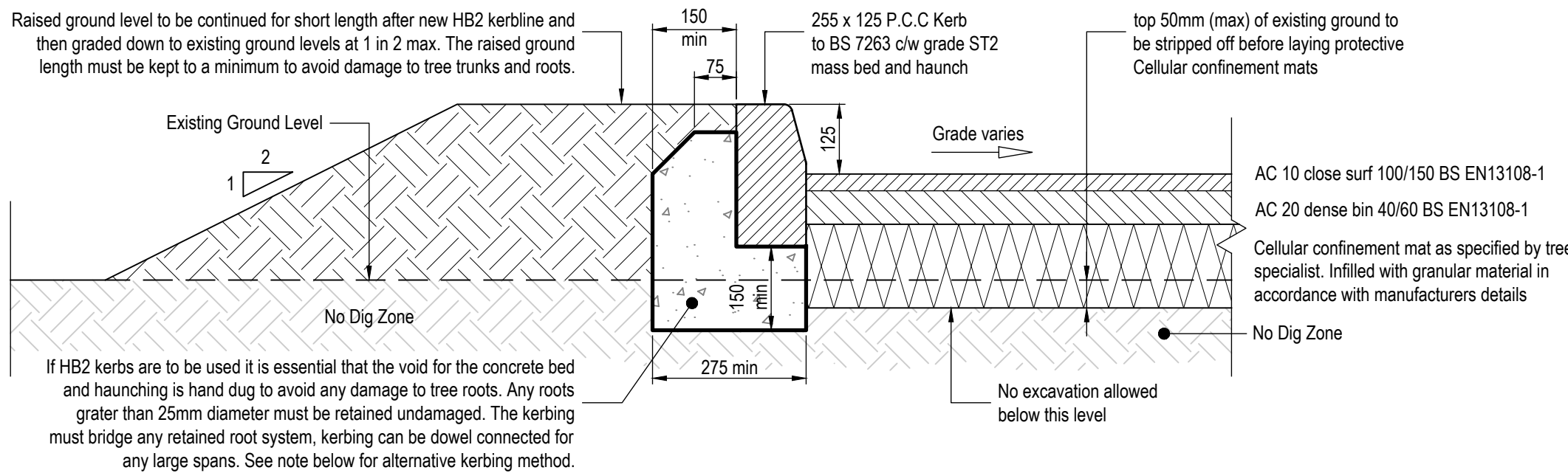
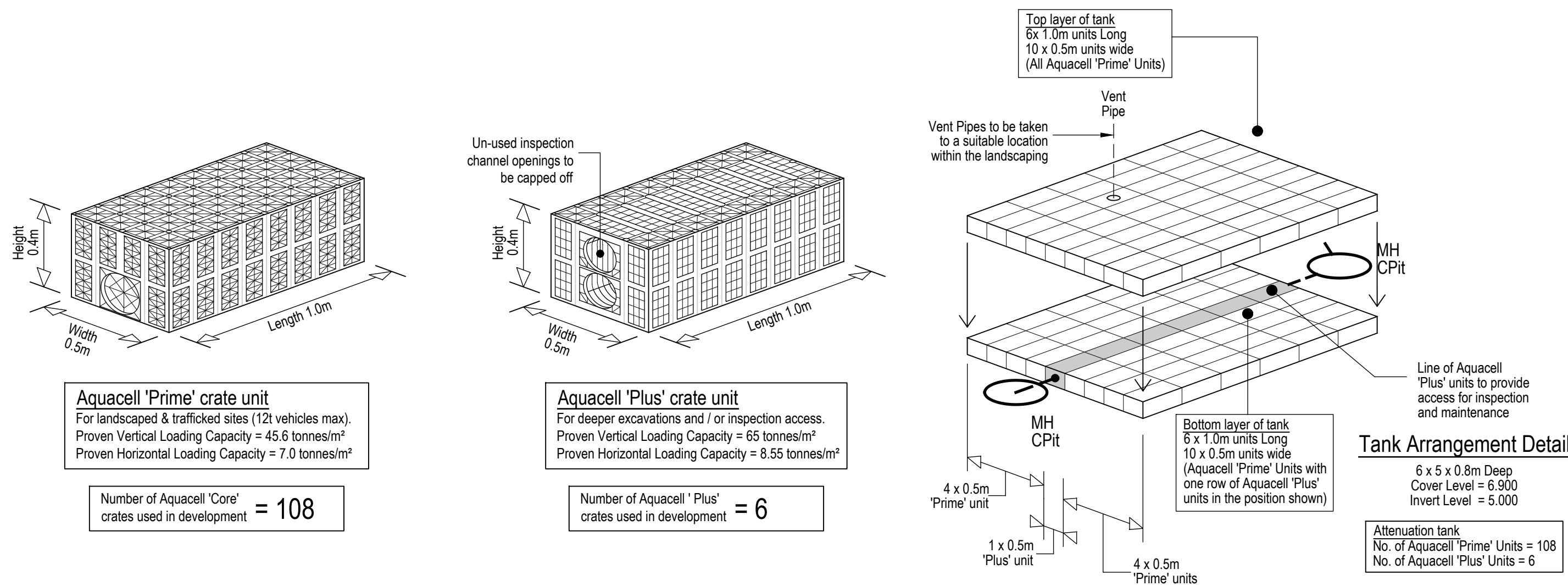




### Wavin Aquacell 'Prime / Plus' Attenuation Tank

SCALE = 1:20

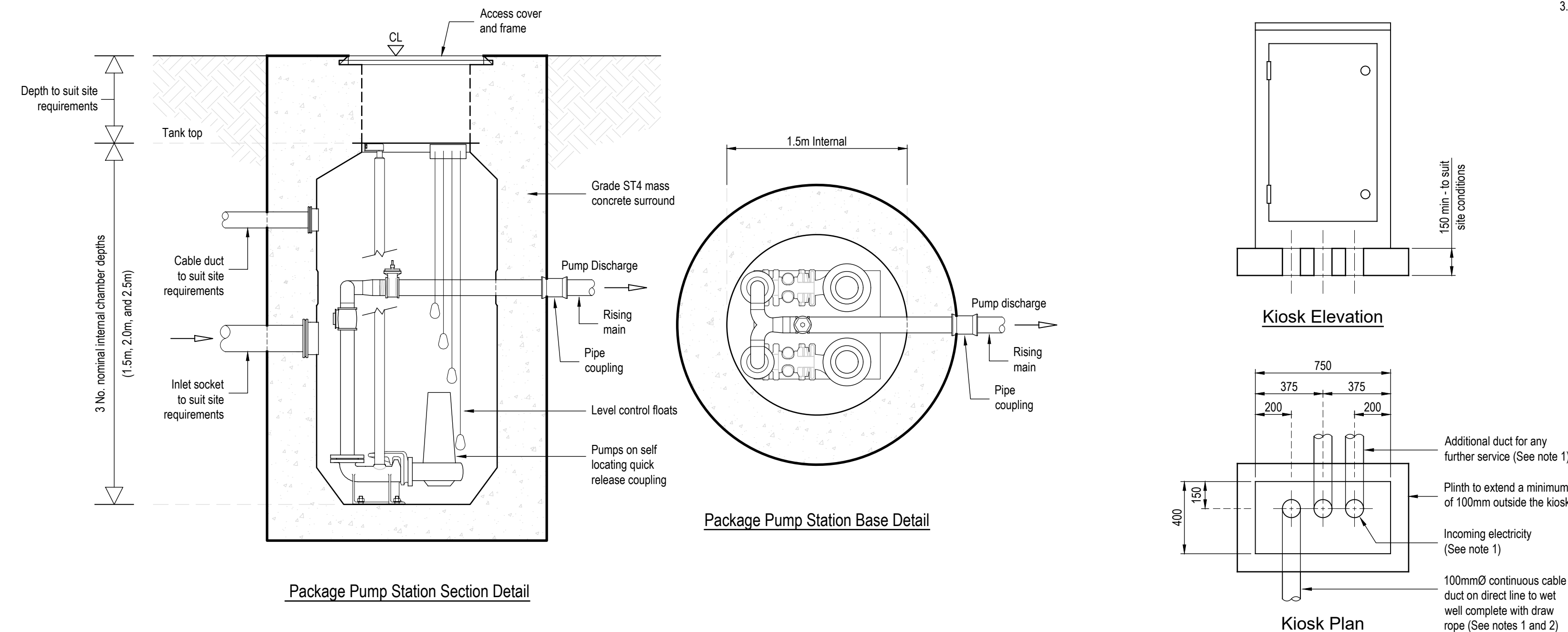
Note:  
1. Refer to drainage plans for pipe arrangements, tank sizes and levels.



### Light Duty Macadam Car Park with Cellular Confinement Mat Construction Detail

SCALE = 1:10

Note:  
1. Pegged down sleepers could be used to form an edging along the tree protection line in lieu of the HB2 kerbs specified above. This would require no additional excavation but would not necessarily be in keeping with the site features.  
2. The car park surfacing is to be laid as specified in the 'Arboricultural Method Statement'.  
3. Any roots greater than 25mm diameter must be retained undamaged.



### Series 1000 Package Pumping Station Construction Detail

SCALE = 1:20

Note:  
This detail is only an indicative arrangement. The final pump depth and layout is subject to design.

### Pump Station Control Kiosk

SCALE = 1:20

Notes:  
1. Ducts shown diagrammatically and are to be laid on the most direct line to suit the site and the services being carried, avoiding any acute changes in direction.  
2. Maximum duct length to be 4.0m

### Specific notes for modular crate installation

- This drawing is to be read in conjunction with all relevant architects, engineers and specialist sub-contractors drawings and the specification.
- Modular crate system to be Wavin Aquacell 'Prime / Plus' or equivalent.
- Units to be installed as per manufacturers recommendations including 'site guidance: soakaway installation'.
- Geomembrane complete wrap around to crates type-1 polypropylene. properties - (and test method):
  - Thickness, mm  $\pm$  10% - 1.0 - (ASTM D-751)
  - Density, g/cm<sup>3</sup> min - 0.9 - (ASTM D-792)
  - Tensile stress @ break, min N/mm<sup>2</sup> - 18 - (ASTM D-638)
  - Elongation @ break, % - > 700 - (ASTM D-638)
  - Puncture resistance, min n - 150 - (FTMS 101C METHOD 2065)
  - Tear resistance, min N - 60 - (ASTM D-1004)
  - Dimensional stability, % change max -  $\pm$ 2.0 - (ASTM D-1204 / 1 Hr @ 100°C)
  - Stress crack resistance - 100% - (ASTM 5397)
  - Volatiles loss, 5% loss max - 0.2 - (ASTM D-1203 method A)
  - Ozone resistance - no cracks - (ASTM D-1149)
  - Carbon black content - 2-3% - (ASTM 1603)
  - Moisture vapour, g/m<sup>2</sup>/day - < 0.1 - (ASTM E96)
  - Friction angle (non woven geotextile) - 21° - (Shear box)
  - Methane permeability - 0.11 g/m<sup>2</sup>/day/atm - (European standard)
  - Methane transmission rate -  $0.8 \times 10^{-10}$  m<sup>3</sup>/m<sup>2</sup>/s/atm - (BRE)
  - Permeability coefficient -  $1.8 \times 10^{-12}$
  - Application temperature - > 4°C
  - Geomembrane wrap - min 50mm
- Joints to be heat welded by a specialist. Joints formed using fusion (twin wedge) bead welded in accordance with manufacturers recommendations.
- Geomembrane to be protected with either 100mm depth of coarse sand or geotextile protective fleece.
- All pipe connections and all vent installations should be made using a flange and adaptor, using adhesive or double sided tape to form a seal, or preformed socket using proprietary seals approved by the geomembrane manufacturer.

### Notes:

- This drawing is to be read in conjunction with all relevant architects, engineers and specialist sub-contractors drawings and the specification.
- All setting out to be in accordance with the schedules. any discrepancies between the engineers and the architects drawings to be referred to the architect before proceeding. Dimensions must not be scaled.
- All private drainage is to be in accordance with BS EN 752-1-2-3-4, BS EN 1295-1, BS EN 1610 and all relevant sections of approved document H of the building regulations (2002 Edition).
- Where drainage pipework is to be flexibly jointed extra strength vitrified clay it should be to BS EN 295-1, Hepworth 'Supersleve' or equivalent.
- Where drainage pipework is plastic i.e. PVC-U it shall be to BS EN 1401-1 Osma or equivalent. Private pipework to be type SN4 and all adoptable pipework to be type SN8.
- All concrete pipework shall be to BS EN 1916 and BS 5911-1. Manholes and fittings shall be to BS 5911 parts 3 and 4 and BS EN 1917.
- The position of the rising main should be a minimum distance of 1.0m from kerb face to the outside of the pipe nearest the kerb. Laid with a minimum of 1.2m of cover in the road and 0.9m of cover in the footpath.
- Where drains pass through foundations or connect to manholes, flexible pipe joints are to be provided within 150mm of the face of the structure and within a further 600mm to form a rocker pipe.
- Where pipes pass through screen walls, footings or retaining walls, lintels are to be provided.
- Where pipelines pass within 1.0m of buildings or walls the foundations are to be taken down below the bottom of the trench. Where pipelines are more than 1.0m away from foundations the trench shall be backfilled with concrete up to a point that meets a 45° angle line taken from the bottom corner of the nearest foundation.
- Where depth to invert does not exceed 600mm and the pipe size does not exceed 100mm diameter, 300mm dia. polypropylene access chambers may be used. Elsewhere, proprietary polypropylene or precast concrete manholes are to be used.
- Where connections are to be made to existing manholes / sewers, invert levels, pipe sizes and orientation should be checked prior to the commencement of the works and any variance reported to the engineer immediately. Where connections are to be made on or off site the contractor is to check the line and level of any services / mains, to ensure that no clashes exist prior to works commencing.
- Where pipelines cross, each is to be surrounded with grade ST4 mass concrete for a distance not less than 1.0m centred on the crossing point. Length of surround to be extended as necessary to within 150mm of the next nearest flexible joints.
- For private drainage, concrete protection is to be provided where the effective cover to the crown of the pipe(s) is less than 1.2m in trafficked areas and 0.6m in soft landscaped or pedestrianised areas.
- 'Effective cover' is the minimum depth of cover over the pipe crown at any time during the construction process.
- The contractor is to ensure that protective measures are taken to ensure that drainage pipework and fittings are not damaged by site traffic prior to oversite filling operations being completed around buildings.
- Chamber annotation references are as follows:
  - AC - Denotes a polypropylene or vitrified clay access chamber, depth not exceeding 600mm, diameter not exceeding 300mm.
  - IC - Denotes a polypropylene inspection chamber, depth not exceeding 3.0m, diameter not exceeding 600mm. Standard diameter 450mm unless specified otherwise.
  - MH - Denotes a manholes constructed from either brick, polypropylene or PCC sections. Chamber depth to be in excess of 1.2m.Annotations are indicative only and final depths are to be checked on site prior to installation.
- The top run of each private foul drainage network is to be laid to falls no slacker than 1:40. the head of each run is to be vented to atmosphere in accordance with approved document H.
- All surface water drainage to be min 100mm dia, laid at a gradient no slacker than 1/80. And all foul water drainage to be min 100mm dia. unless stated otherwise.
- The contractor is to ensure that all pipework connections are arranged to direct flows down or into the main channel in the direction of the main flow. Where necessary 3/4 bends are to be used on oblique connections inside the manhole banking where sufficient room exists or the pipelines on oblique connections are arranged outside the chamber to be able to divert flows down the main channel. Connections brought in perpendicular to the main channel are not acceptable. Where possible the main channel flow shall be from any connections with WC's to ensure a flush through the main channel is achieved.
- The contractor is to ensure that when preformed polypropylene manhole bases are used that they are orientated such that the main flow is through the main channel of the base. This should be achieved by incorporating long radius bends outside of the manhole.
- Any connection into a public sewer is to be inspected by the local water authority and carried out fully in accordance with their requirements. The contractor is to allow for obtaining the appropriate 'connection to a public sewer' forms and paying all necessary fees.
- The contractors attention is drawn to the need to ensure that any trenches excavated through previously compacted filled areas, in particular under the building footprint and immediately around the outside, are re-compacted to ensure localised differential settlement does not occur.
- Drainage channel(s) to be 'Aco M100D' or equivalent. For installation guidance refer to the manufacturer's specification. Refer to landscape architects details for surfacing treatments around units where applicable. Where channels are indicated as in-built falls the relevant units are to be incorporated to provide the necessary length of channel gradient from the head of the run to the sump unit.
- Modular crate attenuation tank system(s) to be 'Wavin Aquacell Prime and Plus' or equivalent.

|      |          |                          |           |
|------|----------|--------------------------|-----------|
| P2   | 20 12 16 | Attenuation tank updated | MJR       |
| P1   | 05 12 16 | Drawn                    | MJR       |
| Rev. | Date     | Description              | Issued By |

## Stage 4 - Technical

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Client: **McCarthy and Stone**

Project Title: **Hayling Island**

## Proposed Drainage Details Drawing Sheet 4 of 4

|          |          |                   |       |
|----------|----------|-------------------|-------|
| Drawn by | MJR      | Drawing No.       | [Rev] |
| Scale    | As Shown | SO-2267-04-DE-053 | P2    |
| Date     | Jul '16  |                   |       |