

## **ACCESS ROUTE TO CSN PRECISION ENGINEERING, NEATH ABBEY ROAD, NEATH**

### **FLOOD CONSEQUENCES STATEMENT & DRAINAGE STRATEGY**

#### **Site Summary**

It is proposed to construct a new access route to the existing premises of CSN Precision Engineering (CSN) on a previously developed site adjacent to Neath Abbey Road, Neath. A neighbouring site between the CSN unit and Neath Abbey Road has recently been developed with a new ALDI food store and access road. In the course of the development the proposals for the access route have been refined and part of it is now subject to a new planning application. This document has been prepared in order to support the new application. Refer to appendix A for the site location plan.

The planning application encompasses a total area of approximately 0.363Ha. Of this, 0.183Ha has already been developed with the new adoptable road providing access to both CSN and the new ALDI and is discussed in a previous FCA, Craddys doc ref. 7899w00015. 0.093ha comprises part of the CSN site which is to be unchanged by the development, and 0.087ha is to be developed with the new private access route and reconfigured CSN car park. Refer to appendix B for the proposed site plan.

The development area is currently surfaced with a mixture of asphalt, concrete, and soft landscaping, forming part of the existing CSN car park and the access route to the neighbouring Celtic Stone premises.

The existing drainage on the site has been investigated by both CCTV drainage survey and a sub-scan services survey. A surface water drain runs through the development area from north to south, receiving run-off from parts of the existing CSN building and car park. The drain exits the CSN site at the southern corner and it is assumed that it ultimately discharges into the River Neath, potentially via discharge into marshland located between the site and the railway line to the south.

There are a number of foul drains within the development area which serve the existing CSN building. The main foul route through the site along the western side of the building also receives discharge from the new ALDI store and continues in a south easterly direction from the southern site boundary before ultimately connecting to the public sewer network. Refer to appendix C for sub-scan and topo survey drawings.

Dŵr Cymru Welsh Water (DCWW) asset mapping shows a 375mm combined drain flowing through the ALDI site from north north west to south south east, passing by the western side of the CSN building. However following subsequent investigation in the course of the development of the ALDI site it has been established that no such sewer actually exists, and this was acknowledged by DCWW in an email dated 5<sup>th</sup> May 2021. Refer to appendix D for the asset map and relevant correspondence with DCWW.

#### **Flood Consequences Statement**

The following considers the flood risk associated with the sites in accordance with Planning Policy Wales Technical Advice Note 15 (TAN 15).

According to Natural Resources Wales's (NRW) online Development Advice Map (DAM), the area subject to development under the current application is entirely located within the TAN 15 Development and Flood Risk Zone C2, which describes areas at risk of flooding and not served by significant flood defence infrastructure. Refer to appendix E for the TAN 15 Development Advice map, and other flood maps from NRW.

According to the detailed flood risk map, the development area is within Flood Zone 2 (0.1%-1% chance of flooding from rivers or seas in any given year).

The proposed development is for access to a commercial/industrial unit, which is classified as "less vulnerable" development in TAN15 Figure 2. The access road and car park are located within DAM Zone C2, however this is shown to coincide with Flood Zone 2, therefore the threshold criteria of TAN15 A1.14 is satisfied.

In order to further review the flood maps for the area, Flood Zone data has been obtained from NRW's data portal, Lle. The current Flood Zone 2 and 3 outlines have been compared with the topographical survey (referenced to an OS benchmark but a local grid) and the latest available LIDAR data. From this design flood levels can be inferred by comparing the zone outlines with contours from the LIDAR data. The existing flood zone outlines and LIDAR contours are shown in appendix E, and the inferred design flood levels are below.

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| Flood Event                                                                | Design Flood Level |
|----------------------------------------------------------------------------|--------------------|
| <b>1 in 100-year fluvial / 1 in 200-year tidal (Flood Zone 3 boundary)</b> | 6.65m AOD          |
| <b>1 in 1000-year (Flood Zone 2 boundary)</b>                              | 7.45m AOD          |

The proposed access route, and Neath Abbey Road itself, are above the 1-100year design flood level therefore egress from the site can be achieved during this flood event. The lowest level is at the junction with Neath Abbey Road, around 7.15m AOD, therefore approximately 300mm of flooding would be expected during the 1 in 1000-year event. This is at the fringe of the flood zone, as ground levels rise above 7.45m to the east along the road, therefore speed of inundation would be maximal and floodwater rate of rise and flow velocities would be minimal. Indicative proposed levels and flooded areas are shown in appendix E.

Zone C2 and FZ2 do not rely on existing flood defences, therefore adequacy and future maintenance of defences are not considered to be applicable.

Since the total site area is less than 1.0Ha and the drainage system will be designed to significantly reduce the overall discharge rates off site (discussed in later sections), the surface water generated by the development is unlikely to have a significant impact upon flooding within the site locality. Other issues considered in assessing the flood risks associated with developing the site were:

- a) Overall loss of flood storage volume during the design event
- b) Obstruction to the flow of water during a flood event
- c) Increase in rate of runoff that might worsen flooding elsewhere
- d) Obstruction to existing watercourses or access to them
- e) Situations that may be dangerous during flooding.
- f) Flooding from fluvial sources.
- g) Flooding from tidal sources.
- h) Flooding from pluvial sources and overland flows
- i) Flooding from ground water
- j) Flooding from sewers
- k) Flooding from reservoirs or canals.
- l) Flooding from other sources.

Item a) The TAN 15 DAM indicates that the site is entirely located within Zone C2 and FZ2. With reference to the flood levels quoted above, it can be seen that none of the existing site area is below the 1 in 100-year design flood level, therefore no loss of storage would occur due the development. When comparing the proposed site levels with the 1 in 1000-year flood level, it can similarly be seen that the proposed development will not decrease the available storage on the site, as proposed levels are generally similar to or lower than the existing. Refer to appendix C for the topo survey with existing levels and the site plan in appendix B for proposed levels.

Item b) The development of the neighbouring ALDI site has introduced a close boarded fence to the northern boundary of the CSN premises (labelled ⑮ on the site plan in appendix B) which represents a potential obstruction to the flow of water in some flood events more extreme than the 1 in 100 year fluvial event. The floor level of the CSN unit is at a level of 6.91m AOD therefore the building is expected to experience flooding in extreme events, and this will remain the case post-development. In the event that flood levels exceed 7.00m, water will tend to overtop the kerb edging the CSN car park and enter the Aldi site via the paladin fence at its southern corner (labelled ⑫ on the site plan). If flood levels rise further, water will continue to proliferate throughout the Aldi site and along the access road. Refer to appendix F for a sketch indicating anticipated

flooded areas taking into account the new features.

Item c). The proposed drainage system will incorporate infiltration features. It is anticipated that no surface water runoff generated by the development will discharge offsite. As such it is therefore anticipated that the development will not worsen flood risk elsewhere.

Item d) The site does not lie in the immediate vicinity of a watercourse, therefore its development will not cause an obstruction to a watercourse or associated access.

Item e) As discussed above, the CSN unit is expected to flood in extreme fluvial/tidal events and this is a known risk to the occupiers. Any staff present will be aware that they should vacate the premises via the access route in such an event.

Item f). Flooding from fluvial sources. At its nearest point, the River Neath is located approximately 250m from the development site. The NRW Flood Map for Planning show the development site to be at less than a 1% chance of flooding in any given year, which is less than the threshold criteria for commercial development.

Item g). Flooding from tidal sources. The River Neath is tidally influenced at its nearest location to the site, however as in f) above, the site is a low risk of flooding according to mapping.

Item h). Flooding from overland flows. The NRW risk of flooding from surface water mapping shows that the site is not at elevated risk of flooding from surface water. With the resurfacing of the access road and car park, levels will be arranged such that flows are directed away from the existing building. Refer to appendix E for NRW surface water flood maps.

Item i). There is no known history of flooding from ground water for the development site.

Item j). Flooding from sewers. There is no known history of flooding from sewers within the vicinity of the development.

Item k). The NRW risk of flooding from reservoirs map indicates that the site is not in an area at risk of reservoir flooding. The nearest canal is the Neath and Tennant Canal, located approximately 125m to the south of the site boundary. In the event of a breach of the northern bank of the canal, the site is unlikely to be affected, as the canal is located at a lower elevation. Additionally, the site is effectively defended from breach flows by the raised embankment of the railway line.

Item l). No other natural or artificial sources of flooding have been identified for this development.

**Conclusion:** This development is deemed appropriate in this location, is at minimal risk of flooding and its undertaking will not increase the risk of flooding to the neighbouring area.

## Surface Water Drainage Strategy

Following the implementation of Schedule 3 of the Flood Water Management Act 2010 in Wales, developments with a construction area greater than 100m<sup>2</sup> are required to incorporate Sustainable Drainage Systems (SuDS). All such systems are required to be approved by the SuDS Approval Body (SAB) under an approval application, and required to be adopted by the SAB where they serve more than a single property. As such, surface water drainage for the modifications to the CSN site will be developed and approved under a SAB application separate to the planning process.

Run-off from the adoptable access road that has already been developed is disposed of to the ground via a series of infiltration including vegetated basins and macro permeable paving (permeable sub-base beneath tarmac). Generally, the use of similar features is feasible for the reconfigured CSN access and car park.

Intrusive site investigation and infiltration testing undertaken on the site by Groundtech Consulting Ltd, report reference GRO-20093-2151, indicates that the underlying ground within the development site comprises a shallow depth of made ground, overlying natural glaciofluvial deposits of sands and gravels. Soakaway tests that were carried out in accordance with BRE 365 within the site show that there is a sufficient infiltration rate within the sands and gravels to support infiltration features, with a measured infiltration rate of 4.12x10<sup>-5</sup>m/s. Groundwater was not encountered in any excavations. Contamination testing has shown the site not to be grossly contaminated. Refer to appendix G for extracts from the geoenvironmental report.

It is anticipated that infiltration features in the form of permeable paving will be included in the surface water drainage system, to improve water discharge quantity and quality, add amenity and biodiversity potential.

The surface water drainage system will be designed to have enough below ground storage capacity to prevent flooding for all storm durations up to and including the 1 in 30-year return period event, plus a 40% increase in rainfall intensity as allowance for climate change. MicroDrainage System 1 software will be used to size any pipes and MicroDrainage Simulation and Source Control software will be used to size the infiltration features.

The drainage system will also be checked for the 1 in 100-year return period events plus 40%. Any surface water flooding will be retained on the site during these storm events, via ponding in the car park. Any ponding will not affect the proposed building or access/egress routes.

In the event of drainage system failure or exceedance (beyond 1 in 100-year rainfall events), flow routes will be away to the south away from the existing building and will be intercepted by other existing drainage features.

The access road and its drainage system that have already been constructed were designed to adoptable standards, and offered for adoption under a Section 38 agreement to Neath Port Talbot Council. The surface water drainage system for the CSN access and car park will remain separate and will only serve the CSN premises, therefore will not be offered for adoption to the SAB.

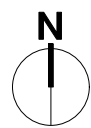
The design of the private drainage will be developed in accordance with current Building Regulations Approved Document Part H.

## Ownership and Maintenance

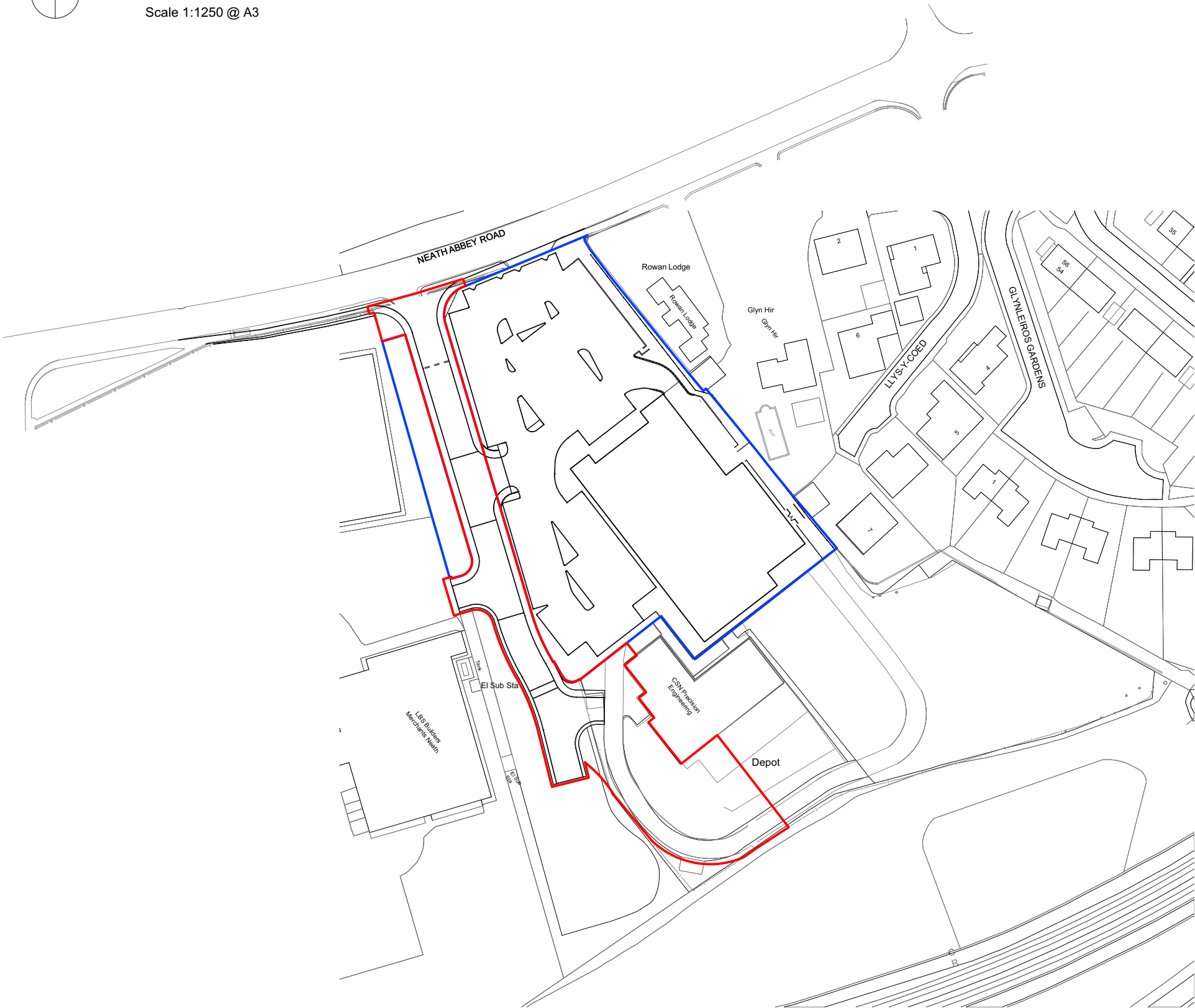
Subject to completion of the requisite Section 38 highways adoption agreement and SAB agreement, maintenance for the adoptable access road surface water drainage will be undertaken by Neath Port Talbot Council highways department. Drainage serving the CSN unit will be maintained by CSN, and any specific maintenance requirements for the new surface water drainage system (including SuDS) will be agreed with the SAB.

## **Appendix A: Site Location Plan**

|                                |                                        |
|--------------------------------|----------------------------------------|
| APPLICATION SITE AREA (Approx) | 3,209 sqm / 0.793 Acre / 0.321 Hectare |
|--------------------------------|----------------------------------------|



0 50 75 100 M  
Scale 1:1250 @ A3



|     |          |    |    |                                                                                                                   |
|-----|----------|----|----|-------------------------------------------------------------------------------------------------------------------|
| P4  | 15/12/21 | JS | GS | Site boundary and area updated to include additional length of close boarded fence.                               |
| P3  | 10/12/21 | JS | GS | Site boundary reduced to exclude land west of access road and Aldi access.                                        |
| P2  | 16/11/21 | JS | GS | Blue line boundary added. Land west of access road included within application boundary. Application area updated |
| P1  | 15/11/21 | JS | GS | First Issue                                                                                                       |
| Rev | Date     | By | Ap | Note                                                                                                              |



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Project  
Neath, Neath Abbey Road

Client  
Aldi Stores Ltd.

Scale 1:1250  
Paper Size A3  
Filename 190487-1400 Proposed Site Plan.vwx  
© Copyright Do not scale this drawing

Drawing Title  
Site Location Plan

Project Number 190487-2100  
Drawing Number P4

Date 15/11/21  
Drawn JS  
Checked JS  
Status PLANNING

Check all dimensions and levels on site

Only to be used on the site for which designed. The electronic transmission of designs/information contained in this drawing is carried out entirely at the User's risk and Kendall Kingscott Ltd. will have no liability for any errors or inaccuracies arising therefrom. The production of amended or updated information from the said designs/information by the User is entirely the responsibility of the User and Kendall Kingscott Ltd. shall have no responsibility in respect thereof whatsoever.

## **Appendix B: Proposed Site Plan**

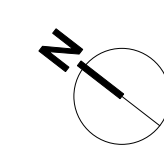


- |                                                                                   |                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Application Area                                                                                                                                                                                                |
|   | Land within Applicant's ownership                                                                                                                                                                               |
|  | Tarmacadam Surfacing (TM)                                                                                                                                                                                       |
|  | Tarmacadam Surfacing (TM)                                                                                                                                                                                       |
|  | Gravel                                                                                                                                                                                                          |
|  | Pavers: 80mm Forterra Aquaflow or equal approved (BS EN 1338)<br>200 x 100mm permeable concrete block paving laid in 45° herringbone pattern with double stretcher course around all perimeters, colour Natural |
|  | Surface finish with soft landscaping. See short flowering lawn mix in table on the right                                                                                                                        |
|  | Landscaping water detention basin                                                                                                                                                                               |
|   | Existing Levels                                                                                                                                                                                                 |
|   | Proposed Levels                                                                                                                                                                                                 |

**APPLICATION SITE AREA (Approx)** 3,209 sqm / 0.793 Acre / 0.321 Hectare

## NOTES

- 1 Existing access to service yard and parking
- 2 Existing parking
- 3 New parking bays
- 4 New footpath
- 5 New site access route
- 6 Extent of road offered for adoption
- 7 Existing raised kerb to be broken out and replaced with footway edging  
Back of new footway construction to lie into existing top of kerb level.
- 8 Dashed line represents line of former access
- 9 2.4m high paladin fence erected around the perimeter of the road, to be tied into existing fence
- 10 2.4m high paladin gates
- 11 Pedestrian gate integrated into 2.4m high paladin fence
- 12 Section of timber knee rail replaced with 2.4m high paladin fence
- 13 Minor re-leveling works required to the existing CSN car park following removal of dropped kerbs
- 14 Tuning head extended in length as per S38 agreement
- 15 Existing 1.8m high close boarded timber fence



Scale Bar 1:200 @ A0



### EL1 – FLOWERING LAWN MIXTURE

### Composition

Mixture EL1 contains slow growing grasses with a selection of wild flowers that respond well to regular short mowing.

## Wild Flowers

| %   | Latin name                                                   | Common name       |
|-----|--------------------------------------------------------------|-------------------|
| 0.2 | <i>Betonica officinalis</i> - ( <i>Stachys officinalis</i> ) | Betony            |
| 1.2 | <i>Centaurea nigra</i>                                       | Common Knapweed   |
| 0.7 | <i>Galium verum</i>                                          | Lady's Bedstraw   |
| 0.4 | <i>Leontodon hispidus</i>                                    | Rough Hawkbit     |
| 1.2 | <i>Lotus corniculatus</i>                                    | Birdsfoot Trefoil |
| 1.4 | <i>Plantago lanceolata</i>                                   | Ribwort Plantain  |
| 0.4 | <i>Primula veris</i>                                         | Cowslip           |
| 0.6 | <i>Ranunculus acris</i>                                      | Meadow Buttercup  |
| 0.2 | <i>Silene alba</i>                                           | Pepper Saxifrage  |
| 0.2 | <i>Vicia cracca</i>                                          | Tufted Vetch      |
| 6.5 |                                                              |                   |

## Grasses

| %  | Latin name                 | Common name        |
|----|----------------------------|--------------------|
| 8  | <u>Agrostis capillaris</u> | Common Bent        |
| 1  | <u>Carex flacca</u>        | Glaucous Sedge     |
| 39 | <u>Cynosurus cristatus</u> | Crested Dogtail    |
| 28 | <u>Festuca rubra</u>       | Red Fescue         |
| 4  | <u>Phleum bertolonii</u>   | Smaller Cat's-tail |

### Clovers, legumes and herbs

| %   | Latin name                               | Common name                                           |
|-----|------------------------------------------|-------------------------------------------------------|
| 1   | <a href="#"><u>Medicago lupulina</u></a> | <a href="#"><u>Black Medick (Ag)</u></a>              |
| 2.5 | <a href="#"><u>Trifolium repens</u></a>  | <a href="#"><u>Small Leaved White Clover (Ag)</u></a> |
| 3.5 |                                          |                                                       |

### Sowing Rates

| kg/ha | kg/acre | g/m <sup>2</sup> | Order Mixture                      |
|-------|---------|------------------|------------------------------------|
| 40    | 16      | 4                | <a href="#">Order this mixture</a> |

\*to be maintained with a 4 weekly cycle of mowing

[illegible]

Drawing Title  
**Proposed Site Plan**

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|                    |                |            |
|--------------------|----------------|------------|
| Project Number     | Drawing Number | Revision   |
| <b>190487-2300</b> |                | <b>P10</b> |

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|          |       |         |                 |
|----------|-------|---------|-----------------|
| Date     | Drawn | Checked | Purpose/Status  |
| 15/11/21 | JS    | GS      | <b>PLANNING</b> |

 Kendall Kingscott

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**Project**  
**Aldi, Abbey Road, Neath**  
**New Store**

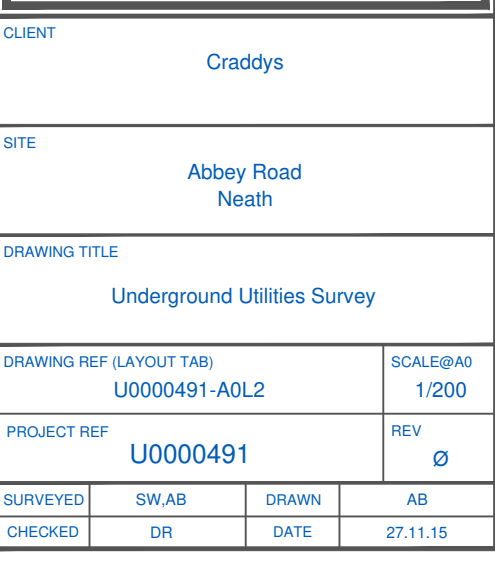
Aldi Stores Ltd

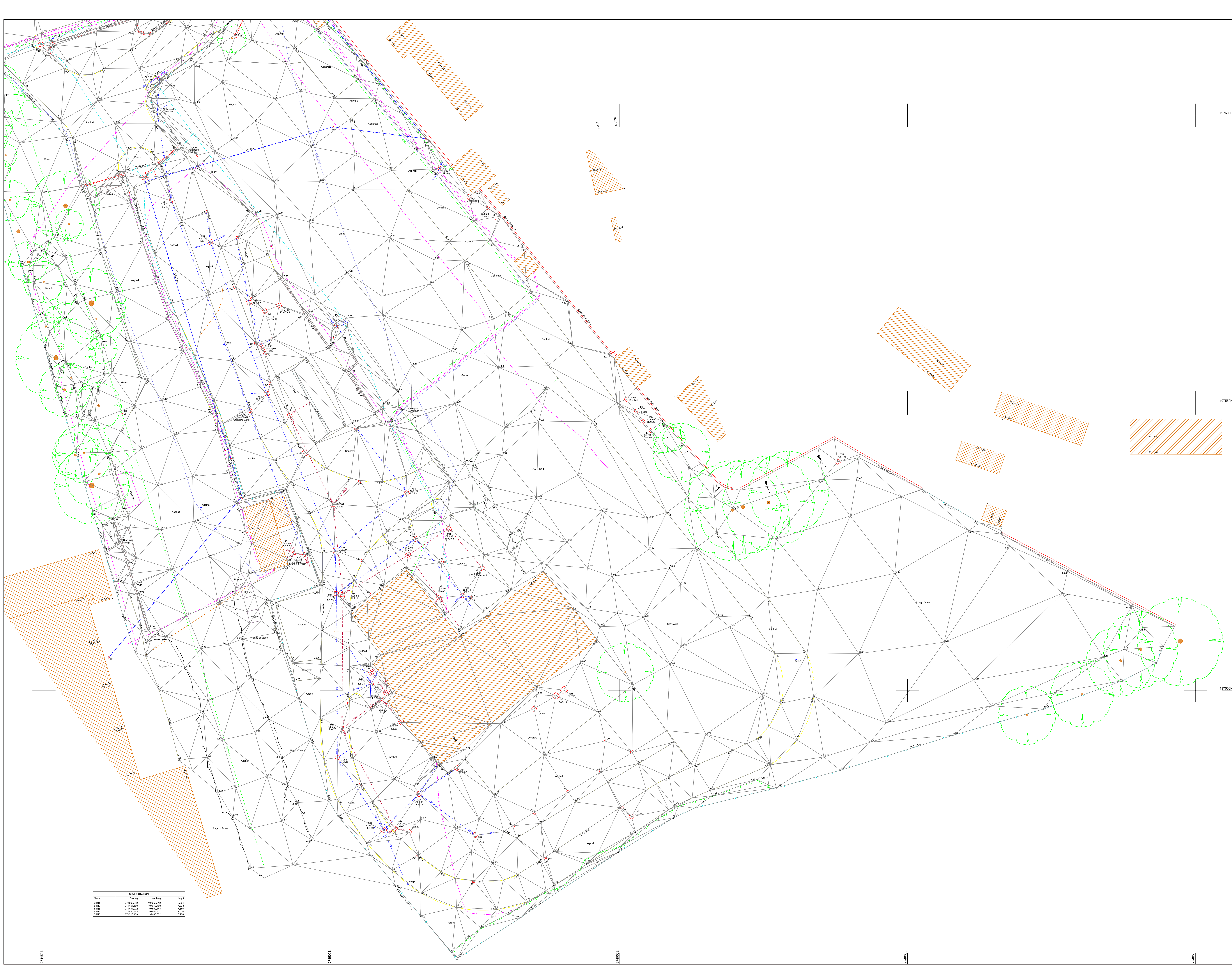
|       |            |      |
|-------|------------|------|
| Scale | Paper Size | File |
| 1:200 | ISO A0     | 19   |

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## **Appendix C: Sub Scan and Topo Surveys**







**ABBREVIATIONS**

|                |                       |      |                             |
|----------------|-----------------------|------|-----------------------------|
| Ave            | Average               | LB   | Letter Box                  |
| AV             | Air Valve             | LI   | Litter Bin                  |
| BS             | Bellman Beacon        | LP   | Lamp Post                   |
| Bol            | Bollard               | MR   | Manhole                     |
| BL             | Bollard Light         | MK   | Marker                      |
| Box            | BT/Elec               | NP   | Name Plate                  |
| BS             | Bus Stop              | OSH  | Overhead (Elec/Tel)         |
| BT             | Telecom IC            | OSM  | Ordnance Survey BM          |
| CATV           | Cable Television IC   | PARA | Parapet                     |
| CCTV           | Closed Circuit Camera | Pav  | Paved                       |
| CL             | Cover Level           | PM   | Parking Meter               |
| Conc           | Concrete              | RE   | Rodding Eye                 |
| DC             | Concrete              | RL   | Rodding Level               |
| DH             | Drainage Channel      | RS   | Road Sign                   |
| DI             | Displaced             | RSJ  | Reinforced Steel Joint      |
| DK             | Drop Kerb             | SA   | Seamless                    |
| DN             | Drain                 | SD   | Slot Drain                  |
| EL             | Earthen Level         | Sen  | Traffic Sensors             |
| EP             | Electricity Pole      | SP   | Sign Post                   |
| ER             | Earthing Rod          | ST   | Water Stop Tap              |
| FB             | Footbridge            | SV   | Water Stop Valve            |
| FEC            | Fire Escape           | SY   | Splay                       |
| FL             | Floor Level           | Tac  | Tactile Paving              |
| FR             | Floodlight            | TGB  | Telephone Call Box          |
| FS             | Flagstaff             | TS   | Traffic Signal              |
| FH             | Fire Hydrant          | TP   | Telephone Pole              |
| Gab            | Gabions               | Veg  | Vegetation                  |
| GM             | Gas Meter             | VP   | Vent Pipe                   |
| GV             | Gas Valve             | WL   | Water Level                 |
| GV             | Gas Valve             | WM   | Water Meter                 |
| HR             | Hand Rail             | WO   | Wash Out                    |
| IC             | Inspection Cover      | WP   | Wooden Plug                 |
| IL             | Invert Level          |      |                             |
| KO             | Kerb Outlet           |      |                             |
| Drainage       |                       |      |                             |
| FW             | Foul Water            | SW   | Surface Water               |
| Com            | Combined Storm/Foul   | BD   | Back Drop                   |
| 25mm           | Pipe Diameter         | UTL  | Unable To Lift              |
| Fences / Walls |                       |      |                             |
| CB             | Crash Barrier         | HR   | Hand Rail                   |
| BWF            | Barbed Wire           | PRF  | Post and Rail               |
| CBF            | Close Boarded         | PWF  | Post and Wire               |
| CLF            | Chain Link            | PLF  | Panel Fence                 |
| IR             | Iron Railings         | SR   | Steel Railings              |
| TR             | Trellis               | SF   | Steel Fencing               |
| BW             | Block Wall            | BLK  | Block Wall                  |
| RW             | Retaining Wall        | Rm   | Rendered Wall               |
| SW             | Stone Wall            | SW   | Height of Wall/Fence (1.8m) |

**Services**

|                |                            |
|----------------|----------------------------|
| Electric       | Traffic Signals            |
| Gas            | Water                      |
| CCTV           | Foul Water Sewer           |
| Telecom        | Surface Water Sewer        |
| BT             | Combined Sewer             |
| Unknown        | End of trace               |
| Overhead Cable | NLR                        |
|                | Not located (from records) |

**Utility Notes**

To assist in the production of this drawing Berry Geomatics Ltd have used record drawings that were made available by utility providers. Any information taken from these records and the completeness of the records cannot be guaranteed.

Utilities are located using non-invasive techniques, the accuracy of which can be adversely affected by local ground, weather and site conditions.

Electromagnetic and GPR detection is not infallible and it is possible that some services can remain undetected. Results are dependent on a number of factors such as soil type, ground water levels and surface conditions. Caution should therefore be taken and that excavations must be undertaken to confirm position, identification and in particular depth of the utility prior to any construction work.

Where there are multiple cables, an average depth has been obtained and that excavations are recommended to confirm the number and depth of cables.

Fibre optic cables can be difficult to detect and access to chambers is often restricted by utility providers. Where possible cable routes will be added from records.

Electromagnetic results can be distorted when working in close proximity to overhead power lines or electric substations and similar structures. It is not guaranteed that redundant services will always be detected.

Gas and water pipes to individual properties are often plastic and of a size that cannot be located by electromagnetic or GPR detection. Where possible, notes have been added from surface evidence such as valves and marked as assumed routes. This should however only be used as a guide.

Drainage information has been obtained without entry in to manhole or inspection chambers. Details shown have been inferred from the surface and as such cannot be guaranteed. Blockages, siltage, sewer collapse or excessive depth will affect the ability to detect services.

If record drawings are available, when a utility is shown but not detected on site, it will be added to the drawing and marked as NLR (not located, from records). The accuracy of these records cannot be guaranteed.

Utility information shown on the drawing has been obtained from non-invasive survey techniques. It always remains a possibility that there are additional cables within the survey area that we have not been able to detect. Care should therefore be taken and the drawing should be used in conjunction with all available utility records.

**Notes**

Heights in metres  
Survey related to Ordnance Survey grid datum (OSGB36)

Do not scale this drawing. All critical dimensions and services should be field verified prior to building operations or construction.

| Rev. | Date    | Amendments         |
|------|---------|--------------------|
| A    | 06/2/20 | Land to West added |
|      |         |                    |
|      |         |                    |
|      |         |                    |
|      |         |                    |

**Client**

Kendall Kingscott  
Glenworth Court  
Lime Kiln Close  
Stoke Gifford  
Bristol BS34 6SR

**Title**

CSN, Neath Abbey Road, Neath  
Sheet 1 of 2

**Drawing Number**

66/19

**Drawn**

DMB

**Checked**

SB

**Date**

15/08/19

**Scale**

1:200(A0)

**Survey Stations**

| Name | Easting   | Northing  | Height |
|------|-----------|-----------|--------|
| STW1 | 27460.040 | 10762.873 | 2.86   |
| STW2 | 27440.289 | 10763.462 | 2.58   |
| STW3 | 27440.272 | 10763.164 | 2.58   |
| STW4 | 27460.000 | 10762.471 | 2.61   |
| STW5 | 27461.110 | 10762.522 | 2.58   |

**BERRY GEOMATICS**

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## **Appendix D: Dŵr Cymru Welsh Water Asset Maps**



**LEGEND(Representative of most common features)**

|                                                                                                             |                                                                                                                                           |                                                                                                            |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
|  Waste network:          |  Foul chamber                                          |  Outfall                |
|  Surface water chamber   |  LH                                                    |  Lamphole               |
|  Combined chamber        |  Storm overflow                                        |  Rising main            |
|  Combined sewer overflow |  Gravity sewer                                         |  Private sewer          |
|  Special purpose chamber |  Private sewer subject to Sect. 104 adoption agreement |  Private Sewer Transfer |
|  Treatment works       |  S 104                                               |  Lateral Drain        |
|  Pumping station       |  Inspection Chamber                                  |                                                                                                            |
| N.B.: Sewer symbol colour indicates the type:                                                               |                                                                                                                                           |                                                                                                            |
| RED - Combined                                                                                              |                                                                                                                                           |                                                                                                            |
| GREEN - Surface water                                                                                       |                                                                                                                                           |                                                                                                            |
| BROWN - Foul                                                                                                |                                                                                                                                           |                                                                                                            |
| Purple - Former S24 sewers (for indicative purposes only)                                                   |                                                                                                                                           |                                                                                                            |

**Notes:**

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation.

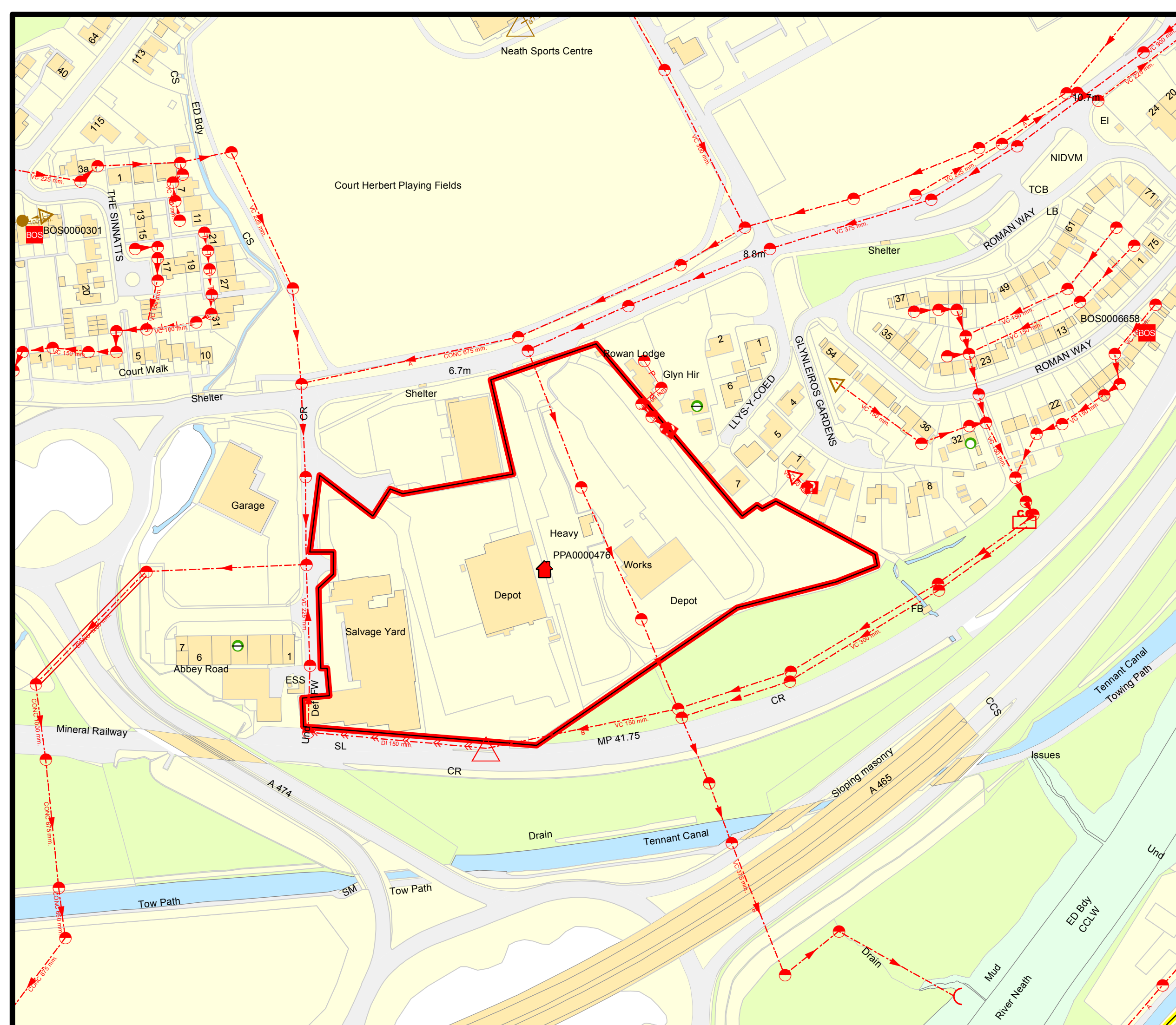
Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which is based upon the best information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

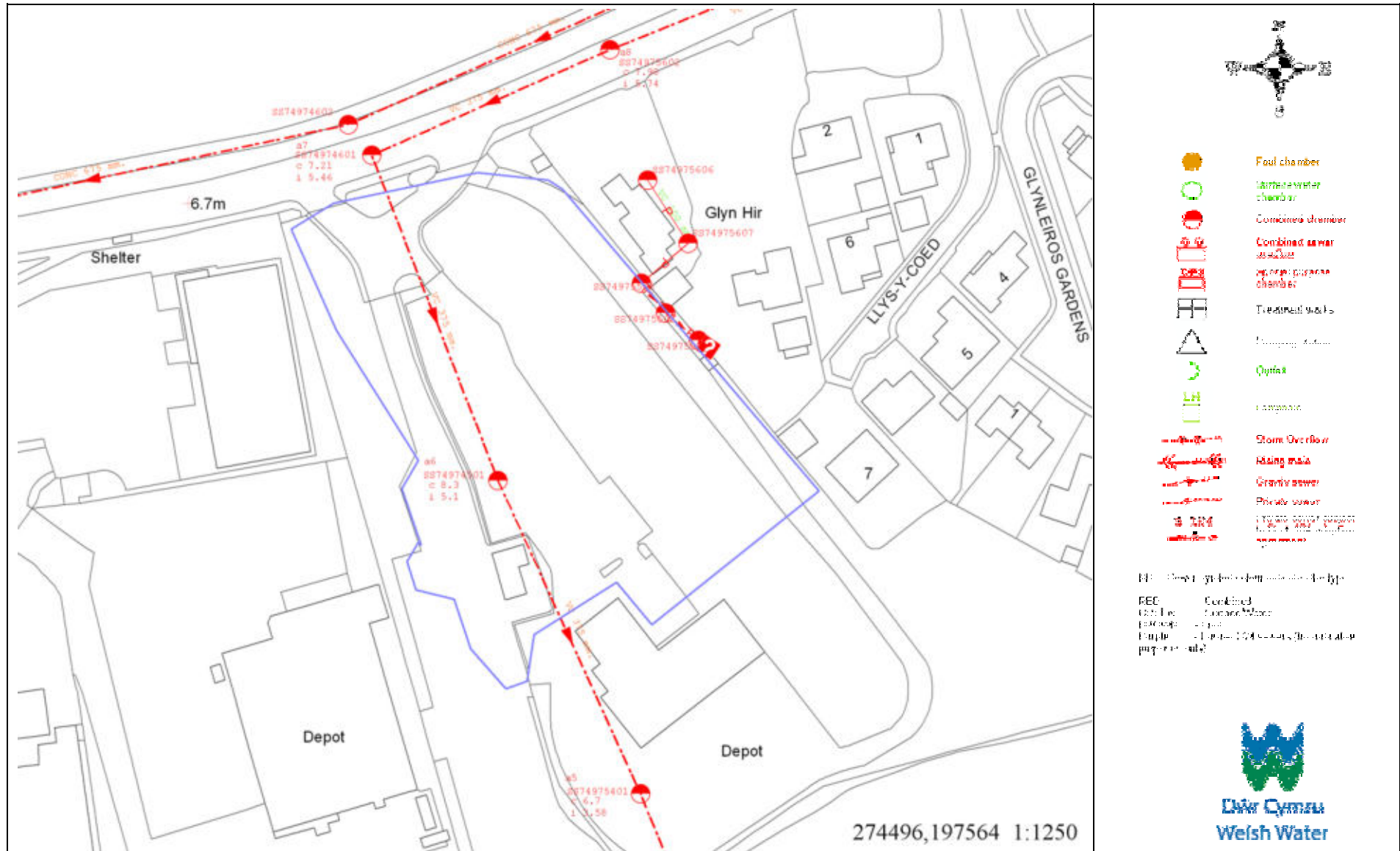
**EXACT LOCATIONS OF ALL APPARATUS  
TO BE DETERMINED ON SITE.**

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Map Ref: 274495,197529  
Map scale: 1:1875  
Printed by: Tombs Nicholas  
Printed on: 20 Jun 2019



**Appendix 3 - Extract of the Public Sewer Map for the area surrounding the property/plot [15/06/2017]**



Dwr Cymru Cyf gives this information as to the position of its underground apparatus by way of general guidance only on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works in vicinity of the Company's apparatus and any onus of locating the apparatus before carrying out any excavations rests entirely with you. It must be understood that the furnishing of information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and of the Company's right to be compensated for any damage to its apparatus. Service pipes are not generally shown but their presence should be anticipated.

EXACT LOCATIONS OF ALL APPARATUS TO  
BE DETERMINED ON SITE.

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Will Hayward

**From:** Nicholas Tombs <Nicholas.Tombs@dwrcymru.com>  
**Sent:** 05 May 2021 14:29  
**To:** Will Hayward  
**Cc:** Robin Griffiths; Chris Jarman  
**Subject:** RE: 7899 CSN Abbey Road, Neath

Hello Will,

Many thanks for providing the survey information which has now been reviewed by our Operations team who provide the following response.

We note from the survey/information that it is clear that it is private, and our plans are not accurate. We are satisfied with what’s been provided without the need for further investigation.

I would like to caveat that should any third party drains be noted on site whilst undertaking the works, then these are to remain connected and our Operations department notified.

I trust this is satisfactory, however; please let me know if I can be of further assistance.

Regards Nick



**Nicholas Tombs MEng PhD GMICE**  
Adoptions Engineer | Developer Services  
Dŵr Cymru Welsh Water

 W: [dwrcymru.com](http://dwrcymru.com)

 E: [developer.services@dwrcymru.com](mailto:developer.services@dwrcymru.com)

 T: 0800 917 2652 M: 07770 821 785

 A: PO Box 3146, Cardiff, CF30 0EH

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**From:** Will Hayward <Will.Hayward@craddys.co.uk>  
**Sent:** 27 April 2021 12:09  
**To:** Nicholas Tombs <Nicholas.Tombs@dwrcymru.com>  
**Cc:** Robin Griffiths <Robin.Griffiths@craddys.co.uk>; Chris Jarman <Chris.Jarman@craddys.co.uk>  
**Subject:** RE: 7899 CSN Abbey Road, Neath

\*\*\*\*\* External Mail \*\*\*\*\*  
Nick,

I’ve now been able to share the files referenced below via the MoveIT system.

I would like to reiterate that from our perspective the surveys appear to quite conclusively show that the sewer crossing the site does not actually exist and has possibly never existed therefore the question of abandonment and removal may be moot. But of course I will leave that to you and your Operations team to determine.

Please do let me know if you have any further issues with the files or if there is any more clarification I can provide.

Regards,

**Will Hayward**  
Project Engineer

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[www.craddys.co.uk](http://www.craddys.co.uk)

**From:** Will Hayward  
**Sent:** 26 April 2021 16:39  
**To:** 'Nicholas Tombs' <[Nicholas.Tombs@dwrcymru.com](mailto:Nicholas.Tombs@dwrcymru.com)>  
**Subject:** RE: 7899 CSN Abbey Road, Neath

Hi Nick,

Thanks for getting back to me. I have tried to register on the MoveIT system but I keep hitting an error. I’ve sent an email to the Service Desk email address provided to try and get it resolved.

Regards,

**Will Hayward**  
Project Engineer

CRADDYS

**From:** Nicholas Tombs [<mailto:Nicholas.Tombs@dwrcymru.com>]  
**Sent:** 26 April 2021 15:54  
**To:** Will Hayward <[Will.Hayward@craddys.co.uk](mailto:Will.Hayward@craddys.co.uk)>  
**Subject:** RE: 7899 CSN Abbey Road, Neath

Hello Will,

Apologies for the delay in my response and thank you for your patience.

Regrettably, we are unable to access cloud based storage and can only use the MoveIT system. If I send you a MoveIT link would you be able to upload the information and resubmit it to me.

I'll need to get our Operations to review the survey and to agree to the abandonment of the existing sewers. They may ask for an in house survey to be undertaken which will need to be funded by the developer.

Any sewers shown on the record of public sewers in need of abandonment would need to be removed from the record either via a letter of consent, if completely removed from the ground, or by legal instruction if they are to remain in place. There would be legal charges to cover if the latter were proposed.

I'll issue to you the MoveIT link now and await your response.

Regards Nick



**Nicholas Tombs MEng PhD GMICE**  
Adoptions Engineer | Developer Services  
Dŵr Cymru Welsh Water

 W: [dwrcymru.com](http://dwrcymru.com)

 E: [developer.services@dwrcymru.com](mailto:developer.services@dwrcymru.com)

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 A: PO Box 3146, Cardiff, CF30 0EH

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**From:** Will Hayward <[Will.Hayward@craddys.co.uk](mailto:Will.Hayward@craddys.co.uk)>  
**Sent:** 26 April 2021 14:20  
**To:** services developer <[developer.services@dwrcymru.com](mailto:developer.services@dwrcymru.com)>  
**Cc:** Nicholas Tombs <[Nicholas.Tombs@dwrcymru.com](mailto:Nicholas.Tombs@dwrcymru.com)>; Robin Griffiths <[Robin.Griffiths@craddys.co.uk](mailto:Robin.Griffiths@craddys.co.uk)>; Chris Jarman <[Chris.Jarman@craddys.co.uk](mailto:Chris.Jarman@craddys.co.uk)>  
**Subject:** FW: 7899 CSN Abbey Road, Neath

\*\*\*\*\* External Mail \*\*\*\*\*  
Good afternoon,

I am just writing to follow up on the below which was sent a couple of weeks as I have not yet received a response. I have called this afternoon and spoken to one of your advisers who suggested a sewer trace may be the appropriate next step. Please could you advise.

Please note the link shown below has now expired and the referenced files may now be found here: <https://we.tl/t-NH37qwsIQm>

Regards,

**Will Hayward**  
Project Engineer

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**From:** Will Hayward  
**Sent:** 07 April 2021 17:53  
**To:** 'Tombs Nicholas' <[Nicholas.Tombs@dwrcymru.com](mailto:Nicholas.Tombs@dwrcymru.com)>  
**Subject:** RE: 7899 CSN Abbey Road, Neath

Good afternoon Nick,

You may recall that you were in contact with my colleague Richard regarding this site a couple of years ago. We are now progressing with this project and looking to start on site very soon with the construction of a new Aldi store, and as part of the SAB approval process we would like to bottom out the issue of the existing combined sewer that appears to cross the site according to your records. The DCWW map provided by yourself with one of the emails below on 6th June 2019 is available for download from WeTransfer here for ease of reference, along with other files referenced below: <https://we.tl/t-X2nXIRHSGW>

As discussed by Richard in his original email, a utility survey has been carried out within the site boundary – see attached U0000491 in pdf and dwg format. This does show an existing foul drain running from north to south through the site that aligns closely to the supposed line of the public sewer, however this appears to have historically only picked up drainage from within the site boundary. In addition to this, the attached CCTV survey from earlier this year shows that this drain is capped off approximately

6.5m south of the northernmost manhole on this run (‘FMH2’ in the CCTV report), and is not operational. The CCTV survey also confirms that drainage from the properties at the east boundary of the site does not connect to this route as had previously been assumed.

Additional underground utility surveying has now also been carried out along Neath Abbey Road and no sewer has been identified in this location – see attached GR617-UU again in pdf and dwg format. I note that there is another sewer shown on your map along the footpath in the sports field immediately to the north of the road, however this was outside the scope of the utility survey.

With the above taken into account, it appears that the DCWW map is inaccurate/out of date and that there is in fact no public sewer passing through the site and therefore this should present no barrier to development. The SAB officer has accepted this evidence. Please could you advise as to whether there is any particular process that we should follow in order to have it formally recognised that the existing records do not reflect the actual arrangement on site.

Thank you in advance for any help you can provide.

Regards,

**Will Hayward**  
Project Engineer

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[www.craddys.co.uk](http://www.craddys.co.uk)

**From:** Tombs Nicholas [<mailto:Nicholas.Tombs@dwrcymru.com>]  
**Sent:** 28 June 2019 11:47  
**To:** Richard Hogarth <[Richard.Hogarth@craddys.co.uk](mailto:Richard.Hogarth@craddys.co.uk)>  
**Subject:** RE: 7899 CSN Abbey Road, Neath

Hi Richard,

I’ve been unable to find out any information on the pumping station but should you have proposals which may affect our access if you could provide me with some details, at the appropriate time, I will follow this up with our Operations team.

Best regards  
Nick



**Nicholas Tombs**  
**Adoption Engineer | Developer Services | Dwr Cymru Welsh Water**  
PO Box 3146 | Cardiff | CF30 0EH | T: 0800 917 2652 | F: 02920 740472 |

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**Before you print** please think about the **ENVIRONMENT**

**From:** Richard Hogarth [<mailto:Richard.Hogarth@craddys.co.uk>]  
**Sent:** 21 June 2019 11:09  
**To:** Tombs Nicholas <[Nicholas.Tombs@dwrcymru.com](mailto:Nicholas.Tombs@dwrcymru.com)>  
**Subject:** RE: 7899 CSN Abbey Road, Neath

\*\*\*\*\* External Mail \*\*\*\*\*  
Morning Nick,

Thanks very much for the additional plan – it kind of looks like the sewers along the railway are newer, intercepting the mapped combined sewer to take it down to the pump station, while the upstream CSO to the east used the remaining length down to the river for it’s overflow. Makes sense in my head anyway!

We’ll do a bit more investigation and try to work out what’s going on where in the ground. Out of interest do you know what the access route is the pump station? As part of our development we’re building an improved access road down the west of the site (the old DFT test area) which will go into the builder’s yard/stone yard, so if all goes to plan it looks like access will be improved by the scheme.

Best regards,

Richard

**Richard Hogarth**  
Chartered Civil Engineer  
MEng (Hons) CEng MICE  
Principal Engineer

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**From:** Tombs Nicholas <[Nicholas.Tombs@dwrcymru.com](mailto:Nicholas.Tombs@dwrcymru.com)>  
**Sent:** 20 June 2019 13:41  
**To:** Richard Hogarth <[Richard.Hogarth@craddys.co.uk](mailto:Richard.Hogarth@craddys.co.uk)>  
**Subject:** RE: 7899 CSN Abbey Road, Neath

Hello Richard,

We’ve interrogated our records and it would appear that these sewers were transferred to our records from the Local Authority records and we therefore have no further information on them. It would seem odd that this sewer discharges to a pumping station when there is an available gravity sewer adjacent.

I’ve attach an extract from the record of public sewers for the wider area which I hope is of some use. Any further information can only be achieved from a sewer trace of the area which would have to be funded by yourselves.

With regards to the abandonment of the sewer, we would require confirmation of the sewerage arrangements for the cottages and CCTV showing that there no third party of unknown connections into this sewer prior to agreeing to any abandonment.

I trust this satisfies your query but let me know should you require anything further.

Best regards  
Nick



**Nicholas Tombs**  
**Adoption Engineer | Developer Services | Dwr Cymru Welsh Water**  
PO Box 3146 | Cardiff | CF30 0EH | T: 0800 917 2652 | F: 02920 740472 |

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**From:** Richard Hogarth [<mailto:Richard.Hogarth@craddys.co.uk>]  
**Sent:** 20 June 2019 12:05  
**To:** Tombs Nicholas <[Nicholas.Tombs@dwrcymru.com](mailto:Nicholas.Tombs@dwrcymru.com)>  
**Subject:** 7899 CSN Abbey Road, Neath

\*\*\*\*\* External Mail \*\*\*\*\*  
Morning Nick,

Another one that I think you can assist with. We’ve got a development site at Neath Abbey Road where we’ve received the attached asset map from a CON29DW search.

We’ve had a sub scan and CCTV survey undertaken, and neither show any 375mm drains crossing the site. There are separate foul and surface water drains on a similar route, but both of these seem to only serve either the current building, or the northern half of the site which was a historic TA Centre. There is no evidence of connections from Neath Abbey Road into these drains, and there is no visible manhole covers in the area of nodes SS74974601 or SS74975602. Given that these and the nodes within the site have cover and invert levels shown on the plan, do you know where this information is derived from?

The existing foul and surface water drains that we have located on the site both disappear off the southern boundary of the depot area, but there’s no indication on the map as to where they might end up, particularly the foul. Is it possible for you to send over a larger scale version that shows the sewers to the south east? I note there are a couple of manhole-looking structures to the north of the railway line, so I assume there are sewers running parallel to it?

The private drain from Glyn Hir to the north east appears to enter the site, but from our surveys this doesn’t appear to still be in use as the chambers are broken/filled, and there is no evidence of recent flows. Can you confirm if a formal abandonment would be required?

Best regards,  
  
Richard

**Richard Hogarth**  
Chartered Civil Engineer  
MEng (Hons) CEng MICE  
Principal Engineer

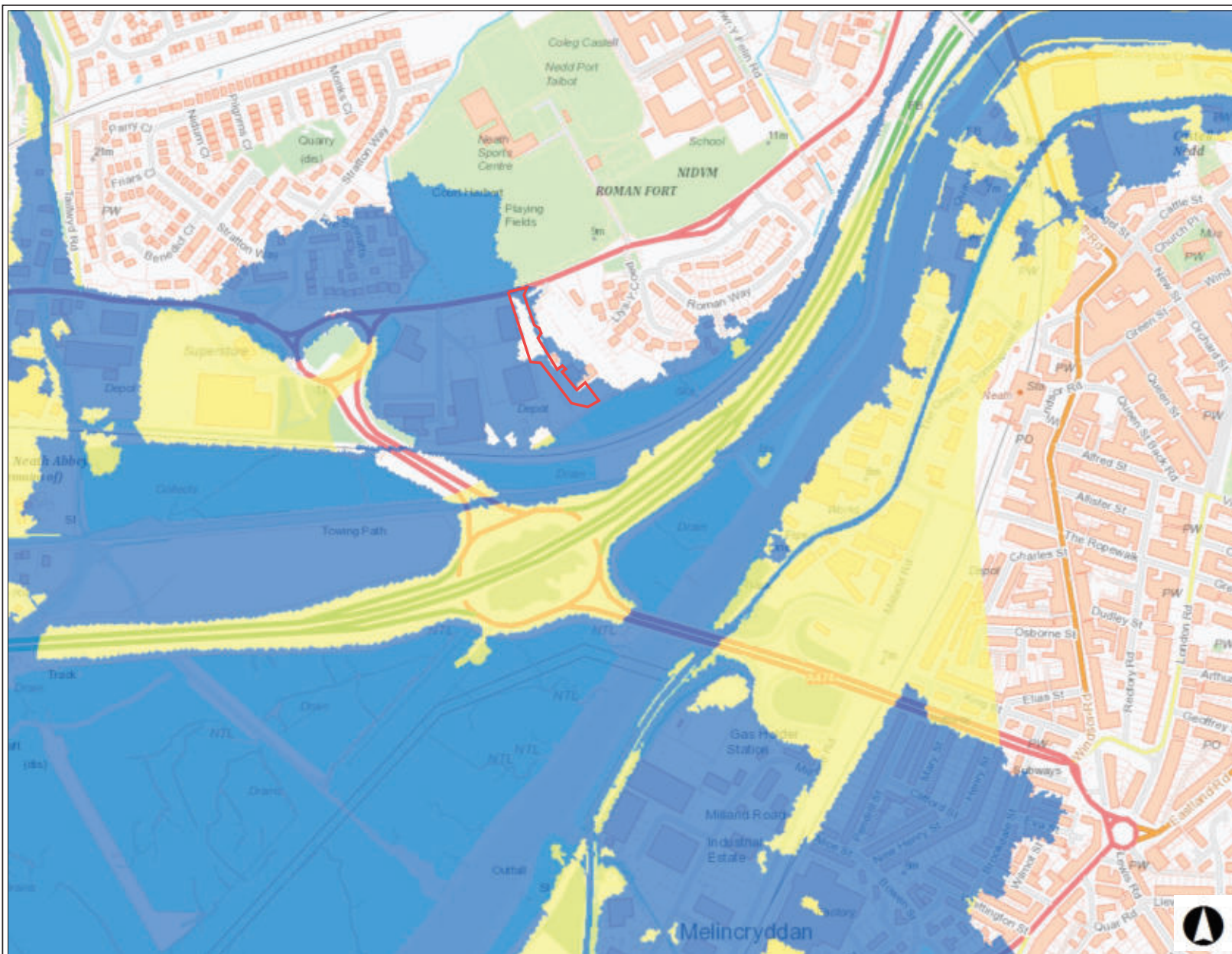
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## **Appendix E: NRW Flood Risk Maps**



AL

Map Perygl Llifogydd / Flood Risk Map

Allwedd / Map Key

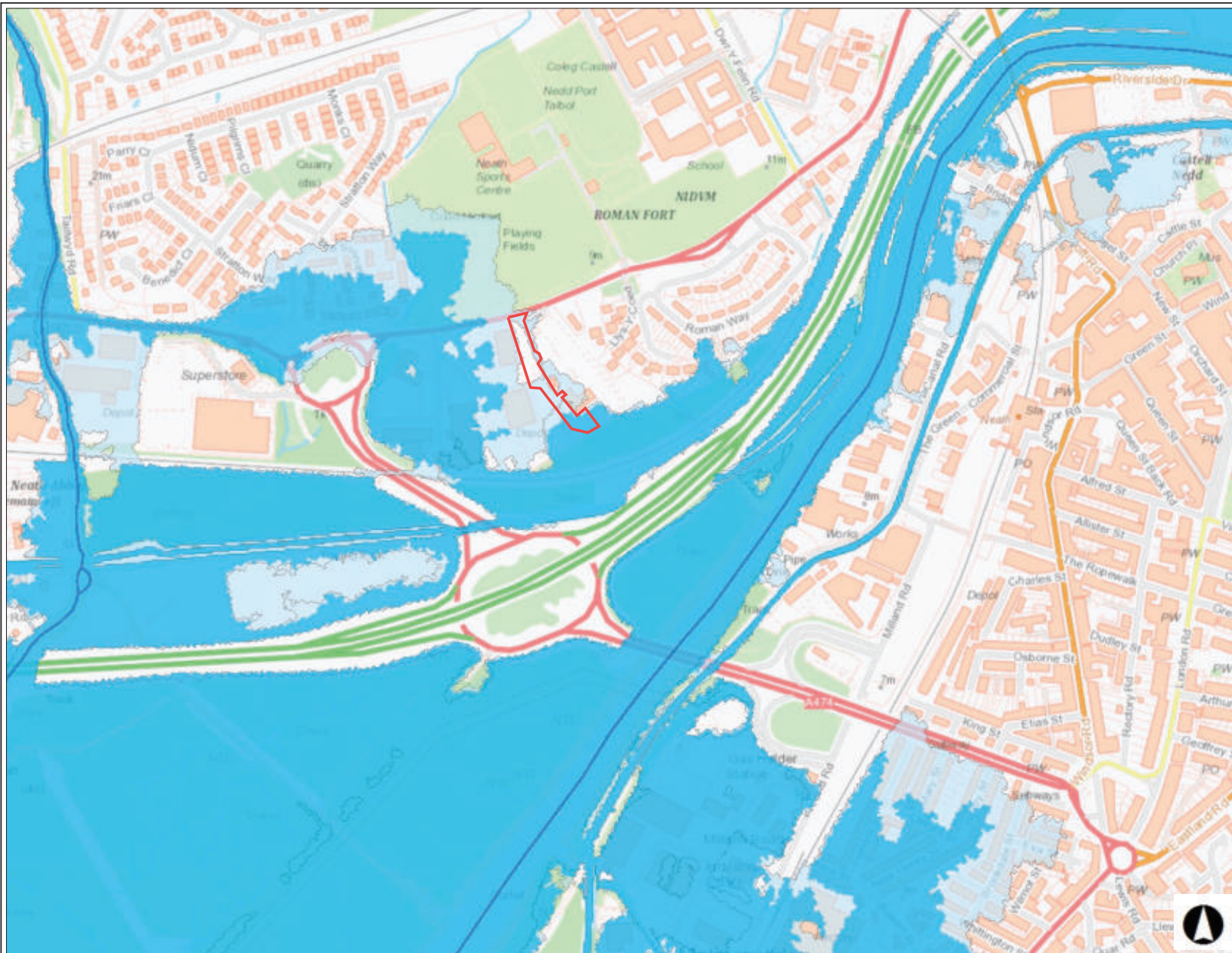
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- Zone C2
- Zone B
- Zone A

Graddfa / Scale 1:4,999

Dyddiad / Date  
19/06/2019

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British\_National\_Grid Kilometers

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## ALDI ABBEY ROAD NEATH

### Map Perygl Llifogydd / Flood Risk Map

#### Allwedd / Map Key

-  Main Rivers
-  Flood Defences
-  Areas Benefiting from Flood Defences
-  Flood Storage Areas
-  Floodmap Flood Zone 3
-  Floodmap Flood Zone 2

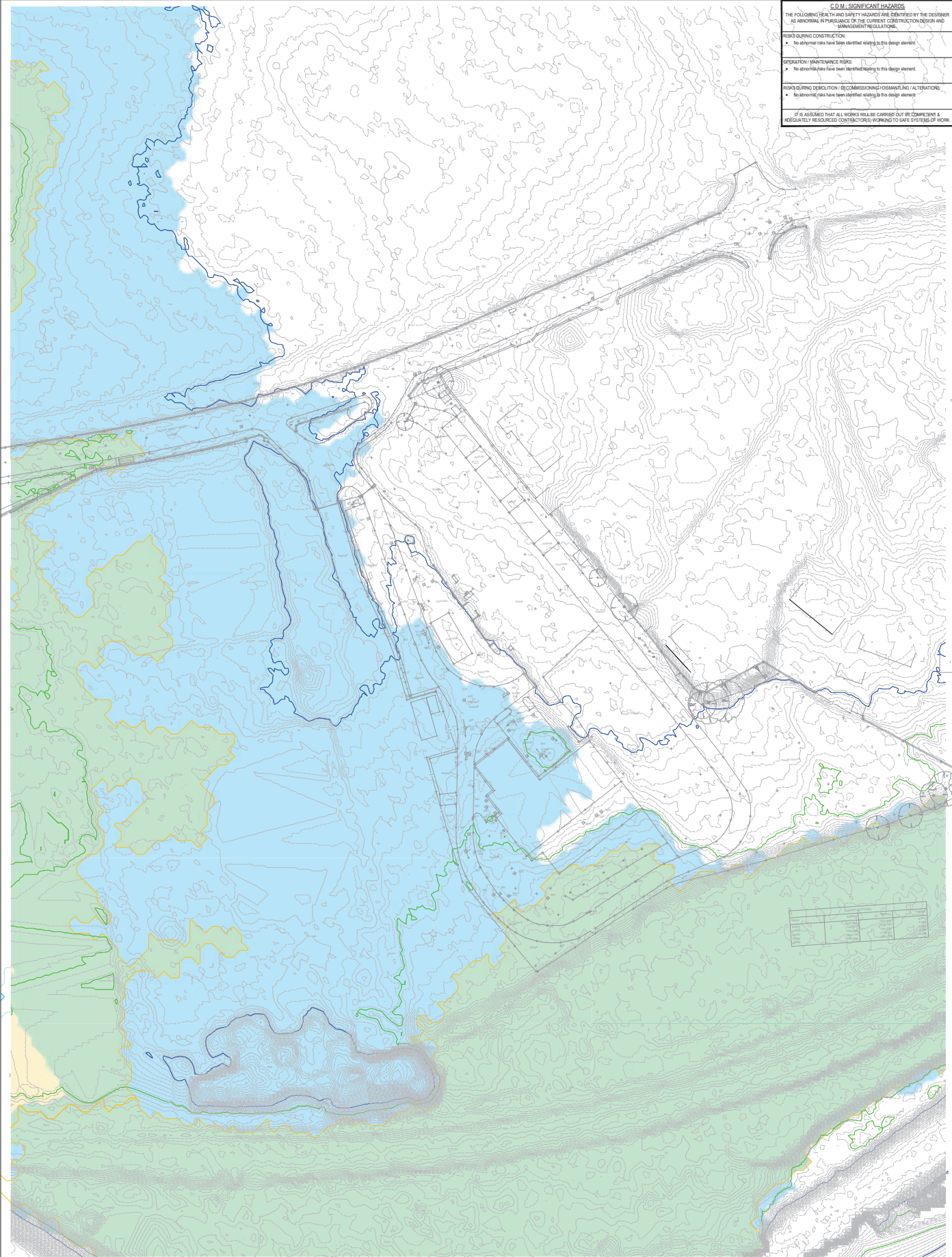
Graddfa / Scale 1:5,001

Dyddiad / Date  
19/06/2019

0.3 0 0.13 0.3  
British\_National\_Grid Kilometers

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• No abnormal risks have been identified relating to this design element.  
**RISKS DURING DEMOLITION / DECOMMISSIONING / REMANUFACTURING / ALTERATIONS:**  
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IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCES CONTRACTORS WORKING TO SAFE SYSTEMS OF WORK.



**KEY**

- FLOOD ZONE 3
- FLOOD ZONE 2
- 7.45m Existing contour (Design Flood Level 1 in 1000yr)
- 6.85m Existing contour (Design Flood Level 1 in 100yr Fluvial / 1 in 1000yr Tide)

**Note:**

- Contours shown has been obtained from LIDAR information.
- Flood Zone 2 & 3 areas has been obtained from Natural Resources Wales Shape File information

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**CHECKED** R/JH  
**APPROVED** RAG

**JOB NO.** 7899  
**DRAWING NUMBER** 7899sk0004

**REV** A

**PROJECT TITLE**  
ALDI STORE  
NEATH ABBEY ROAD  
NEATH

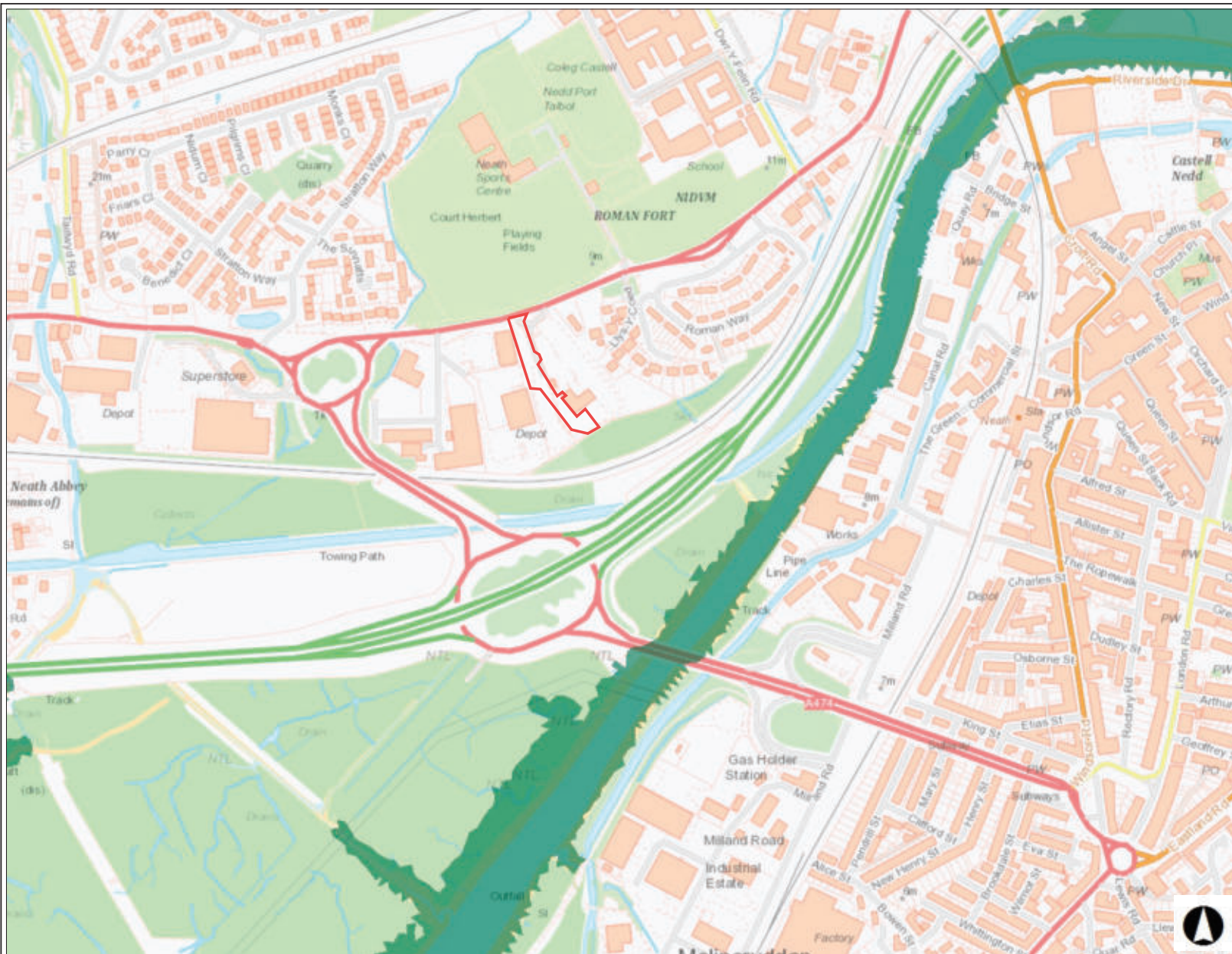
**DRAWING TITLE**  
FLOOD ZONE 2 & 3  
EXISTING SURFACE

**AG** 09.08.19  
**STATUS** INFORMATION

**SKETCH ISSUE**  
**REVISION DETAILS**

**BY** **DATE**

**ALDI**



## ALDI ABBEY ROAD NEATH

Map Perygl Llifogydd / Flood Risk Map

### Allwedd / Map Key

 Reservoir Extents

Graddfa / Scale 1:5,001

Dyddiad / Date  
19/06/2019

0.3 0 0.13 0.3  
British\_National\_Grid Kilometers

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## ALDI ABBEY ROAD NEATH

### Map Perygl Llifogydd / Flood Risk Map

#### Allwedd / Map Key

- High Surface Water Flood Risk - Extent
- Medium Surface Water Flood Risk - Extent
- Low Surface Water Flood Risk - Extent

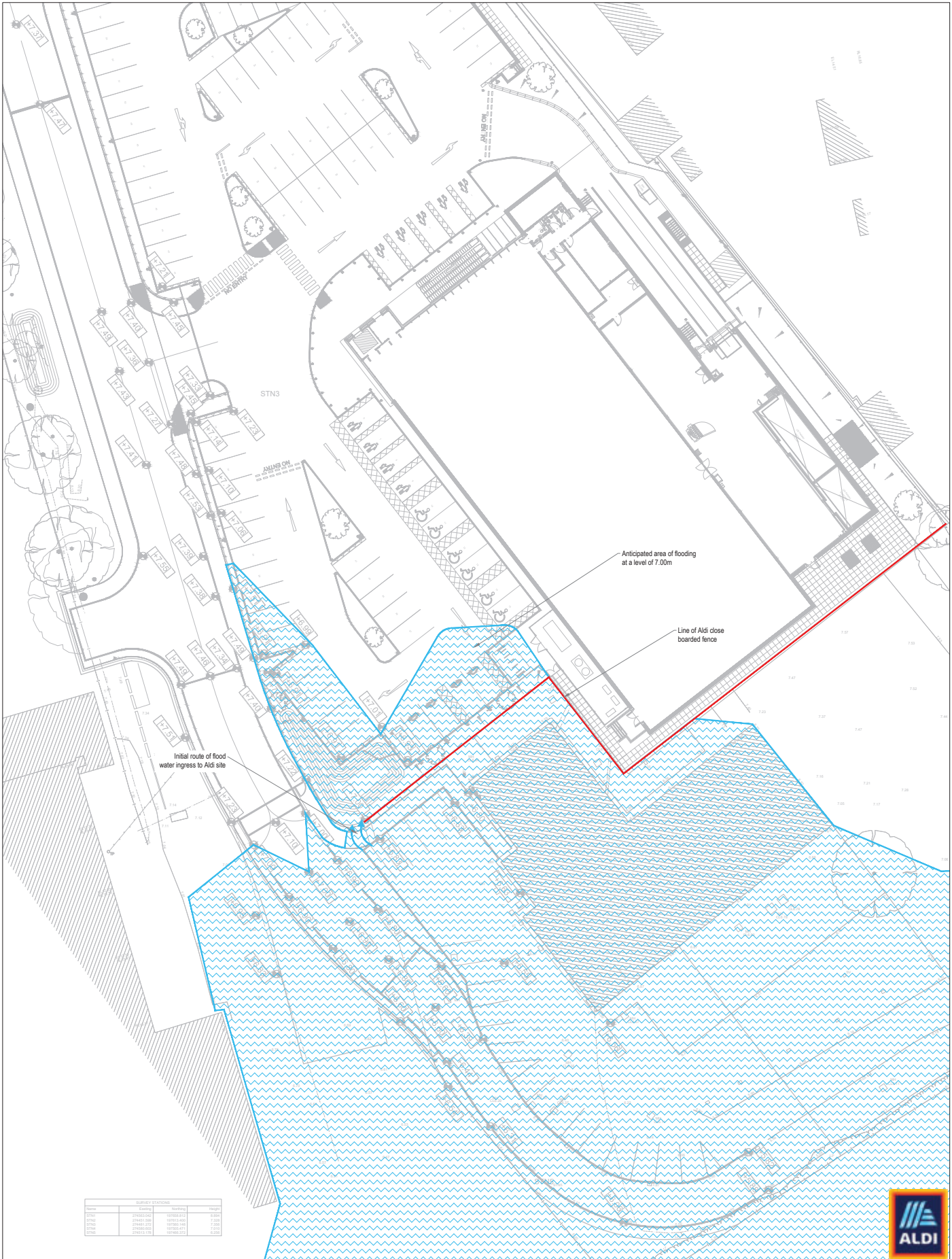
Graddfa / Scale 1:5,001

Dyddiad / Date  
19/06/2019



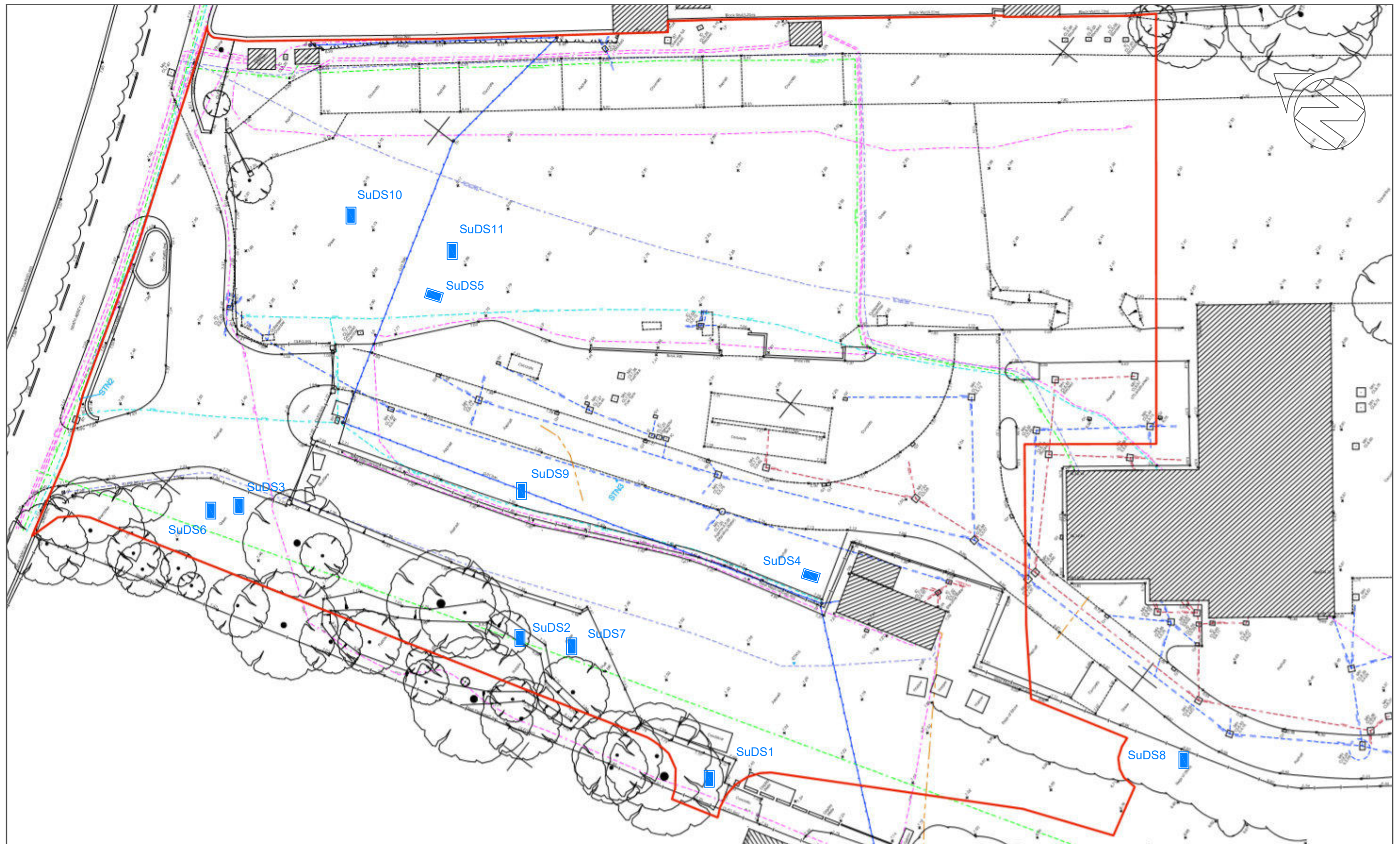
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## **Appendix F: Anticipated Flooded Areas**



|                                                                                                                                                                                                  |  |                                                                                                                                                                                                       |  |                                                                                                                                                  |  |                                                                              |                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------|---------------------------------|
| <b>GENERAL NOTES</b><br>DRAWINGS AND SPECIFICATIONS: This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialists drawings together with the specification. |  | <b>IF YOU HAVE A QUERY CALL US</b><br>SCALING FROM THIS DRAWING OR OBTAINING DIMENSIONS ELECTRONICALLY MAY NOT PROVIDE ACCURATE INFORMATION AND SHOULD BE AVOIDED. WORK ONLY FROM FIGURED DIMENSIONS. |  | <b>CRADDYS</b><br>Consulting Civil and Structural Engineers<br>www.craddys.co.uk                                                                 |  | <b>PROJECT TITLE</b><br>CSN ACCESS ROAD<br>NEATH ABBEY ROAD<br>NEATH         |                                 |
|                                                                                                                                                                                                  |  |                                                                                                                                                                                                       |  | THIS DRAWING IS THE COPYRIGHT OF CRADDYS PITCHERS LTD AND MUST NOT BE COPIED, REPRODUCED OR SUBMITTED TO OTHER PARTIES WITHOUT THEIR PERMISSION. |  | <b>DRAWING TITLE</b><br>ANTICIPATED EXTENT<br>OF TIDAL FLOODING AT 7.00m AOD |                                 |
|                                                                                                                                                                                                  |  |                                                                                                                                                                                                       |  | <b>CLIENT</b><br>ALDI STORES LTD                                                                                                                 |  | SCALE AT A1                                                                  | DRG SIZE                        |
|                                                                                                                                                                                                  |  |                                                                                                                                                                                                       |  |                                                                                                                                                  |  | AS NOTED                                                                     | A1                              |
|                                                                                                                                                                                                  |  |                                                                                                                                                                                                       |  |                                                                                                                                                  |  | DRAWN                                                                        | WAH                             |
|                                                                                                                                                                                                  |  |                                                                                                                                                                                                       |  |                                                                                                                                                  |  | CHECKED                                                                      |                                 |
|                                                                                                                                                                                                  |  |                                                                                                                                                                                                       |  |                                                                                                                                                  |  | APPROVED                                                                     |                                 |
|                                                                                                                                                                                                  |  |                                                                                                                                                                                                       |  |                                                                                                                                                  |  | <b>JOB NO.</b><br>7899                                                       | <b>DRAWING NUMBER</b><br>sk0045 |
|                                                                                                                                                                                                  |  |                                                                                                                                                                                                       |  |                                                                                                                                                  |  | <b>REV</b><br>A                                                              | <b>REV</b><br>A                 |

## **Appendix G: Soakaway Testing Results**



|                                                                                                                        |                                |               |      |         |      |             |                                                                                       |                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------|------|---------|------|-------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>GROUNDTECH</b><br>CONSULTING | CLIENT                         | DATE          |      |         |      | Status      |                                                                                       | Notes<br><div> Soil Percolation Test Location</div> |
|                                                                                                                        | ALDI STORES LIMITED            | FEBRUARY 2021 |      |         |      | Preliminary |                                                                                       |                                                                                                                                          |
|                                                                                                                        | PROJECT TITLE                  | SCALE         |      |         |      | Draft       |                                                                                       |                                                                                                                                          |
|                                                                                                                        | ALDI, NEATH                    | NTS           |      |         |      | Issued      |  |                                                                                                                                          |
|                                                                                                                        | PLAN TITLE                     | PLAN NUMBER   |      |         |      | For Comment |                                                                                       |                                                                                                                                          |
|                                                                                                                        | EXPLORATORY HOLE LOCATION PLAN | 20093 02 1.1  | Rev. | Details | Date | Approved    |                                                                                       |                                                                                                                                          |

# Trial Pit Log

Trialpit No  
**SuDS8**  
Sheet 1 of 1

|                             |                               |                      |                         |
|-----------------------------|-------------------------------|----------------------|-------------------------|
| Project Name: ALDI, NEATH   | Project No. 20093             | Co-ords: -<br>Level: | Date 28/01/2021         |
| Location: NEATH             | Dimensions (m):<br>Depth 1.10 |                      | Scale 1:25<br>Logged SM |
| Client: ALDI STORES LIMITED |                               | 1.9                  |                         |

| Water Strike | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend                                                                            | Stratum Description                                                                                                                                                           |   |
|--------------|-----------------------------|------|---------|-----------|-----------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|              | Depth                       | Type | Results |           |           |                                                                                   |                                                                                                                                                                               |   |
|              |                             |      |         | 0.30      |           |  | MADE GROUND: Vegetation over brown grey slightly sandy gravelly sandy topsoil. Sand is fine to medium. Gravel is angular to well rounded fine to coarse of brick and plastic. |   |
|              |                             |      |         | 0.70      |           |  | Dark brown slightly clayey fine to medium SAND and GRAVEL. Gravel is subangular fine to coarse of mixed lithology.                                                            |   |
|              |                             |      |         | 1.10      |           |  | Light brown slightly clayey sandy GRAVEL. Gravel is subangular to subrounded fine to coarse of mixed lithology.                                                               | 1 |
|              |                             |      |         |           |           |                                                                                   | End of pit at 1.10 m                                                                                                                                                          |   |
|              |                             |      |         |           |           |                                                                                   |                                                                                                                                                                               | 2 |
|              |                             |      |         |           |           |                                                                                   |                                                                                                                                                                               | 3 |
|              |                             |      |         |           |           |                                                                                   |                                                                                                                                                                               | 4 |
|              |                             |      |         |           |           |                                                                                   |                                                                                                                                                                               | 5 |

|                                                                                                      |
|------------------------------------------------------------------------------------------------------|
| Remarks: 1. No groundwater encountered 2. Pit sides stable. 3. Soil percolation testing carried out. |
| Stability:                                                                                           |



SOIL PERCOLATION TEST

Sheet 1 of 2

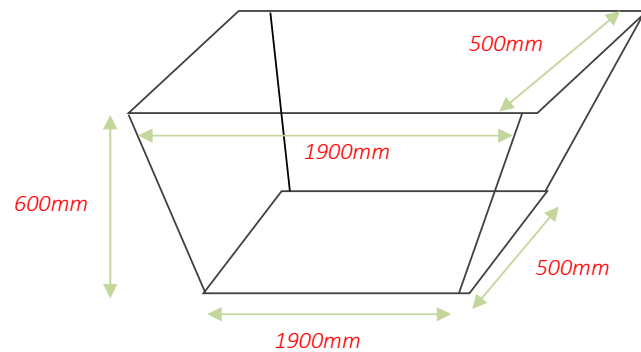
Date of Test: 28/01/2021

POSITION: SuDS8  
TEST 1

Weather: Clear

Engineer: S Mullen  
Checked: R Wyatt

Trial Pit Measurements



Test Data

| Time Elapsed (mins) | Depth to Water Level (mm) |
|---------------------|---------------------------|
| 0                   | 300                       |
| 1                   | 310                       |
| 2                   | 325                       |
| 3                   | 352                       |
| 5                   | 397                       |
| 6                   | 410                       |
| 10                  | 431                       |
| 15                  | 475                       |
| 20                  | 493                       |
| 30                  | 549                       |
| 40                  | 563                       |
| 50                  | 580                       |
| 60                  | 600                       |

Pit Depth (mm): 600

Pit Details: Open with no stone filling

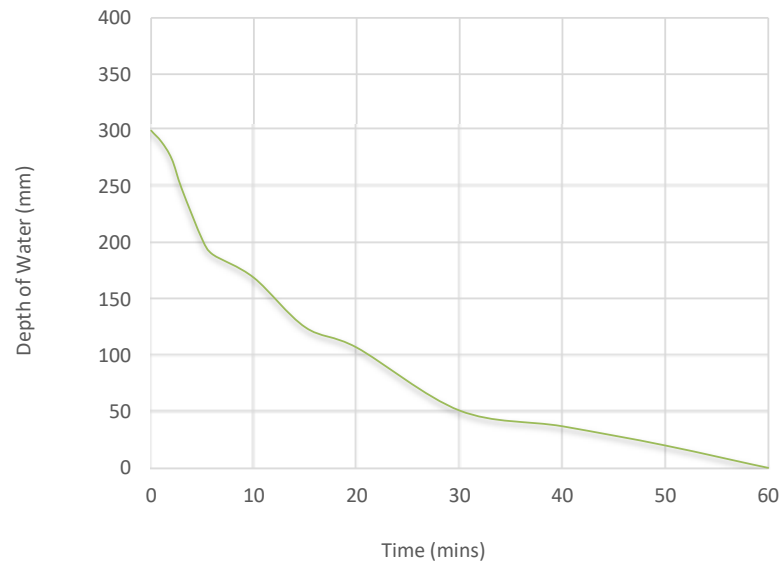
Groundwater Level: NGW

## SOIL PERCOLATION TEST

POSITION: SuDS8  
TEST 1



Depth vs Time



|                                          |       |
|------------------------------------------|-------|
| Volume of Pit (m <sup>3</sup> )          | 0.57  |
| Void Ratio of Infill                     | 1     |
| Volume of Infill (m <sup>3</sup> )       | N/A   |
| Volume of Water in Pit (m <sup>3</sup> ) | 0.285 |

### Compliance Check:

|                                         |     |
|-----------------------------------------|-----|
| Water Level at 75% effective depth (mm) | 225 |
| Water Level at 25% effective depth (mm) | 75  |

Compliant with BRE 365

### Soil Infiltration Rate Calculation

|                                              |        |
|----------------------------------------------|--------|
| Water Level 1                                | 225    |
| Water Level 2                                | 75     |
| Time to Drain from Level 1 to Level 2 (mins) | 22     |
| Volume of water discharged (m <sup>3</sup> ) | 0.1425 |

|                                  |      |
|----------------------------------|------|
| Discharge Area (m <sup>2</sup> ) | 1.67 |
|----------------------------------|------|

|                                |           |
|--------------------------------|-----------|
| Soil Infiltration Rate (m/min) | 0.0038786 |
|--------------------------------|-----------|

|                                |          |
|--------------------------------|----------|
| Soil Infiltration Rate (m/sec) | 6.46E-05 |
|--------------------------------|----------|

SOIL PERCOLATION TEST

Sheet 1 of 2

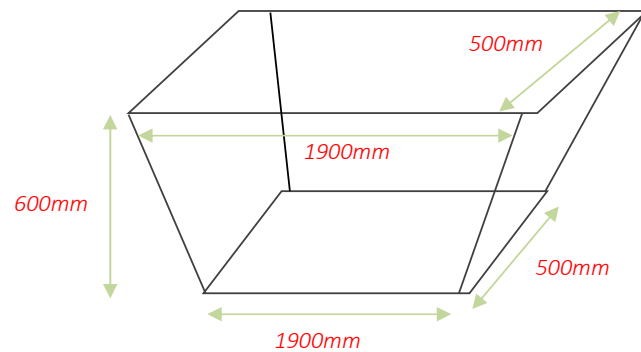
Date of Test: 28/01/2021

POSITION: SuDS8  
TEST 2

Weather: Clear

Engineer: S Mullen  
Checked: R Wyatt

Trial Pit Measurements



Test Data

| Time Elapsed (mins) | Depth to Water Level (mm) |
|---------------------|---------------------------|
| 0                   | 300                       |
| 1                   | 310                       |
| 2                   | 320                       |
| 3                   | 330                       |
| 5                   | 330                       |
| 6                   | 340                       |
| 10                  | 380                       |
| 15                  | 410                       |
| 20                  | 460                       |
| 30                  | 500                       |
| 40                  | 535                       |
| 50                  | 576                       |
| 60                  | 600                       |

Pit Depth (mm): 600

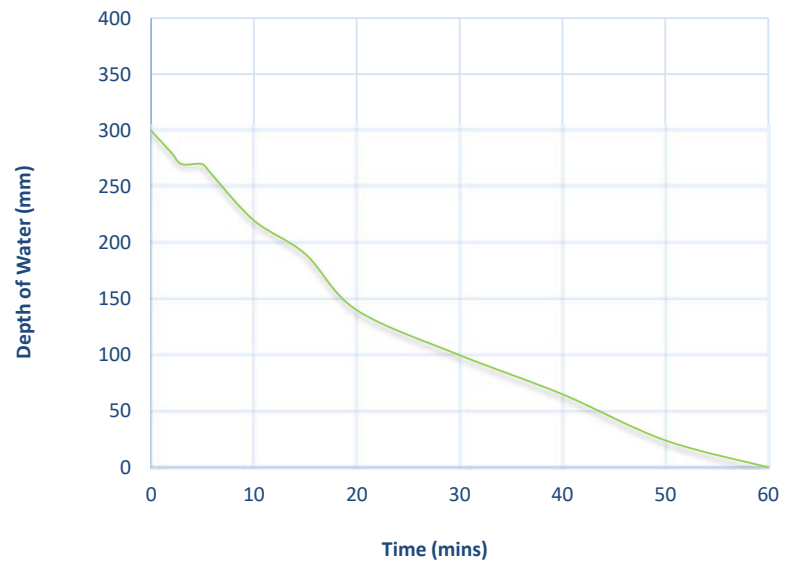
Pit Details: Open with no stone filling

Groundwater Level: NGW

SOIL PERCOLATION TEST

POSITION: SuDS8  
TEST 2

Depth vs Time



|                                          |       |
|------------------------------------------|-------|
| Volume of Pit (m <sup>3</sup> )          | 0.57  |
| Void Ratio of Infill                     | 1     |
| Volume of Infill (m <sup>3</sup> )       | N/A   |
| Volume of Water in Pit (m <sup>3</sup> ) | 0.285 |

Compliance Check:

|                                         |     |
|-----------------------------------------|-----|
| Water Level at 75% effective depth (mm) | 225 |
| Water Level at 25% effective depth (mm) | 75  |

Compliant with BRE 365

Soil Infiltration Rate Calculation

|                                              |        |
|----------------------------------------------|--------|
| Water Level 1                                | 225    |
| Water Level 2                                | 75     |
| Time to Drain from Level 1 to Level 2 (mins) | 28     |
| Volume of water discharged (m <sup>3</sup> ) | 0.1425 |

|                                  |      |
|----------------------------------|------|
| Discharge Area (m <sup>2</sup> ) | 1.67 |
|----------------------------------|------|

|                                |           |
|--------------------------------|-----------|
| Soil Infiltration Rate (m/min) | 0.0030475 |
|--------------------------------|-----------|

|                                |          |
|--------------------------------|----------|
| Soil Infiltration Rate (m/sec) | 5.08E-05 |
|--------------------------------|----------|

SOIL PERCOLATION TEST

Sheet 1 of 2

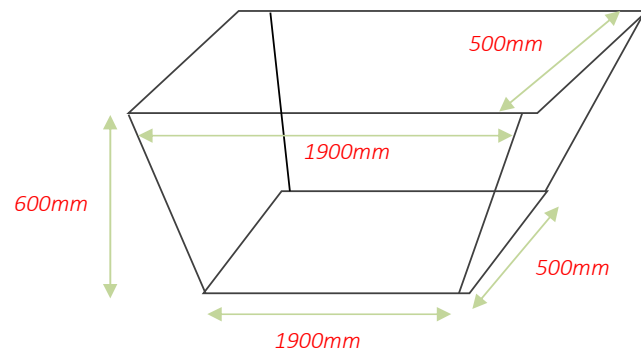
Date of Test: 28/01/2021

POSITION: SuDS8  
TEST 3

Weather: Clear

Engineer: S Mullen  
Checked: R Wyatt

Trial Pit Measurements



Test Data

| Time Elapsed (mins) | Depth to Water Level (mm) |
|---------------------|---------------------------|
| 0                   | 300                       |
| 1                   | 300                       |
| 2                   | 310                       |
| 3                   | 310                       |
| 5                   | 330                       |
| 6                   | 330                       |
| 10                  | 360                       |
| 15                  | 380                       |
| 20                  | 420                       |
| 30                  | 480                       |
| 40                  | 500                       |
| 50                  | 530                       |
| 60                  | 580                       |
| 75                  | 600                       |

Pit Depth (mm): 600

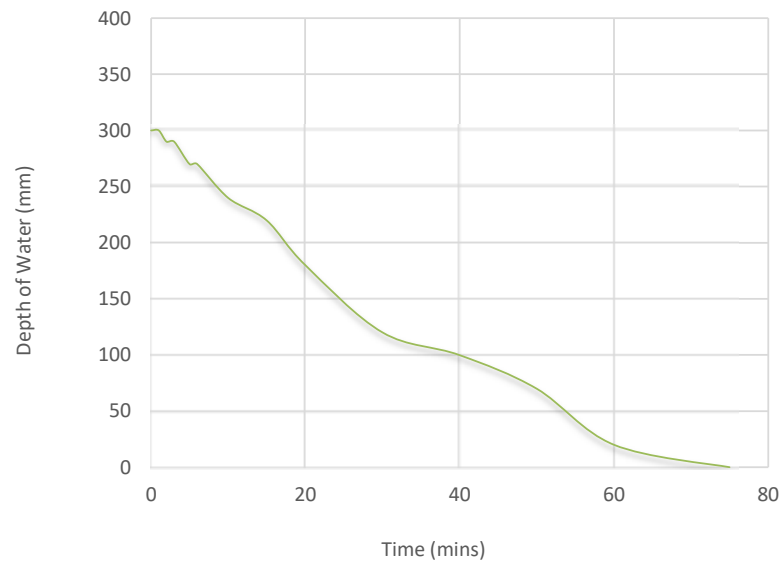
Pit Details: Open with no stone filling

Groundwater Level: NGW

## SOIL PERCOLATION TEST

POSITION: SuDS8  
TEST 3

Depth vs Time



|                                          |       |
|------------------------------------------|-------|
| Volume of Pit (m <sup>3</sup> )          | 0.57  |
| Void Ratio of Infill                     | 1     |
| Volume of Infill (m <sup>3</sup> )       | N/A   |
| Volume of Water in Pit (m <sup>3</sup> ) | 0.285 |

### Compliance Check:

|                                         |     |
|-----------------------------------------|-----|
| Water Level at 75% effective depth (mm) | 225 |
| Water Level at 25% effective depth (mm) | 75  |

Compliant with BRE 365

### Soil Infiltration Rate Calculation

|                                              |        |
|----------------------------------------------|--------|
| Water Level 1                                | 225    |
| Water Level 2                                | 75     |
| Time to Drain from Level 1 to Level 2 (mins) | 34.5   |
| Volume of water discharged (m <sup>3</sup> ) | 0.1425 |

|                                  |      |
|----------------------------------|------|
| Discharge Area (m <sup>2</sup> ) | 1.67 |
|----------------------------------|------|

|                                |           |
|--------------------------------|-----------|
| Soil Infiltration Rate (m/min) | 0.0024733 |
|--------------------------------|-----------|

|                                |          |
|--------------------------------|----------|
| Soil Infiltration Rate (m/sec) | 4.12E-05 |
|--------------------------------|----------|

SOIL PERCOLATION TEST

Sheet 1 of 2

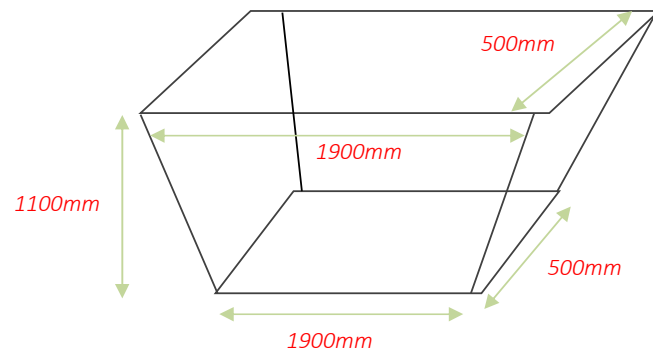
Date of Test: 28/01/2021

POSITION: SuDS8  
TEST 4

Weather: Clear

Engineer: S Mullen  
Checked: R Wyatt

Trial Pit Measurements



Test Data

| Time Elapsed (mins) | Depth to Water Level (mm) |
|---------------------|---------------------------|
| 0                   | 320                       |
| 1                   | 360                       |
| 2                   | 420                       |
| 3                   | 450                       |
| 5                   | 470                       |
| 6                   | 490                       |
| 10                  | 580                       |
| 15                  | 710                       |
| 20                  | 950                       |
| 30                  | 1019                      |
| 40                  | 1100                      |

Pit Depth (mm): 1100

Pit Details: Open with no stone filling

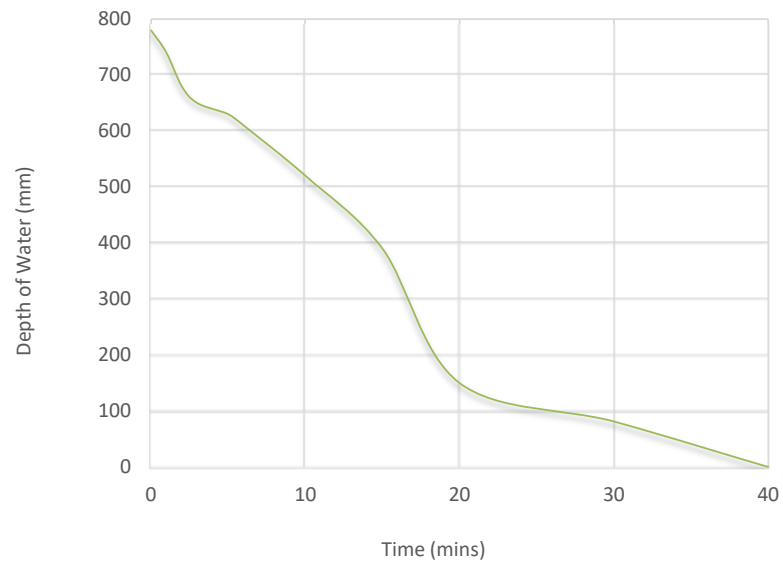
Groundwater Level: NGW

## SOIL PERCOLATION TEST

POSITION: SuDS8  
TEST 4



Depth vs Time



|                                          |       |
|------------------------------------------|-------|
| Volume of Pit (m <sup>3</sup> )          | 1.045 |
| Void Ratio of Infill                     | 1     |
| Volume of Infill (m <sup>3</sup> )       | N/A   |
| Volume of Water in Pit (m <sup>3</sup> ) | 0.741 |

### Compliance Check:

|                                         |     |
|-----------------------------------------|-----|
| Water Level at 75% effective depth (mm) | 585 |
| Water Level at 25% effective depth (mm) | 195 |

Compliant with BRE 365

### Soil Infiltration Rate Calculation

|                                              |        |
|----------------------------------------------|--------|
| Water Level 1                                | 585    |
| Water Level 2                                | 195    |
| Time to Drain from Level 1 to Level 2 (mins) | 12     |
| Volume of water discharged (m <sup>3</sup> ) | 0.3705 |

|                                  |       |
|----------------------------------|-------|
| Discharge Area (m <sup>2</sup> ) | 2.822 |
|----------------------------------|-------|

|                                |           |
|--------------------------------|-----------|
| Soil Infiltration Rate (m/min) | 0.0109408 |
|--------------------------------|-----------|

|                                |          |
|--------------------------------|----------|
| Soil Infiltration Rate (m/sec) | 1.82E-04 |
|--------------------------------|----------|

SOIL PERCOLATION TEST

Sheet 1 of 2

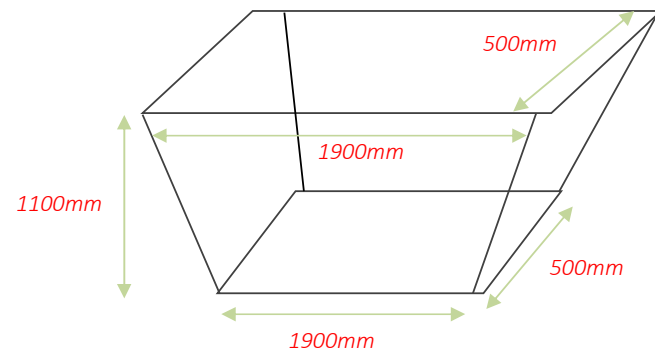
Date of Test: 29/01/2021

POSITION: SuDS8  
TEST 5

Weather: Clear

Engineer: S Mullen  
Checked: R Wyatt

Trial Pit Measurements



Pit Depth (mm): 1100

Pit Details: Open with no stone filling

Groundwater Level: NGW

Test Data

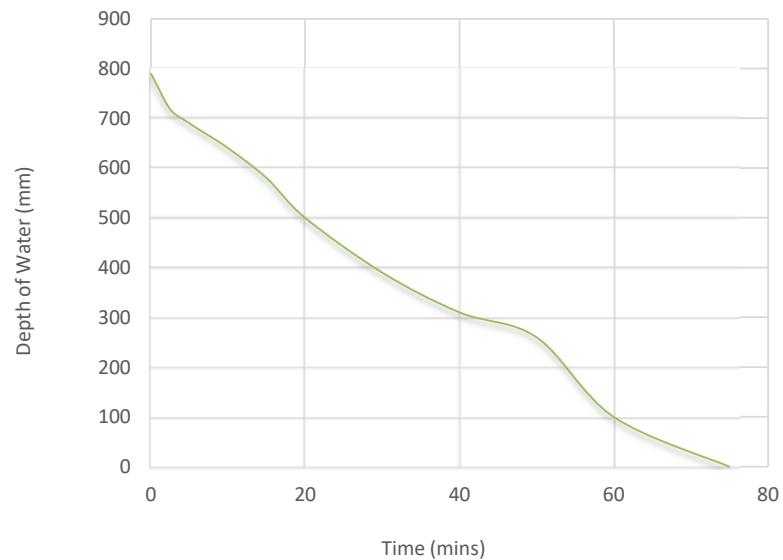
| Time Elapsed (mins) | Depth to Water Level (mm) |
|---------------------|---------------------------|
| 0                   | 310                       |
| 1                   | 340                       |
| 2                   | 370                       |
| 3                   | 390                       |
| 5                   | 410                       |
| 6                   | 420                       |
| 10                  | 460                       |
| 15                  | 520                       |
| 20                  | 600                       |
| 30                  | 710                       |
| 40                  | 790                       |
| 50                  | 840                       |
| 60                  | 1000                      |
| 75                  | 1100                      |

SOIL PERCOLATION TEST



POSITION: SuDS8  
TEST 5

Depth vs Time



|                                          |        |
|------------------------------------------|--------|
| Volume of Pit (m <sup>3</sup> )          | 1.045  |
| Void Ratio of Infill                     | 1      |
| Volume of Infill (m <sup>3</sup> )       | N/A    |
| Volume of Water in Pit (m <sup>3</sup> ) | 0.7505 |

Compliance Check:

|                                         |       |
|-----------------------------------------|-------|
| Water Level at 75% effective depth (mm) | 592.5 |
| Water Level at 25% effective depth (mm) | 197.5 |

Compliant with BRE 365

Soil Infiltration Rate Calculation

|                                              |         |
|----------------------------------------------|---------|
| Water Level 1                                | 592.5   |
| Water Level 2                                | 197.5   |
| Time to Drain from Level 1 to Level 2 (mins) | 40      |
| Volume of water discharged (m <sup>3</sup> ) | 0.37525 |

|                                  |       |
|----------------------------------|-------|
| Discharge Area (m <sup>2</sup> ) | 2.846 |
|----------------------------------|-------|

|                                |           |
|--------------------------------|-----------|
| Soil Infiltration Rate (m/min) | 0.0032963 |
|--------------------------------|-----------|

|                                |          |
|--------------------------------|----------|
| Soil Infiltration Rate (m/sec) | 5.49E-05 |
|--------------------------------|----------|

SOIL PERCOLATION TEST

Sheet 1 of 2

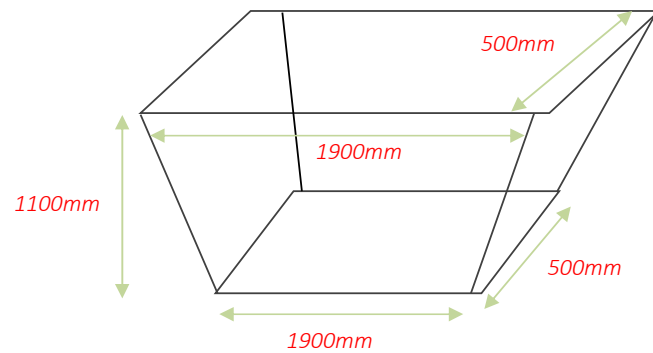
Date of Test: 29/01/2021

POSITION: SuDS8  
TEST 6

Weather: Clear

Engineer: S Mullen  
Checked: R Wyatt

Trial Pit Measurements



Pit Depth (mm): 1100

Pit Details: Open with no stone filling

Groundwater Level: NGW

Test Data

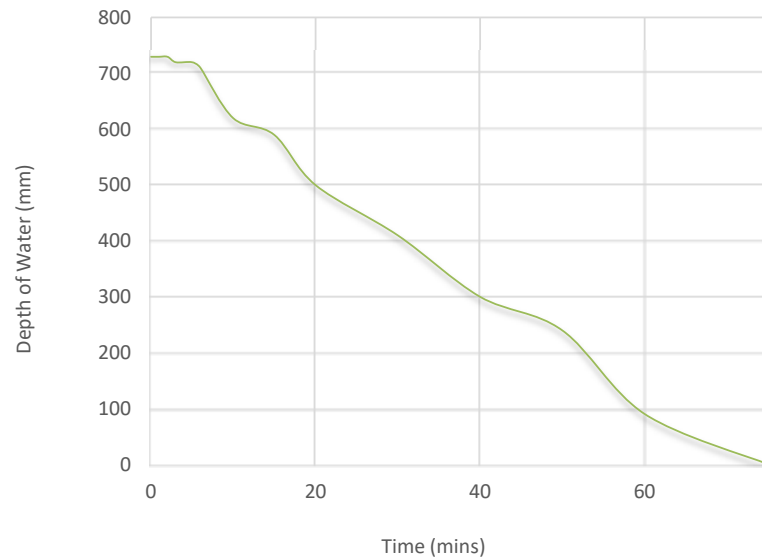
| Time Elapsed (mins) | Depth to Water Level (mm) |
|---------------------|---------------------------|
| 0                   | 370                       |
| 1                   | 370                       |
| 2                   | 370                       |
| 3                   | 380                       |
| 5                   | 380                       |
| 6                   | 390                       |
| 10                  | 480                       |
| 15                  | 510                       |
| 20                  | 600                       |
| 30                  | 690                       |
| 40                  | 800                       |
| 50                  | 860                       |
| 60                  | 1010                      |
| 75                  | 1100                      |

## SOIL PERCOLATION TEST

POSITION: SuDS8  
TEST 6



Depth vs Time



|                                          |        |
|------------------------------------------|--------|
| Volume of Pit (m <sup>3</sup> )          | 1.045  |
| Void Ratio of Infill                     | 1      |
| Volume of Infill (m <sup>3</sup> )       | N/A    |
| Volume of Water in Pit (m <sup>3</sup> ) | 0.6935 |

### Compliance Check:

|                                         |       |
|-----------------------------------------|-------|
| Water Level at 75% effective depth (mm) | 547.5 |
| Water Level at 25% effective depth (mm) | 182.5 |

Compliant with BRE 365

### Soil Infiltration Rate Calculation

|                                              |         |
|----------------------------------------------|---------|
| Water Level 1                                | 547.5   |
| Water Level 2                                | 182.5   |
| Time to Drain from Level 1 to Level 2 (mins) | 36.5    |
| Volume of water discharged (m <sup>3</sup> ) | 0.34675 |

|                                  |       |
|----------------------------------|-------|
| Discharge Area (m <sup>2</sup> ) | 2.702 |
|----------------------------------|-------|

|                                |           |
|--------------------------------|-----------|
| Soil Infiltration Rate (m/min) | 0.0035159 |
|--------------------------------|-----------|

|                                |          |
|--------------------------------|----------|
| Soil Infiltration Rate (m/sec) | 5.86E-05 |
|--------------------------------|----------|